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Jessica Strübel
*University of Rhode Island, jessica-strubel@uri.edu*

Trent A. Petrie
*University of North Texas*

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Available at: [https://doi.org/10.1037/men0000224](https://doi.org/10.1037/men0000224)
Sexual Orientation, Eating Disorder Classification, and Men’s Psychosocial Well-Being

Jessica Strübel, Ph.D. and Trent A. Petrie, Ph.D.

a University of Rhode Island
College of Business
Department of Textiles, Fashion Merchandising & Design
Quinn Hall, 211A
55 Lower College Road
Kingston, RI 02881
Tel. 401.874.5481
Fax: 401.874.4029
Email: Jessica-strubel@uri.edu

b University of North Texas
Department of Psychology
Room 368 Terrill Hall
1155 Union Circle, #311280
Denton, TX 76203-5017
Tel. 940-565-4718
Fax: 940-565-4682
Email: Trent.Petrie@unt.edu

Author Note
A version of this research study was originally presented as a poster in 2017 at the American Psychological Association Convention. Based on feedback we received from colleagues during the convention on our study, we reconceptualized the relationships of the variables (and thus reanalyzed the data) and are presenting these findings in this paper. Although the data used in the poster match those used for this paper, the analyses used differed between the poster and this paper.

Correspondence concerning this article should be addressed to Jessica Strübel, Quinn Hall, 211A, 55 Lower College Road, Kingston, RI 02881.
Abstract

In a sample of 676 men, we examined (a) the relationship between men’s eating disorder (ED) classification (asymptomatic vs. symptomatic/clinical) to theoretically and empirically identified psychosocial correlates (i.e., body image concerns, sociocultural pressures, internalization processes and depressive symptomatology), and (b) determine the extent to which sexual orientation moderated those relationships. To test our hypotheses, we used the PROCESS v2.16 macro. Consistent with the tenets of objectification theory as well as past research, the men, regardless of sexual orientation, who were classified as symptomatic/clinical reported more sociocultural pressures, greater internalization and appearance comparisons, stronger investment in their appearance, greater body dissatisfaction and shame, and more depressive symptomatology than did those who were asymptomatic. Further, independent of ED classification, the gay men in our sample reported higher levels of distress across all the outcomes than those who were heterosexual. Sexual orientation moderated the ED relationships with pressures to be lean, appearance orientation, and body shame such that the relationships were stronger for gay men who were symptomatic/clinical than the other groups (e.g., asymptomatic gay men, symptomatic/clinical heterosexual men). The current study supports existing literature that indicates a relationship between level of ED classification and various psychosocial outcomes in men, particularly for those who identify as gay.

Keywords: men, objectification, eating disorders, sociocultural pressures, psychological well-being
Public Significance Statement

Gay men who were classified with an eating disorder, compared to gay men without an eating disorder and heterosexual men with or without an eating disorder, reported experiencing the highest levels of body shame and the most pressure to have a lean body. These same gay men also reported spending the most time and energy on improving their physical appearance. Although eating disorders have long been viewed as a feminine affliction, many boys and men currently are subjected to a range of societal messages about how they should look (i.e., lean and muscular), eat, and behave that can increase their risk of developing unhealthy relationships with food and eating. Such risks may be exacerbated by sexual orientation due to the increased importance of, and focus on, physical attractiveness and bodily appearance that exist within the gay community.
Sexual Orientation, Eating Disorder Classification, and Men’s Psychosocial Well-Being

Historically, eating disorders have been viewed as affecting just girls and women, yet over the last few decades researchers have determined that boys and men also are subjected to similar limiting and deleterious societal ideals about weight and appearance (e.g., be lean and muscular), food and eating, exercising, and the characteristics and behaviors that define their gender roles and identities (Engeln, Sladek, & Waldron, 2013; Heath, Tod, Kannis-Dymand, & Lovell, 2016; Vandenbosch & Eggermont, 2013). As with girls and women, these ideals can increase boys’ and men’s risk of developing an objectified view of themselves, experiencing dissatisfaction and shame in regards to their appearance and bodies, and ultimately developing unhealthy relationships with food and eating (Dakanalis et al., 2015; Parent & Bradstreet, 2016; Sweeting et al., 2015). Although the occurrence of men’s body dissatisfaction and eating disorders still are less prevalent than women’s (e.g., Murnen, 2011; Streigel-Moore et al., 2009), they are experienced by sizable numbers of men and have become central concerns in the study of men’s psychological health and well-being.

Objectification theory proposes that individuals’ immersion in sociocultural environments, specifically those where expectations and ideals about weight, appearance, body, gender role, etc. are communicated and where sexually objectifying messages and experiences occur, will result in them internalizing societal appearance ideals, developing an objectified (third-person) view of self, and engaging in self-objectifying behaviors, such as self-monitoring and appearance evaluation (Fredrickson & Roberts, 1997; Noll & Fredrickson, 1998; Parent & Moradi, 2011). Theoretically, these self-objectifying processes and behaviors are expected to increase body shame and dissatisfaction and subsequently raise individuals’ risk of experiencing
Sexual orientation

Psychological distress (e.g., depression; Olivardia, Pope, Borowiecki, & Cohane, 2004) and of engaging in pathogenic eating (e.g., excessive dieting) and other body changing behaviors (e.g., steroid usage; Murray, Griffiths, & Mond, 2016; Parent & Moradi, 2011). Men are not immune to such sociocultural pressures and sexual objectification (De Jesus et al., 2015; Register, Katrevich, Aruguete, & Edman, 2015), nor the experience of body image concerns (i.e., psychological need to be leaner and more muscular), though the extent of their experiences and depth of their concerns may vary based on their sexual orientation. Within the gay community, sociocultural messages focus prominently on physical appearance and emphasize rigid standards of attractiveness (i.e., leanness and muscularity) that may increase gay men’s risk beyond that experienced by heterosexual men (Duggan & McCreary, 2004; Essayli, Murakami, & Latner, 2019).

