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Disparities in Self-Reported Eating Disorders and Academic Impairment in Sexual and Gender Minority College Students Relative to Their Heterosexual and Cisgender Peers

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Abstract

Objective: The purpose of the current study was threefold: (1) compare rates of self-reported anorexia nervosa (AN), self-reported bulimia nervosa (BN), and eating pathology-specific academic impairment (EAI) by gender identity (cisgender men, cisgender women, transgender or genderqueer) and sexual orientation (gay or lesbian, bisexual, unsure, other), (2) examine associations between gender identity, sexual orientation, and eating outcomes, and (3) identify for whom rates of eating disorder diagnoses and EAI is greatest.

Method: The study includes a sample of Minnesota students (n=13906) who participated in the College Student Health Survey from 2015–2018. Chi-square tests with bootstrapping examined differences in eating pathology rates between groups. Adjusted logistic regressions tested the association between gender identity, sexual orientation, and self-reported eating outcomes.

Results: Chi-square results revealed heightened rates of self-reported AN, self-reported BN, and EAI in cisgender women, transgender or genderqueer, and sexual minority (e.g., lesbian or bisexual) students. Logistic regression analyses in cisgender men and cisgender women revealed higher odds of self-reported AN, self-reported BN, and EAI in sexual minority students relative their heterosexual peers. Chi-square analyses indicated that bisexual cisgender women reported heightened rates of all three eating pathology measures relative to other sexual and/or gender (e.g., transgender) minority students.

Discussion: Individuals with marginalized gender and/or sexual orientation identities report heightened rates of eating pathology, with cisgender bisexual women reporting the poorest outcomes relative to individuals from other marginalized identities. Preventive efforts and more research are needed to understand the mechanisms driving this disparity and to reduce risk in marginalized groups.

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Keywords

Gender identity; sexual and gender minorities; anorexia nervosa; bulimia nervosa; disparities

Eating disorders (EDs) and eating disorder behaviors (e.g., purging) affect people of all social identities. Yet, recent research has highlighted disparities in ED rates in some marginalized groups. ED rates significantly differ by gender identity, or one's personal perception of their gender, which may or may not be different from their sex assigned at birth. To this end, research has identified higher rates of eating disorders among women relative to men (Hoek, 2006) as well as among individuals who identify as transgender (i.e., identifying with a gender that differs from sex identified at birth) compared to individuals who identify as cisgender (i.e., identifying with gender consistent with sex assigned at birth; Diemer, Grant, Munn-Chernoff, Patterson, & Duncan, 2015). Similarly, rates of eating disorders differ by sexual orientation, or a person's sexual identity as it relates to the gender(s) of people they are attracted to or form intimate relationships with. Individuals who identify as gay, lesbian, bisexual, unsure, or prefer an alternative identifier (LGBQ+) report considerably higher rates of EDs and ED behaviors relative to heterosexual identified individuals (Calzo, Blashill, Brown, & Argenal, 2017; Diemer et al., 2015). However, less is known about the role the intersection of gender identities and sexual orientations in the frequency of EDs and ED behaviors.

Gender identity and sexual orientation are two separate social identities, but are inherently related (e.g., a person's gender identity may influence their sexual orientation). Moreover, a minority stress framework (Meyer, 2003) has been applied to examine eating pathology disparities by gender identity (Diemer et al., 2015) and sexual orientation (Mason & Lewis, 2015). Minority stress models (Hatzenbuehler, 2009; Meyer, 2003) suggest that health disparities in marginalized populations (e.g., transgender or non-heterosexual groups) may be explained by experiences of discrimination and oppression based on their social identity. Because each individual has more than one identity, exposure to unique forms of discrimination and oppression as the result of intersecting marginalized identities may compound health risks associated with minority stress (Bowleg, 2012; Balsam, Molina, Bearnell, Simoni, & Walters, 2011; Crenshaw, 1991).

Multiple minority stress theory suggests that the intersection of multiple marginalized identities is associated with increased health risk as a result of experiencing discrimination in multiple domains (Balsam et al., 2011). For example, a person who identifies as transgender and gay may be exposed to discrimination related to their gender identity, sexual orientation, and the intersection thereof (e.g., invalidation of their identity as a gay man due to their sex assigned at birth), whereas gay cisgender men may experience discrimination related to their sexual orientation, but are less likely to experience discrimination related to their gender identity or the intersection of their sexual orientation and gender identity. However, research comparing rates of eating pathology by gender identity and sexual orientation has been limited and even less research has examined the association between gender identity, sexual orientation, and eating pathology outcomes. Thus, the purpose of the present study is to: (1) examine differences in eating pathology frequency by gender identity

and sexual orientation; (2) examine the associations between gender identity and sexual orientation with eating pathology; and (3) examine differences in eating pathology frequency in LGBQ+ and transgender identified people as a preliminary test of the multiple minority stress framework.

