

Alcohol and drug use among sexual minority college students and their heterosexual counterparts: the effects of experiencing and witnessing incivility and hostility on campus

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Purpose: Research suggests that discrimination contributes to increased substance use among sexual minorities. Subtle discrimination and witnessing mistreatment, however, have received little attention. Using minority stress theory as a conceptual framework the authors examined the intersection of sexual orientation, experiencing and witnessing incivility and hostility, and students' alcohol and drug use. The authors hypothesized that experiencing/witnessing incivility/hostility would mediate the relationship between sexual minority status and drinking and drug use, as well as problematic use of these substances.

Methods: Data were taken from a campus climate survey ($n = 2497$; age mean $[M] = 23.19$ years; 61% female; 17% sexual minorities). Controlling for demographics, logistic regressions depicted specifications for each path of the mediation analysis and bootstrapping was used to assess the significance of each sexual minority-mistreatment-drinking/drug use path.

Results: Experiencing incivility mediated the relationship between sexual minority status and problematic drinking. Sexual minority college students were more likely to personally experience incivility (adjusted odds ratio $[AOR] = 1.87$; 95% confidence interval $[CI] = 1.51-2.33$), which was associated with greater odds of problematic drinking ($AOR = 1.64$; 95% $CI = 1.35-2.00$). The mediation path was significant at $P < 0.001$. Further, witnessing hostility mediated the relationship between sexual minority status and problematic drinking. Sexual minority college students were more likely to witness hostility ($AOR = 1.87$, 95% $CI = 1.48-2.36$), which was associated with greater odds of problematic drinking ($AOR = 1.53$; 95% $CI = 1.24-1.90$). The mediation path was significant at $P < 0.01$.

Conclusion: The results provide further evidence for minority stress theory and suggest that clinical alcohol use interventions with sexual minorities need to assess personal incivilities and witnessing interpersonal mistreatment, especially hostility. Campus climate interventions that address subtle discrimination as well as harassment and violence may help reduce problematic drinking.

Keywords: sexual orientation, discrimination, minority stress, campus climate, drinking, substance use

Introduction

While substance use is common among adolescents and young adults, it is especially prevalent among college students.¹⁻³ College is often a time of great change for students – living away from parents for the first time, establishing one's sense of autonomy and personal goals, and developing new social networks. College can also be a time in which students are exposed to social contexts that encourage the use of and facilitate access to

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alcohol and drugs. These and other factors may contribute to college students' heightened risk for substance use.^{3,4} Among this population, substance use is associated with a range of risk behaviors, such as driving while intoxicated and sexual risk behaviors,⁵⁻⁷ and adverse outcomes, for example, sexual assault.⁸ Clearly, it is important to understand substance use among college students, especially high-risk subgroups. Studies indicate that sexual minority college students are at increased risk for substance use, as well as substance misuse, compared to their heterosexual peers.^{6,9-11}

For most students, college days overlap with critical stages of identity development,^{12,13} including sexual orientation.¹⁴ Although a person's development of sexual orientation begins early in life, and some individuals identify as sexual minorities before college,¹⁵ for many young people college presents an opportunity to explore and resolve their sexual orientation.^{16,17} Even for students who enter college already identifying as sexual minorities, college may be a time of sexual exploration and growth, especially given the fluidity of sexuality.^{14,18,19} Models of sexual minority identity formation highlight the centrality of contextual and relational influences on developmental processes.^{14,20} Being in a welcoming and accepting social environment and being affirmed by others are important factors to facilitating healthy sexual minority identity development;^{14,20-22} yet, recent narrative research suggests that past experiences of marginalization can positively influence sexual minority adults' sense of self – a self they value.²³

The connection between stress and substance use and abuse is well documented.²⁴⁻²⁶ All students experience stress, however, sexual minority students often experience additional stress, including that related to societal-level sexual stigma as well as interpersonal prejudice and discrimination,²⁷ such as harassment and violence.^{28,29} Studies consistently demonstrate that sexual minority students experience more discrimination than their heterosexual peers,^{10,30,31} and perceive campus climate to be less accepting.^{29,32} Minority stress theory posits that the higher prevalence of negative health outcomes among sexual minorities may be attributed to chronic stress, related to being a stigmatized group in a noxious environment.²⁷ That is, experiences of marginalization and interpersonal discrimination can cause stress responses, which can put minority individuals at increased risk for negative physical and psychological outcomes, including substance use. Some sexual minorities may use substances as a way to cope with stress in the face of stigma and mistreatment.^{27,33}

Consistent with this theory, Reed et al found that sexual minority students' substance use and related consequences

were partially explained by experiencing physical/sexual violence or threats of physical violence and feeling unsafe on campus.¹⁰ However, not all incidents of mistreatment involve blatant violence or related threats; many discriminatory acts are non-assaultive and subtle in nature. In some cases, subtle discrimination may be unintentional.³⁴ Stereotypical comments and prejudicial slurs are examples of subtle mistreatment. These forms of mistreatment are more pervasive on campus than overt discrimination,³⁵ including mistreatment targeting sexual minority students.^{28,36-38}