Objectification Theory

Researchers originally developed objectification theory to examine how women’s immersion in environments that are body/appearance-focused and sexualizing may result in them viewing themselves as objects and engaging in self-objectifying processes and behaviors (Fredrickson & Roberts, 1997; Noll & Fredrickson, 1998). As women adopt this “objectified” perspective, they are hypothesized to become more preoccupied with appearance and engage in more self- and other-comparisons, which is thought to lead to increases in body shame and dissatisfaction and a heightened awareness of body and self (e.g., Moradi, 2011; Tiggemann & Kuring, 2004). For women, the culmination of these experiences is diminished psychological well-being, often in the forms of increased depression, anxiety, and eating pathology (Frederick et al., 2012; Tiggemann & Kuring, 2004).
Although originally developed to explain women’s experiences, over the last 10-15 years, researchers have acknowledged the utility in applying objectification theory to understand how men experience and respond to sociocultural appearance pressures and ideals (e.g., Heath et al., 2016; Vandenbosch & Eggermont, 2013). From this perspective, researchers have documented the sociocultural pressures/ideals men experience, their internalization of such ideals, the objectifying processes and behaviors in which they engage, and the linkage of these outcomes to body image concerns and unhealthy relationships with food and eating (Dakanalis et al., 2015; Daniel & Bridges, 2010; Heath et al., 2016; Parent & Bradstreet, 2016; Sweeting et al., 2015; Turel, 2018). For example, Daniel and Bridges (2010) documented a growth in media images and societal messages (e.g., advertisements, pornography, fitness magazines, social media) that present an idealized male body that is characterized by a youthful visage, low body fat (i.e., lean) and musculosity. Whereas women evidence a drive for thinness (Murnen, 2011), men appear to be preoccupied with musculosity and an aversion to being overweight, trapping them between sometimes conflicting pressures to gain muscle and get bigger but also stay lean (e.g., Engeln et al., 2013). Further, men, like women, may internalize these societal body ideals and adopt self-objectifying perspectives and behaviors (e.g., self-monitoring, self-other comparisons; Heath et al., 2016; Martins, Tiggemann, & Kirkbride, 2007; Rosenmann, Kaplan, Gaunt, Pinho, & Guy, 2018; Turel, 2018). In a sample of adult men, Heath et al. (2016) found that the men’s identification with a muscular appearance ideal was related to their viewing their bodies from a third person perspective (i.e., self-objectification); both of these variables, in turn, were related to higher levels of dissatisfaction with their current musculosity. With these increasing levels of sociocultural pressures, and internalization of such appearance ideals thereof, men have become increasingly vulnerable to experiencing a range of body image concerns (e.g., body
shame/dissatisfaction), psychological distress (e.g., depression), and disordered eating

(Dakanalis et al., 2015; Daniel & Bridges, 2010; De Jesus et al., 2015; Heath et al., 2016).

Men, Body Image Concerns, and Disordered Eating

Studies on men and body images have demonstrated that body image concerns exist among men (Calzo et al., 2015; Dakanalis et al., 2015; Engeln et al., 2013). For example, based on a cross-sectional, internet-based sample, the prevalence of body dissatisfaction among U.S. men, ranged from 9.0% to 28.4%, depending on the different criteria used by the researchers (Fallon, Harris, & Johnson, 2014). Based on an exhaustive review of the body image literature, Fiske, Fallon, Blissmer and Redding (2014) were able to identify only seven studies that met their stringent inclusion criteria (e.g., nationally-based sample, reported prevalence data, adult U.S. sample). Because of variability in how body dissatisfaction was operationalized and measured across the reviewed studies, prevalence rates for men ranged from 8% to 61%. However, when they examined rates within specific definitions and measurements, there was more consistency in prevalence rates: weight dissatisfaction (35% to 52%) and dissatisfaction with overall appearance (15% to 43%). Although men’s prevalence rates may have plateaued in the last decade (Fiske et al.), large numbers still report being concerned with their bodies and appearance, which is a precursor for disordered eating, psychological distress, and other health concerns (Fallon et al., 2014).

In regards to eating disorder (ED) prevalence, epidemiological studies suggest that men account for 10% to 25% of all individuals diagnosed with anorexia nervosa and bulimia nervosa (Sweeting et al., 2015); lifetime ED prevalence is estimated to range from 0.7% to 6.5% (Duncan, Ziobrowski, & Nicol, 2017; Nagl et al., 2016; Sweeting et al., 2015). In a meta-analysis of community-based studies, Sweeting et al. reported prevalence rates (partial-syndrome
and full-syndrome, respectively) that ranged from 0% to 1.08% (bulimia nervosa [BN]), 0% to 0.92% (anorexia nervosa [AN]), and 0.4% to 2.0% (binge eating [BED]). Similarly, Mohler-Kuo et al. (2016) reported lifetime prevalence rates of 0.2% (AN), 0.9% (BN), and 0.7% (BED) in a nationally representative sample of Swiss men. Although prevalence rates of clinical diagnoses are relatively low, like women, men experience and report more subclinical symptoms (i.e., symptoms that do not meet the all DSM criteria for clinical disorders, such as extreme dieting and binge eating; Chapman & Woodman, 2016).

Within the conceptual framework of objectification theory, men’s development of disordered eating symptoms would be predicated on the extent to which they experience and internalize societal appearance ideals and then become dissatisfied with, and ashamed of, their body size and shape, in particular their leanness and muscularity (e.g., Dakanalis et al., 2015; Murnen & Smolak, 2015; Parent & Bradstreet, 2016). For example, Dakanalis et al. (2015) found that men who were highly dissatisfied with their body size were more likely to engage in risky eating behaviors in order to modify their appearance. Further, studies have found that men’s muscle dissatisfaction correlates significantly with higher levels of muscle dysmorphia as well as more eating concerns, such as measured by the Eating Disorder Examination - Questionnaire (Calzo et al., 2016; Klimek et al., 2018; Murray et al., 2016). The findings from these, and other studies (e.g., Blashill, 2010; Lavender, Brown & Murray, 2017; Parent & Bradstreet, 2016), indicate that a substantial percentage of men experience dissatisfaction and shame with their bodies and appearance, as well as disordered eating symptoms, and these outcomes result from the harmful effects of media pressures, internalization of such ideals, and self-objectification.