Disparities Across Gender

Little research has explicitly compared the rate of EDs among transgender and cisgender populations. This is particularly concerning, as the results from a recent study suggests that ED behaviors are common among transgender college students (28–45%; Watson, Adjei, Saewyc, Homma, & Goodenow, 2017). The few studies that have examined differences in eating pathology rates among cisgender and transgender participants elucidated significant disparities (Diemer et al., 2015; Guss et al., 2017). For example, the results from a nationally representative sample of college students revealed heightened rates of past year ED diagnosis and ED behaviors in transgender identified college students as compared to cisgender college students (Diemer et al., 2015). In a separate study, transgender adolescents reported greater risk of ED behaviors compared to cisgender boys (Guss et al., 2017). The apparent disparities among transgender youth highlight the need for more research examining the intersection of gender identity and other social identities in rates of EDs to examine the extent to which individuals with additional marginalized identities (e.g., sexual minorities) report greater disparities than individuals with only one marginalized identity.

Disparities Across Sexual Orientation and Their Intersection with Gender

EDs and ED behavior are more prevalent among LGBQ+ individuals relative to heterosexual individuals. These disparities have been identified across the full spectrum of eating pathology (Calzo et al., 2017; Bankoff et al., 2016; VanKim et al., 2016). For example, EDs and ED behaviors are more common among men who identify as gay, bisexual or prefer an alternative identifier (Bankoff et al., 2016) and sexual minority women, broadly defined (Diemer et al., 2015) as compared to heterosexual men and women. However, few studies have examined the intersection of gender identity and sexual orientation on ED diagnosis. One such study compared rates of past year ED diagnoses among heterosexual cisgender men and women, sexual minority cisgender men and women, and transgender identified college students, the results from which revealed heightened rates of past year ED diagnoses in transgender college students and sexual minority cisgender men and women relative to cisgender heterosexual students (Diemer et al., 2015). The present study aims to build on the work of Diemer et al (2015) in several ways. Specifically, in a new sample, the proposed study (1) compares eating pathology rates across a wider range of sexual orientation categories (heterosexual, gay or lesbian, bisexual, unsure, or other); (2) includes heterosexual transgender students and sexual minority transgender students as separate groups; and (3) tests for potential differences in eating pathology impairment by gender identity and sexual orientation.

Eating Pathology-Specific Academic Impairment

EDs result in significant changes to psychosocial functioning (Bohn et al., 2008; Stice, Nathan Marti, & Rohde, 2013). To this end, eating pathology-specific academic impairment (EAI) may serve as a good measure of psychosocial functioning among college students who report ED or ED behaviors (Yanover & Thompson, 2008). The tendency to focus on weight, shape, and food concerns among individuals with EDs has been shown to impact academic functioning in both men and women (Yanover & Thompson, 2008), with women reporting higher rates of academic interference compared to men (Hoerr, Bokram, Lugo, Bivins, & Keast, 2002). While EAI is an important marker of psychosocial functioning in college students, past studies have not explicitly tested for differences in impairment by gender identity. Moreover, no known study has examined differences in EAI by sexual orientation and thus potential disparities in impairment by both gender identity and sexual orientation remain unknown. This is particularly concerning because past research has found that transgender or genderqueer (TGQ) and LGBQ+ college students are exposed to unique challenges (e.g., feelings of safety) in college settings compared to their cisgender and/or heterosexual peers (Oswalt & Wyatt, 2011; Singh, Meng, & Hansen, 2013). Such experiences impact the academic success of TGQ and LGBQ+ college students (Oswalt & Wyatt, 2011; Rankin et al., 2010). Thus, academic impairment specific to EDs may be particularly important to consider among TGQ and LGBQ+ college students.

The Current Study

The current study examines rates of self-reported lifetime anorexia nervosa (AN), self-reported lifetime BN, and past year eating pathology-specific academic impairment (EAI) by gender identity and sexual orientation, as well as the associations between gender identity, sexual orientation, and eating pathology. This study aims to answer three questions: (1) Are there differences in self-reported ED rates and EAI by gender identity and sexual orientation?; (2) Is there an association between gender identity, sexual orientation, and self-reported ED outcomes? (3) Among persons with a marginalized gender identity or sexual orientation, for whom are rates of self-reported EDs and EAI greatest?

Methods

Sample

The analytic sample was derived from the merged data from the 2015–2018 (n=13,584) College Student Health Survey (CSHS; Boynton Health, 2018). The CSHS is an annual survey collected from 2- and 4-year Minnesota colleges and universities. Purposive sampling is used to select colleges each year. Developed by Boynton Health at The University of Minnesota, the CSHS was designed to give postsecondary institutions a comprehensive look at the health of their students. With modifications over the years, Boynton Health has administered the College Student Health Survey either at the University of Minnesota or at partner institutions across the state of Minnesota since 1995. Over 60 postsecondary institutions have participated in CSHS since 2007.

The present study includes data from 27 colleges and universities, wherein purposive sampling methods were used. In larger (>500) colleges and universities (n=22), the CSHS includes random student samples drawn from enrollment lists. Samples from smaller colleges (<500 students; n=5) include all enrolled students. Only the most recent wave of data was included in the merged sample from schools that were sampled more than once across waves. Selected students first received a postcard notifying them of their eligibility to participate in the survey and were sent a personalized link through email. To encourage participation, students received a minimum of 6 points of contact (e.g., notifications or invitations). Responses ranged from 19–71% with the overall response rate of 39.8%. Participants gave informed consent online before accessing survey materials. The authors' Institutional Review Board approved study procedures. All sample demographics are presented in Table 1.

