Weight Stigma and Sociocultural Attitudes Toward Appearance Among Heterosexual and Sexual Minority Individuals

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Abstract

Purpose: The current study aims to examine weight stigma and sociocultural attitudes toward appearance among lesbian, gay, and bisexual (LGB) individuals and heterosexual men and women.

Methods: The sample consisted of heterosexual and LGB men and women. Participants were drawn from introductory psychology classes and a variety of supplemental recruitment methods (Facebook, Instagram, Reddit, MTURK, etc.).

Results: Individuals identifying as male and individuals identifying as heterosexual had significantly greater weight bias than individuals identifying as female and individuals identifying as LGB. Additional gender identity and sexual orientation mean group differences among sociocultural attitudes were observed. While there were modest associations between weight bias and overall sociocultural attitudes, gender identity and sexual orientation had little impact on the strength of these associations.

Conclusion: This investigation contributes to knowledge of the impact of gender identity and sexual orientation on weight stigma and sociocultural attitudes toward appearance.

Level of Evidence

III: Evidence obtained from cohort or case–control analytic studies.

What Is Already Known On This Subject?

Despite high occurrence of obesity and overweight in the United States, weight bias, defined as weight-based implicitly or explicitly held beliefs, attitudes or discrimination, is common and widespread. Little is known about levels of weight bias and sociocultural attitudes toward appearance among sexual minority individuals (i.e., individuals who identify as lesbian, gay, bisexual, queer, and any other sexual orientation that is not heterosexual; LGBTQ+).

What does this study add?

Research examining sexual minorities' levels of weight bias and sociocultural attitudes toward appearance is understudied and differs from heterosexuals in important ways. This investigation contributes to knowledge of the impact of gender identity and sexual orientation on weight stigma and sociocultural attitudes toward appearance.

Introduction

Despite high occurrence of obesity and overweight in the United States (1), weight bias, defined as weight-based implicitly or explicitly held beliefs, attitudes or discrimination, is common (2) and widespread (3). However, little is known about levels of weight bias among sexual minority individuals (i.e., individuals who identify as lesbian, gay, bisexual, queer, and any other sexual orientation that is not

heterosexual; LGBTQ+). The experience and/or internalization of weight stigma has been tied to several harmful physical and mental consequences, including a higher risk for depression, disordered eating, and poorer cardiovascular health (4, 5).

While it is unclear how weight stigmatizing attitudes form, they are likely associated with sociocultural influences on appearance through the media, peers, and family and the internalization of thin and muscular ideals. Yet, similar to weight bias research, these sociocultural influences on sexual minority individuals remain relatively understudied in comparison to their heterosexual counterparts, as sexual minority persons are often aggregated with heterosexual samples.

With regard to gender, generally, women portrayed in the media have become increasingly thinner through recent years (6). This exposure to the sociocultural messages regarding the thin ideal has repeatedly been associated with harmful consequences among women, including body dissatisfaction and eating disorders (7, 8). For men, the ideal body is often portrayed as thin and muscular, and high internalization of muscular standards is linked to harmful consequences, such as eating disorders (9). Men may also be more likely to develop body dissatisfaction after increased exposure to a muscular physique/media pressure (10).

Sociocultural pressures may influence the development of weight bias differently for heterosexual men and women; women may be more likely to internalize thin pressure while men externalize and apply pressure outwardly to women (11). Yet, this does not mean that sociocultural attitudes cannot foster a development of weight bias in heterosexual women. Among men and women exercise science college students, a high internalization of the athletic body ideal was predictive of weight bias (12). Interestingly, men typically report higher drive for athletic body types than females (13), which could possibly explain why men hold higher weight bias than women. Further research is needed to examine this more specifically among men, and in particular it is unknown whether sexual minority individuals have the comparable sociocultural pressures toward appearance and levels of weight bias, as well as comparable associations between sociocultural pressures and weight bias as their heterosexual counterparts.

Literature suggests that gay men are receiving strong sociocultural messages regarding weight. Gay men may be more influenced by sociocultural attitudes (through media exposure; 14) and report a higher drive for thinness after exposure to the male ideal body in comparison to heterosexual men (15). This is concerning as images of men in magazines intended for media consumption by gay men tend to be lower in body fat than images of men in magazines tailored towards heterosexual men (16).

Legenbauer et al. (17) found that the internalization of the male thin ideal has been found to be tied to increased desire for a thinner partner among gay men. It is possible that this preference towards a thin figure is associated with weight bias (18) - it is therefore reasonable to consider whether weight bias plays a role in this relationship. Foster-Gimble and Engeln (19) found that approximately a third of gay men report receiving direct anti-fat bias, with the most common form being rejection of a romantic partner due to weight. Further, gay men were more likely to believe that an overweight man would be rejected by an attractive target in comparison to heterosexual men. Gay men also report experiencing

more weight-related teasing than heterosexual men (14). Thus, weight bias may be a prominent issue among this community and may be tied to sociocultural messages regarding male body ideals.

