

## Support for an expanded tripartite influence model with gay men

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### ABSTRACT

This study investigated whether an expanded tripartite influence model would represent gay men's experiences. This model was extended by adding partners and gay community involvement as sources of social influence and considering dual body image pathways (muscularity and body fat dissatisfaction) to muscularity enhancement and disordered eating behaviors. Latent variable structural equation modeling analyses upheld this model for 346 gay men. Dual body image pathways to body change behaviors were supported, although three unanticipated interrelationships emerged, suggesting that muscularity and body fat concerns and behaviors may be more integrated for gay men. Internalization of the mesomorphic ideal, appearance comparison, muscularity dissatisfaction, and body fat dissatisfaction were key mediators in the model. Of the sources of social influence, friend and media pressure to be lean, gay community involvement, and partner, friend, media, and family pressures to be muscular made incremental contributions. Unexpectedly, certain sources were directly connected to body change behaviors.

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### Introduction

Much theoretical interest and research on men's body image has emerged, with scholars consistently noting that men's body concerns differ qualitatively from those of women (McCreary, 2007). Whereas men typically want to be mesomorphic, or have a defined muscular (but not excessively large) body, women desire to be thin (Arbour & Martin Ginis, 2006; Jones & Crawford, 2005; Olivardia, Pope, Borowiecki, & Cohane, 2004; Ridgeway & Tylka, 2005). Despite these differences, both men and women face societal and interpersonal pressures to attain the *gendered body ideal* – the body portrayed in the media as ideal for their gender (Karazsia & Crowther, 2010; Leit, Gray, & Pope, 2002; Rolhinger, 2002).

It is important to consider the source and amount of these pressures. Men are believed to value attractiveness in a partner to a greater extent than women (Feingold, 1990; Legenbauer et al., 2009), which creates appearance-related pressures for heterosexual females and gay males (Brand, Rothblum, & Solomon, 1992; Siever, 1994). Western culture incessantly reminds girls and women to be attractive for the actual or anticipatory onlooker, who is often assumed to be a man gazing at their body and evaluating them based on their appearance (Fredrickson & Roberts, 1997). Gay men also experience gaze, but it may be more multifaceted for them

– they are not only objectified by gay men, but they often gaze at gay men. Gazing at gay men frequently elicits a body-comparison dynamic within the *onlooker* that instigates fear that his body will never conform to gay images of beauty and feelings of being ugly, sexually undesirable, and invisible (Wood, 2004). Feelings of inadequacy may be temporarily allayed when he witnesses gay men gazing at his body, but being gazed at encourages him to focus on his body, further heightening his body shame across time (Wiseman & Moradi, 2010). This dynamic is especially problematic for gay men who feel like “chronic losers in the competitive game of the gay male gaze” (Wood, 2004, p. 45), who wish to attract men who fit the mesomorphic ideal, and who are involved in gay communities that encourage gaze rather than resist its cultural hegemony (Siever, 1994; Wood, 2004). Gay men report more pressure to be attractive than heterosexual men (Carper, Negy, & Tantleff-Dunn, 2010), and this dynamic may contribute to this difference (Wood, 2004).

Yet, there is much more research on the body image of heterosexual men relative to gay men (Carper et al., 2010; Wiseman & Moradi, 2010), which is perhaps due in part to the difficulty of obtaining large samples of gay men when convenience samples of heterosexual men are readily available. Also, in many studies of male body image, the sexual orientation of participants is not assessed or acknowledged, suggesting that researchers may not consider sexual orientation to be an important identity variable in body image research (Wood, 2004). An unfortunate result is that we do not know which sociocultural variables uniquely contribute to gay men's body image and body change behaviors. The present study aims to understand the links between specific social

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influences, body image, and body change behaviors within a fairly large sample of gay men using theory and research as a foundation from which to build and test a model of their experiences.

Most of the body image research with gay men has compared them against heterosexual men. A meta-analysis of this research (Morrison, Morrison, & Sager, 2004) revealed that gay men, on average, report greater levels of overall body dissatisfaction compared to heterosexual men, although this difference was rather small in magnitude and was derived in part from several studies which used body image instruments developed for and validated on women. Using a body image measure specifically developed for men, Kaminski, Chapman, Haynes, and Own (2005) revealed a similar trend: gay men were more likely than heterosexual men to have higher overall body dissatisfaction. A few reasons for this difference have been offered by Wood (2004). In addition to gay male gaze and the body comparing dynamic described previously, gay men may experience greater body dissatisfaction because culture oppresses boys and men who do not conform to the masculine gender role (Connell, 1987). Indeed, boys who do not conform to this masculine code of conduct were found to be more highly stigmatized and teased based on their appearance, which then corresponded to their significantly higher rate of body distress (Beren, Hayden, Wilfley, & Grilo, 1996). Pursuing the mesomorphic ideal, as it is intertwined with cultural visions/values of masculinity and men's health, may be one way gay men believe they can overcome this cultural stigma, avoid aesthetic discrimination, appear to be disease-free, and attain a partner who is mesomorphic (Wood, 2004).

Although quantitative differences exist in the amount of body dissatisfaction among gay and heterosexual men, they prioritize the same two body-related concerns indicative of the mesomorphic ideal: muscularity and low body fat (Jones & Crawford, 2005; Martins, Tiggemann, & Churchett, 2008; Ridgeway & Tylka, 2005; Tiggemann, Martins, & Kirkbride, 2007; Yelland & Tiggemann, 2003). These concerns may be somewhat interconnected, as men may wish to lose body fat not to be thin or smaller but to highlight their muscle definition, as body fat can hide musculature (Hildebrandt, Langenbucher, & Schlundt, 2004). Yet, muscularity and body fat dissatisfaction are distinct as well, as they are uniquely and negatively associated with gay and heterosexual men's overall psychological well-being (Bergeron & Tylka, 2007; Blashill, 2010; Martins, Tiggemann, & Kirkbride, 2007; Tylka, Bergeron, & Schwartz, 2005). While many studies reveal that gay and heterosexual men do not differ in their level of muscularity dissatisfaction (Blashill, 2010; Duggan & McCreary, 2004; Martins et al., 2007), gay men on average report significantly more body fat dissatisfaction (Kaminski et al., 2005; Martins et al., 2007; Williamson & Hartley, 1998) and disordered eating behaviors (Carper et al., 2010; Russell & Keel, 2002), which may reflect their desire to overcome cultural stigma of gender nonconformity, as body fat is often considered feminine (Wood, 2004).

Only one study has modeled how certain social influences are associated with gay and bisexual men's body image. Wiseman and Moradi (2010) conceptualized gay men's body image concerns using objectification theory (Fredrickson & Roberts, 1997). This theory asserts that individuals living in sexually objectifying cultures may adopt an observer's perspective of their body (self-objectify) and scrutinize their body from an external perspective to determine its consistency with gendered body ideals (body surveillance). If they do not perceive their body to be consistent with these ideals, they may experience body shame, which could prompt detrimental mental health consequences such as disordered eating. Indeed, gay and bisexual men's perceptions of being sexually objectified predicted their internalization of the gendered body ideal and tendency to engage in body surveillance, which then predicted their body shame (Wiseman & Moradi, 2010). This finding is in contrast to heterosexual men, whose internalization of

the gendered body ideal and body surveillance were not linked to body shame (Daniel & Bridges, 2010). In another study, both state-induced and trait self-objectification were linked to body shame for gay but not heterosexual men, with gay men also reporting higher self-objectification, body surveillance, and body shame than heterosexual men (Martins et al., 2007).