Measures

Gender Identity.—Gender identity was assessed with one question: "What is your sex or current gender? (Check all that apply)." Response options included: Male, Female, TransMale/Transman, TransFemale/Transwoman, Genderqueer, I prefer an alternative identifier. Three gender identity categories were created: cisgender men, cisgender women, and transgender or genderqueer (TGQ). In this sample, the TGQ group included participants who identified as transmale/transman, transfemale/transwoman, genderqueer, I prefer an alternative identifier, or more than one gender identity response options. Individuals who identified as transgender or genderqueer were combined in one group because there were too few individuals in each category to conduct statistically valid analyses on these separate groups. Consistent with past research (e.g., Diemer et al., 2015), these potentially distinct groups have been grouped together because of their shared experience of holding a gender identity that is not consistent with sex assigned at birth.

Sexual Orientation.—Sexual orientation was assessed with one question. "Which of the following terms best describes your sexual identity?" Response options included: heterosexual or straight, gay or lesbian, bisexual, I am not sure (hereafter labeled "unsure"), I am not sure what this questions means, and I prefer an alternative identifier (hereafter labeled "other"). Participants who identified as gay or lesbian, bisexual, unsure, or other were conceptualized as holding a marginalized or minority sexual orientation. Participants (n=2309) who were not sure what the question regarding sexual orientation meant were not included in the analytic sample (n=13,584). The remaining five groups (heterosexual, gay or lesbian, bisexual, unsure, or other) were included in the study.

Eating Disorder Diagnosis.—Anorexia nervosa (AN) and bulimia nervosa (BN) self-report diagnoses were captured from a list of potential psychological health diagnoses using the prompt: "Have you ever been diagnosed with any of the following?" Participants selected whether they were diagnosed with "anorexia" or "bulimia" within the past 12 months, more than 12 months ago, or never. Lifetime anorexia and bulimia diagnoses were created by combining diagnoses in past 12 months and more than 12 months ago.

Eating Pathology-Specific Academic Impairment.—Eating pathology-specific academic impairment (EAI) was assessed with a single item from a list of 20 potential problems posed to have influenced academic performance (e.g., homelessness, alcohol use). The prompt read: "During the past 12 months, how have the following affected your academic performance?" The EAI item read: "eating disorder/problems (anorexia, bulimia, other disordered eating)," and response options included: (1) I do not have this issue/not applicable; (2) I have this issue – my academics have not been affected; and (3) I have this issue – my academics have been affected. Participants who selected response option "*I have this issue – my academics have been affected"* for the academic problem were categorized as having EAI.

Covariates.—The associative models included age (in years) and race as covariates. Racial identities included: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Pacific Islander, White, Other, or Prefer not to answer. Due to restrictions to our statistical power for analyzing small gender identity and sexual orientation groups, race was dichotomized (White/Non-White).

Analytic Strategy

Chi-square tests were conducted to examine differences in rates of self-reported lifetime AN, self-reported lifetime BN, and past year EAI by gender identity and sexual orientation. The first set of chi-square tests examined differences in ED rates by gender identity (cisgender men, cisgender women, and TGQ). In a second step, the association between gender identity and self-reported lifetime AN, self-reported lifetime BN, and past year EAI were examined using logistic regressions. Age and race were included as covariates. Chi-square tests also examined differences in rates of EDs and impairment by sexual orientation (heterosexual, gay or lesbian, bisexual, unsure, or other). The association between sexual orientation and self-reported lifetime AN, self-reported lifetime BN, and past year EAI were then examined using logistic regressions, with age and race as covariates.

Given the known gender differences in ED, a third set of chi-square tests examined differences in self-reported EDs and impairment rates by sexual orientation within gender identities. In a second step, associations between sexual orientation and ED outcomes in cisgender men and cisgender women were examined with stratified logistic regression analyses. All models included age and race as covariates. These associations were unable to be examined in TGQ students due to sample size restrictions and inadequate statistical power. Finally, chi-square tests compared rates of self-reported lifetime AN, self-reported lifetime BN, and past year EAI in LGBQ+ and TGQ identified individuals. Some cell sizes were small (e.g., $n<5$). Monte Carlo tests (10000 samples) with Percentile Bootstrapping (1000 draws) were included in all chi-square tests to adjust for sparse cells, as these tests do not have cell size requirements.

This study included minimal item-level missingness on the variables of interest. Pairwise deletion was used (e.g., missing on the independent and dependent variables) to handle item-level missingness. As a result, there are slight differences in analytic sample size for each analysis. The sample size in each analysis is labeled accordingly.

Results

The majority of the sample (*n*=13562) identified as cisgender women (*n*=8820, 64.8%), followed by cisgender men (*n*=4526, 33.4%), and TGQ (*n*=238, 1.8%) college students. Additional sample demographics are presented in Table 1.