In comparison, less is known about lesbian women in this area even though they are more likely to be overweight as compared to the general US female population (20). It is possible that lesbian women may face less pressure to achieve the thin-ideal based on media and overall sociocultural attitudes. For example, models used in magazines geared towards a lesbian audience were found to be more diverse in weight in comparison to models in magazines targeted at heterosexual women (21). Additionally, while lesbian women are not immune from general media or societal pressure to be thin (22, 23), one study found that they reported lower pressure from the peers toward appearance than bisexual and heterosexual women (24). It is unknown as to whether this phenomenon translates to weight biased attitudes, however.

In one of the few studies to date, sexual minority individuals reported rates of weight based discrimination comparable to heterosexual individuals (25). As noted earlier, research has established concerning negative consequences among heterosexual men and women related to weight bias and subjection to sociocultural attitudes regarding weight. Research among sexual minority individuals in this area is limited but some research suggests similar negative consequences. The current study aims to examine the overall externalized experience, including explicit weight stigma and overall sociocultural attitudes toward appearance, among LBG individuals along with heterosexual men and women. Consistent with the literature, we hypothesized that all men would exhibit greater weight bias than women with gay men reporting the highest levels and lesbian women reporting the lowest. We further hypothesized that women would report experiencing a greater pressure to be thin, though lesbian women may report less pressure to be thin and lower weight bias in comparison to bisexual and heterosexual women. We also hypothesized that individuals who reported sociocultural attitudes toward appearance that reflected higher pressure for thin or muscular body types would also have higher amounts of weight stigma, particularly for heterosexual men and women and gay men.

Methods

Participants

Participants were 1179 individuals with a mean age of 20 years old. Racial/ethnic breakdown was 68.5% White, 14% Black/African American, 5.8% Latinx, 4% Asian, 1.5% Middle Eastern, 6% other racial/ethnic backgrounds, and 0.2% declined to report race/ethnicity. Regarding education, 31% of the sample had a high school diploma, 61% were in or had some college, 5% had a bachelor's degree, and 2.5% had a graduate or professional degree. The sample breakdown for gender identity was 65% female, 26.6% male, 4.4% nonbinary, 2.7% transgender, 0.3% agender, 0.3% pangender, and .4% declaring other gender identities. Regarding sexual orientation, 69% identified as heterosexual, with 6.9% identifying as gay and 7.9% as lesbian, 16.4% as bisexual, 4.8% as pansexual, and 3.9% identifying as another sexual orientation.

Because our sample consisted of modest numbers of agender, nonbinary, pangender, pansexual, and transgender individuals, the study focused on bisexual men ($n=11$), bisexual women ($n=154$), gay men ($n=69$), heterosexual men ($n=210$), heterosexual women ($n=484$), and lesbian women ($n=79$). All participants included in the present study were cis-gender. The final sample size was 1007.

Procedure

Measures

Demographics. Participants were asked to provide their personal demographic information, including age, education, race/ethnicity, height and weight, sexual orientation, and gender.

The Universal Measure of Bias-FAT was developed to measure anti-fat attitudes (26). The UMB-FAT is a 20-item questionnaire with scores on a 7-point scale range from “strongly agree” to “strongly disagree.” The UMB-FAT has 4 subscales: negative judgment (dislike towards overweight or obese persons), distance (whether overweight or obese persons should be included in social situations, e.g., friend groups), equal rights (whether overweight or obese persons deserve equal rights, e.g., employment opportunities) and attraction (how attractive overweight or obese persons are). In the present sample, Cronbach’s $\alpha=.82$ for negative judgment, .73 for distance, .88 for attraction, and .87 for attraction.

Sociocultural Attitudes Toward Appearance Questionnaire (SATAQ-4) is a measure of internalization of appearance ideals and appearance pressures (13). The 31-item measure includes 5 factors: internalization of thin ideals (I want my body to look very thin), internalization of muscularity (it is important for me to look athletic), pressures from family (I feel pressure from family members to look thinner), pressures from the media (I feel pressure from the media to improve my appearance), and pressures from friends (my peers encourage me to get thinner). Each subscale had good validity and good reliability (13). Internal consistency for the SATAQ in the current sample was 0.90 for Internalization of Muscular standards, .79 for Internalization of Thin Standards, .91 for Family Pressures, .91 for Peer Pressures, and .95 for Media Pressures.

Data Analyses

MANCOVA and post hoc analyses were performed to examine gender and sexual orientation differences in weight stigma and sociocultural attitudes. Because age, education, and currently enrolled were not significant in the MANCOVA, only race and BMI were included as covariates. Next, partial correlations examining the association between weight stigma, sociocultural attitudes, controlling for race/ethnicity and BMI were examined. To explore whether gender and sexual orientation moderated the association between sociocultural attitudes and weight bias, linear regression in which weight stigma, gender, and sexual orientation and their two- and three-way interactions were examined. All predictor variables were standardized with a mean of 0 and a standard deviation of 1.0.