Although objectification theory appears to be one valid framework to understand gay men's body image, it does not fully account for the diverse social pressures they are under to be mesomorphic (Carper et al., 2010; Martins et al., 2007; Siever, 1994). First, participation in gay male communities that incessantly emphasize the mesomorphic ideal likely is a source of social influence for gay men in that they experience substantial pressure to adopt these ideals (Greene & Herek, 1994; Siever, 1994; Signorile, 1997; Wood, 2004). This type of gay male subculture often dominates the iconography and institutional culture of gay public life, as seen in gyms, bars, advertising, and clubs (Wood, 2004). Often, gay men who do not fit the mesomorphic ideal are classified as "fats," "fems," or "trolls" within this subculture (Signorile, 1997; Wood, 2004, p. 55). Compounding this problem is that, unlike lesbian communities, there is a dearth of critical discourse within gay male communities to label, analyze, challenge, and resist the cultural hegemony that fosters the pursuit of this ideal and body dissatisfaction (Wood, 2004). This discourse may be preempted by (a) gay men who resemble the mesomorphic ideal and derive their sense of power from stigmatizing other gay men or (b) those who do not fit this ideal but are constrained by internalizing cultural stigmatization. Second, gay men may experience pressure to become (and remain) muscular and lean from their partners, as male partners are likely to highly value physical attractiveness (Feingold, 1990; Legenbauer et al., 2009). Third, the media may be a source of pressure for gay men to become and stay muscular and lean. Gay men, relative to heterosexual men, reported a higher tendency to be impacted by gendered body ideals in the media, which were, in turn, associated with their internalization of these ideals (Carper et al., 2010). Exposure to fitness magazines was related to gay men's social physique anxiety, their drive for muscularity, and their disordered eating behaviors (Duggan & McCreary, 2004). Fourth, gay men have reported that their friends often place a great importance on physical attractiveness; interestingly, the relationship between peer appearance-related pressures and body dissatisfaction was more pronounced among gay men than heterosexual men (Hospers & Jansen, 2005). Exploring how these various pressures work together to predict to gay men's body image has not yet been undertaken and is, then, a fruitful and worthwhile area for exploration.

Therefore, we examined these five sources of social influence in the model of gay men's body image and body change behaviors tested in the present study. As a model framework, we used the tripartite influence model (Thompson, Covert, & Stormer, 1999; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999) to specify associations between these sources of social influence, body image, and body change behaviors. This model posits that three sources of social influence (friends/peers, family/parents, and media) directly and indirectly predict body dissatisfaction via internalization of the gendered body ideal and appearance comparison. In turn, body dissatisfaction predicts disordered eating behaviors. This model has received much empirical support for adolescent girls and women (e.g., Keery, van den Berg, & Thompson, 2004), and studies have begun to modify it to reflect men's experiences (Karazsia & Crowther, 2009, 2010; Tylka, 2011).

Specifically, Karazsia and Crowther (2009) found that internalization of the mesomorphic ideal and appearance comparison mediated the link between social influence (an overall variable representing parental, sibling, and peer encouragement to exercise and diet) and college men's muscularity dissatisfaction. In another study, they included body change behaviors within their

model and found that (a) overall social influence predicted college men's internalization of the mesomorphic ideal and engagement in appearance comparison; (b) internalization of the mesomorphic ideal contributed unique variance in muscularity dissatisfaction; and (c) overall social influence, internalization of the mesomorphic ideal, and muscularity dissatisfaction each predicted muscularity-oriented behaviors in college men (Karazsia & Crowther, 2010). Most recently, Tylka (2011) expanded the tripartite influence model for men by integrating partner pressure to be mesomorphic as a source of social influence and exploring dual body image pathways (muscularity and body fat dissatisfaction) to two body change behaviors (muscularity enhancement and disordered eating) and tested this model with a sample of predominantly heterosexual men. Support was garnered for the dual body image pathways to body change behaviors. Internalization, muscularity dissatisfaction, and body fat dissatisfaction each served as mediators in the model. All sources of social influence made unique contributions to the model, with family and media pressure predicting internalization of the mesomorphic ideal, friend pressure predicting muscularity dissatisfaction, media pressure predicting body fat dissatisfaction, and partner pressure predicting disordered eating behaviors.

Based on the aforementioned research, we refined the tripartite influence model for gay men in two main ways (see Fig. 1). First, we integrated partners and gay community involvement as sources of social influence to accompany the original three pressures included in the tripartite influence model (friends/peers, family/parents, and media) and investigated each source individually within the model. We teased apart pressures to be muscular and pressures to be lean to gain a better understanding of which contributed uniquely to the model. Second, similar to Tylka (2011), we included dual body image pathways (muscularity and body fat dissatisfaction) to muscularity enhancement behaviors and disordered eating behaviors, respectively. Because the broad types of body concerns and associated body change behaviors are similar for gay and heterosexual men (Tiggemann et al., 2007; Yelland & Tiggemann, 2003), we expected that the dual pathway body image model would also be representative for gay men.

Our hypotheses mirrored the tenets of the tripartite influence model. First, according to this model, internalization of gendered body ideals and appearance comparison should mediate the relationships between appearance-related social influence variables and body dissatisfaction. Thus, we hypothesized that internalization of the mesomorphic ideal and appearance comparison would mediate the relationships between (a) pressures to be muscular and muscularity dissatisfaction, (b) pressures to be lean and body fat dissatisfaction, and (c) gay community involvement and both muscularity and body fat dissatisfaction. Research has offered preliminary support for some of these associations. Overall appearance-related pressures were associated with gay men's internalization of gendered body ideals, and internalization of the mesomorphic ideal and appearance comparison were associated with their body image (Carper et al., 2010; Levesque & Vichesky, 2006).

Second, the tripartite influence model specifies that body dissatisfaction should predict body change behaviors. Hence, we hypothesized that muscularity dissatisfaction would predict muscularity enhancement behaviors, and body fat dissatisfaction would predict disordered eating behaviors. Indeed, gay men's levels of muscularity dissatisfaction and body fat dissatisfaction have been shown to be linked to their engagement in muscularity enhancement behaviors (Chaney, 2008) and disordered eating behaviors (Blashill, 2010; Smith, Hawkeswood, Bodell, & Joiner, 2011), respectively. Also, per the tripartite influence model, our third hypothesis was that muscularity dissatisfaction and body fat dissatisfaction should mediate the links from internalization of the

mesomorphic ideal and appearance comparison to body change behaviors.

While bivariate associations between some of the model variables have been explored for gay men, it is unknown whether each path would add unique variance to the model. Likewise, unanticipated paths could emerge. The model was tested with these issues in mind. To achieve the most parsimonious and accurate representation of the data, we planned to trim paths that were not significant and add paths not originally specified but impact the fit of the model to the data.