Comparisons of Self-Reported Eating Disorders and Impairment by Gender Identity

The results from the chi-square tests revealed gender differences in self-reported lifetime AN, BN, and past year EAI (Table 2). Specifically, cisgender women and TGQ students reported higher rates of self-reported lifetime AN and BN diagnoses, and past year EAI relative to cisgender men.

The logistic regressions results indicated that cisgender women (OR=5.16, 95% CIs: 3.69–7.22) and TGQ students (OR=6.04, 95% CIs: 3.11–11.74) report greater odds of a self-reported lifetime AN diagnosis and past year EAI (OR=2.63, 95% CIs: 1.82–3.81 and OR=4.61, 95% CIs: 2.11–10.09) relative to cisgender men after adjusting for covariates. Only cisgender women were found to have increased odds of a self-reported lifetime BN diagnosis (OR=4.05, 95% CIs: 2.74–5.97) relative to cisgender men.

Comparisons of Self-Reported Eating Disorders and Impairment by Sexual Orientation

Chi-square results revealed differences in rates EDs and EAI by sexual orientation (Table 3). Specifically, gay or lesbian, bisexual, and other-identified students reported higher rates of self-reported lifetime AN relative to heterosexual students. Similarly, gay or lesbian, and bisexual students reported higher rates of self-reported lifetime BN relative to heterosexual students. Finally, bisexual and unsure students reported higher rates of EAI relative to heterosexual students.

Similar results were revealed in logistic regression analyses. Specifically, the results indicated that gay or lesbian (OR=2.10, 95% CIs: 2.15–3.79), bisexual (OR=2.85, 95% CIs: 2.15–3.79), and other (OR=3.02, 95% CIs: 1.96–4.66) students had greater odds of self-reported lifetime AN relative to heterosexual students. Further, the results from logistic regression analyses revealed that gay or lesbian (OR=2.33, 95% CIs: 1.31–4.12) and bisexual (OR=3.06, 95% CIs: 2.16–4.34) college are at greater odds of self-reported lifetime BN relative to heterosexual students. Finally, results indicated that, relative to heterosexual students, bisexual (OR=3.54, 95% CIs: 2.44–5.14), unsure (OR=4.14, 95% CIs: 2.43–7.04), and other (OR=2.41, 95% CIs: 1.22–4.78) students reported heightened odds of EAI.

Within-Gender Comparisons by Sexual Orientation

Chi-square results revealed higher rates of eating pathology outcomes in LGBQ+ students relative to heterosexual students (Table 4). For example, among cisgender men, rates of self-reported lifetime AN were highest in gay and bisexual students. Similarly, among cisgender women, rates of self-reported lifetime AN were highest in bisexual students. No significant differences in self-reported lifetime AN, self-reported lifetime BN, or past year EAI were among TGQ students. All chi-square results are presented in Table 4.

Logistic regression results revealed associations between sexual orientation and ED outcomes in cisgender women (see Table 5). Cisgender women who identified as lesbian, bisexual, and other had greater odds of a self-reported lifetime AN diagnosis relative to heterosexual cisgender women. Moreover, lesbian and bisexual cisgender women had greater odds of a self-reported lifetime BN diagnosis relative to heterosexual cisgender women. Finally, bisexual and unsure cisgender women had greater odds of a reporting past year EAI relative to heterosexual cisgender women.

The logistic regression results also revealed significant associations between sexual orientation and ED outcomes in cisgender men (see Table 6). Gay and bisexual cisgender men had greater odds of a self-reported lifetime AN diagnosis relative to heterosexual cisgender men. Bisexual and unsure cisgender men had greater odds of a reporting past year EAI relative to heterosexual cisgender men. No differences in self-reported lifetime BN diagnoses by sexual orientation were identified in cisgender men. Cisgender men who prefer an alternative sexual orientation identity were not included in the logistic regressions for self-reported lifetime BN and past year EAI due to inadequate statistical power.

Marginalized Gender and Sexual Orientation Comparisons

The final set of chi-square tests compared rates of self-reported lifetime AN, self-reported lifetime BN, and past year EAI among LGBQ+ and TGQ students (see Table 7). The results revealed heightened rates of self-reported lifetime AN, lifetime BN, and past year EAI in bisexual cisgender women. Sexual minority cisgender women and TGQ students with an “other” sexual orientation reported the higher rates of eating pathology relative to sexual minority cisgender men. All results are presented in Table 7.

Discussion

The purpose of the current study was to examine differences in rates of self-reported lifetime AN, self-reported lifetime BN, and past year EAI in LGBQ+ and TGQ college students as well as the associations between sexual orientation, gender identity, and ED outcomes. Consistent with past research (Diemer et al., 2015), the present study revealed heightened rates and increased risk of self-reported EDs in cisgender women or TGQ college students relative to their heterosexual or cisgender peers. This disparity may in part be explained by findings from past qualitative research, suggesting that eating pathology may emerge in response to the desire to suppress or accentuate particular gendered features (e.g., to conform to feminine ideals of slimness or to suppress secondary sexual characteristics; Ålgars, Santtila, & Sandnabba, 2010).