Results

Because our sample consisted of modest numbers of lesbian women ($n=79$), cisgender gay men ($n=69$), bisexual men ($n=11$), and bisexual women ($n=154$), we conducted preliminary MANOVA analyses comparing bisexual and gay men and bisexual and lesbian women, respectively, on study variables of interest with the goal of increasing statistical power. Because the overall F -statistics for bisexual and gay men [$F(9, 70)=1.82, p = .08$] and bisexual and lesbian women [$F(9,216)=1.47, p=.16$], respectively, did not significantly differ, data for bisexual and gay men and bisexual and lesbian women were combined, bringing the sample size of sexual minority men to 80 and the sample size of sexual minority women to 233.

Additionally, we examined differences in gender and sexual orientation on demographic variables. Individuals identifying as men were slightly but significantly younger ($M_{age} = 20.7, SD_{age} = .20$) than individuals identifying as women ($M_{age} = 19.8, SD_{age} = .12, p > .001$). There were also racial/ethnic differences between individuals identifying as women (28.9% indicated identification as a racial/ethnic minority) than men (37.9% indicated identification as a racial/ethnic minority). Then, LGB participants had slightly higher BMIs ($MBMI = 25.6, SDBMI = .35$) than straight counterparts ($MBMI = 24.0, SDBMI = .22$). Also, individuals identifying as LGB were significantly older ($M_{age} = 21.7, SD_{age} = .20$) than their straight counterparts ($M_{age} = 18.7, SD_{age} = .13$). The LGB participants were also more educated: straight participants were more likely to be currently enrolled in college (with 97% enrolled) in comparison to LGB participants (with 70% enrolled). Further, LGB participants were more likely to have either completed a bachelor's degree or graduate/professional degree (21.4%) in comparison to straight participants (with only 1.8% reporting having these degrees). These modest sample asymmetries are likely secondary to recruitment strategies. Individuals identifying as heterosexual were predominantly drawn from introductory psychology classes, whereas sexual minority recruitment was also supplemented through additional outlets (e.g., Facebook, MTURK, etc.).

MANCOVA for differences in weight stigma and sociocultural influences

Factorial MANCOVA (Gender x Sexual Orientation) was conducted with BMI and race (White or other) as covariates and with outcome variables being the four UMB-FAT scales and the five SATAQ-4 scales. The values of Pillai's Trace (aka multivariate partial eta-squared) were highest for gender (.154) and BMI (.144) and smallest for race (.024) and the interaction (.056) with sexual orientation having an intermediate value (.088).

Univariate tests showed that the MANCOVA was significant for every outcome variable, with proportions of variance (R^2 , aka h^2) being .173 for media pressure, .121 for family pressure, .112 for attraction weight stigma, .088 for athletic internalization, .053 for thin internalization, and less than .05 for the remaining outcomes.

For weight bias, significant main effects for sexual orientation were observed for negative judgments [$F(1,994)=8.14, p<.01$], attraction [$F(1,994)=30.64, p<.001$], and equal rights [$F(1,994)= 7.39, p<.01$]. Heterosexual individuals demonstrated more weight bias toward persons who are obese than did sexual

minority individuals. Furthermore, significant main effects for gender were observed for all forms of weight bias [negative judgment [$F(1,994)=7.06, p<.01$], attraction [$F(1,994)=32.68, p<.001$], social distance [$F(1, 994)=9.33, p<.01$], equal rights [$F(1,994)=34.17, p<.001$]. Men demonstrated significantly more bias towards overweight or obese persons than did women. No significant interaction effects were observed between gender and sexual orientation. See Table 1 for MANCOVA cell and marginal adjusted means and standard errors.

For sociocultural attitudes, significant main effects for gender were observed for all measures except for societal pressure from peers: (Family, [$F(1,994)=33.11, p<.001$]; Media, [$F(1,994)=70.94, p<.001$]; Internalization Thin, [$F(1,994)=19.95, p<.001$]; Internalization Athletic/Muscular, [$F(1,994)=14.63, p<.010$]). Women reported receiving significantly more pressure from family, the media, and showed more internalization of thin ideals. However, men demonstrated more internalization of the muscular ideals than their women counterparts. There was also a main effect for sexual orientation for societal pressure from the media [$F(1,994)=16.82, p<.001$] and internalization of muscular ideals [$F(1,994)=37.90, p<.001$]. Sexual minority individuals reported significantly more pressure from the media about their weight, but internalized standards of muscular ideals less compared to their heterosexual counterparts. There was a significant interaction between sexual orientation and gender for media pressure toward appearance [$F(1,994)=23.71, p<.001$] and muscular standards [$F(1,994)=16.15, p<.001$]. These interactions were probed with tests of the simple main effects of sexual orientation. Sexual minority status had a significant simple effect on athletic ideals among men, $F(1,286) = 42.63, p < .001$, partial $h^2 = .13$). Internalization of athletic ideals was greater in straight men (adj $M = 17.51$) than in gay men (adj $M = 13.29$). Straight women had a slightly greater mean (adj $M = 14.44$) than did gay women (adj $M = 13.63$), but this difference fell short of statistical significance, $F(1, 713) = 3.61, p = .058$, partial $h^2 = .005$. Media pressure regarding appearance was significantly greater among gay men (adj $M = 13.23$) than among straight men (adj $M = 9.78$), $F(1, 286) = 27.96, p < .001$, partial $h^2 = .09$, but among women the effect of sexual orientation was nil, $F(1, 712) = 0.45, p = .51$, partial $h^2 = .001$.