Sexual Orientation as a Risk Factor
Consistent with objectification theory, researchers have conceptualized and examined sexual orientation as a sociocultural risk factor that heightens men’s body image concerns (e.g., Calzo et al., 2016; Frederick & Essayli, 2016; Lanzieri & Hildebrandt, 2016). Westernized societies value traditional expressions of masculinity, such as a hypermuscular physique. Within the gay community, such muscular images have been idealized even more because many gay men believe that the association between hypermuscularity and masculinity helps them contradict society’s heterosexist views of gay men as physically inferior and even feminine (Frederick & Essayli, 2016). Thus, gay men may be especially prone to internalize such appearance standards and to pay particular attention to their own and others’ physical attractiveness (Smith, Hawkesood, Bodell, & Joiner, 2011; Lanzieri & Hildebrant, 2016), resulting in body shame and dissatisfaction and their engagement in self-objectifying behaviors, such as appearance checking and monitoring (Lanzieri & Hildebrant, 2016; Martins et al., 2007; Michaels, Parent, & Moradi, 2013;). High levels of body dissatisfaction among gay men commonly are associated with increased investment in appearance creation and maintenance, and a greater likelihood of participating in unhealthy eating behaviors (e.g., extreme dieting) to achieve a physical appearance ideal that is in many ways unattainable (e.g., Blashill, 2010; Russell & Keel, 2002; Boisvert & Harrell, 2009).

Although initial studies suggested that sexuality was not related to body image concerns nor did it influence the rate of EDs in men (e.g., Boroughs & Thompson, 2002), subsequent research has shown that gay, compared to heterosexual, men commonly exhibit higher rates of body dissatisfaction, thinness-oriented EDs, dietary restraint, and weight concerns (Boisvert & Harrell, 2009; Feldman & Meyer, 2007; Fredrick & Essayli, 2016; Russell & Keel, 2002; Smith et al., 2011). For example, Smith et al. (2011) found that gay men, in an attempt to achieve the
lean body ideal they believed their potential partners preferred, were more likely to exhibit
restrictive eating behaviors than heterosexual men. Similarly, men who reported their sexual
orientation as gay were 57% to 354% more likely to report disordered eating behaviors compared
to heterosexual men (Matthews-Ewald, Zullig, & Ward, 2014). According to the National
Eating Disorder Association (2012), 42% of all men who have been diagnosed with an ED
identify as gay. Further, gay, compared to heterosexual, men were more likely to report dieting
to lose weight as well as engaging in binge eating and purging (Calzo et al., 2015; Matthews-
Ewald et al., 2014; Watson, Adjei, Saewyc, Homma, & Goodenow, 2017).

Because of stringent sociocultural body norms, general societal oppression, and higher
levels of eating pathology, gay men are more likely than heterosexual men to experience
psychological distress (e.g., depression, low self-esteem; Griffiths et al., 2018; Parent &
Bradstreet, 2016; Russell & Keel, 2002). For example, Cochran et al. (2003) found that the gay
and bisexual men in their sample were 3.0 times more likely to meet the criteria for major
depression compared to the heterosexual men. For many gay men, behaviors associated with
EDs (e.g., bingeing, over-exercising) may be a way to cope with, or manage, their feelings of
marginalization, social pressure, body shame, depression, and anxiety (Boisvert & Harrell, 2009;
Calzo, Blashill, Brown, & Argenal, 2017; Carper, Negy, & Tanleff-Dunn, 2000; Feldman &
Meyer, 2007). For example, in samples of male adolescents and adult men, disordered eating
symptomology (for anorexia and bulimia; Eisenberg, Nicklett, Roeder, & Kirz, 2011) and
subclinical patterns of disordered eating (i.e., purging, binge eating, overeating; Calzo et al.,
2016) have been associated with depressive symptomatology. Thus, the co-existence of eating
pathology and a gay sexual orientation may make men particularly vulnerable to psychological
distress.
Purpose

Recent research findings demonstrate that (a) men internalize societal appearance and body ideals and, as a result, experience increased body image concerns and a higher risk for different forms of disordered eating (e.g., Klimek et al., 2018; Dakanalis et al., 2015); and (b) compared to men who are asymptomatic (i.e., have no ED symptoms), men who are symptomatic of an ED (i.e., subclinical or clinical levels of symptoms) report higher levels of distress across a range of sociocultural (e.g., internalization), body image (e.g., body dissatisfaction), and psychological (e.g., depressive symptomatology) variables (Calzo et al., 2016; Turel et al., 2018). Even so, studies on men have lagged behind what has been conducted with girls and women (Lavender et al., 2017), leaving researchers with a relatively simple understanding of men’s experiences in regard to eating pathology. Further, even though sexual orientation has been identified as a sociocultural risk factor for body image and eating concerns (Frederick & Essayli, 2016; Russell & Keel, 2002), studies examining how it may heighten men’s vulnerability have been limited. For example, would sexual orientation moderate the relationship between ED classification and men’s reported levels of internalization, body image concerns, and psychological distress? To date, no study has addressed this question. Thus, our purpose was to examine the relationship between men’s ED classification (asymptomatic vs. symptomatic) to theoretically and empirically identified psychosocial correlates, including body image concerns, sociocultural pressures, internalization processes and depressive symptomatology, and to determine the extent to which sexual orientation (gay vs. heterosexual) moderated those relationships. First, we tested for a main (and direct) effect between ED classification and each outcome, hypothesizing that the men who were symptomatic would report higher levels of disturbance across each outcome. Second, we tested whether the men’s
sexual orientation would change either the strength or direction of the ED classification – outcome relationships; that is, would sexual orientation moderate these relationships. We hypothesized that there would be significant moderating effects across all the outcomes, such that the gay men who were symptomatic/clinical, compared to the remaining three groups of men (e.g., asymptomatic gay men; symptomatic/clinical heterosexual men), would report the highest levels of distress.