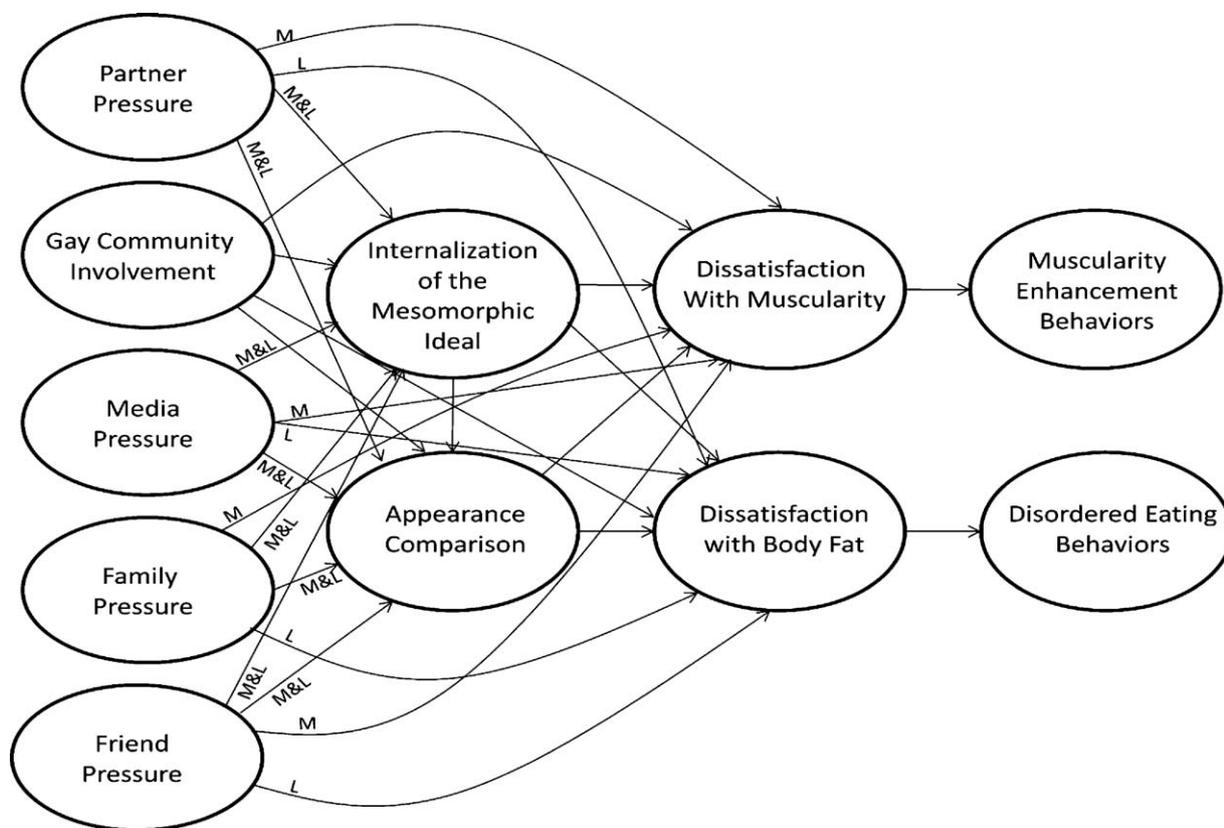
## Method

### Participants

Data from 346 gay men were analyzed. Participants ranged in age from 18 to 58 ( $M=24.7$ ,  $SD=7.6$ ). Most identified as White/Caucasian (81.5%), followed by Latino (4.9%), multiracial (4.9%), Asian American (4.3%), African American (3.8%), and Native American (0.6%). They were undergraduate students (57.3%; 17.4% first-year students, 14.7% sophomores, 18.6% juniors, 6.6% seniors), graduate students (21.4%), or not enrolled in college (22.3%). Participants were mainly from the United States; they lived in the South (10.1%), Northeast (13.6%), Midwest (59.9%), Southwest (4.3%), and the West (7.5%). Additional participants lived in Canada (2.3%) and the United Kingdom (2.3%). Most participants (67.7%) were single but had previous relationships, and 33.3% were currently involved in a relationship. In terms of socioeconomic identification, 16.9% reported working class, 71.0% endorsed middle class, 22.8% selected upper-middle class, and 3.2% indicated upper class. Their self-reported height and weight were converted to metric units in order to calculate BMI ( $\text{kg}/\text{m}^2$ ), that, when averaged, was 24.40 ( $SD=4.1$ ). According to the Centers for Disease Control and Prevention (2011) criteria for adult weight status categories, 1.7% were underweight ( $\text{BMI}>18.5$ ), 65.3% were normal weight ( $\text{BMI}=18.5\text{--}24.9$ ), 21.3% were overweight ( $\text{BMI}=25.0\text{--}29.9$ ), and 11.7% were obese ( $\text{BMI}=30.0$  and above).

### Measures

**Perceived pressure to be muscular and lean.** Two modified versions of the Perceived Sociocultural Pressures Scale (PSPS; Stice, Ziemba, Margolis, & Flick, 1996) were administered. The original 8-item PSPS was designed to assess pressures to lose weight/be thin from four sources: friends, family, dating partners, and media (two items per source). To assess muscularity pressures, PSPS items were altered by substituting "be more muscular" for "lose weight" and "have a muscular body" for "have a thin body" (e.g., "I've felt pressure from my friends to be more muscular."). To assess pressures to be lean, PSPS items were altered by substituting "to be lean" for "lose weight" and "have a lean body" for "have a thin body." (e.g., "I've felt pressure from my partners to have a lean body."). Although thin and lean appear to be similar terms, men often differentiate between the two and interpret thin as small in size (low body fat and low muscle mass) and lean as low body fat but not a loss in muscle size (Ridgeway & Tylka, 2005). Similar to the original PSPS, items on both versions were rated on a scale ranging from 1 (*never*) to 5 (*always*). For each version, the two subscale items for each pressure source are averaged to generate a subscale score. Higher subscale scores indicate greater perceived pressure from that particular source. Psychometric evidence has been garnered for similar PSPS versions within samples of predominantly heterosexual men, with the individual pressure sources demonstrating internally consistent scores ( $\alpha\text{s}=.88$  to  $.95$ ) and moderate correlations with internalization of the mesomorphic ideal (Tylka, 2011;



**Fig. 1.** The hypothesized social influence model. For each social influence source except gay community involvement (pressures to be muscular and lean were not specified for gay community involvement), separate latent variables were created for pressures to be muscular and pressures to be lean; for figural parsimony, they are presented as one latent variable in this figure. M: pressure to be muscular; L: pressure to be lean; M&L: pressure to be muscular and pressure to be lean paths both were estimated.

Tylka et al., 2005). In the current study, alphas (muscularity version and lean version, respectively) were .88 and .85 for friend pressure, .95 and .86 for family pressure, .92 and .91 for partner pressure, and .85 and .79 for media pressure.

**Gay community involvement.** The 11-item Importance of Gay/Bisexual Community Activities scale (IGBCA; Greene & Herek, 1994) was used to measure men's involvement in and regular exposure to gay culture. Item stems (e.g., "Knowing what is going on in the local gay community") are rated on a scale ranging from 1 (*not at all important to you*) to 4 (*very important to you*). Item scores are averaged, and higher scores indicate greater involvement with gay culture. In a sample of gay men, the internal consistency reliability of its items ( $\alpha = .86$ ) and the construct validity of its scores (via a strong negative relationship with internalized homophobia) have been upheld (Andorka, 2007; Greene & Herek, 1994). In the current study, alpha was .87.

**Internalization of the mesomorphic ideal.** The 11-item internalization subscale of the male version of the SATAQ-R (Thompson, Heinberg, et al., 1999) was used to measure the degree to which men adopt societal mesomorphic ideals (e.g., muscularity, being physically fit) as their personal standard. A sample item is, "Photographs of physically fit men make me wish that I had a better muscle tone." Its items are rated on a scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). After specified items are reverse-coded, items are averaged. Higher scores indicate greater internalization of the mesomorphic ideal. The internal consistency reliability ( $\alpha = .89$ ) and construct validity (via its relationship to body shame) of its scores have been upheld with a sample of gay men (Wiseman & Moradi, 2010). In the current sample, three items that overlap conceptually with appearance comparison, e.g., "I often find myself comparing my physique to that of

athletes pictured in magazines," were deleted to maintain appropriate distinctiveness and integrity among internalization of the mesomorphic ideal and appearance comparison. For the current sample, alpha was .83.