Previous research has paid little attention to the role of subtle mistreatment on wellbeing outcomes, thereby limiting our understanding of the relationship between the social environment and the wellbeing of sexual minorities.²³ In regard to substance use among college students, researchers have investigated everyday discrimination^{39,40} (ie, recurring, minor experiences of unfair mistreatment) as well as heterosexual harassment³¹ (ie, "insensitive verbal and symbolic [but non-assaultive] behaviors that convey animosity toward non-heterosexuality," eg, being called homophobic names). Although Hatzenbuehler et al⁴⁰ set out to study fairly common subtle practices of discrimination (eg, being treated with less courtesy than others), the everyday discrimination measure⁴¹ they used went beyond concern for subtle forms of mistreatment by including an item about being threatened or harassed. Silverschanz et al³¹ make a very important contribution to understanding heterosexism by examining non-assaultive forms. Although students are subjected to heterosexism and other forms of identity-based discrimination, incidents of interpersonal mistreatment, especially subtle ones, are not necessarily explicitly linked to the target's identity. Without an empirical understanding of mundane subtle forms of mistreatment, effective prevention and treatment interventions cannot be developed.

Incivility is a particular type of interpersonal mistreatment that is not openly identity based.⁴² Incivility refers to "low-intensity deviant behavior with ambiguous intent to harm the target"⁴³ that violates norms of mutual respect. Being treated rudely or with disrespect are examples of incivility. Such behaviors are very common across various settings.^{44,45} The occurrence of incivility based on sexual identity has not been investigated; however, members of marginalized groups have repeatedly been found to be the targets of incivility more than those from dominant groups.⁴⁵⁻⁴⁷ Although less intense than harassment or violence, incivility is concerning as it can develop into violent behavior.⁴³ Uncivil behaviors may not have the overt goal of causing harm, nevertheless they can compromise the target's wellbeing.⁴² Experiencing incivility

has been found to be negatively associated with college students' psychological and academic wellbeing;⁴⁴ however, its association with substance use has not been examined. Similar to other forms of mistreatment, it is possible that students who experience incivility may experience increased levels of stress, and thus be at increased risk of substance use and misuse.

Being in an environment where others are mistreated can also negatively affect one's wellbeing.⁴⁸ Workplace sexual harassment researchers use the term "ambient sexual harassment" to capture the phenomenon of witnessing or overhearing sexual harassment that targets others.⁴⁹ Research demonstrates a positive relationship between ambient sexual harassment and bystander stress, job dissatisfaction, psychological distress, and health impairment.^{49,50} Similar results have been found concerning incivility targeting one's workgroup (ie, colleagues in shared work environments), even when controlling for personal incivility.⁵¹

Ambient discrimination among college students has been given little attention, thereby limiting the empirical knowledge used to inform policy and practice interventions. One exception is the study by Silverschanz et al³¹ of ambient heterosexual harassment (eg, overhearing anti-gay epithets). They found this form of harassment to be positively correlated with various outcomes, including substance use problems, both among heterosexual and sexual minority students. Further, students from both sexual identity groups who reported ambient heterosexual harassment were at statistically higher risk for substance use problems than those not reporting any heterosexual harassment.³¹

These various studies suggest that bystanders experience stress when witnessing mistreatment toward others, which can contribute to negative outcomes among spectators. Therefore, the authors propose that ambient interpersonal mistreatment may be a risk factor for substance use and problematic use among both sexual minority and heterosexual students. However, the authors add that the wellbeing of sexual minority college students may be at increased risk compared to their heterosexual peers; the stress associated with ambient mistreatment will be in addition to the chronic stress associated with being a member of a stigmatized minority group, and being subjected directly to interpersonal prejudice.

Study purpose

To develop effective substance use interventions among sexual minority students, it is essential to explore the influence of various aspects of campus climate. Given the nature of contemporary interpersonal mistreatment and its ill effects on targets and bystanders, it is important to move beyond a concern

solely for blatant forms of discrimination and identity-based harassment. It is also important to examine the effect personally experiencing and witnessing mistreatment has on health outcomes. This study examines the relationship between various forms of interpersonal mistreatment and students' substance use.

Based on the existing literature, the authors believe that experiencing or witnessing interpersonal mistreatment, regardless of the intent or form of such behavior, suggests an unwelcoming environment, which can negatively affect a sexual minority student's wellbeing, including substance use. Using minority stress theory²⁷ as a conceptual framework, the authors examine two categories of interpersonal mistreatment on campus, namely incivility (defined as subtle, discourteous behaviors that are ambiguous in intent) and hostility (defined as blatant behaviors that aim to disturb, control, or harm the target). Both categories will be explored in their personal (directly targeted) and ambient (witnessed) forms. Their association with students' wellbeing in terms of alcohol use, drug use, problematic drinking, and problematic drug use will also be examined. To date, minority stress theory has not been tested in regard to incivility and ambient forms of mistreatment. By doing so, the authors aim to advance theoretical and pragmatic understanding of how various dimensions of the social environment on campus intersect with sexual minority status and substance use outcomes.