Method

Participants

Participants were 141 gay, and 535 heterosexual men. For the gay men, their mean age was 22.69 years (SD = 4.77); their mean body mass index (BMI) was 25.25 kg/m² (SD = 5.97). In terms of ethnicity, 32 (22.7%) were Hispanic/Latinx; racially, 97 (68.8%) identified as White, 11 (7.8%) as Asian-American or Pacific Islander, 12 (8.5%) as African-American, 8 (5.7%) as Biracial, 3 (2.1%) as Native American, and 10 (7.1%) as other. Regarding their current relationship status, 112 (79.4%) reported being single. A majority had finished high school and were in college (n = 91; 66.0%), whereas the remainder already had earned a bachelor’s degree (n = 33; 23.4%), a master’s degree (n = 9; 6.4%), or a doctoral or professional degree (n = 6; 4.3%).

For the heterosexual men, their mean age was 21.85 years (SD = 4.43); their mean BMI was 25.32 kg/m² (SD = 5.14). In terms of ethnicity, 119 (22.2%) were Hispanic/Latinx; racially, 342 (63.9%) identified as White, 51 (9.5%) as Asian-American or Pacific Islander, 43 (8.0%) as African-American, 22 (4.1%) as Biracial, 9 (1.7%) as Native American, and 62 (11.6%) as other; four did not provide race/ethnicity data. Regarding their current relationship status, 448 (83.7%) reported being single and not in a romantic relationship. A majority had finished high school and
were in college (n = 442; 82.6 %), whereas the remainder already had earned a bachelor’s degree (n = 50; 9.3 %), a master’s degree (n = 31; 5.8 %), or a doctoral or professional degree (n = 8; 1.5 %).

**Instruments**

**Demographics and sexual orientation.** At the end of the survey, the men provided information about their age, ethnic status (Hispanic/Latinx or not), racial group, current relationship status, educational level, and height and weight. The men also indicated their sexual orientation via the one-item Kinsey Sexual Orientation Scale (Kinsey, Pomery, & Martin, 1948; Kinsey et al., 2003). From seven response options, ranging from 0 (*exclusively heterosexual*), 1 (*predominantly heterosexual, only incidentally homosexual*), 2 (*predominantly heterosexual, but more than incidentally homosexual*), 3 (*bisexual*), 4 (*predominantly homosexual, but more than incidentally heterosexual*), 5 (*predominantly homosexual, only incidentally heterosexual*), to 6 (*exclusively homosexual*), the men selected the description that best defined how they currently viewed themselves. Consistent with previous research (e.g., Tiggeman et al., 2007), the men who selected responses 4, 5, or 6 or who chose responses 0, 1, or 2 were classified as gay or heterosexual, respectively; the men who chose response 3 were excluded from this study (n = 18).

**Sociocultural pressures.** Eight items from the Perceived Sociocultural Pressure Scale (PSPS; Anderson et al., 2011; Stice & Agras, 1998) assessed pressures about needing to be lean and needing to be more muscular across four different sources: friends, family, romantic partners, and the media (i.e., TV, magazines, social media). For example, the men rated the pressure they felt from friends to be lean from 1 (*never*) to 5 (*always*). The total score for each pressure (e.g., being lean) is the mean of the four items representing the four sources (e.g., family
SEXUAL ORIENTATION

members); higher scores indicate more perceived pressure. For the gay and heterosexual men in our study, respectively, Cronbach’s alphas were .75 and .77 (lean) and .70 and .73 (muscular).

Chatterton, Petrie, Schuler and Ruggero (2017) reported significant correlations between the two pressures and measures of muscular body image (.37 and .54), intentions to diet (.50 and .37), and bulimic symptomatology (.41 and .37), supporting their validity.

Internalization processes. Five items from the Internalization General subscale of the Sociocultural Attitudes Toward Appearance Scale-3 (SATAQ-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004) assessed internalization of societal body/appearance ideals (we excluded the items that focused on social comparisons so as not to overlap with the PACS). The men rated each item from 1 (completely disagree) to 5 (completely agree). Total score is the mean of the five items; higher scores indicate stronger internalization. Cronbach’s alphas for the current study were .93 (gay) and .93 (heterosexual). Karazsia and Crowther (2008) provided detailed information about the scale’s validity, including significant correlations with measures of drive for muscularity, physical appearance comparisons, and negative affect.

The five-item Physical Appearance Comparison Scale (PACS; Thompson, Heinberg, & Tantleff-Dunn, 1991) assessed the degree to which individuals compare their own appearance with others. The men responded to each item from 1 (definitely disagree) to 5 (definitely agree). Total score is the mean of the five items; higher scores indicate a greater tendency to make comparisons. Cronbach’s alphas from the current study were .83 (gay) and .87 (heterosexual). Thompson et al. (1991) reported significant correlations between the PACS and measures of body dissatisfaction and self-esteem, supporting the scale’s validity.

The 12-item Appearance Orientation subscale from the Multidimensional Body Self-Relations Questionnaire (MBSRQ; Cash, 2011) assessed investment in appearance and grooming
related behaviors. The men responded to each item from 1 (\emph{definitely disagree}) to 5 (\emph{definitely agree}). The total score is the mean of the 12 items; higher scores indicate a higher level of investment. Cash (2011) has provided extensive information about the scale’s validity. Cronbach’s alphas from the current sample were .87 (gay) and .86 (heterosexual).

\textbf{Body image}. Seventeen items from the Body Parts Satisfaction Scale for Males (BPSS-M; McFarland & Petrie, 2012) assessed the men’s satisfaction with the leanness and muscularity of their upper body (e.g., arms, chest) and their overall body (e.g., “overall muscle tone and definition”). The men rated each item from 1 (\emph{extremely dissatisfied}) to 6 (\emph{extremely satisfied}). The total score is the mean of the 17 items; higher scores indicate greater satisfaction. For the gay and heterosexual men, respectively, Cronbach’s alphas from this study were .96 and .96 (Body). McFarland and Petrie provided extensive data on the scale’s construct and incremental validity.

The four-item Body Shame Scale (Andrews, 1995; Tripp & Petrie, 2001) assesses feelings of shame associated with one’s body. The men responded to each item from 1 (\emph{definitely disagree}) to 5 (\emph{definitely agree}). Total score is the mean of the four items; higher scores indicate more shame. Cronbach’s alphas from the current study were .93 (gay) and .92 (heterosexual). Tripp and Petrie (2001) provided evidence for the scale’s validity, including significant relationships with measures of body dissatisfaction, body shape concerns, and disordered eating (e.g., binge eating).