**Appearance comparison.** The five-item Physical Appearance Comparison Scale (PACS; Thompson, Heinberg, & Tantleff, 1991) was administered to gauge participants' tendency to compare their own appearance to the appearance of others. A sample item is "At parties or other social events, I compare my physical appearance to the physical appearance of others," and all items are rated on a scale ranging from 1 (*never*) to 5 (*always*). After one specified item is reverse-coded, its items are averaged; higher scores indicate greater appearance comparison. The internal consistency reliability ( $\alpha = .74$ ) of its items and construct validity of its scores (via its strong relationship to internalization of the mesomorphic ideal) were upheld among a sample of college men (Tylka et al., 2005). For the current sample, alpha was .77.

**Dissatisfaction with muscularity and body fat.** The Male Body Attitudes Scale's (MBAS; Tylka et al., 2005) 10-item muscularity and 8-item body fat subscales were used to measure men's dissatisfaction with their muscularity and body fat, respectively. Sample items include "I think I have too little muscle on my body" for the muscularity subscale and "I think my body should be leaner" for the body fat subscale. Each MBAS item is rated on a scale ranging from 1 (*never*) to 6 (*always*). After reverse-coding specified items, subscale items are averaged with higher scores indicating greater muscularity dissatisfaction and body fat dissatisfaction. The MBAS's factor structure has been upheld with samples of gay men (Blashill & Vander Wal, 2009) and predominantly heterosexual men (Tylka et al., 2005). In samples of gay men, both subscales have yielded evidence of internal consistency reliability ( $\alpha = .90$  for muscularity,

$\alpha = .94$  for body fat), and construct validity in their moderate relationships with depressive symptomatology and social sensitivity (Blashill, 2010; Blashill & Vander Wal, 2009). In the current study, alphas were .92 and .95 for muscularity and body fat dissatisfaction, respectively.

**Muscularity enhancement behaviors.** The eight-item muscularity behaviors subscale of the Drive for Muscularity Scale (DMS; McCreary & Sasse, 2000) was used to measure men's engagement in body change behaviors designed to increase muscularity. A sample item is "Other people think I work out with weights too often." Items are each rated along a scale ranging from 1 (*always*) to 6 (*never*). All items are reverse-coded and averaged so that higher scores indicate greater engagement in muscularity-related behaviors. Among a sample of gay men, its items were internally consistent ( $\alpha = .84$ ) and related to muscularity dissatisfaction suggesting construct validity evidence (Andorka, 2007). In the current study, alpha was .87.

**Disordered eating behaviors.** The dieting and bulimia/food preoccupation subscales of the Eating Attitudes Test-26 (Garner, Olmsted, Bohr, & Garfinkel, 1982) were used to estimate participants' disordered eating behaviors. The dieting subscale (13 items) gauges the extent to which participants dwell on their level of fat and engage in dieting behaviors in an attempt to lose fat/weight. The bulimia/food preoccupation subscale (six items) assesses participants' preoccupation with food and dieting and tendency to engage in behaviors characteristic of bulimia. Items are rated along a 6-point scale ranging from *always* to *never*: *always*, *usually*, and *often* are coded as 3, 2, and 1, respectively, and *sometimes*, *rarely*, and *never* are each coded as 0 (Garner et al., 1982). Responses are summed, and higher scores indicate greater disordered eating behaviors. Among gay men, EAT-26 scores have demonstrated evidence of internal consistency reliability ( $\alpha = .90$ ) and construct validity via its negative relationships to body shame and internalization of the mesomorphic ideal (Wiseman & Moradi, 2010). In a sample of predominantly heterosexual men, Cronbach's coefficient alpha was .91 for the 19 items composing the two subscales used in this study (Tylka, 2011). In the current study, alpha was .86 for these 19 items. Although the oral control subscale items were administered, they yielded extremely poor internal consistency reliability with this sample ( $\alpha = .28$ ) and therefore were not integrated into the total score.

## Procedure

All procedures were approved by the university's Institutional Review Board. Men were recruited through (a) bulletin postings and advertisements on three social websites (facebook.com, gay.com, and myspace.com) and (b) newsletter and listerv advertisements hosted by Gay, Lesbian, Bisexual, and Transgender (GLBT) student organizations at universities and colleges throughout the United States. The study was described as an investigation of the relationships between body experiences, attitudes, and behaviors. Interested participants could click a URL link to a Web page that hosted details needed for informed consent. After providing consent, men were directed to the survey Web page, where the measures and demographic information form were hosted. Two different orderings of the survey (containing opposite sequences of the measures) were administered to offset potential ordering effects. In a separate link, participants had the opportunity to enter their e-mail address in a raffle for \$50. In sum, 457 men provided responses.

We used several strategies to detect duplicate, incomplete, and erroneous data. First, we checked the IP address of every participant to verify that he only took the survey once (no duplicate data were detected). Second, we scanned the data and removed participants who did not complete more than 75% of each measure's items (79

participants were excluded, most of whom exited the survey prematurely). Third, we embedded a validity question within the items of three measures, each of which instructed participants to choose certain responses to screen participants who are inattentive or randomly responding (e.g., "Please choose Strongly Disagree for this item."). Nine men who answered at least one validity item incorrectly were excluded. Fourth, we performed an outlier analysis and excluded two cases with extremely large Mahalanobis distance values that far exceeded acceptable limits (Tabachnick & Fidell, 2007). Last, data from 21 bisexual men were not included, as their body image may differ considerably from those of gay men (Davids & Green, 2011). The various pruning strategies above resulted in the final data set of 346 gay men.

**Creation of measured/observed variables.** A latent variable was constructed for each source (friends, family, media, and partners) of pressure to be muscular by allowing its two individual PSPS-Muscularity items to estimate it. Similarly, a latent variable was constructed for each source of pressure to be lean by allowing its two PSPS-Lean items to estimate it. For the latent variables representing gay community involvement, internalization of the mesomorphic ideal, appearance comparison, muscularity dissatisfaction, body fat dissatisfaction, muscularity enhancement behaviors, and disordered eating behaviors, three parcels (i.e., measured indicators) were constructed following the specifications by Russell, Kahn, Spoth, and Altmaier (1998). First, for the items representing each variable, an exploratory factor analysis was performed using the maximum likelihood (ML) method of extraction, and a single factor was extracted. Second, the factor loadings from this analysis were rank-ordered and successively assigned to one of three parcels, which helped equalize the average loadings of each parcel on its respective latent factor. Third, items within each parcel were averaged to obtain a total parcel score. Last, the three total parcel scores were used to estimate their respective latent variable within the SEM analyses.

## Results

### Preliminary Analyses

Measure means, standard deviations, and bivariate correlations are presented in Table 1. Data were examined for normality of distribution. It has been suggested that researchers testing structural equation models should transform variables that have absolute values of skewness  $> 3$  and kurtosis  $> 10$  (Kline, 2005). Skewness and kurtosis values for all 21 parcel indicators, the eight PSPS-Muscularity item indicators, and the eight PSPS-Lean item indicators were all lower than these values (skewness range =  $-1.37$  to  $1.97$ , kurtosis range =  $-1.30$  to  $4.34$ ). Thus, no variable was transformed.

### Test of the Hypothesized Model

The number of cases in this study ( $N = 346$ ) far exceeded the  $N \geq 200$  criterion specified for complex models which have internally consistent and highly interrelated indicators (Weston & Gore, 2006). In the present study, indicators (items and parcels) within each latent variable were indeed internally consistent ( $\alpha$  range = .77 to .95, average  $\alpha = .88$ ) and strongly related ( $r$ s = .63 to .90, average  $r = .79$ ). Thus, we proceeded to test our model as originally specified.

