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Associations between anti-bisexual minority stress and body esteem and emotional eating among bi+ individuals: The protective role of individual-and community-level factors

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Abstract

Bisexual individuals experience prejudice specifically related to their bisexual identity, and these experiences may compound extant risk for disordered eating behaviors and body esteem concerns. However, little is known about how sexual minority stress related to bisexual orientation is associated with emotional eating and body esteem. The current study examined the associations between bisexual-specific minority stress and emotional eating and body esteem in a sample of bisexual plus (bi+) adults (including bisexual, pansexual, queer, and those with attractions to more than one gender regardless of identity), and tested the moderating effects of identity centrality, affirmation, and community connectedness as potential protective factors. This study leveraged data from an online survey of 498 adults (77.46% cisgender women; 79.7% White), ages 18 to 64 years (M = 28.5; SD = 9.59). Bisexual-specific minority stress was associated with more emotional eating ($\beta = 0.15$, $p = .013$) and lower body esteem ($\beta = -0.16$, $p = .005$), while controlling for sociodemographic characteristics, body mass index, and heterosexist

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Grace B. Jhe: Conceptualization, Investigation, Writing – original draft, Writing – review & editing. **Ethan H. Mereish:** Methodology, Visualization, Formal analysis, Writing – review & editing. **Allegra Gordon:** Conceptualization, Writing – review & editing. **Julie M. Woulfe:** Conceptualization, Writing – review & editing. **Sabra L. Katz-Wise:** Conceptualization, Writing – original draft, Writing – review & editing, Supervision.

Declaration of competing interest

None.

minority stress. This finding remained the same when sensitivity analyses were conducted with participants who identified specifically as bisexual. Identity centrality and affirmation and community connectedness did not demonstrate moderating effects but they had main effects, such that they were positively associated with body esteem ($\beta = 0.16$, $p = .001$; $\beta = 0.21$, $p < .001$; $\beta = 0.13$, $p = .004$, respectively). Results suggest that anti-bisexual minority stress has a unique association with bi+ individuals' emotional eating and body esteem, and identified potential individual- and community-level protective factors for body esteem. These findings inform future research and interventions for this understudied population.

Keywords

Bi+; Bisexual; Body esteem; Emotional eating; Minority stress; Anti-bisexual minority stress

1. Introduction

Sexual minority individuals (e.g., lesbian, gay, bisexual, or queer individuals) are often exposed to discrimination, harassment, and marginalization related to their sexual orientation (Littlejohn et al., 2019). The minority stress model (Meyer, 1995; Meyer, 2003) posits that these experiences are stressors that may lead to adverse health outcomes. Heterosexist minority stress (i.e., experiencing discrimination or prejudice based on sexual orientation) specifically has been associated with higher levels of psychological distress (Szymanski, 2006a) and more disordered eating behaviors (Watson et al., 2015; Watson, Velez, Brownfield, Flores, 2016a) among sexual minority women. Experiences of sexual minority stress are associated with more body image concerns (Kimmel, Mahalik, 2005a; Meyer, 2003) and more disordered eating behaviors(Watson et al., 2015; Watson, Velez, Brownfield, Flores, 2016a) in addition to higher levels of psychological distress (Meyer, 1995; Meyer, 2003; Scandurra et al., 2020; Szymanski, 2006a).

In addition to minority stressors that all sexual minority individuals experience (e.g., heterosexist discrimination), bisexual individuals face unique minority stressors related to their bisexual orientation, including anti-bisexual stigma or biphobia, defined as negative attitudes about bisexuality and bisexual individuals (Mulick & Wright, 2002). Anti-bisexual stigma exists in both heterosexual as well as in lesbian and gay communities (Brewster et al., 2014; Chmielewski & Yost, 2013; Mulick & Wright, 2002; Roberts et al., 2015), and bisexual individuals may experience marginalization from both of these communities (Brewster & Moradi, 2010; Roberts et al., 2015). A growing body of research indicates that bisexual individuals are at risk of experiencing increased mental health concerns and a higher prevalence of poor health outcomes compared to both heterosexual and lesbian and gay individuals (Bostwick et al., 2015), possibly as a result of anti-bisexual stigma (Arnett et al., 2019; Dyar & London, 2018; Feinstein et al., 2020; Flanders, Dobinson, Logie, 2017a). In fact, a previous study showed that greater bisexual-specific minority stress was significantly associated with poorer health above and beyond the effects of heterosexist minority stress among individuals with bisexual orientation (Katz-Wise, Mereish, & Woulfe, 2017). However, bisexual individuals are often grouped with other sexual minorities in research instead of being assessed as a unique group (Galupo et al., 2015; Watson, Velez,

Brownfield, Flores, 2016a). Incorporating the minority stress model in understanding the impact of bisexual-specific minority stress—in addition to the heterosexist minority stress experiences they share with other sexual minority individuals—can bring to light the unique experiences bisexual individuals have.