After adjusting for overlap with other predictors, BMI was positively associated with pressure from family ($b = .31$), peers ($b = .21$), media ($b = .12$), and internalization of the thin ideal ($b = .10$), but negatively associated with attraction bias ($b = -.17$), internalization of muscularity ($b = -.12$), distance bias ($b = -.09$), and judgment bias ($b = -.08$). After adjusting for overlap with other predictors, minority participants were less affected by the thin ideal ($ES = .24$), attraction bias ($ES = .19$), internalization of muscularity ($ES = .18$), and media pressure ($ES = .14$). The effect sizes (ES) here are the differences between adjusted means divided by the overall standard deviation.

Partial correlation and regression examining weight stigma and sociocultural influences

Partial correlations were utilized to examine the relationship between weight stigma and sociocultural influences controlling for the influence of racial/ethnic identity and BMI. Greater weight bias (negative judgments, social distance, equal rights, and attraction) was associated with internalization of the muscular/athletic ideal. Greater negative judgments about people who are overweight and perceiving

people who are overweight or obese as unattractive was significantly associated with greater internalization of the thin ideal. The feeling that people with obesity are unattractive was significantly associated with individuals receiving significant family pressure toward appearance. Greater negative judgments toward people with obesity, a greater desire to socially distance from people with obesity, as well as the belief that people who are overweight and obese should have equal rights as people who are normal weight were significantly associated with greater pressure from peers to be thin. Interestingly, greater media pressure was significantly associated with less weight bias (negative judgements, distance, equal rights, and attraction).

Linear regression examining weight stigma, gender, sexual orientation, including two- and three-way interactions were examined. Overall, there was no evidence that gender identity or sexual orientation (gender x weight bias; sexual orientation x weight bias; gender x sexual orientation x weight bias) impacted the strength of the association between weight bias and sociocultural variables. Regression tables available upon request.

Discussion

While some research has examined experienced and internalized weight stigma among sexual minority individuals (25), to our knowledge, no studies have examined differences in levels of weight stigma among sexual minority individuals and its relationship to sociocultural attitudes toward appearance.

However, anecdotal and research evidence suggests that gay men are likely to experience and possess high levels of weight bias (19, 27). Alternatively, lesbian women may experience comparable or lower levels of pressures to be thin than straight women (22, 23, 28) potentially translating into lower levels of weight bias. In this investigation, individuals identifying as men and individuals identifying as heterosexual commonly exhibited higher levels of weight stigma than individuals identifying as women or a sexual minority. Gender and sexual orientation did not statistically interact. Therefore, while it is true that sexual minority men do have high levels of weight bias, it was significantly lower or equivalent to heterosexual men. This was somewhat unexpected given some of the body- and weight-based experiences among sexual minority men in other contexts which might suggest greater weight bias or internalized weight bias. For example, relative to heterosexual men, gay men report diminished body satisfaction (14) and higher body self-objectification (15). Similarly, one study showed greater media exposure to thin models in magazines catered to the gay community relative to those intended for consumption by heterosexual men (16). Finally, in a hypothetical dating study where an overweight man hit on an attractive target (a man for gay participants or a woman for heterosexual participants), gay men predicted a greater likelihood of rejection for the gay participant (19). Of course, none of these studies compared levels of weight stigma between heterosexual and sexual minority men. Therefore, while it may be true that sexual minority men experience greater body-related issues and weight-based experiences, stigmatizing attitudes toward people with obesity were stronger among heterosexual men. Additionally, consistent with anecdotal and research evidence suggesting body issues may be less prevalent among sexual minority women (29, 30), lesbian/bisexual women tended to evidence significantly lower weight bias than heterosexual women in this investigation. Still, the statistical interaction between gender

identity and SO wasn't significant and these findings were part of a broader trend for sexual minority individuals to possess somewhat lower levels of weight bias than their heterosexual counterparts.