We used Mplus Version 4.1 (Muthén & Muthén, 2006) with maximum likelihood estimation to analyze all models. We determined model fit via consensus among three indices recommended by Hu and Bentler (1999): the Comparative Fit Index (CFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). Specifically, CFI values  $\geq .95$ , SRMR

**Table 1**  
Correlations, means, and standard deviations among measures.

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. PSPS (Mu)-Friend	–														
2. PSPS (Mu)-Family	.38***	–													
3. PSPS (Mu)-Partner	.52***	.39***	–												
4. PSPS (Mu)-Media	.35***	.22***	.29***	–											
5. PSPS (L)-Friend	.51***	.18**	.38***	.21***	–										
6. PSPS (L)-Family	.30***	.51***	.27***	.16**	.61***	–									
7. PSPS (L)-Partner	.36***	.24**	.65***	.22***	.66***	.55***	–								
8. PSPS (L)-Media	.22***	.07	.21***	.50***	.50***	.39***	.49***	–							
9. IGBCA	.24***	.08	.13*	.10	.08	.04	.08	.10	–						
10. SATAQ-R-Intern	.28***	.18**	.32***	.33***	.26***	.15**	.23***	.22***	.19***	–					
11. PACS	.39***	.32***	.44***	.40***	.31***	.23***	.34***	.35***	.30***	.70***	–				
12. MBAS-Mu	.29***	.32***	.33***	.29***	.19**	.20**	.25***	.08	.08	.50***	.55***	–			
13. MBAS-BF	.21***	.15*	.32***	.22***	.58***	.44***	.55***	.54***	.04	.46***	.50***	.35***	–		
14. DMS-MBs	.25***	.13*	.26***	.11*	–.04	–.05	.03	–.13*	.20**	.27***	.30***	.41***	–.05	–	
15. EAT	.23***	.11*	.29***	.12*	.48***	.33***	.42***	.30***	.09	.31***	.37***	.26***	.60***	.12*	–
16. Body Mass Index	.00	.08	.07	.04	.38***	.47***	.27***	.31***	–.09	.01	.10	.05	.52***	–.09	.24***
M	2.50	2.10	2.75	3.80	2.17	1.99	2.46	3.46	2.45	4.18	3.32	3.50	3.67	2.15	7.33
SD	1.09	1.07	1.14	0.92	1.05	1.15	1.27	1.15	0.62	0.69	0.80	1.18	1.25	0.98	7.98
Range	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–4	1–5	1–5	1–6	1–6	1–6	0–57

Note.  $N = 346$ . Mu: Muscularity; L: Lean; PSPS: Perceived Sociocultural Pressures Scale adapted to assess pressures to be mesomorphic; IGBCA: Importance of Gay/Bisexual Community Activities Scale; SATAQ-R-Intern: Internalization subscale of the male version of the Sociocultural Attitudes Toward Appearance Questionnaire – Revised (minus three items suggestive of appearance comparison); PACS: Physical Appearance Comparison Scale; MBAS-Mu: Muscularity subscale of the Male Body Attitudes Scale; MBAS-BF: Body fat subscale of the MBAS; DMS-MBs: Muscularity Behaviors subscale of the Drive for Muscularity Scale; EAT: Dieting and Bulimia/Food Preoccupation subscale composite of the Eating Attitudes Test-26.

\*  $p < .05$ .

\*\*  $p < .01$ .

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

values of  $\leq .08$ , and RMSEA values  $\leq .06$  indicate that a model provides a good representation of the data.

**Examination of the measurement model.** The measurement model provided a good fit to the data ( $CFI = .95$ ,  $SRMR = .04$ ,  $RMSEA = .06$ ),  $\chi^2(489, N = 346) = 971.20$ . For latent variables representing sources of pressure to be muscular, each item – factor loading was significant (all  $ps < .001$ ): .88 and .90 for friend pressure, .94 and .96 for family pressure, .88 and .91 for media pressure, and .90 and .93 for partner pressure. For latent variables representing sources of pressure to be lean, each item – factor loading was significant as well ( $ps < .001$ ): .86 and .86 for friend pressure, .86 and .88 for family pressure, .80 and .81 for media pressure, and .87 and .96 for partner pressure. For other latent variables, each parcel – factor loading was significant (all  $ps < .001$ ). These loadings ranged from .76 to .94 for gay community involvement, .79 to .83 for internalization of the mesomorphic ideal, .78 to .81 for appearance comparison, .89 to .91 for muscularity dissatisfaction, .90 to .95 for body fat dissatisfaction, .76 to .87 for muscularity enhancement behaviors, and .83 to .89 for disordered eating behaviors.

**Examination of the structural model.** This model provided an adequate fit to the data ( $CFI = .94$ ,  $SRMR = .06$ ,  $RMSEA = .06$ ),  $\chi^2(524, N = 346) = 1111.26$ ,  $p < .001$ . Several nonsignificant paths emerged, as sources of pressure varied in their ability to uniquely predict internalization of the mesomorphic ideal, appearance comparison, muscularity dissatisfaction, and body fat dissatisfaction. To obtain a more parsimonious model, we deleted nonsignificant paths and reexamined the model. The trimmed model did not result in decreased model fit ( $CFI = .94$ ,  $SRMR = .06$ ,  $RMSEA = .06$ ),  $\chi^2(540, N = 346) = 1127.56$ ,  $p < .001$ ;  $\chi^2_{\text{difference}}(16, N = 346) = 16.30$ ,  $p = .432$  and thus was retained.

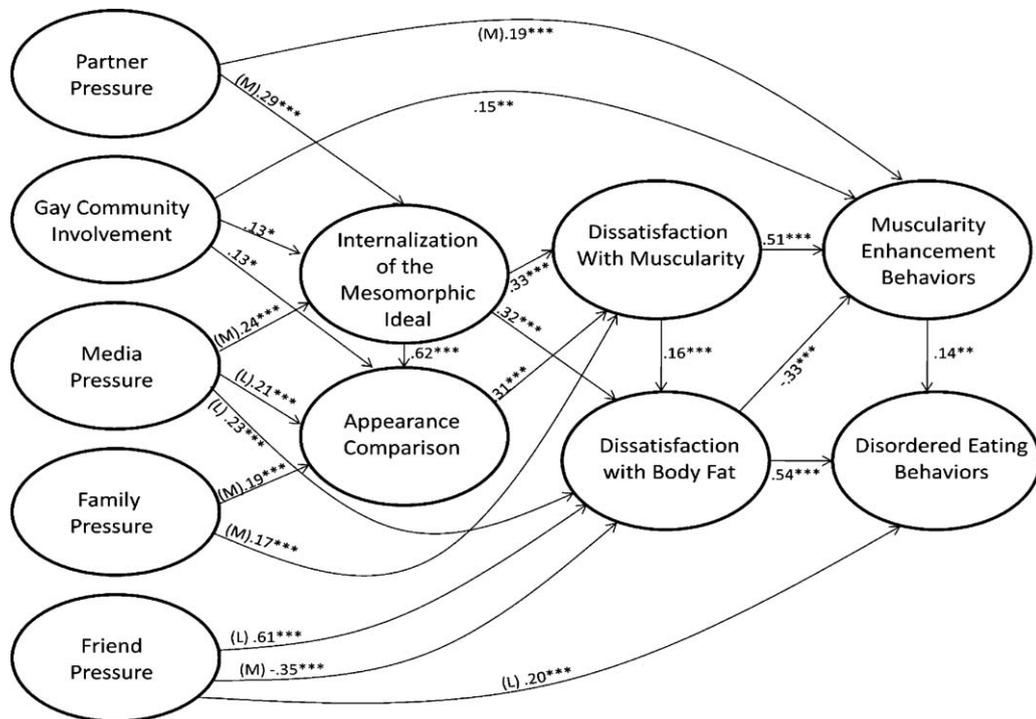
We explored modification indices (MIs) in the trimmed model to determine whether data reveal paths which should be estimated (Kline, 2005). We noted seven paths with large MIs: the path from gay community involvement to muscularity enhancement behaviors ( $MI = 8.61$ ), the path from partner pressure to be muscular to muscularity enhancement behaviors ( $MI = 6.30$ ), the path from friend pressure to be muscular to body fat dissatisfaction ( $MI = 28.90$ ), the path from friend pressure to be lean to

disordered eating behaviors ( $MI = 8.96$ ), the path from media pressure to be lean to muscularity dissatisfaction ( $MI = 5.50$ ), the path from body fat dissatisfaction to muscularity enhancement behaviors ( $MI = 22.29$ ), and the path from muscularity enhancement behaviors to disordered eating behaviors ( $MI = 20.23$ ). Therefore, we added these seven paths to the trimmed model and examined this revised model.