Cisgender women and TGQ college students also reported heightened rates of EAI, which offers a unique contribution to the literature. This difference may indicate that cisgender women and TGQ college students experience more associated distress, greater severity of ED behaviors, or other ramifications (e.g., social impairment) related to disordered eating. This disparity may also be due to the fact that overall self-reported ED rates were higher in these groups, and may be influenced by higher rates of disordered eating behaviors that were not captured in the CSHS (e.g., binge eating disorder).

In general, LGBQ+ cisgender women reported higher rates of EDs as compared their heterosexual peers. Lesbian, bisexual, and unsure cisgender women also reported increased odds of self-reported AN, and lesbian and bisexual cisgender women experienced greater odds of self-reported BN. This disparity may driven by either minority stress associated with sexual orientation or a unique set of societal norms for cisgender women who identify as lesbian, bisexual, or prefer an alternative sexual identity.

Similarly, LGBQ+ cisgender men reported higher rates of self-reported EDs compared to their heterosexual peers. Further, gay and bisexual men reported increased odds of self-reported AN relative to heterosexual cisgender men, however sexual minority men were not at increased risk of self-reported BN relative to their heterosexual peers. It is possible that cisgender LGBQ+ men are only at increased risk of self-reported AN because of an increased pressure for thinness and muscularity perceived by same-sex attracted men in their peer groups pressure for thinness and muscularity perceived by same-sex attracted men in their peer groups (Austin et al., 2004; Calzo et al., 2018; VanKim, Porta, et al., 2016). Thus, future research should explore body image ideals and their relation to eating pathology in these communities.

Within LGBQ+ college students, cisgender women who identified as bisexual or unsure reported the highest rate and greatest odds of past year EAI. Yet, unsure cisgender women reported lower rates of lifetime AN and BN relative to other sexual minority cisgender women. This finding is similar to the results from cisgender men, where both unsure and bisexual cisgender men reported the highest rate and greatest risk of EAI, but unsure cisgender men did not report heightened risk of either lifetime AN or BN. College students who are unsure of their sexual orientation may experience heightened stress due to the uncertainty associated with identity exploration (Oswalt & Wyatt, 2011). As a result, individuals who are already emotionally burdened with identity exploration may have more significant EAI as a result of the added stress of ED behavior and weight or shape concerns.

Past year EAI findings are consistent with past research that has shown heightened academic impairment among bisexual college students relative to students with other LGBQ+ identities (Oswalt & Wyatt, 2011). It is possible that the level of eating pathology severity is greater in LGBQ+ populations, resulting in greater impacts on academic achievements. Thus, more research is needed to examine differences in eating pathology severity and its relationship with academic impairment in LGBQ+ populations.

The results from chi-square tests examining differences in self-reported life time EDs and past year EAI within TGQ students did not reveal significant differences across sexual orientation groups. The current study used Monte Carlo tests with bootstrapping to adjust for small cell sizes however, it is possible that statistical power influenced findings. While not statistically significant, TGQ college students who identify with an “other” sexual orientiation identity reported the highest rate of lifetime AN and past year EAI. In contrast, gay, lesbian, and bisexual TGQ students reported the highest rate of lifetime BN. It is also possible that the present study did not find differences in ED rates among TGQ students across diverse sexual orientations because potentially distinct diverse gender identities were combined into a single group, which may ultimately suppress findings. For example, certain

marginalized gender identity groups (e.g., genderqueer) may be at heightened ED risk relative to other groups (e.g, transmen; Diemer et al., 2018). Thus, further research into ED disparities across diverse gender identities is urgently needed.

Finally, the results of the analyses examining differences in rates of self-reported lifetime AN, lifetime BN, and past year EAI across college students with at least one measured, marginalized identity revealed that bisexual cisgender women reported heightened frequency across all three ED outcomes of interest. Bisexual women may report higher rates ED outcomes as a result of increased exposure to discrimination, such as that within lesbian and gay communities (i.e., delegitimization of their bisexual identity), which lesbian women may not face (Shearer et al., 2015). Given this trend, more research examining the mechanisms related to ED development among individuals who identify as bisexual cisgender women is needed.

Some limitations should be noted. First, the current study included a self-report assessment of ED diagnoses, did not capture all EDs, and combined past year and lifetime diagnoses due to sample restrictions. Thus, rates of EDs may be underestimated, all contributing factors for EAI cannot be accounted for, and potential differences between lifetime and past year diagnoses could not be examined. Further, due to limited sample sizes, other-identified cisgender men were not includes in logistic regressions testing associations between sexual orientation and self-reported lifetime BN and past year EAI. Similarly, the present study was unable to include ethnicity as a covariate in the models due to a lack of statistical power in the overall models. Thus, future studies should examine the intersection of sexual orientation and ethnicity and their associations with eating pathology. Moreover, the study does not include an assessment of sex assigned at birth and as a result, some participants who identify with a different gender from their sex assigned at birth may not be captured. Yet, given the nature of the CSHS, brief assessments are imperative to avoid respondent overburden and to assess a wide range of constructs in a large sample. Moreover, while the EAI was intended to capture negative influences on academic performance, the question does not specify whether participant's eating pathology has positively or negatively influenced their academic performance. The present study included a high proportion of cisgender women, which may result in increased sensitivity to detect differences in eating pathology rates. The analyses were stratified by gender, and thus the higher proportion of cisgender women did not influence associations. Finally, the results of the study are from college students in Minnesota, and thus the generalizability may be limited. The present study also contains several strengths. Specifically, the study compares rates of eating pathology in a novel and large college sample including 2- and 4-year colleges and universities. Further, the present study is the first to compare rates of self-reported EAI among LGBQ+ and TGQ students relative to heterosexual and cisgender students.