Research findings examining differences in sociocultural attitudes to be thin with sexual minority individuals are somewhat mixed. For example, a study of heterosexual, lesbian, and bisexual women found no group differences on the SATAQ, except for peer appearance differences with heterosexual and bisexual women showing greater peer pressure to be thin than lesbian women (24). In a different study, gay men evidenced higher scores on pressures from family, pressures from peers, and thin internalization, and lower scores on muscular internalization as compared to the SATAQ4 development and validation sample (13, 31). Regarding women in that study, lesbian women reported higher scores on the family and significant other pressures subscales relative to the validation sample (31). Interestingly, in this investigation, we found no gender or sexual identity differences on pressure from peers. And unlike previous research (24), our preliminary analyses reveal no difference between lesbian and bisexual women. Perhaps all young individuals feel pressure from peers to be thin. Alternatively, sexual minority women may still be receiving significant peer pressure from their heterosexual friendships, similar to the finding that thin internalization was a function of the number of heterosexual friends for lesbian women (32). Determining under what conditions peer pressures to be thin are evident among heterosexual and sexual minority individuals will be an important area of future inquiry.

The strongest effects on sociocultural attitudes in this study were gender effects. Women were more likely to internalize pressure to be thin than men. Women also reported lower internalized pressure to be muscular/athletic, but more pressure to be thin from family and the media. As noted previously, the idea that women, regardless of SO, still feel media pressure to be thin is quite consistent with pre-existing research (22, 23). However, it should be noted that both internalized pressure to be muscular and media pressure toward appearance were qualified by statistical interactions. Heterosexual men reported the lowest media pressure toward appearance, followed by sexual minority men, followed by heterosexual and sexual minority women who were indistinguishable. Interestingly, while gay men reported modestly less media pressure than women, their mean scores were much more comparable to women than heterosexual men. Still, women, regardless of sexual orientation, experienced the highest levels of media pressure. The finding that gay/bisexual men experience more media pressure in comparison to heterosexual men is also consistent with the literature (15, 16).

Heterosexual men most internalized pressure to be muscular/athletic and sexual minorities evidenced the lowest internalized pressure to be muscular/athletic. While this was somewhat anticipated for sexual minority women who as a group may feel fewer body image-related pressures (33, 34) it was unexpected to see lower scores among sexual minority men. However, in a different study, gay men also evidenced higher scores on thin internalization and lower scores on muscular internalization as compared to heterosexual men (13, 31). These findings are also consistent with the greater incidence of eating disorders with their emphasis on thinness among gay men (35).

When examining the relationship between levels of weight bias and sociocultural pressures toward appearance broadly, greater levels of weight bias were associated with greater internalization of the muscular/athletic ideal and to a lesser extent internalization of the thin ideal. Greater peer pressure toward appearance was also related to greater weight bias. These findings are consistent with the prevailing view that weight stigma reflects the degree to which the thin-ideal is internalized (36, 37) and consistent with research showing that sociocultural experiences can lead to internalized weight bias (38).

Internalized weight bias and levels of weight stigma are commonly correlated (39) suggesting that negative judgements regarding weight are both internalized and externalized.

Interestingly, greater media pressure toward appearance was inversely associated with weight bias. It is unclear why media pressure toward appearance was so consistently associated with lower weight bias in this sample. Perhaps body acceptance and positivity movements have heightened awareness of the stigmatizing effects of media pressures toward appearance as well as heightened awareness regarding the mistreatment that people experience when they are overweight. For example, one study examining the effect of fat-negative and fat-positive news articles have on anti-fat stigma found that fat-positive news articles had a small effect on decreasing anti-fat attitudes among participants (40). Another study found that body positive messaging on social media sites like Instagram increases body image and self-esteem (41). Whether body acceptance and positivity movements can counteract media pressures and diminish weight stigma will be an important area of future inquiry among both heterosexuals and sexual minorities. Additional analyses indicated that there was no evidence that gender or sexual orientation impacted the strength of the association between weight stigma and sociocultural attitudes. Therefore, while numerous gender and sexual orientation differences emerged, the strength of the associations among constructs remained similar.

Research examining sexual minorities' levels of weight bias and sociocultural attitudes toward appearance is understudied and differs from heterosexuals in important ways. First, while it is true that extant research has demonstrated that gay/bisexual men do have high levels of weight bias, in this study, it was equivalent or lower than straight men. Additionally, while lesbian/bisexual women did evidence somewhat lower weight bias than heterosexual women in this investigation, it was more consistent with lower weight bias among sexual minority individuals than their heterosexual counterparts. While most sociocultural appearance attitude differences followed along gender lines with women internalizing pressure to be thin and men to be muscular these were often qualified by an interaction with heterosexual men being significantly higher or lower than everyone else. Given the impact of weight stigma and sociocultural attitudes toward appearance on quality of life, body image, eating disorders, and psychological adjustment, it will be important to examine these associations among gay and bisexual men. Therefore, future research into these important issues of weight stigma and sociocultural attitudes among different gender and sexual identities toward appearance are crucial to expanding our knowledge of these areas among underrepresented populations.