1.1. Body image among sexual minority individuals

Body image is a multidimensional construct referring to affect and cognitions related to self-perception of body shape, size, and form (McClain & Peebles, 2016; Ryan et al., 2010). Research on sexual minority men, mostly focused on gay men, has shown that they are more likely than heterosexual men to experience poor body image and related distress (Calzo et al., 2017; Dahlenburg et al., 2020; Feldman & Meyer, 2007; He et al., 2020; Kimmel, Mahalik, 2005b; Morrison et al., 2004; Russell & Keel, 2002). Findings on sexual minority women have been inconsistent (He et al., 2020; Smith et al., 2019), such as significantly higher levels of body acceptance among lesbian and bisexual women than heterosexual women (Dahlenburg et al., 2020; Leavy & Hastings, 2010) or insignificant differences between lesbian and heterosexual women (He et al., 2020; Huxley et al., 2014; Morrison et al., 2004; Yean et al., 2013). Expanding objectification theory (i.e., a framework that argues that increased vulnerability to disordered eating in women is related to having one's body evaluated and treated as a sexualized object) (Fredrickson & Roberts, 1997), scholars have argued that bisexual women may be particularly at risk for poor body image and eating disorder behaviors due to their exposure to cultural depictions of bisexual people as hypersexual and sexually promiscuous (Doan Van, Mereish, Woulfe, & Katz-Wise, 2019; Flanders, Dobinson, Logie, 2017b; Rust, 2002a; Watson, Velez, Brownfield, Flores, 2016b). Initial research on the relationship between these constructs indicates that sexual orientation-based discrimination and objectification have a salient effect on bisexual women's body image and body shame (Brewster et al., 2014; Chmielewski & Yost, 2013). A key dimension of body image is body esteem, which refers to the overall positive or negative self-evaluations and feelings towards one's body or appearance (Franzoi & Shields, 1984; Mendelson et al., 2001). Low body esteem has implications for individuals' health, psychological well-being, and global self-esteem (Bidzan et al., 2018; Mendelson et al., 2001). Despite the importance of body esteem, how sexual minority individuals may experience global self-evaluations of one's body remains understudied.

1.2. Eating behaviors among sexual minority individuals

Sexual minority populations have higher rates of disordered eating behaviors, such as binge eating, dieting, and purging, than same-gender heterosexual peers (Calzo et al., 2017; Laska et al., 2015; Shearer et al., 2015; Watson et al., 2017; Yean et al., 2013), although findings among women have been less conclusive (Shearer et al., 2015; Yean et al., 2013). Exposure to sexual minority stress is positively associated with disordered eating behaviors (Katz-Wise et al., 2015; Mason & Lewis, 2015; Watson, Velez, Brownfield, Flores, 2016a). Internalized homophobia (i.e., internalizing society's negative attitudes about one's sexual minority identity and directing these attitudes towards oneself) (Barnes & Meyer, 2012), for example, was found to be related to more disordered eating behaviors through body shame as a mediator among sexual minority men (Wiseman & Moradi, 2010). However, less is known about emotional eating, which is the tendency to (over)eat in response to

negative emotions (Evers et al., 2010; Frayn & Knäuper, 2018; Lindeman & Stark, 2001; Nguyen-Rodriguez et al., 2009). Emotional eating behavior is associated with stressful events and negative affect (Michels et al., 2012; Tan & Chow, 2014). It is also associated with underlying psychological mechanisms, such as reliance on emotion-oriented coping and avoidance distraction (Spoor et al., 2007), and a lack of adaptive emotion regulation skills (Evers et al., 2010) when experiencing high levels of stress. Individuals who use food to cope with negative mood (e.g., anxiety, depression, stress) may engage in emotional eating and overeating (Evers et al., 2010; Nguyen-Rodriguez et al., 2009). Understanding the unique association between anti-bisexual minority stress and emotional eating will provide insight into bisexual individuals' experiences.

1.3. A resilience framework for sexual minority individuals

Many sexual minority individuals show resilience despite the stressors they face (Russell, 2005; Saewyc, 2011). Resilience refers to positive adaptation in the context of significant adversity (Luthar et al., 2000; Masten, 2007; Meyer, 2015). There are two types of resilience: individual-based resilience, which focuses on personal agency or qualities that help individuals cope with stress, and community-based resilience, which focuses on connectedness to community and social resources (Meyer, 2015). Many studies with the general population have examined potential protective factors, such as self-compassion, psychological resilience, and family support, that buffer against body esteem or image concerns (Braun et al., 2016; Izydorczyk et al., 2018; Wasylkiw et al., 2012) and emotional eating (Gouveia et al., 2018). However, comparable studies for bi+ individuals are limited.