The present study did not support the multiple minority stress framework (Balsam et al., 2011), as the rates of eating pathology were not significantly higher in TGQ college students who identify as LGBQ+ relative to college students with only one marginalized social identity. However, the present study only had enough statistical power to examine differences with chi-square tests and thus, the results should serve only as a preliminary test of the multiple minority stress framework.

In sum, the results from the present study support the minority stress framework (Meyer, 2003), wherein LGBQ+ and TGQ college students report heightened rates of eating pathology when compared to heterosexual and cisgender college students, respectively. In general, the current study suggests that bisexual cisgender women report heightened rates across more eating pathology domains when compared to TGQ and LGBQ+ college students. Future research should aim to examine the mechanisms associated with heightened rates of eating among TGQ college students, bisexual cisgender women, and cisgender men and women who are unsure of their sexual orientation. Potential mechanisms may include sociocultural differences in idealized body images, minority stress, coping response styles, and eating pathology severity.

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Abbreviations:

ED	eating disorders
LGBQ+	lesbian, gay, bisexual, and other sexual minorities
TGQ	transgender or genderqueer
EAI	eating pathology-specific academic impairment
AN	anorexia nervosa
BN	bulimia nervosa

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Table 1.

Sample demographics by gender identity

Demographic Characteristic	Gender Identity		
	Cisgender Men *N* = 4526	Cisgender Women *N* = 8820	Transgender or Genderqueer *N* = 238
	n (%)	*n* (%)	*n* (%)
Sexual Orientation			
Heterosexual	4071 (90.0)	7648 (86.7)	29 (12.2)
Gay or lesbian	183 (4.0)	152 (1.7)	30 (12.6)
Bisexual	157 (3.5)	637 (7.3)	53 (22.3)
I am not sure yet	80 (1.8)	221 (2.5)	13 (5.5)
Prefer other identifier	35 (0.1)	162 (1.8)	47.5 (47.1)
Race[a]			
American Indian/Alaska Native	124 (2.7)	241 (2.7)	11 (4.5)
Asian	564 (12.2)	905 (10.0)	22 (9.0)
Black or African American	325 (7.0)	500 (5.5)	13 (5.3)
Native Hawaiian/Pacific Islander	18 (0.4)	34 (0.4)	1 (0.4)
White	3593 (77.4)	7453 (82.6)	201 (82.0)
Prefer other identifier	116 (2.5)	171 (1.9)	15 (6.1)
Ethnicity[a]			
Hispanic or Latinx	255 (6.6)	415 (5.6)	16 (7.4)
Hmong	104 (2.7)	235 (3.2)	3 (1.4)
Somali	54 (1.4)	71 (1.0)	1 (0.5)
None of the above	3997 (88.6)	7942 (90.3)	209 (88.6)
Prefer not to answer	147 (3.8)	171 (2.3)	8 (3.7)
Self-reported Anorexia Nervosa			
Past year	12 (0.3)	55 (0.6)	1 (0.4)
Lifetime	26 (0.6)	322 (3.7)	11 (4.7)
Total	38 (0.8)	377 (4.3)	12 (5.1)
Self-reported Bulimia Nervosa			
Past year	12 (0.3)	38 (0.4)	1 (0.4)
Lifetime	17 (0.4)	188 (2.1)	3 (1.3)
Total	29 (0.6)	226 (2.6)	4 (1.7)
EAI	34 (0.7)	170 (1.9)	8 (3.4)
Age [*M*(SD)] (range=18–76)	24.0 (7.4)	23.6 (7.3)	22.5 (7.3)
BMI [*M*(SD)] (range=14–120)	25.6 (5.6)	25.7 (6.4)	26.2 (7.0)

Note.