\textbf{Depressive symptomatology}. The 9-item Patient Health Questionnaire (Kroenke et al., 2001) measures depressive symptomatology. The men responded to each item from 0, (\emph{not at all}), to 3, (\emph{nearly every day}). Total score is the sum of the items and can range from 0 (\emph{low}) to 27 (\emph{high}). Cronbach’s alphas from the current study were .91 (gay) and .89 (heterosexual). Using
multiple independent samples, Kroenke et al. established the scale’s criterion-related (e.g., sensitivity and specificity for diagnosis were 88%) and construct validity.

**Eating disorder classification.** The 50-item Questionnaire for Eating Disorder Diagnoses (Q-EDD; Mintz, O’ Halloran, Mulholland, & Schneider, 1997) was used to classify the men based on DSM-4-TR criteria (APA, 2000) as having a clinical (i.e., bulimia nervosa, anorexia nervosa, or eating disorder not otherwise specified [ED-NOS; i.e., subthreshold bulimia, binge eating disorder, nonbinging bulimia, and menstruating anorexia]) or subclinical (i.e., demonstrates symptoms of disordered eating but does not meet criteria for a clinical diagnosis) ED, or being asymptomatic (i.e., not reporting any level of eating pathology/disturbance). Classification is based on the scoring rubric developed and validated by the authors. Specifically, participant responses are compared to the DSM ED criteria and, following the step by step comparisons, sorted into one of the three classification levels. Within the clinical ED classification, specification regarding ED diagnosis is determined. Research has shown the Q-EDD to be a reliable and valid measure for establishing ED classification for women and men (e.g., DiPasquale & Petrie, 2013). For example, Mintz et al. reported one to three-month test-retest reliabilities, with kappa values ranging from .54 to .85, for clinical ED, subclinical ED, and asymptomatic groups, and an accuracy rate of 98% between the Q-EDD classification and clinician-determined ED diagnoses.

**Procedure and Data Analysis**

We received approval from our university IRB, and then solicited men who were attending a university located in the south-central U.S. or members of different social media websites (e.g., Facebook, Reddit) to participate in a study on men’s body image and psychological health. We did not limit ourselves to the traditional, university-based sample
because we wanted to have a broader, more diverse sample in terms of age, educational
experience, and sexual orientation. Soliciting men’s involvement through other outlets would
allow us to pursue this sampling goal. Regardless of method of participant solicitation (e.g.,
Facebook, university research website), the men accessed a secure website where they provided
consent and then anonymously completed the survey questionnaire, which took approximately
20 minutes. Through the university’s research portal, which was not connected in any way to our
data base, the students received extra credit points in their psychology classes; we offered no
other compensation for participating.

We initially had 730 usable surveys, however, we excluded the men who reported being
bisexual on the Kinsey scale ($n = 18$) and the men who were statistically significant outliers
(based on box-plot analyses) due to their age (i.e., above 40 years or below 18 years of age; $n =
35$) or BMI (i.e., $> 50$ kg/m$^2$; $n = 1$. Thus, our final sample was 676; there were no missing data
at the individual item response level for these participants. Each measure’s distributional
properties (e.g., skewness, kurtosis) were within normal ranges so we made no transformations
to the data.

To examine our hypotheses, we used the PROCESS v2.16 macro (Hayes, 2016) to test
for moderation; we represented ED classification and sexual orientation through effects coding
(Frazier, Tix, & Barron, 2004). For each outcome variable (e.g., pressures to be lean,
internalization, depressive symptomatology), we designated ED classification as the IV and
sexual orientation as the moderator. The PROCESS macro provides output not only for the main
effects of ED classification and sexual orientation, but also for the interaction of the two
variables, which is the test of moderation. In addition, the PROCESS macro provides 95%
confidence intervals through bootstrapping procedures, providing unbiased estimates, and data
points for graphing significant interactions.

**Results**

**Correlations and ED Classification**

In Table 1, we present the means, standard deviations and bivariate correlations of all the
measures by sexual orientation. As expected, regardless of sexual orientation, the men were far
more likely to be classified as symptomatic vs. as having a clinical ED, respectively (gay --
41.8% vs. 11.3%; heterosexual – 39.1% vs. 3.4%); the remaining men in each group were
classified as asymptomatic (gay – 46.9%; heterosexual – 57.5%). For the 16 gay men who were
classified with a clinical ED, they fell within the following diagnostic categories: (a)
Subthreshold Bulimia ($n = 9$); (b) Binge Eating Disorder ($n = 5$); (c) and NonBinging Bulimia ($n
= 2$). For the 18 heterosexual men with a clinical ED, their diagnostic categories included: (a)
Subthreshold Bulimia ($n = 4$); (b) Binge Eating Disorder ($n = 12$); (c) NonBinging Bulimia ($n
= 1$); and (d) Anorexia Nervosa ($n = 1$). Because so few men were classified with a clinical ED
regardless or sexual orientation, they were combined with the symptomatic group for the
subsequent analyses. This approach has been taken in numerous studies (e.g., Petrie, Greenleaf,
Carter, & Reel, 2007) because the responses of individuals (men and women) in the symptomatic
and ED classification groups are more similar than different from each other across a wide range
of psychosocial, body image, and ED correlates. Thus, in our analyses, we had the following
groupings for the ED classifications: (a) gay men (symptomatic/ED = 75; asymptomatic = 66),
and (b) heterosexual men (symptomatic/ED = 227; asymptomatic = 308).

**Moderator Analyses**
We conducted a moderator analysis for each psychosocial, body image, and psychological outcome.

**Pressures.** For sociocultural pressures to be lean, the full regression model was significant, $F (3, 672) = 24.65, p < .000, R^2 = .10$, as were the main effects of ED classification ($B = .27, 95\% \text{ CI} = .19 \text{ to } .35$) and sexual orientation ($B = .19, 95\% \text{ CI} = .11 \text{ to } .27$). For this type of pressure, symptomatic vs asymptomatic, and gay vs. heterosexual, men reported significantly higher levels.