Two forms of individual-based resilience include identity centrality and identity affirmation. Identity centrality refers to the degree to which individuals feel that a specific aspect of themselves, such as sexual orientation, defines who they are as a person (Earnshaw et al., 2015; Quinn & Earnshaw, 2011). Identity affirmation refers to the degree to which individuals feel a sense of belonging and pride about their identity (Ghavami et al., 2011; Perry et al., 2013). Ethnic identity centrality and affirmation have been frequently examined among ethnic minorities, and studies have demonstrated that these identity processes can be protective against the negative effects of discrimination on self-esteem, depressive symptoms, and school performance (Shramko et al., 2018), and may buffer against the effect of stigma on health (Pascoe & Smart Richman, 2009). Among sexual minority individuals, a sense of affirmation of one's sexual and ethnic minority identity may promote a positive sense of attachment to the group, which can in turn yield psychological benefits (Ghavami et al., 2011). A potential protective effect of identity centrality has also been shown among sexual minority Latinx youth, such that those with low minority stress and high identity centrality had higher academic performance (Shramko et al., 2018).

Community connectedness is the degree to which an individual feels connected to the sexual and gender minority community (Brandon-Friedman & Kim, 2016; Frost & Meyer, 2012), and has been found to predict positive individual and social outcomes among sexual minorities in a longitudinal study (Frost & Meyer, 2012). Community connectedness can positively impact psychological well-being, promote resilience, and buffer against the effects of minority stress on health among sexual and gender minorities (DiFulvio, 2011; Frost

& Meyer, 2012; Hendricks & Testa, 2012). However, little is known about whether these individual- and community-level factors would buffer against disordered eating and body image concerns.

1.4. Purpose of the present study

Applying the minority stress model and a resilience framework, the current study sought to address the limitations in research by examining the associations between bisexual-specific minority stress and body image concerns as well as emotional eating behaviors, while accounting for heterosexist minority stress, among individuals who fall under the "bisexual umbrella." (Flanders et al., 2017c; Galupo et al., 2017) The study also sought to examine the potential protective role of individual and community factors for those under the bisexual umbrella. Of note, bisexuality has various definitions based on behavior, attraction, or desire and may use binary or nonbinary definitions (Flanders et al., 2017c). In the current study, bisexuality is defined as an umbrella term that refers to individuals with bisexual identity and/or attractions to more than one gender (Doan Van et al., 2019; Mereish, Katz-Wise, & Woulfe, 2017; Mereish, Katz-Wise, & Woulfe, 2017; Bauer & Brennan, 2013; Chmielewski & Yost, 2013; Flanders et al., 2017c; Rust, 2002b), and consequently this study included individuals who self-reported identifying as bisexual, pansexual, and queer individuals, and those who report attractions to more than one gender regardless of identity (hereafter referred to as bi+) (Mereish, Katz-Wise, & Woulfe, 2017; Mereish, Katz-Wise, & Woulfe, 2017). There is a dearth of research on the patterning of anti-bisexual minority stress and related resilience factors across bi+ populations, and the research that exists suggests that there is both significant overlap in experiences of anti-bisexual prejudice as well as some distinct differences for bi-identified people (Mitchell et al., 2015). This study offers a novel opportunity to examine associations between anti-bisexual minority stress and body esteem and emotional eating in a bi+ sample, as well as to examine similarities and differences between plurisexual identities within the bisexual umbrella. Given the unique experiences of adults who identify specifically as bisexual, as detailed above, sensitivity analyses were conducted with this group. Specifically, we hypothesized that individuals who experience higher levels of anti-bisexual minority stress would experience lower body esteem and more emotional eating. We also hypothesized that identity centrality, identity affirmation, and connectedness to the bisexual community would serve as moderators, buffering against the associations between anti-bisexual minority stress on body esteem and emotional eating.

2. Method

2.1. Procedures

Participants for the present study were part of a larger study of bi+ adults' health and wellbeing (Katz-Wise et al., 2017; Mereish, Katz-Wise, & Woulfe, 2017; Mereish, Katz-Wise, & Woulfe, 2017). They were recruited through online sexual minority and bisexual-specific groups and listservs (e.g., social groups). Inclusion criteria were age 18 years or older and identifying as bisexual and/or having attractions to more than one gender. All potential participants received a link to the data collection website, on which they provided informed consent, completed an online survey, and had the option of being entered into a raffle for a monetary incentive for their participation. The study was approved by the

researchers' Institutional Review Board. More detailed information about the study methods can be found in previous studies (Katz-Wise et al., 2017; Mereish, Katz-Wise, & Woulfe, 2017; Mereish, Katz-Wise, & Woulfe, 2017).