[a]=Participants may select more than one option, thus summed values may exceed total sample size or 100%

Table 2

Chi-square comparisons of self-reported eating disorder diagnoses and eating pathology-specific academic impairment by gender identity

	Gender Identity					
Eating Outcomes	**Male N=4522**		**Female N=8861**		**Transgender or Genderqueer N=240**	
	N	**%**	**N**	**%**	**N**	**%**
Self-reported AN	38	0.8[a]	377	**4.3[b]**	12	**5.1[b]**
Self-reported BN	29	0.6[a]	226	**2.6[b]**	4	**1.7[b]**
Past year EAI	34	0.7[a]	170	**1.9[b]**	8	**3.3[b]**

Note. Subscripts represent groups between which there are no significant differences in prevalence ($p. \geq 05$); boldface values reflect the group(s) with the highest prevalence of each specific outcome across gender identity

Table 3

Chi-square comparisons of self-reported eating disorder diagnoses and eating pathology-specific academic impairment by sexual orientation

	Sexual Orientation									
Eating Outcomes	**Heterosexual N=11610**		**Gay or Lesbian N=356**		**Bisexual N=839**		**Unsure N=310**		**Other N=305**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Self-reported AN	308	2.7[a]	19	**5.3[b]**	62	**7.4[b]**	11	3.5[a,b]	24	**7.9[b]**
Self-reported BN	188	1.6[a]	13	**3.7[b]**	40	**4.8[b]**	8	2.6[a,b]	8	2.6[a,b]
Past year EAI	143	1.2[a]	7	1.9[a,b]	36	**4.2[b]**	16	**5.1[b]**	9	2.9[a,b]

Note. Subscripts represent groups between which there are no significant differences in prevalence ($p. \geq 05$); boldface values reflect the group(s) with the highest prevalence of each specific outcome across gender identity

Table 4.

Chi-square results comparing the rates of self-reported lifetime eating disorder diagnoses and past year eating pathology-specific academic impairment rates by sexual orientation within gender identity

Eating Outcomes (% Yes)	Cisgender Men					Cisgender Women					Transgender or Genderqueer Students				
	Hetero *N* = 4071	**Gay *N* = 183**	**Bisexual *N* = 157**	**Unsure *N* = 80**	**Other *N* = 35**	**Hetero *N* = 7362**	**Lesbia *N* = 140**	**Bisexual *N* = 581**	**Unsure *N* = 211**	**Other *N* = 148**	**Hetero *N* = 30**	**Gay or Lesbian *N* = 29**	**Bisexual *N* = 53**	**Unsure *N* = 13**	**Other *N* = 108**
Lifetime AN	0.6[a]	**2.8[b]**	**3.2[b]**	1.3[a,b]	2.9[a,b]	3.7[a]	7.9[b,c]	**8.8[c]**	4.5[a,b]	8.6[b,c]	0.0	6.7	1.9	0.0	8.0
Lifetime BN	0.5[a]	**1.7[b]**	1.3[a,b]	1.3[a,b]	0.0[a]	2.2[a]	**6.6[b]**	**5.9[b]**	3.2[a,b]	3.7[a,b]	0.0	0.0	3.8	0.0	1.8
Past year EAI	0.6[a]	0.5[a,b]	**2.5[b]**	**3.8[b]**	0.0[a,b]	1.5[a]	3.3[a,b]	**4.7[b]**	**5.8[b]**	2.4[a,b]	0.0	3.3	3.7	0.0	4.4

Note. All columns represent the percent of participants who report the associated eating outcome; Superscripts represent groups between which there are no significant differences in rates (*p.* ≥05); boldface values reflect the group(s) with the highest rate of each specific outcome within each gender identity; Hetero = Heterosexual or Straight; AN= anorexia nervosa; BN=bulimia nervosa; EAI=eating pathology-specific academic impairment

Table 5.

Stratified logistic regression results comparing odds of self-reported lifetime AN and BN, as well as past year EAI in cisgender women

Variables	N	%	B	SE	OR	CI
Self-reported lifetime AN (n=8724)	377	4.3				
Sexual Orientation						
Heterosexual/Straight	285	3.8	---	---	---	---
Gay or Lesbian	12	8.0	0.81	0.31	2.26**	1.24–4.12
Bisexual	56	8.9	0.89	0.15	2.44***	1.81–3.29
Unsure	10	4.5	0.19	0.33	1.21	0.63–2.31
Other	14	8.8	0.85	0.29	2.34**	1.34–4.11
Race						
White	337	4.6	---	---	---	---
Non-White	40	2.7	0.52	0.17	1.69**	1.21–2.35
Age	---	---	−0.02	0.01	0.98	0.97–1.00
Self-reported lifetime BN (n=8691)	226	2.6				
Sexual Orientation						
Heterosexual/Straight	167	2.2	---	---	---	---
Gay or Lesbian	10	6.7	1.16	0.34	3.17**	1.64–6.14
Bisexual	36	5.8	1.00	0.19	2.72***	1.88–3.95
Unsure	7	3.2	0.43	0.39	1.53	0.72–3.31
Other	6	3.8	0.559	0.44	1.75	0.76–4.03
Race						
White	201	2.8	---	---	---	---
Non-White	25	1.7	0.48	0.22	1.61*	1.06–2.45
Age	---	---	0.01	0.01	1.01	0.99–1.03
Past year EAI (n=8767)	170	1.9				
Sexual Orientation						
Heterosexual/Straight	118	1.6	---	---	---	---
Gay or Lesbian	5	3.4	0.80	0.47	2.23	0.90–5.55
Bisexual	30	4.7	1.13	0.22	3.05***	2.03–4.60
Unsure	13	5.8	1.30	0.30	3.67***	2.03–6.64
Other	4	2.5	0.44	0.53	1.55	0.56–4.25
Race						
White	137	1.9	---	---	---	---
Non-White	33	2.2	−0.19	0.20	0.83	0.56–1.22
Age	---	---	−0.02	0.01	0.10	0.95–1.00

[a]=data reflect the mean and standard deviation rather than the N and %; B=unstandardized beta; SE=standard error; OR=Odds Ratio; CIs=95% confidence intervals; AN=anorexia nervosa; BN=bulimia nervosa; EAI=eating pathology-specific academic impairment;

*** = $p<.001$

** = $p<.01$

* = $p<.05$

Table 6.