The ED classification by sexual orientation interaction predicting pressures to be lean was statistically significant ($B = .11, 95\% \text{ CI} = .03 \text{ to } .19; R^2 = .01$). The rates of change for pressures to be lean were significant for both gay ($B = .38, 95\% \text{ CI} = .24 \text{ to } .53$) and heterosexual ($B = .16, 95\% \text{ CI} = .09 \text{ to } .24$) men, suggesting that the pressures experienced by both groups of men increased across the two ED classifications (see Figure 1). Further, the strength of the relationship between ED classification and pressures to be lean was stronger for the gay men and, overall, the gay men who were symptomatic/clinical reported significantly more pressures than the three other groups of men.

For sociocultural pressures to be muscular, the full regression model was significant, $F (3, 672) = 10.66, p < .000, R^2 = .05$. Regarding each variable in the model, only the main effects of ED classification ($B = .19, 95\% \text{ CI} = .11 \text{ to } .27$) and sexual orientation ($B = .12, 95\% \text{ CI} = .04 \text{ to } .20$) were significant; the ED classification by sexual orientation interaction was not significant ($B = .08, 95\% \text{ CI} = -.01 \text{ to } .16$). For this type of pressure, symptomatic vs asymptomatic, and gay vs. heterosexual, men reported significantly higher levels.

**Internalization processes.** For the internalization of general societal appearance ideals, the full regression model was significant, $F (3, 672) = 19.38, p < .000, R^2 = .08$. Regarding each
variable in the model, only the main effects of ED classification (B = .16, 95% CI = .06 to .25) and sexual orientation (B = .31, 95% CI = .22 to .40) were significant; the ED classification by sexual orientation interaction was not significant (B = .09, 95% CI = -.01 to .18). In regards to internalization, the gay men and the symptomatic men endorsed significantly higher levels than those who were heterosexual or asymptomatic, respectively.

For appearance comparisons, the full regression model, $F (3, 672) = 30.07, p < .000, R^2 = .12$, as well as the main effects of ED classification (B = .21, 95% CI = .13 to .30) and sexual orientation (B = .31, 95% CI = .23 to .40) were significant. The ED classification by sexual orientation interaction was not significant (B = .06, 95% CI = -.02 to .14). Gay men, in comparison to heterosexual, and those who were symptomatic/clinical vs. those who were asymptomatic, engaged in significantly more physical appearance comparisons.

Finally, the full regression model for appearance orientation was significant, $F (3, 672) = 24.47, p < .000, R^2 = .10$, as were the main effects of ED classification (B = .12, 95% CI = .06 to .18) and sexual orientation (B = .24, 95% CI = .17 to .30). For the two main effects, gay, in comparison to heterosexual, men and those who were symptomatic/clinical vs asymptomatic, engaged significantly more often in grooming and appearance related behaviors.

The ED classification by sexual orientation interaction predicting appearance orientation was statistically significant (B = .10, 95% CI = .04 to .16; $R^2 = .01$). The rate of change in their appearance orientation scores was significant for the gay men (B = .22, 95% CI = .11 to .33), indicating that the strength of the relationship between ED classification and appearance orientation strengthened for this group of men; the rate of change for the heterosexual men was not significant (B = .02, 95% CI = -.04 to .08). Overall, the symptomatic/clinical gay men
reported a significantly higher score on this variable than the other three groups of men. See

Figure 2.

**Body image.** For body satisfaction, the full regression model, \( F (3, 672) = 26.79, p < .000, R^2 = .11 \), as well as the main effects of ED classification (\( B = -.25, 95\% \text{ CI} = -.34 \text{ to } -.15 \)) and sexual orientation (\( B = -.29, 95\% \text{ CI} = -.38 \text{ to } -.20 \)), were statistically significant. The ED classification by sexual orientation interaction, however, was not significant (\( B = -.04, 95\% \text{ CI} = -.13 \text{ to } .05 \)). The gay, compared to the heterosexual, men and those who were symptomatic/clinical vs. asymptomatic reported significantly more dissatisfaction with their bodies’ leanness and muscularity.

Regarding the shame the men felt with respect to their bodies and appearance, the full regression model was statistically significant, \( F (3, 672) = 33.29, p < .000, R^2 = .13 \); the main effects of ED classification (\( B = .37, 95\% \text{ CI} = .26 \text{ to } .47 \)) and sexual orientation (\( B = .35, 95\% \text{ CI} = .25 \text{ to } .46 \)) also were. The gay men reported more shame than the heterosexual men, and those who were symptomatic/clinical scored higher than those who were asymptomatic.

The ED classification by sexual orientation interaction term was statistically significant (\( B = .14, 95\% \text{ CI} = .04 \text{ to } .25; R^2 = .01 \)). The rate of increase in body shame was significant for the gay (\( B = .51, 95\% \text{ CI} = .32 \text{ to } .69 \)) and heterosexual (\( B = .22, 95\% \text{ CI} = .13 \text{ to } .32 \)) men, indicating that the relationship between ED classification and body shame strengthened for each group (See Figure 3). Despite both slopes being significant, the symptomatic/clinical gay men reported experiencing significantly more shame than the other three groups of men.

**Depressive symptomatology.** The full regression model, \( F (3, 672) = 21.98, p < .000, R^2 = .09 \), as well as the main effects of ED classification (\( B = 1.85, 95\% \text{ CI} = 1.31 \text{ to } 2.40 \)) and sexual orientation (\( B = .77, 95\% \text{ CI} = .23 \text{ to } 1.32 \)), were statistically significant. The ED
classification by sexual orientation interaction term was not \((B = .38, 95\% \text{ CI} = -.16 \text{ to } .92)\). The gay, compared to the heterosexual, men and those who were symptomatic vs. asymptomatic reported significantly more depressive symptomatology.

**Discussion**

As hypothesized, and consistent with past research (e.g., Dakanalis et al., 2015; Parent & Bradstreet, 2016) and objectification theory (Daniel & Bridges, 2010; Fredrickson & Roberts, 1997), the men, regardless of sexual orientation, who were classified as symptomatic/clinical in their eating reported more sociocultural pressures, greater internalization and appearance comparisons, more investment in their appearance, higher levels of body dissatisfaction and shame, and more depressive symptomatology than did those who were asymptomatic.