2.2. Participants

Participants were 498 adults ages 18 to 64 years (M = 28.50, SD = 9.59) and were mostly cisgender women (76.7%) and White (79.7%; see Table 1). All participants identified as bisexual and/or reported attraction to more than one gender (and may have had other plurisexual sexual orientation identities). Most participants in the study identified as bisexual (74.8%), followed by queer (16.5%) and pansexual (3.4%); a minority of participants (5.2%) endorsed another sexual orientation identity (e.g., lesbian, gay, heterosexual) and attractions to multiple genders. They reported their education level as follows: some high school or high school degree or GED equivalent (33.1%), Associate or Bachelor's degree (39.4%), and graduate degree (27.5%). Many participants reported having low income (annual income ≤ $19,999; 56.5%), with 37.6% students and 34.5% working full-time. The mean body mass index (BMI; kg/m^2) in the sample was 26.88 (SD = 8.18) and participants were in the following BMI categories: <18.5 (4.8%), 18.5 - <25.0 (48.6%), 25.0 - <30.0 (20.2%), and 30.0 or higher (26.4%).

2.3. Measures

2.3.1. Sociodemographic variables—Participants' sexual orientation was assessed with the following options: Bisexual; Gay; Heterosexual/Straight; Lesbian; Queer; Don't Know; Unsure/Questioning; Other (please specify). Participants' gender identity was assessed with the following response options: Male/man; Female/woman; Transgender; and Other. Participants' age, race/ethnicity, education, and annual individual income were also assessed.

2.3.2. BMI—Participants' BMI was assessed by asking them for their current height and weight in the U.S. Units of Measurement (e.g., feet, inches, and pounds). Participants' height and weight was converted to the metric system to calculate their BMI, which was computed by dividing weight in pounds by height in inches squared and then multiplying by a conversation factor of 703 (Centers for Disease Control and Prevention, 2012).

2.3.3. Heterosexist minority stress—Heterosexist minority stress was assessed using the 7-item Harassment and Rejection subscale of the Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS) (Szymanski, 2006b), a validated measure that assesses the frequency of experiencing harassment, rejection, and discrimination in the past year (e.g., "How many times have you been verbally insulted because of you are a lesbian/gay/bisexual person?"). Response options were on a 6-point scale, ranging from 1 (*the event has never happened to you*) to 6 (*the event happened almost all the time [more than 70% of the time*). A mean was computed and higher scores indicate higher levels of heterosexist minority stress. For this study, the Cronbach alpha reliability was 0.83.

2.3.4. Anti-bisexual minority stress—Anti-bisexual minority stress was assessed with the previously validated Anti-Bisexual Experiences Scale (Brewster & Moradi, 2010)

(e.g., “People have not taken my sexual orientation seriously because I am bisexual”), which measured life experiences of anti-bisexual minority stress or prejudice from heterosexual people (17-items) and from lesbian and gay people (17-items). Response options were on a 6-point scale, ranging from 1 (*never*) to 6 (*almost all of the time*). As the two subscales were highly correlated, we computed a mean of both subscales for a combined scale of overall anti-bisexual minority stress. Higher scores indicate higher levels of anti-bisexual minority stressors. For this study, the Cronbach alpha reliability coefficient for the combined scale was 0.98.

2.3.5. Emotional eating—The 5-item Coping subscale of the Motivations to Eat Scale, a validated measure, assessed participants’ emotional eating behaviors (Jackson et al., 2003) (e.g., “How many times would you say you eat as a way to help you cope?”). Response options were on a 5-point scale, ranging from 1 (*almost never/never*) to 5 (*almost always/always*). A mean was computed and higher scores indicate more emotional eating. For this study, the Cronbach alpha reliability was 0.92.

2.3.6. Body esteem—The 6-item Appearance Self-Esteem subscale of the State Self-Esteem Scale, a previously validated measure, assessed participants’ self-evaluations of their appearance, such as body and weight, at a given point in time (Heatherton & Polivy, 1991) (e.g., “I feel satisfied with the way my body looks right now”). Response options were on a 5-point scale, ranging from 1 (*not at all*) to 5 (*extremely*). A mean was computed and higher scores indicate higher levels of positive body esteem. For this study, the Cronbach alpha reliability was 0.88.

2.3.7. Identity centrality and affirmation—The 5-item Identity Centrality and the 3-item Identity Affirmation subscales of the Lesbian, Gay, and Bisexual Identity Scale (Mohr & Kendra, 2011), a validated measure, assessed participants’ view of their sexual orientation identity as central to their overall identity (e.g., “My sexual orientation is a central part of my identity”) and participants’ affirmation of their sexual orientation identity (e.g., “I am glad to be an LGB person” and “I’m proud to be part of the LGB community”). Response options were on a 6-point scale, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). For this study, the Cronbach alpha reliability was 0.87 for identity centrality and 0.90 for identity affirmation.

2.3.8. Connectedness to the bisexual community—Participants were asked to rate how connected they felt to the bisexual community with one item (“Please rate how connected you feel to the bisexual community”) with a 7-point scale, from 1 (*not connected at all*) to 7 (*very connected*). This question was developed by the authors for this study.