Adding paths based on data rather than theory should assure a low Type I error rate; thus, in order for an added path to be retained, its standardized path coefficient should be significant at  $p < .01$  (Ullman, 2001). All added paths were significant at  $p < .01$ . The revised model with the seven added paths ( $CFI = .95$ ,  $SRMR = .05$ ,  $RMSEA = .05$ ),  $\chi^2(536, N = 346) = 1040.67$ ,  $p < .001$ ,  $\chi^2/df = 1.94$ , provided a significantly better fit than the trimmed model without the added paths,  $\chi^2_{\text{difference}}(4, N = 346) = 86.89$ ,  $p < .001$  and consequently was retained.

This final model is presented in Fig. 2. Gay community involvement as well as partner and media pressure to be muscular accounted for 22.6% of the variance in internalization of the mesomorphic ideal. Gay community involvement, media pressure to be lean, family pressure to be muscular, and internalization of the mesomorphic ideal contributed 64.1% of the variance in appearance comparison. Family pressure to be muscular, internalization of the mesomorphic ideal, and appearance comparison predicted 44.8% of the variance in muscularity dissatisfaction. Friend and media pressure to be lean, friend pressure to be muscular, internalization of the mesomorphic ideal, and muscularity dissatisfaction accounted for 66.4% of the variance in body fat dissatisfaction. Gay community involvement, partner pressure to be muscular, muscularity dissatisfaction, and body fat dissatisfaction contributed 33.5% of variance in men's muscularity enhancement behaviors. Last, friend pressure to be lean, body fat dissatisfaction, and muscularity enhancement behaviors predicted 47.1% of the variance in disordered eating behaviors.

**Post-hoc analyses.** First, we evaluated the final model in Fig. 2 against a model that included BMI. Because BMI was inversely related to two endogenous variables (i.e., body fat dissatisfaction and disordered eating; see Table 1), these paths were



**Fig. 2.** Refined social influence model for gay men. For each source of social influence, separate latent variables were created for pressures to be muscular and pressures to be lean; for figural parsimony, they are presented as one latent variable in this figure. M: pressure to be muscular; L: pressure to be lean. Path coefficients are presented. \* $p < .05$ , \*\* $p < .01$ , and \*\*\* $p < .001$ .

specified in the model. This expanded model including BMI,  $\chi^2(561, N = 346) = 1123.45, p < .001$ , provided a significantly worse fit to the data than the revised model without the BMI paths,  $\chi^2_{\text{difference}}(25, N = 346) = 82.78, p < .001$ . The BMI – body fat dissatisfaction path was significant,  $\beta = .25, t(345) = 5.97, p < .001$ . However, BMI inversely predicted disordered eating behaviors,  $\beta = -.13, t(345) = -2.50, p = .013$ , which was in the opposite direction of the bivariate correlation,  $r = .24, p < .001$ , suggesting that the presence of the other model variables changed the nature of this relationship. Hence, the model with BMI was not interpreted because it provided a worse fit while being less parsimonious.

Second, we acknowledged that our sample size fell below the recommended 5:1 cases-to-parameter ratio (in this case,  $N = 400$ ) to examine a structural model (Bentler, 1990). As a result, we conducted a post-hoc analysis where we examined another structural model with two rather than three indicators for each latent variable, trimming one indicator (which equals two parameters) for seven latent variables that originally had three indicators (note that the remaining variables – the sources of pressure – originally only had two indicators per latent variable). These indicators were created by the procedure specified by Russell et al. (1998) with one exception: a measure's items were assigned to two parcels instead of three. This decrease in indicators reduces the sample size requirement to 330, which falls below our sample size of 346.

The fit statistics for this reduced-indicator model (CFI = .95, SRMR = .04, RMSEA = .06,  $\chi^2(347, N = 346) = 738.04, p < .001, \chi^2/df = 2.13$ ) were comparable to the fit statistics for the model presented in Fig. 2. Further, all specified paths in this reduced-indicator model were significant and similar in strength to the model in Fig. 2. The average change in path values from the model in Fig. 2 to the reduced-indicator model was  $|.02|$ , with the largest difference in path values being  $|.07|$ . These findings confirm that our sample size was adequate to perform the original analyses and uphold the integrity of the model in Fig. 2.

### Indirect Effects and Mediation

Consistent with tenets of the tripartite influence model, we planned to test internalization of the mesomorphic ideal and appearance comparison as mediators of the links between (a) sources of pressure to be muscular and muscularity dissatisfaction, (b) sources of pressure to be lean and body fat dissatisfaction, (c) gay community involvement and muscularity dissatisfaction, and (d) gay community involvement and body fat dissatisfaction. We also planned to examine muscularity dissatisfaction as a mediator between (a) internalization of the mesomorphic ideal and muscularity enhancement behaviors, (b) appearance comparison and muscularity enhancement behaviors, and (c) each significant source of pressure to be muscular and muscularity enhancement behaviors. Likewise, we planned to test body fat dissatisfaction as a mediator between (a) internalization of the mesomorphic ideal and disordered eating behaviors, (b) appearance comparison and disordered eating behaviors, and (c) each significant source of pressure to be lean and disordered eating behaviors. If at least one path of a hypothesized indirect effect was not significant (e.g., the path from appearance comparison to body fat dissatisfaction), then it precludes mediation; therefore, the indirect effects involving these nonsignificant paths were not estimated.

We used Shrout and Bolger's (2002) bootstrap procedures to estimate the significance of the indirect effects. When analyzing the final structural model, we specified Mplus to (a) create 1000 bootstrap samples from the data set by random sampling with replacement and (b) generate indirect effects and 95% bias-corrected confidence intervals (CIs) around the indirect effects. All indirect effects examined were significant, suggesting mediation. Partial or full mediation was determined by whether there was a significant direct path in the model; if so, then it would indicate partial mediation and if not, then it would indicate full mediation. For each analysis, Table 2 includes the standardized indirect effect, bias-corrected 95% CI, and whether it represents full or partial mediation.

**Table 2**  
Tests of mediation: examination of indirect effects, bias-corrected 95% confidence intervals (CIs), and significance of direct paths.