Strengths and Limitations

To our knowledge, this is one of the first studies to explore levels of weight stigma among sexual minority individuals, therefore extending extant research that is limited by its predominant focus on heterosexual persons reporting a negative association between weight stigma and appearance related constructs.

However, recruitment of sexual minority individuals was challenging and by asking individuals to simply report their sexual orientation, we may have missed sexual minority individuals who are in the questioning phase of their sexual identity development or who do not wish to use the LGB+ label (e.g., endorse same-sex attraction and/or sexual behaviors but do not self-identify as LGB+). Also, due to small sample size this study was unable to examine important underrepresented groups (e.g., nonbinary, transgender individuals' weight stigma). Additionally, while we didn't observe differences between gay and bisexual men or lesbian and bisexual women among our variables of interest, the lived experiences of gay and bisexual men and lesbian and bisexual women are likely to be significantly different, with the health outcomes of bisexual individuals often diminished or overlooked (42). Therefore, by combining the groups, important differences in body and weight related constructs between those attracted to both sexes rather than the same sex may have been missed. Finally, the cross-sectional study design limits the ability to determine causal relationships among weight stigma and sociocultural attitudes toward appearance.

Declarations

Compliance with Ethical Standards

Conflicts of interest: The authors have no conflicts of interest to declare that are relevant to the content of this article.

Funding: The authors did not receive support from any organization for the submitted work.

Ethical approval: This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of East Carolina University (UMCIRB 19-002031).

Informed consent: Informed consent was obtained from all individual participants included in the study.

References

1. Hales CM, Carroll MD, Fryar CD, Ogden CL: Prevalence of obesity and severe obesity among adults: United States, 2017–2018. 2020.
2. Andreyeva T, Puhl RM, Brownell KD: Changes in perceived weight discrimination among Americans: 1995-1996 through 2004-2006. *Obesity*. 2008, 16 1129-1134.
3. Puhl RM, Heuer CA: The stigma of obesity: A review and update. *Obesity*. 2009, 17:1-24.
4. Papadopoulos SB, L.: Correlates of weight stigma in adults with overweight and obesity: A systematic literature review. *Obesity*. 2015, 23:1743-1760.
5. Pearl RL: Weight bias and stigma: Public health implications and structural solutions. *Social Issues and Policy Review*. 2018, 12:146-182.
6. Grabe S, Ward LM, Hyde JS: The role of the media in body image concerns among women: a meta-analysis of experimental and correlational studies. *Psychological Bulletin*. 2008, 134:460.
7. Bessenoff GR: Can the media affect us?