2.4. Analytic method

The data were cleaned and screened for missing cases; some had missing data on the item level; however, most had no more than 0.60% item-level missingness, one had no more than 0.80%, and three had no more than 1%, which is considered small (Parent, 2013). We first examined correlations among all the study’s measures. We then tested six separate hierarchical linear regression models to examine the associations between anti-bisexual

minority stress and emotional eating as well as body esteem. We accounted for the following covariates on the first step of each regression model: age, gender, education, income, race/ethnicity, BMI, and heterosexist minority stress (Katz-Wise et al., 2017). We entered the main effects of anti-bisexual minority stress, identity centrality, identity affirmation, and connectedness to the bisexual community on the second step for each respective model, and entered the two-way interactions of anti-bisexual minority stress and each of the respective moderators (identity centrality, identity affirmation, and connectedness to the bisexual community) on the third step for each respective model. The criterion variables were emotional eating and body esteem. We centered the anti-bisexual minority stress, identity centrality, identity affirmation, and connectedness to the bisexual community variables. We followed the commonly used procedures for testing moderation (Aiken & West, 1991). Given previous literature suggesting that adults who identify as bisexual experience more anti-bisexual prejudice from lesbian and gay individuals as compared to other bisexual+ identities (e.g., pansexual) (Mitchell et al., 2015), we also conducted sensitivity analyses for the same models specifically focusing on participants who identified as bisexual.

3. Results

Unadjusted correlations are presented in Table 2. We conducted an ANOVA to test for sexual orientation identity differences (bisexual, queer, pansexual, and other sexual orientations) in the experience of anti-bisexual minority stress. A significant difference was found, $F(3,496) = 3.953$, $p = .008$, $\eta^2 = 0.023$. A follow up Bonferroni adjustment demonstrated that bisexual participants ($M = 2.71$, $SD = 1.1$) had higher levels of anti-bisexual prejudice compared to participants who were in the “other reported sexual orientations” group ($M = 2.03$; $SD = 0.95$; $p = .011$). There were no significant differences between bisexual, queer ($M = 2.53$; $SD = 0.97$), or pansexual ($M = 2.39$; $SD = 0.78$) participants.

Regression analyses for the associations between anti-bisexual minority stress and potential protective factors as well as emotional eating and body esteem are reported in Table 3 (Step 2). Analyses testing the two-way moderating interactions were not significant (reported in Table 3, Step 3). While accounting for sociodemographic variables, BMI, and heterosexist minority stress, anti-bisexual minority stress across all models was associated with more emotional eating ($\beta s = 0.14$ to 0.16, $ps < 0.05$) and lower body esteem ($\beta s = -0.14$ to -0.15, $ps < 0.05$). Identity centrality and affirmation and connectedness to the bisexual community were all associated with a greater body esteem ($\beta = 0.16$, $p = .001$; $\beta = 0.21$, $p < .001$; $\beta = 0.13$, $p = .004$, respectively), but not with emotional eating.

Sensitivity analyses for the same models with only participants who identified as bisexual demonstrated largely similar patterns to the models described above. While accounting for sociodemographic variables, BMI, and heterosexist minority stress, anti-bisexual minority stress across all models was associated with more emotional eating ($\beta s = 0.19$ to 0.20 $ps < 0.01$) and lower body esteem ($\beta s = -0.18$, $ps < 0.01$). Identity affirmation and connectedness to the bisexual community were associated with greater body esteem ($\beta = 0.21$, $p < .001$; $\beta = 0.13$, $p = .004$, respectively); however, unlike the prior model, identity centrality was no longer significant ($\beta = 0.10$, $p = .067$). Similar to the original models, identity

centrality, affirmation, and connectedness to the bisexual community were not associated with emotional eating; analyses testing the two-way moderating interactions were also not significant.

4. Discussion

A primary aim of this study was to examine the associations between anti-bisexual minority stress and body esteem as well as emotional eating behaviors among bi+ adults. As hypothesized, those who experienced greater anti-bisexual-specific stressors were found to have greater emotional eating and lower body esteem. Although the magnitude of the effect estimates was modest, these associations held, even when accounting for sociodemographic variables, BMI, and heterosexist minority stress, suggesting that greater anti-bisexual minority stress is uniquely associated with bi+ individuals' greater emotional eating and lower body esteem.