Indirect path	Indirect effect ( $\beta$ )	95% CI	Direct path significant?	Full or partial mediation
Partner Pressure (M) → Internalization → Muscularity Dissatisfaction	.10**	.043 to .193	No	Full
Partner Pressure (M) → Internalization → Body Fat Dissatisfaction	.09**	.047 to .149	No	Full
Gay Community Involvement → Internalization → Muscularity Dissatisfaction	.07*	.015 to .168	No	Full
Gay Community Involvement → Internalization → Body Fat Dissatisfaction	.07*	.008 to .131	No	Full
Gay Community Involvement → Comparison → Muscularity Dissatisfaction	.06*	.012 to .143	No	Full
Media Pressure (M) → Internalization → Muscularity Dissatisfaction	.11**	.043 to .237	No	Full
Media Pressure (M) → Internalization → Body Fat Dissatisfaction	.10**	.045 to .181	No	Full
Media Pressure (L) → Comparison → Muscularity Dissatisfaction	.08**	.023 to .142	No	Full
Family Pressure (M) → Comparison → Muscularity Dissatisfaction	.07**	.017 to .140	Yes	Partial
Media Pressure (L) → Body Fat Dissatisfaction → Disordered Eating	.05**	.024 to .078	No	Full
Family Pressure (M) → Muscularity Dissatisfaction → Muscularity Enhancement	.07**	.028 to .132	No	Full
Friend Pressure (L) → Body Fat Dissatisfaction → Disordered Eating	.14**	.098 to .199	Yes	Partial
Friend Pressure (M) → Body Fat Dissatisfaction → Disordered Eating	-.07**	-.107 to -.045	No	Full
Internalization → Muscularity Dissatisfaction → Muscularity Enhancement	.25**	.092 to .450	No	Full
Internalization → Body Fat Dissatisfaction → Disordered Eating	.11**	.057 to .158	No	Full
Comparison → Muscularity Dissatisfaction → Muscularity Enhancement	.22**	.053 to .400	No	Full

Note.  $N = 346$ . M: Muscular; L: Lean. The indirect effect estimate is standardized.

\*  $p < .05$ .

\*\*  $p < .01$ .

## Discussion

Our expanded version of the tripartite influence model provided a solid foundation from which to understand gay men's body image and body change behaviors. Overall, the model constructs contributed 41.2% of the variance in muscularity dissatisfaction, 67.4% of the variance in body fat dissatisfaction, 33.5% of variance in muscularity enhancement behaviors, and 47.7% of the variance in disordered eating behaviors. These percentages are considered sizeable for structural models (Tabachnick & Fidell, 2007; Ullman, 2001).

Many notable findings were revealed. First, dual body image pathways to body change behaviors, uncovered in previous research with predominantly heterosexual men (Tylka, 2011), were also supported with this sample of gay men. Within the model, muscularity dissatisfaction was linked to muscularity enhancement behaviors, and body fat dissatisfaction was linked to disordered eating behaviors. Tylka (2011), however, revealed a more modest link between muscularity dissatisfaction and muscularity enhancement behaviors. Whereas muscularity dissatisfaction does not appear to strongly translate into engaging in muscularity enhancement behaviors for heterosexual men, there was a rather strong connection between these variables noted for gay men in this study. Men who have a muscular body shape tend to be ridiculed less for gender nonconformity from the wider culture and stereotyped as healthy and disease-free in the gay community (Wood, 2004); thus, gay men may feel more of an incentive to engage in behaviors that promote their muscularity if they feel that they are scrawny and underdeveloped. Gay men sometimes describe going to gyms as going to "church," reflecting the worshiping of the body and the methodical, ritualized, and moralistic nature of achieving and maintaining the mesomorphic ideal (Manalansan, 2003, p. 74). For the second pathway, a strong link between body fat dissatisfaction and disordered eating behaviors was noted for gay men in this study as well as heterosexual men in other studies (Smith et al., 2011; Tylka, 2011). Because fat often is equated with being feminine and weak, both gay and heterosexual men may be very likely to engage in disordered eating behaviors if they feel that they have too much body fat.

Curiously, unanticipated interrelationships emerged across these dual body image and body change behavior pathways for gay men; these interrelationships were not evidenced in heterosexual men (Tylka, 2011). Gay men who are dissatisfied with their muscularity seem to also be somewhat dissatisfied with their body

fat, and gay men who engage in muscularity enhancement behaviors are also somewhat more likely to simultaneously engage in disordered eating behaviors. These findings suggest that muscularity and low body fat may be more intertwined for gay men, as gay men seem to desire a more inflexible and homogenous prototype of the mesomorphic ideal (i.e., they desire both a certain level of muscularity and a very low level of body fat) for themselves than do heterosexual men, who may not hold themselves to such a narrow body standard. Because gay media and the gay community tend to exclusively promote this inflexible mesomorphic prototype as attractive (Greene & Herek, 1994; Wood, 2004), these contexts may simultaneously set the stage for dissatisfaction with both muscularity and body fat for gay men if their body falls short of this prototype. Indeed, gay men typically report more desire to achieve the body appearance of both male models and athletes who reflect this rigid mesomorphic ideal than do heterosexual men (Carper et al., 2010). Whenever individuals are exposed to a more homogenous body ideal rather than a variety of more flexible and less extreme versions of this standard, they experience heightened body dissatisfaction (Buote, Wilson, Strahan, Papps, & Gazzola, 2011).

Interestingly, gay men who were more dissatisfied with their body fat were actually *less* likely to engage in muscularity enhancement behaviors. If they are self-conscious about their body fat, then they may avoid places where their body shape is on display and clothing that accentuates their body shape to other men. Gyms with suitable and diverse weight lifting equipment would be one such susceptible arena for gay men. Attire worn when lifting weights may reveal their body fat, and they may fear that other men – especially gay men – will negatively evaluate their bodies, and therefore lose "the competitive game of the gay male gaze" (Wood, 2004, p. 45). They may think, then, that they should be in shape before they work out in such arenas. Gay men who have significant body fat also may not want their body to become even larger, as musculature is masked under body fat, and therefore avoid engaging in muscle building behaviors that may increase their overall body size.

Second, each of the five sources of social influence uniquely contributed to the model, providing a more nuanced understanding of the particular sources connected to internalization of the mesomorphic ideal, appearance comparison, body dissatisfaction, and body change behaviors. Exposure to the muscular ideal prototype (via the media and gay community), as well as having a partner who urges them conform to this muscular ideal, seem to assist gay men in holding the mesomorphic ideal as their own personal

standard. Men who adopt this ideal as their own personal standard, as well as who are more involved in the gay community and perceive media pressure to have low body fat, are more likely to engage in an appearance comparison dynamic with others. Appearance comparison can be troubling as it absorbs time, energy, and mental concentration that could be directed at more productive tasks (Fredrickson & Roberts, 1997). Family pressure to be muscular further was connected to muscularity dissatisfaction. Parents who ascribe to rigid gender role stereotypes may bestow muscularity pressures upon their sons considered to be effeminate (Wood, 2004). Because effeminate boys and men are often classified as gay, and a muscular build is in direct contrast to being effeminate, some parents may pressure their effeminate son to be muscular to distract others from viewing their child as gay (Greene & Herek, 1994). Parents who know that their son is gay additionally may pressure him to be muscular due to their lack of acceptance of their son's sexual orientation, shame that their son is gay, or a sense of protection (e.g., a muscular build may prevent a gay boy or man from being the target of a hate crime). Regardless, these parental pressures appear to be detrimental to gay men, manifesting as appearance comparison and muscularity dissatisfaction. Body fat dissatisfaction was predicted in a positive direction by media and friend pressures to be lean and, interestingly, in a negative direction by friend pressure to be muscular. Of these variables, friend pressure to be lean was more closely tied with body fat dissatisfaction. Gay men may turn to their friends' opinions as a source of how they feel about their body fat. When friends pressure them to be lean, they are more dissatisfied with their body fat. Conversely, friends' pressures to be muscular may actually help gay men turn their focus away from being dissatisfied with their body fat.