Regardless of sexual orientation, as men are increasingly objectified in modern media (e.g., advertisements, social media), their bodies become more important and central in determining their global self-concept (Martins et al., 2008; Tiggemann et al., 2007). Exposure to masculine imagery, and expectations of muscul arity that affirm masculinity, socializes men to be conscious of how others observe and evaluate their bodies, thereby cultivating self-objectification. The objectification processes of self and other comparisons regarding attractiveness and muscul arity, the self-monitoring of appearance, and resulting body shame can promote eating patterns (e.g., dieting) that are thought to improve body size/shape and minimize dissatisfaction (Dakanalis et al., 2015; Klimek et al., 2018; Register et al., 2015). Thus, the men in our study who endorsed eating pathology were expected to report the highest levels of disturbances across these variables, which is what we found.

Further, independent of ED classification, the gay, in comparison to the heterosexual, men reported higher levels of distress across all the outcomes, which was consistent with our
hypotheses and past research (e.g., Frederick & Essayli, 2016; Martins et al., 2013; Michaels et al., 2013). For example, gay men have been found to be at an increased risk for internalization of appearance ideals, the experience of societal body ideals, making physical appearance comparison, depression, and body dissatisfaction (Boisvert & Harrell, 2009; Frederick & Essayli, 2016; Lanzieri & Hildebrandt, 2016; Russell & Keel, 2002). Because Western society has conflated musculature and masculinity and because of ubiquitous homonegativity, gay men may believe they have to affirm their manliness in a heterosexist society via the size and shape of their physique (Badenes-Ribera, Fabris, & Longobardi, 2018; Lanzieri & Hildebrandt, 2016). In reaction to this societal-level demasculinization, gay men may become preoccupied with their eating habits, diets, exercise routines, and other appearance modifying behaviors that are needed to acquire a desirable body (Lanzieri & Hildebrandt, 2016).

**Moderating Effects**

In addition to the direct relationships between ED classification and the psychosocial outcomes and between sexual orientation and the outcomes, sexual orientation interacted significantly with ED classification on three variables – pressures to be lean, appearance orientation, and body shame. For these three outcomes, their significant relationships with ED classification was strengthened, particularly for the gay men. That is, the slope of the lines demarcating the change in each outcome variable between the asymptomatic and symptomatic/clinical classifications was significantly stronger for the gay men. And, as hypothesized, the gay men who were symptomatic/clinical reported significantly more distress than the men who comprised the other three groups (i.e., asymptomatic gay men, asymptomatic heterosexual men, and symptomatic/clinical heterosexual men). Within the symptomatic/clinical ED classification, being gay appears to be a potential risk factor, significantly increasing the
men’s experiences of sociocultural pressures to be lean, engagement in appearance-related behaviors, and level of shame they feel in relation to their bodies.

**Pressure to be lean.** Studies have shown that gay men are more likely to be concerned with weight and leanness compared to their heterosexual counterparts (e.g., Calzo et al., 2015; Matthews-Ewald et al., 2104), which is consistent with our finding that sexual orientation moderated only the ED classification relationship to pressures to be lean (but not with pressures to be muscular). Compared to heterosexual men, gay men are more likely to experience weight-related social pressures because the gay community endorses a leaner ideal and reports more visible anti-fat attitudes (e.g., teasing, discrimination) that may be internalized (Foster-Gimbel & Engeln, 2016; Griffiths et al., 2018). Gay men may be particularly attuned to anti-fat biases and messages (Foster-Gimbel & Engeln, 2016) and the need to achieve a thin, or lean, body (e.g., Carper et al., 2010). For example, Blashill (2010) found that although muscle dissatisfaction marginally predicted gay men’s eating restraint scores, their level of dissatisfaction with body fat was a significant (and stronger) predictor of not only their eating restraint, but their general eating concerns (as measured by the Eating Disorder Examination Questionnaire; EDE-Q).

Further,

**Appearance orientation.** Although gay and heterosexual men may internalize the same media messages, gay men report greater amounts of pressure from within the gay community to be, and value, physical attractiveness (e.g., Blashill, 2010; Carper et al., 2010). Gay men particularly feel excessive pressures to be attractive from within the gay community and these pressures often result in a heightened concern with their body and attractiveness (Frederick & Essayli, 2016). Consequently, they tend to be more invested in their physical appearance as a mode of cultivating a desired self-image (Strübel & Petrie, 2016; Strübel & Petrie, 2018). Thus,
the greater investment in attaining (and maintaining) a societally-based appearance ideal, which likely is exacerbated by pressures and expectations that are unique to the gay community, may result in symptoms associated with a subclinical or clinical ED.

**Body shame.** Over the past few decades, images in gay media and mainstream media have become progressively thinner and more muscular (Schwartz & Andsager, 2011). These culturally constructed physical ideals that are propagated in the media are internalized and used as a basis for constant comparison, self-evaluation, and evaluations of others. Subsequently, men who do not measure up to the images of attractiveness are often stigmatized and marginalized (Lanzieri & Hildebrandt, 2016). The daily pressures gay men encounter from the media and the gay community itself, especially those in relation to losing weight so as to obtain a thin/lean physique, may lead to objectification processes (e.g., self-monitoring) that subsequently promote body image concerns, particularly feelings of shame about their bodies and appearance. And, as Fallon et al. (2014) noted, body image concerns are a primary determinant of EDs. Body shame in gay men may reflect the importance they believe others place on their physical appearance (Boisvert & Harrell, 2009). Believing that their peers and partners are attracted to a thinner and more muscular body, gay men perpetuate body stereotypes within the gay community, and society at large, by publicly echoing a preference for a lean body in themselves and their partners (Flave & Novak, 2018).