One theory for this finding is that emotional eating serves as a coping strategy for the negative affect associated with discriminatory experiences. This is consistent with affect regulation theories for disinhibited eating (Evers et al., 2010), as well as recent studies including African American and Hispanic/Latino men, which found that general discrimination was positively associated with loss of control eating (Kelly et al., 2020). In fact, the findings from the present study are supported by a previous study, in which cisgender bi+ individuals reported high shape and weight concerns as well as disordered eating behaviors, possibly due to bisexual-specific minority stress (Nagata et al., 2020). Bi+ individuals may experience social exclusion or discrimination from both lesbian and gay individuals as well as heterosexual individuals (Chmielewski & Yost, 2013). Experiencing anti-bisexual prejudice from within a sexual minority community that was expected to be supportive in addition to heterosexual community may heighten internalized biphobia and psychological distress, leading to emotional eating as a way of coping with stress. Moreover, these individuals may also experience low body esteem as a result of low self-esteem – these two constructs are highly associated with one another (Mendelson et al., 1996). Minority stress has been found to be related to lower self-esteem, particularly when individuals of marginalized groups internalize negative stereotypes about their group membership (Austin & Goodman, 2017; Katz et al., 2002). The present study's findings are consistent with the minority stress model (Meyer, 1995; Meyer, 2003), such that anti-bisexual minority stress serves as a unique stressor that has negative association with the well-being of bi+ individuals who are already at risk of experiencing several stressors, including sexual orientation-based discrimination and objectification (Fredrickson & Roberts, 1997).

Another primary aim of this study was to examine the buffering role of identity centrality, identity affirmation, and connectedness to the bisexual community against the negative effect of anti-bisexual minority stress on body esteem and emotional eating. Results indicated that these three hypothesized moderators did not moderate associations between anti-bisexual prejudice and emotional eating and body esteem. The study showed that the effect of anti-bisexual prejudice did not depend on the level of identity affirmation, identity centrality, or community connectedness. This may underscore the deleterious associations between anti-bisexual minority stress and emotional eating as well as body esteem among

bi+ adults given how the main effect of anti-bisexual minority stress was significant above and beyond the interaction effects. However, the moderators demonstrated main effects, such that greater identity affirmation and centrality and community connectedness were associated with more positive body esteem. Variables with main effects or robust and direct ameliorative effects are considered “protective” and are distinguished from interactive or moderating processes that describe under which condition variables have ameliorative effects, such as protective-stabilizing or –enhancing (Luthar et al., 2000). In this resilience framework, identity-level and community-level variables were found to be protective for body esteem above and beyond the effect of anti-bisexual and heterosexist minority stress.

Feeling positive about one’s identity and feeling connected to a bisexual community may protect against sexual orientation-based discrimination and objectification (Brewster et al., 2014; Chmielewski & Yost, 2013), help these individuals externalize anti-bisexual minority stress, and have a positive perception of their bodies. Identity affirmation has been found to have a positive correlation with self-esteem (i.e., feelings about oneself overall), which has also been positively correlated with body esteem (i.e., feelings about one’s body/appearance) (Mendelson et al., 1996). Bi+ individuals with positive feelings about their sexual orientation identity may also feel positive about themselves overall, including their body/appearance. This is consistent with previous studies that found ethnic identity affirmation is positively associated with psychological well-being (Brittian et al., 2013; Ghavami et al., 2011; Perry et al., 2013) and self-esteem (Umaña-Taylor et al., 2008). These findings largely held when the sample was restricted to those who identified as bisexual where greater identity affirmation was associated with higher body esteem. Identity centrality was no longer significant for body esteem, but the trend was still in the same direction (i.e., positive association). This may suggest that the centrality of one’s sexual orientation identity may not be as salient for bisexual individuals specifically, while overall feelings of positivity, belonging, and pride about one’s identity remain important for feelings about one’s body/appearance.

The findings also suggest that a sense of belonging and feeling connected to a bisexual community, in particular, is protective for bi+ individuals in terms of their feelings about their body regardless of their BMI or minority stress. This finding remained the same when the sample included only those who identified as bisexual. This is consistent with previous studies that have demonstrated the protective effects of community connectedness on health outcomes among sexual and gender minorities (DiFulvio, 2011; Frost & Meyer, 2012; Hendricks & Testa, 2012). On the other hand, the hypothesized protective factors were not associated with emotional eating, possibly reflecting a lack of association between one’s sense of identity and emotion regulation strategies or coping skills in context of high stress (Evers et al., 2010; Nguyen-Rodriguez et al., 2009; Spoor et al., 2007). Future research is needed to further explore underlying mechanisms for emotional eating among bi+ individuals.