Third, consistent with the tenets of the tripartite influence model, internalization of the mesomorphic ideal, appearance comparison, muscularity dissatisfaction, and body fat dissatisfaction were key mediators in the model, fully or partially connecting all five sources of social influence to gay men's body image and/or body change behaviors. Internalization of the mesomorphic ideal linked involvement in the gay community and muscularity pressures from partners and media to both muscularity dissatisfaction and body fat dissatisfaction. Appearance comparison connected gay community involvement, media pressure to be lean, and family pressure to be muscular to muscularity dissatisfaction. Dissatisfaction with muscularity linked muscularity pressures from family, internalization of the mesomorphic ideal, and appearance comparison to engagement in muscularity enhancement behaviors. Dissatisfaction with body fat connected internalization of the mesomorphic ideal as well as friend and media pressures to be lean to disordered eating behaviors.

Fourth, three sources of social influence were directly linked to gay men's body change behaviors, although the strength of these links were rather small in magnitude. This finding was not anticipated, as direct relationships between social influence variables and body change behaviors are not specified in the tripartite influence model. Perceiving pressure to be muscular from partners and the gay community may promote gay men's engagement in muscularity enhancement behaviors, irrespective of their actual level of muscularity dissatisfaction. Perhaps gay men engage in muscularity enhancement behaviors somewhat to appear attractive and disease-free in the gay community and to attempt to be viewed as attractive by their partner. Also, pressure to be lean from friends was directly linked to gay men's disordered eating behaviors above and beyond being dissatisfied with their body fat. Gay men often report that their friends place a high value on physical attractiveness (Hospers & Jansen, 2005); thus, those who perceive peer pressure to be lean may engage in disordered eating behaviors in an active attempt to reduce this pressure and avoid fat-related teasing.

Fifth, the inclusion of BMI adversely affected model fit. Unlike women, BMI does not appear to be a useful indicator in models of body image for gay men or heterosexual men (Tylka, 2011). This may be due to the different gendered body ideals. In contrast to the thin ideal, the mesomorphic ideal does not promote weighing less relative to height (i.e., having lower BMI) and being smaller, but instead promotes having muscular definition. Because muscle is denser than fat, a mesomorphic man can weigh more than a man with little muscle and high fat.

### Implications for Clinical Practice

Therapists are encouraged to incorporate cognitive dissonance interventions in their individual or group work with gay male clients to help them reduce their internalization of the mesomorphic ideal and appearance comparison, as these two variables played central roles in the model. In these interventions, therapists encourage clients to act contrary to a previously held dysfunctional attitude; their resultant discomfort helps modify this attitude (Stice, Chase, Stormer, & Appel, 2001). Potential interventions could include verbal, written, and behavioral exercises such as (a) writing a paper about the costs associated with pursuing the mesomorphic ideal and engaging in body comparison, (b) performing role-plays where they resist pressure to adopt the mesomorphic ideal, (c) dissuading other gay men from pursuing the muscular ideal and engaging in dangerous muscularity enhancement and disordered eating behaviors, and (d) examining their reflection in a full-length mirror at home and recording positive aspects about their body. In addition, therapists could help gay male clients develop scripts to use with significant others who pressure them to be muscular and lean as well as encourage involvement in GLBT groups that de-emphasize appearance.

Also, these findings highlight key variables to target within cognitive behavioral interventions for gay male clients with body image concerns and who engage in maladaptive body change behaviors. Therapists could have these clients explore their body image development and day-to-day body experiences via expressive writing and self-monitoring exercises (Cash, 2008), paying close attention to the five sources of social influence and cognitive schemas that have contributed to and maintain their body image. Behavioral strategies to deal with negative sources can be a focus of therapy, such as actively limiting amount and type of media exposure, finding social groups that are supportive and non-appearance based, seeking friends who do not engage in negative body talk, choosing partners who accept their body, and assertively confronting family members who comment on their appearance. Therapists can challenge irrational beliefs that the mesomorphic ideal is the only attractive body type, achieving this ideal will bring happiness, and appearance can be controlled, while helping gay men adopt the perspective of taking care of their bodies for health (rather than appearance) reasons. Therapists can incorporate mindfulness and body acceptance exercises to manage negative body image thoughts and to challenge specific cognitive errors or distortions in private body talk (Cash, 2008). Body-and-mind relaxation can also be administered with graduated exposure and response prevention exercises to decrease negative body-related cognitions and emotions. Dialectical behavior therapy (Linehan, 1993) can also be used to facilitate mindfulness, stress tolerance, adaptive coping, and a reduction in harmful body change behaviors.

### Limitations and Directions for Future Research

Whereas these findings advance body image research for gay men, they should be interpreted in light of this study's limitations. It is true that correlational data can provide useful groundwork

for important areas where research is limited, such as models of gay men's body image. However, because data were collected in one time period, causal interpretations cannot be made about the sequence of model variables – it is plausible that alternative configurations of the model could also provide a good fit to the data. As a next step, researchers could begin to use longitudinal designs to examine the proposed temporal relations specified in the expanded model.

Only self-reports of pressure to be muscular and lean were assessed. These reports could be influenced by subjective interpretation of others' statements as well as memory recall, as they represent men's perceptions of being pressured rather than the actual levels of pressure they receive. Nevertheless, it is important to assess individuals' perceptions of events, as these perceptions are reflective of their reality (Kelly, 1955). Another potential problem is that these reports simply reflect the quantity of pressure they receive from each source without regarding the quality of the pressure (i.e., some statements may be infrequent but much more damaging than others).

The generalizability of our findings is limited by our recruitment strategies. Although social networking sites provide opportunities for anonymous responding that may facilitate honesty when completing online surveys, men on these sites are not likely representative of all gay men. Similarly, college students involved in GLBT student organizations and included on GLBT student listservs are not representative of all gay men. Our sample was largely composed of White/Caucasian college students from the U.S. (mainly Midwest) who identify as middle class or upper-middle class, and our findings need to be interpreted with this in mind. Notably, not all gay men experience a homogenous gay community. Wood (2004) has pointed out that some gay male communities emphasize appearance more so than others. Certain subcultures in the gay community (e.g., the "bear" subculture) view fat bodies as attractive (Gough & Flanders, 2009). Individuals who adhere to the culture of this community may be less affected by mainstream gay cultural norms and may express different levels of and associations between the model variables.

Last, some DMS items that assess muscularity enhancement behaviors may not pose a high risk. Whereas some items clearly are dangerous (e.g., intended steroid use) and characteristic of muscle dysmorphia (e.g., experiencing guilt if a weight-training session is missed), two items (lifting weights and drinking weight-gain or protein shakes) are not necessarily high-risk unless done in excess. Muscle building supplements (another DMS item) may be harmful if men are taking testosterone, human growth hormone, insulin-like growth factor, and beta-2 agonists (Bahrke, 2007); however, other supplements (e.g., B vitamins, protein bars) are relatively harmless when ingested in moderation. Associations among the model constructs may be different if only dangerous muscularity enhancement behaviors were assessed. In a sample of predominantly heterosexual men, muscularity dissatisfaction predicted positive outcome expectations for anabolic steroids (AAS), which then predicted intended AAS use (Parent & Moradi, 2011). Researchers could determine whether these associations hold for gay men.

## Conclusion

This expanded tripartite influence model was representative of gay men's experiences, with the dual body image pathways and mediational links supported. Interestingly, interrelationships emerged between muscularity and body fat dissatisfaction, as well as between muscularity enhancement and disordered eating behaviors. These links suggest that muscularity and body fat (concerns and behaviors) may be more integrated for gay men,

reflecting a more homogenous mesomorphic ideal than has been found for heterosexual men. When studying gay men's body image, it is important for researchers to separate out forms of social influence, both in terms of the source (gay community, partners, family, media, and friends) and the type of pressure (muscular, lean), as these forms and types were differentially connected to internalization of the mesomorphic ideal, appearance comparison, body image, and even body change behaviors. We encourage researchers to continue to consider within-group variability when studying body image and body change behaviors of gay men as well as other sexual minority populations.

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