Stratified logistic regression results comparing odds of self-reported lifetime AN and BN, as well as past year EAI in cisgender men

Variables	N	%	B	SE	OR	CI
Self-reported lifetime AN (n=4461)	35	0.8				
Sexual Orientation						
Heterosexual/Straight	23	0.6	---	---	---	---
Gay or Lesbian	5	2.8	1.63	0.50	5.08**	1.91–13.53
Bisexual	5	3.2	1.77	0.50	5.90***	2.21–15.76
Unsure	1	1.3	0.78	1.03	2.19	0.29–16.46
Other	1	2.9	1.64	1.04	5.16	0.68–39.41
Race						
White	25	0.7	---	---	---	---
Non-White	13	1.3	−0.40	0.38	0.67	0.32–1.40
Age	---	---	−0.01	0.02	1.00	0.95–1.05
Self-reported lifetime BN (n=4452)	27	0.6				
Sexual Orientation						
Heterosexual/Straight	21	0.5	---	---	---	---
Gay or Lesbian	3	1.7	1.21	0.623	3.341	0.99–11.32
Bisexual	2	1.3	0.92	0.746	2.516	0.58–10.86
Unsure	1	1.3	0.83	1.032	2.294	0.30–17.33
Other	0	0.0	NA	NA	NA	NA
Race						
White	18	0.5	---	---	---	---
Non-White	10	1.1	−0.62	0.41	0.54	0.24–1.21
Age	---	---	−0.01	0.03	0.99	0.94–1.05
Past year EAI (n=4487)	33	0.7				
Sexual Orientation						
Heterosexual/Straight	25	0.6	---	---	---	---
Gay or Lesbian	1	0.6	−0.15	1.02	0.86	0.12–6.38
Bisexual	4	2.5	1.52	0.55	4.55**	1.56–13.30
Unsure	3	3.8	1.82	0.63	6.16**	1.80–21.8
Other	0	0.0	NA	NA	NA	NA
Race						
White	22	0.6	---	---	---	---
Non-White	11	1.2	−0.61	0.37	0.54	0.261–1.13
Age	---	---	0.04	0.02	1.04	1.001–1.07

[a]=data reflect the mean and standard deviation rather than the N and %; B=unstandardized beta; SE=standard error; OR=Odds Ratio; CIs=95% confidence intervals; AN=anorexia nervosa; BN=bulimia nervosa; EAI=eating pathology-specific academic impairment;

*** = $p<.001$

** = $p<.01$

* = $p<.05$

Table 7.

Chi-square results comparing the rates of self-reported lifetime eating disorder diagnoses and past year eating pathology-specific academic impairment rates across all marginalized sexual orientation and gender identity groupings

Eating Pathology Outcomes (% Yes)	Cisgender Men				Cisgender Women				Transgender or Genderqueer				
	Gay *N* = 183	Bisexual *N* = 157	Unsure *N* = 80	Other *N* = 35	Lesbian *N* = 140	Bisexual *N* = 581	Unsure *N* = 211	Other *N* = 148	Hetero *N* = 30	Gay or Lesbian *N* = 29	Bisexual *N* = 53	Unsure *N* = 13	Other *N* = 108
Lifetime AN	2.8^{a}	3.2^{ab}	1.3^{a}	2.9^{abcd}	**7.9^{bcd}**	**8.8^{d}**	4.5^{abc}	**8.6^{cd}**	0.0	6.7^{abcd}	1.9^{abcd}	0.0	**8.0^{bcd}**
Lifetime BN	1.7^{a}	1.3^{a}	1.3^{a}	0.0	**6.6^{b}**	**5.9^{b}**	3.2^{ab}	3.7^{ab}	0.0	0.0	3.8^{ab}	0.0	1.8^{ab}
Past year EAI	0.5^{a}	2.5^{ab}	3.8^{ab}	0.0	3.3^{ab}	**4.7^{b}**	**5.8^{b}**	2.4^{ab}	0.0	3.3^{ab}	3.7^{ab}	0.0	**4.4^{b}**

Note. All columns represent the percent of participants who reported the associated eating outcome; Superscripts represent groups between which there are no significant differences in rates ($p.$ ≥05); values that are bolded and underlined reflect the group(s) with the highest rates of each specific outcome across all outcomes; values that are bolded reflect the group(s) with heightened rates of each specific outcome relative to most groups but are not the highest across all groups; Hetero = Heterosexual or Straight; AN= anorexia nervosa; BN=bulimia nervosa; EAI=eating pathology-specific academic impairment