This research has a number of limitations that should be considered to inform future studies. First, the study design was cross-sectional, limiting the ability to draw causal conclusions. Future research in this area would benefit from using a longitudinal study design to better understand effects of anti-bisexual minority stress on emotional eating

and body esteem, as well as underlying mechanisms to describe how individual- and community-level factors contribute to self-perception. Second, the study sample consisted of predominantly White individuals, thereby limiting the generalizability of the findings to other racial and ethnic groups. Third, the study examined community connectedness in relation to the bisexual community using one question. To better understand protective pathways against anti-bisexual minority stress, future studies would benefit from including more questions to also assess connectedness to other communities (e.g., broader LGBT community) and investigating multiple dimensions of community connectedness, such as positivity, closeness, and participation (Frost & Meyer, 2012). Considering that the hypothesized protective factors did not have a significant moderating effect, future research using qualitative methods is needed to better understand the process by which anti-bisexual prejudice is associated with emotional eating and body esteem. Identity affirmation and centrality as well as community connectedness need to be further explored in relation to anti-bisexual minority stress. Finally, the present study did not assess between-group differences in outcomes among different bi+ identities or differences between those with pluriexual identities and those with monosexual identities who report attractions to multiple genders due to insufficient statistical power and a lack of significant findings from sensitivity analyses. However, future research in this area will be helpful in understanding the differences in experiences of anti-bisexual minority stress among individuals who fall under the larger bi+ umbrella. Moreover, examining various dimensions of sexual orientation, including sexual identity, attractions, and behavior, in relation to the experience of sexual minority stress and well-being will be informative as it will better capture the complexity of the construct.

This research has a number of implications for improving clinical practice. It is important for mental health clinicians to assess individuals' experiences of anti-bisexual discrimination (Brewster et al., 2014) in their clinical practice and consider providing psychoeducation about the relationship between anti-bisexual discrimination, internalized bi-negativity, and the internalization of sociocultural standards and body esteem. It is also necessary for clinicians to assess individual's feeling of positivity, belonging, and pride about their identity, as identity affirmation is associated with more positive body esteem as well as other forms of resilience. Clinicians should also consider the intersection of oppression of multiple marginalized identities that bi+ individuals experience, such as weight stigma, poverty, sexism, and racism (Rodriguez et al., 2013), and promote skills for coping with stigma and maladaptive minority stress reactions. Although it is beyond the scope of the paper, it is also important to consider intervention strategies for perpetrators of bisexual discrimination.

In summary, the results of the current study underscore the negative associations between anti-bisexual minority stress and emotional eating as well as body esteem, and highlight the protective effect of bi+ identity affirmation and centrality as well as connectedness to a bisexual community on body esteem among bi+ individuals, an understudied population at risk for biphobia from both heterosexual as well as lesbian and gay individuals. Recognizing that bi+ individuals may experience prejudice from both lesbian and gay as well as heterosexual individuals, healthcare providers should pay careful attention to the experience

of bisexual-specific minority stress as well as the unique role of identity affirmation when working with bi+ individuals on their eating and body esteem concerns.

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Table 1

Sociodemographic characteristics the sample (N = 498).

	Total Sample	
	***M* (*SD*)**	**% (*n*)**
Age	28.60 (9.59)	
Gender identity		
Cisgender women		76.7 (382)
Cisgender men		11.2 (56)
Transgender, binary		2.8 (14)
Transgender, nonbinary/other (e.g., agender, gender fluid)		9.2 (46)
Sexual Orientation Identity		
Bisexual		74.8 (372)
Gay		0.6 (3)
Lesbian		0.4 (2)
Heterosexual/straight		0.8 (4)
Queer		16.5 (82)
Pansexual		3.4 (17)
Other		3.4 (17)
Race/ethnicity		
Asian/Pacific Islander		2.8 (14)
Black/African American		2.8 (14)
Hispanic/Lantina/o		3.8 (19)
Middle Eastern/Arab American		0.8 (4)
Native American/American Indian/Alaskan		0.4 (2)
White (non-Hispanic)		79.7 (397)
Biracial/Multiracial		7.8 (39)
Other		1.8 (9)
Education		
High school degree/GED or less		33.1 (165)
College degree		39.4 (196)
Graduate degree		27.5 (137)
Individual Income		
≥ $9999		42.2 (207)
$10,000 to $19,999		14.3 (70)
$20,000 to $29,999		12.9 (63)
$30,000 to $49,999		13.1 (64)
$50,000 to $69,999		8.2 (40)
≥ $70,000		9.4 (46)
Employment		
Full time		34.5 (172)
Part time		11.4 (57)
Student		37.6 (187)

	Total Sample	
	***M* (*SD*)**	**% (*n*)**
Unemployed		10.4 (52)
Other		6 (30)
Body Mass Index (BMI)	26.88 (8.18)	
Below 18.5		4.8 (23)
18.5–24.9		48.6 (235)
25–29.9		20.2 (98)
30 or more		26.4 (128)

Note. BMI = [weight (kg) / height (m)]^2.

Table 2

Correlations among variables in the study and their descriptives.