**Remaining psychosocial variables.** Although the gay men (vs. the heterosexual) and the symptomatic/clinical men (vs. the asymptomatic) reported more distress across the remaining psychosocial outcomes (e.g., internalization, body dissatisfaction), indicating significant main effects, sexual orientation and ED classification did not interact to significantly increase risk in relation to any of these outcomes; that is, there were no statistically significant moderating
effects. Even so, on all of the remaining variables, the symptomatic/clinical gay men reported
the most distress and, if not beholden to traditional views on statistical significance (Andersen &
Stoove, 1998), several of the other interaction terms might have been interpreted. For example, at
our selected $p$-value, the sexual orientation by ED classification interaction term for the men’s
experience of societal pressures to be more muscular was not significant ($p = .064$). However, as
we had hypothesized, the symptomatic/clinical gay men scored highest on this variable and, in
comparison to the other three groups of men, demonstrated effect sizes that were moderate: (a)
asymptomatic gay men (Cohen’s $d = .59$), (b) asymptomatic heterosexual men (Cohen’s $d = .68$),
and (c) symptomatic/clinical heterosexual men (Cohen’s $d = .43$). Given the magnitude of these
effect sizes, statistical significance would have been reached with a slightly larger sample of gay
men. Thus, given that the selection of these psychosocial variables were consistent with past
research (e.g., Fredrick & Essayli, 2016; Lanzieri & Hildebrant, 2016; Matthews-Ewald, Zullig,
& Ward, 2014) and objectification theory (Fredrickson & Roberts, 1997; Noll & Fredrickson,
1998), researchers should continue to examine them in future studies, but may need to
oversample gay men to ensure sufficient numbers to do so.

Limitations and Future Research

Our study had limitations that warrant discussion. First, although we did solicit
involvement from men who were older and not currently in college, the majority of our sample
was younger and reported currently being in college, thus limiting generalizability. Thus, future
studies may want to expand their samples, such as to specific racial/ethnic subgroups (e.g.,
African Americans, Asian Americans) or men who are older and more established in their lives
and careers. Doing so would allow researchers to further test the role of sexual orientation in the
relationship between ED classification and psychosocial factors. Second, regardless of from
where the participants were recruited, all entered the survey website in the same manner and we asked no questions that would allow us to differentiate between the data collection methods. Although we would not expect these men to differ significantly from each other in any way, we are unable to statistically support this claim, which is a limitation of our study. Third, all the constructs were assessed via self-report and thus subject to potential bias (e.g., underreporting of unfavorable personal characteristics) or misclassification. For example although the QEDD has high levels of specificity and sensitivity in diagnostic classification (Mintz et al., 1997), structured clinical interviews would have provided an even more valid assessment of ED status. Although such interviews are the gold standard, we need to rely on a paper-and-pencil measure given the large, nationally drawn sample we collected. Further, our findings were consistent with theory and past research, and the statistical effect sizes moderate, suggesting that the use of self-report measures may have been minimally problematic.

Fourth, conceptualizing internalization as we did, we were not able to assess the muscularity ideal in this construct, which is a limit. We did, though, address the importance of muscularity for men through how measured body satisfaction, and in future studies, researchers should assess it within internalization as well. Fifth, although we used an established, frequently used measure for the men’s sexual orientation, in future studies, researchers might use broader measures to determine sexual orientation, such as the Klein Sexual Orientation Grid (Klein, Sepekoff, & Wolf, 1985), which considers emotions and feelings in the self-identification of sexual orientation. Finally, our study relied on a cross-sectional data set, which limits what can be determined regarding the direction of the relationships that emerged. Our findings though were consistent with our a priori hypotheses and future studies could further test how, over time,
immersion in the gay community might lead to increases in internalization, body shame, appearance orientation, and ultimately, the development of disordered eating behaviors.

Our findings support direct, meaningful associations between ED classification or sexual orientation and a wide range of psychosocial outcomes in men (e.g., body image concerns, depressive symptomology, sociocultural pressures). As hypothesized, the men who self-reported as gay or who had been classified as symptomatic/clinical in terms of their ED reported more distress or pathology across all outcomes. Further, sexual orientation, specifically self-reporting as gay, strengthened the relationship between ED classification and the men’s experience of pressures to be lean, the extent to which they are focused on their appearance, and the amount of shame they experience in relation to their bodies. Sociocultural pressures regarding appearance in general, but particularly those that emanate from the gay community, and the objectification processes and body image concerns that result, are related to a higher level of ED disturbance. Our findings support the idea that sexual orientation, in particular the sociocultural experiences of gay men, likely increases men’s risk and warrants additional study.
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1. Figure 1. Interaction of sexual orientation and ED Classification for Pressures to be Lean

2. Figure 2. Interaction of sexual orientation and ED Classification for Appearance Orientation
Figure 3. Interaction of sexual orientation and ED Classification for Body Shame

Sexual orientation

- gay
- heterosexual

Estimated Means

ED Classification - Asymptomatic (1) and Symptomatic (2)

Error bars: 95% CI
Table 1. Correlations, Means, and Standard Deviations Among the Psychosocial Variables for Gay (n = 141) and Heterosexual (n = 535) Men

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<td>.364</td>
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<td>.342</td>
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<td>3.</td>
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<td>4.</td>
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<td>Mean</td>
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<td>2.95</td>
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<td>3.85</td>
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<td>SD</td>
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<td>.67</td>
<td>1.00</td>
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<td>.99</td>
<td>1.16</td>
<td>5.78</td>
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Note: Correlations for the heterosexual men (n = 535) are presented below the diagonal; correlations for the gay men (n = 141) are presented above the diagonal. Sat-Body = Press = Perceived Sociocultural Pressures Scale for Leanness and Muscularity (scores can range from 1, lower perceived pressure, to 5, higher perceived pressure). Appear-Orien. = Appearance Orientation subscale from the Multidimensional Body Self-Relations Questionnaire (scores can range from 1, lower investment in appearance, to 5, greater investment in appearance). SATAQ = Internalization General subscale of the Sociocultural Attitudes Toward Appearance Scale-3 (scores can range from 1, lower internalization, to 5, higher internalization). PACS = Physical Appearance Comparison Scale (scores can range from 1, lower tendency to make comparisons, to 5, higher tendency to make comparisons). Body Parts Satisfaction Scale-Men subscales for Body Factor (scores can range from 1, extreme dissatisfaction, to 6, extreme satisfaction). Shame = Body Shame Scale (scores can range from 1, low shame, to 5, high shame). PHQ = Patient
Health Questionnaire (scores can range from 0, lower depressive symptomology, to 27, higher depressive symptomology).

Correlations > .28 or < -.28 are significant at $p < .001$ for the gay men; correlations > .14 or < -.14 are significant at $p < .001$ for the heterosexual men.