Social comparison, self-discrepancy, and the thin ideal. *Psychology of Women Quarterly*. 2006, 30:239-251. 8. Hawkins N, Richards PS, Granley HM, Stein DM: The impact of exposure to the thin-ideal media image on women. *Eating disorders*. 2004, 12:35-50. 9. Leone JE, Sedory EJ, Gray KA: Recognition and treatment of muscle dysmorphia and related body image disorders. *Journal of athletic training*. 2005, 40:352. 10. Duggan SJ, McCreary DR: Body image, eating disorders, and the drive for muscularity in gay and heterosexual men: The influence of media images. *Journal of homosexuality*. 2004, 47:45-58. 11. Magallares A, Morales J-F: Gender differences in antifat attitudes. *Revista de Psicología Social*. 2013, 28:113-119. 12. Langdon J, Rukavina P, Greenleaf C: Predictors of obesity bias among exercise science students. *Advances in physiology education*. 2016, 40:157-164. 13. Schaefer LM, Burke NL, Thompson JK, et al.: Development and validation of the sociocultural attitudes towards appearance questionnaire-4 (SATAQ-4). *Psychological Assessment*. 2015, 27:54. 14. McArdle KA, Hill MS: Understanding body dissatisfaction in gay and heterosexual men: The roles of self-esteem, media, and peer influence. *Men and Masculinities*. 2009, 11:511-532. 15. Martins Y, Tiggemann M, Kirkbride A: Those speedos become them: The role of self-objectification in gay and heterosexual men's body image. *Personality and Social Psychology Bulletin*. 2007, 33:634-647. 16. Lanzieri N, Cook BJ: Examination of muscularity and body fat depictions in magazines that target heterosexual and gay men. *Body Image*. 2013, 10:251-254. 17. Legenbauer T, Vocks S, Schäfer C, et al.: Preference for attractiveness and thinness in a partner: Influence of internalization of the thin ideal and shape/weight dissatisfaction in heterosexual women, heterosexual men, lesbians, and gay men. *Body Image*. 2009, 6:228-234. 18. Carels RA, Musher-Eizenman D: Individual differences and weight bias: Do people with an anti-fat bias have a pro-thin bias? *Body Image*. 2010, 7:143-148. 19. Foster-Gimbel O, Engeln R: Fat chance! Experiences and expectations of antifat bias in the gay male community. *Psychology of Sexual Orientation and Gender Diversity*. 2016, 3:63. 20. Cochran SD: Emerging issues in research on lesbians' and gay men's mental health: Does sexual orientation really matter? *American Psychologist*. 2001, 56:931. 21. Milillo D: Sexuality sells: A content analysis of lesbian and heterosexual women's bodies in magazine advertisements. *Journal of Lesbian Studies*. 2008, 12:381-392. 22. Owens LK, Hughes TL, Owens-Nicholson D: The effects of sexual orientation on body image and attitudes about eating and weight. *Journal of Lesbian Studies*. 2002, 7:15-33. 23. Cogan JC: Lesbians walk the tightrope of beauty: Thin is in but femme is out. *Journal of Lesbian Studies*. 1999, 3:77-89. 24. Hazzard VM, Schaefer LM, Schaumberg K, et al.: Testing the Tripartite Influence Model among heterosexual, bisexual, and lesbian women. *Body Image*. 2019, 30:145-149. 25. Puhl RM, Himmelstein MS, Pearl RL, Wojtanowski AC, Foster GD: Weight Stigma Among Sexual Minority Adults: Findings from a Matched Sample of Adults Engaged in Weight Management. *Obesity*. 2019, 27:1906-1915. 26. Latner JD, O'Brien KS, Durso LE, Brinkman LA, MacDonald T: Weighing obesity stigma: The relative strength of different forms of bias. *International Journal of Obesity*. 2008, 32:1145-1152. 27. Peitzman L: It gets better, unless you're fat. *Buzzfeed*. 2013. 28. Yean C, Benau E, Dakanalis A, et al.: The relationship of sex and sexual orientation to self-esteem, body shape satisfaction, and eating disorder symptomatology. *Frontiers in psychology*. 2013, 4:887. 29. Chmielewski JF, Yost MR: Psychosocial influences on bisexual women's body image: Negotiating gender and sexuality. *Psychology of Women Quarterly*. 2013, 37:224-241. 30. Moreno-Domínguez S, Raposo T, Elípe P: Body image and sexual dissatisfaction: differences among heterosexual, bisexual, and lesbian women. *Frontiers in psychology*. 2019, 10:903. 31. Convertino

AD, Gonzales IV M, Malcarne VL, Blashill AJ: A psychometric investigation of the Sociocultural Attitudes Towards Appearance Questionnaire-4-Revised among sexual minority adults in the US. *Body Image*. 2019, 31:96-101. 32. Ludwig MR, Brownell KD: Lesbians, bisexual women, and body image: An investigation of gender roles and social group affiliation. *International Journal of Eating Disorders*. 1999, 25:89-97. 33. Myers A, Taub J, Morris JF, Rothblum ED: Beauty mandates and the appearance obsession: Are lesbian and bisexual women better off? *Journal of Lesbian Studies*. 1999, 3:15-26. 34. Henn AT, Taube CO, Vocks S, Hartmann AS: Body image as well as eating disorder and body dysmorphic disorder symptoms in heterosexual, homosexual, and bisexual women. *Frontiers in Psychiatry*. 2019, 10:531. 35. Russell CJ, Keel PK: Homosexuality as a specific risk factor for eating disorders in men. *International Journal of Eating Disorders*. 2002, 31:300-306. 36. Vartanian LB, Herman CP, Polivy J: Implicit and explicit attitudes toward fatness and thinness: The role of the internalization of societal standards. *Body Image*. 2005, 2 373-381. 37. Nutter S, Russell-Mayhew S, Saunders JF: Towards a sociocultural model of weight stigma. *Eating and Weight Disorders: EWD*. 2020. 38. Lee MS, Gonzalez BD, Small BJ, Thompson JK: Internalized weight bias and psychological wellbeing: An exploratory investigation of a preliminary model. *PloS one*. 2019, 14:e0216324. 39. Durso LE, Latner JD: Understanding self-directed stigma: Development of the Weight Bias Internalization Scale. *Obesity*. 2008, 16 s80-s86. 40. Frederick DA, Saguy AC, Sandhu G, Mann T: Effects of competing news media frames of weight on antifat stigma, beliefs about weight and support for obesity-related public policies. *International Journal of Obesity*. 2016, 40:543-549. 41. Cohen R, Newton-John T, Slater A: The case for body positivity on social media: Perspectives on current advances and future directions. *Journal of Health Psychology*. 2020:1359105320912450. 42. Fredriksen-Goldsen KI, Kim H-J, Barkan SE, Muraco A, Hoy-Ellis CP: Health disparities among lesbian, gay, and bisexual older adults: Results from a population-based study. *American Journal of Public Health*. 2013, 103:1802-1809. 39. Chmielewski, J. F., & Yost, M. R. (2013). Psychosocial influences on bisexual women’s body image: Negotiating gender and sexuality. *Psychology of Women Quarterly*, 37(2), 224-241. 40. Moreno-Domínguez, S., Raposo, T., & Elipe, P. (2019). Body image and sexual dissatisfaction: differences among heterosexual, bisexual, and lesbian women. *Frontiers in psychology*, 10, 903. 41. Myers, A., Taub, J., Morris, J. F., & Rothblum, E. D. (1999). Beauty mandates and the appearance obsession: Are lesbian and bisexual women better off?. *Journal of Lesbian Studies*, 3(4), 15-26. 42. Henn, A. T., Taube, C. O., Vocks, S., & Hartmann, A. S. (2019). Body image as well as eating disorder and body dysmorphic disorder symptoms in heterosexual, homosexual, and bisexual women. *Frontiers in psychiatry*, 10, 531.