	Anti-bisexual Prej-Comb	Heterosexist MS	Identity Centrality	Identity Affirmation	Bi Comm. Connect.	Emotional Eating	Body Esteem
Anti-bisexual Prej-Comb	–						
Heterosexist MS	0.581**	–					
Identity Centrality	0.280**	0.211**	–				
Identity Affirmation	0.122**	0.057	0.529**	–			
Bi Community Connectedness	0.160**	0.130**	0.307**	0.298**	–		
Emotional Eating	0.215**	0.196**	0.089*	−0.014	0.077	–	
Body Esteem	−0.220**	−0.244**	0.056	0.179**	0.036	−0.430**	–
Mean	2.63	1.72	4.35	4.83	4.09	2.53	3.02
Standard Deviation	1.07	0.71	1.09	1.04	1.89	0.97	0.89
Range	1–6	1–5.14	1.40–6	1–6	1–7	1–5	1–5

Note. Anti-bisexual Prej-Comb = Anti-Bisexual Prejudice Scale – from both Heterosexual People and Lesbian and Gay People; Heterosexist MS = heterosexist minority stress; Bi Community Connectedness = Connectedness to the bisexual community.

* $p < .05$.

** $p < .01$.

Table 3

Results from linear regression analyses on the association between anti-bisexual minority stress and emotional eating and body esteem.

Models	Emotional Eating		Body Esteem	
	B **(SE)**	***β***	***B*** **(SE)**	***β***
Step 1				
Age	0.00 (0.01)	−0.04	−0.01 (0.01)	−0.06
Gender Identity	−0.15 (0.14)	−0.05	0.12 (0.12)	0.05
Race	−0.35 (0.11)	−0.14**	0.08 (0.10)	0.04
Education	0.01 (0.11)	0.01	0.07 (0.10)	0.04
Income	−0.10 (0.11)	−0.05	0.27 (0.09)	0.15**
BMI	0.03 (0.01)	0.24***	−0.03 (0.01)	−0.30***
Heterosexist Minority Stress	0.24 (0.06)	0.18***	−0.27 (0.06)	−0.22***
	R^2 = 0.12		R^2 = 0.17	
Step 2				
Anti-bisexual Prej-Comb	0.14 (0.05)	0.15*	−0.12 (0.05)	−0.15**
Identity Centrality	0.01 (0.04)	0.01	0.13 (0.04)	0.16**
	R^2 = 0.13; Δ R^2 = 0.01*		R^2 = 0.20; Δ R^2 = 0.03***	
Step 3				
Anti-bisexual Prej-Comb	0.14 (0.05)	0.15*	−0.12 (0.05)	−0.15*
Identity Centrality	0.01 (0.04)	0.01	0.13 (0.05)	0.16**
Anti-bisexual Prej x Centrality	0.00 (0.04)	0.00	−0.01 (0.03)	−0.01
	R^2 = 0.13; Δ R^2 = 0.00		R^2 = 0.20; Δ R^2 = 0.00	
Step 2				
Anti-bisexual Prej-Comb	0.14 (0.05)	0.16**	−0.12 (0.05)	0.14*
Identity Affirmation	−0.03 (0.04)	−0.03	0.18 (0.04)	0.21***
	R^2 = 0.14; Δ R^2 = 0.02		R^2 = 0.22; Δ R^2 = 0.05***	
Step 3				
Anti-bisexual Prej-Comb	0.14 (0.05)	0.16**	−0.12 (0.05)	−0.14*
Identity Affirmation	−0.03 (0.04)	−0.04	0.18 (0.04)	0.21***
Anti-bisexual Prej x Affirmation	−0.03 (0.04)	0.04	0.01 (0.03)	0.02
	R^2 = 0.14; Δ R^2 = 0.00		R^2 = 0.22; Δ R^2 = 0.00	
Step 2				
Anti-bisexual Prej-Comb	0.13 (0.05)	0.15*	−0.12 (0.05)	−0.14*
Bi Community Connectedness	0.02 (0.02)	0.03	0.06 (0.02)	0.13**
	R^2 = 0.13; Δ R^2 = 0.02*		R^2 = 0.19; Δ R^2 = 0.02**	
Step 3				
Anti-bisexual Prej-Comb	0.13 (0.05)	0.14*	−0.11 (0.05)	−0.14*
Bi Community Connectedness	0.02 (0.02)	0.03	0.06 (0.02)	0.13**

Models	Emotional Eating		Body Esteem	
	B **(SE)**	***β***	***B*** **(SE)**	***β***
Anti-bisexual Prej x Community	0.02 (0.02)	−0.03	−0.02 (0.02)	−0.06
	R^2 = 0.13; Δ R^2 = 0.00		R^2 = 0.19; Δ R^2 = 0.00	

Note. Anti-bisexual Prej-Comb = Anti-Bisexual Prejudice Scale – from both Heterosexual People and Lesbian and Gay People; Bi Community Connectedness = Connectedness to the bisexual community; BMI = [weight (kg) / height (m)]^2; Δ R^2 = change in percent variance accounted for between Steps in the model. B = unstandardized beta coefficient; SE = unstandardized error; β = standardized beta coefficient.

* $p < .05$.

** $p < .01$.

*** $p < .001$.