Tables

Table 1. MANCOVA and post hoc analyses for Gender Identity and Sexual Orientation for Weight Stigma and Sociocultural attitudes controlling for race/ethnicity and BMI.

	Adjusted Cell Means (Standard Error)				Adjusted Marginal Means (Standard Error)			
	<i>Male</i>		<i>Female</i>		<i>Gender Identity</i>		<i>Sexual Orientation</i>	
	<i>Hetero. Male</i>	<i>Gay/Bi Male</i>	<i>Hetero. Female</i>	<i>Lesbian/Bi Female</i>	<i>Male</i>	<i>Female</i>	<i>Hetero.</i>	<i>Gay/Lesbian/Bi</i>
Weight Bias	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)
Negative Judgment	2.91 (.08) ^A	2.59 (.13) ^{BC}	2.61 (.06) ^B	2.40 (.08) ^C	2.75(.08) ^A	2.51 (.05) ^B	2.76 (.05) ^A	2.50 (.08) ^B
Distance	2.47 (.07) ^A	2.22(.11) ^{AB}	2.11 (.05) ^B	2.10 (.07) ^B	2.34 (.07) ^A	2.10(.04) ^B	2.29 (.04) ^A	2.16 (.07) ^A
Attraction	4.17 (.09) ^A	3.57 (.15) ^B	3.56(.06) ^B	3.04 (.09) ^C	3.87 (.09) ^A	3.30 (.05) ^B	3.86 (.05) ^A	3.31 (.09) ^B
Equal Rights	2.93 (.09) ^{A,B}	2.62 (.15) ^A	2.30 (.06) ^B	2.06 (.09) ^C	2.78 (.09) ^A	2.18 (.05) ^B	2.62(.06) ^A	2.34 (.09) ^B
Sociocultural Attitudes								
Internalization Thin	14.82 (.32) ^C	15.13(.52) ^{BC}	17.02 (.21) ^A	16.09 (.30) ^B	14.97(.30) ^A	16.55 (.18) ^B	15.92 (.19) ^A	15.61 (.30) ^A
Internalization Muscle	17.59 (.36) ^A	13.50(.58) ^C	14.45(.24) ^B	13.58 (.34) ^C	15.55(.34) ^A	14.02 (.21) ^B	16.02 (.22) ^{A,C}	13.54 (.34) ^B
Family Pressure	8.26 (.33) ^B	8.68(.53) ^B	10.24 (.22) ^A	10.91 (.31) ^A	8.47 (.31) ^A	10.58 (.19) ^B	9.25(.20) ^A	9.79 (.31) ^A
Peer Pressure	8.37(.30) ^A	8.32(.49) ^A	8.56(.20) ^A	8.78 (.29) ^A	8.34 (.29) ^A	8.67 (.17) ^A	8.46 (.18) ^A	8.55 (.28) ^A
Media Pressure	9.71(.35) ^C	13.20 (.57) ^B	14.87 (.23) ^A	14.58 (.33) ^A	11.45 (.33) ^A	14.73(.20) ^B	12.29 (.21) ^{A,C}	13.90 (.33) ^B

Note. Means sharing superscripts are statistically equivalent to each other at the .05 level. The Sidak procedure was employed to cap familywise error at .05.

Table 2. Partial correlations examining the association between weight stigma and sociocultural influences controlling for the influence of race/ethnicity and BMI.

<i>Weight Stigma</i>	<i>Negative Judgment</i>	<i>Distance</i>	<i>Attraction</i>	<i>Equal Rights</i>
Sociocultural Attitudes	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
Internalization Thin	.06*	.03	.07*	-.03
Internalization Muscular	.16**	.16**	.21**	.09**
Family Pressure	.04	.05	-.08**	-.02
Peer Pressure	.15**	.17**	.04	.08**
Media Pressure	-.09**	-.08**	-.08**	-.14**

* $p \leq .05$, ** $p \leq .01$.