The primary research question is: Does experiencing/witnessing incivility and hostility on campus mediate a relationship between sexual minority status and drinking and drug use variables? In addressing this question, the authors examine the following hypotheses:

- H1. Sexual minority college students will be at increased risk for alcohol use, drug use, problematic drinking, and problematic drug use compared to heterosexual college students.
- H2. Sexual minority college students will be at increased risk for personal incivility and hostility and ambient incivility and hostility compared to heterosexual college students.
- H3. College students who experience personal incivility and hostility and ambient incivility and hostility will be at increased risk for alcohol use, drug use, problematic drinking, and problematic drug use, regardless of sexual orientation.
- H4. As the result of greater exposure to personal/ambient incivility/hostility (H2), sexual minority college students will be at increased risk of drinking and drug use and problematic drinking and drug use compared to heterosexual college students.

Materials and methods

The data for the current investigation are from a cross-sectional campus climate study conducted at a large, public, research university during the 2009 winter semester. Data were collected using an anonymous online survey. Students were invited to provide feedback about their perceptions of the campus climate, which was defined as “the actions and attitudes within a university that influence whether people feel welcomed and valued as members of the community.” Both full- and part-time students were eligible to participate in the study. Students had to be at least 18 years of age to join the study. To minimize participant self-selection,⁵² sexuality was not referenced in study recruitment or the informed consent materials. An advisory committee consisting of students, staff, faculty, and alumni representatives provided guidance for the original study. The study received approval from the host university’s Institutional Review Board. Referral information to student counseling services and other campus-based support services was made available to interested participants through a hyperlink included at the top of each page of the survey. All participants were offered an opportunity to enter a raffle for one of fifty \$50 cash cards (with the information recorded separately from survey data).

The survey was developed in consultation with the advisory committee and staff from the host institution’s lesbian, gay, bisexual, and transgender (LGBT) student services office and the Division of Student Affairs. Further, feedback about the content and online design and presentation of the survey was gathered from a group of recent graduates. Numerous changes were made based on the group’s feedback. The survey’s format, interface, and distribution procedures mirrored those of the host institution’s campus-wide student satisfaction and learning outcome surveys.

Sample

The sample was drawn from (1) a census of sophomore and junior undergraduates ($N = 11,342$); (2) a random sample of 8,000 graduate students; and (3) a convenience sample of sexual minority students involved in LGBT student organizations. This sampling strategy was selected in order to recruit a sufficient number of sexual minorities into the study. Because the host university does not record information about students’ sexual orientation, it was not possible to conduct a stratified sample based on sexual orientation.

Students in the census and random sample were contacted using official university email addresses and invited to participate in the study. Reminder messages were sent

7 and 14 days later. The invitation and reminder messages included the survey link. Just over 5000 students activated the survey link. Due to use of an anonymous internet-based survey,^{53,54} it cannot be known if students who did not activate the survey link received the invitation/reminder emails or if they were disinterested in joining the study. Though official university email addresses were used, it is possible that some students may not use their university account or may check it infrequently. After reading the informed consent form, 3762 agreed to participate; however, 1298 were excluded from the sample (59% answered no questions, 41% provided only partial data), thereby reducing the sample to 2464. Based on the number of students invited to participate in the study, the response rate is 13% (average response rate for campus-wide student satisfaction and learning-outcome surveys at the host institution is 10%). Based on those known to have received the survey, the response rate is 49%.

Members of LGBT student organizations were invited to participate in the study. An invitation to participate in the study was posted on the electronic mailing list for leaders of LGBT student organizations, and the leaders were asked to forward the message to their organizations’ members. Reminder messages were posted 7 and 14 days later for distribution to organizational members. Students were asked to complete the survey if they were at least 18 years of age and they had not been previously invited to join the study. The survey link was included in the invitation and reminder messages. After reviewing the informed consent form, 73 students agreed to join the study, however, only 33 surveys had sufficient data to be useable.

The undergraduate, graduate, and LGBT student groups for this study were combined (resulting in a final $n = 2497$), and compared heterosexual students with sexual minority students. Demographic information for both groups is displayed in Table 1.

Measures

Sexual orientation

Informed by Kinsey et al’s⁵⁵ research suggesting that human sexuality does not fall neatly within the exclusive categories of heterosexual and homosexual, and Silverschanz’s arguments for conceptualizing sexual orientation as a continuum,⁵⁶ participants were asked “what is your sexual orientation?” and selected from the following categories: completely lesbian or gay, mostly lesbian or gay, bisexual, mostly heterosexual, completely heterosexual, and not listed. For this analysis, similar to other studies,^{31,51,57} two groups were created: heterosexual students and sexual minority students.

Table 1 Sample demographics, interpersonal mistreatment variables, and drinking and drug use variables by sexual minority status

Variable	% or M (SD)		Test statistic ^a	P	Effect size ^b
	Sexual minority (n = 451)	Heterosexual (n = 2046)			
Demographics					
Age	23.4 (5.2)	23.1 (6.0)	0.88	0.377	0.05
White race	74.5%	71.3%	1.92	0.166	0.03
Undergraduate student	52.5%	57.9%	4.26	0.039	0.04
International student	9.8%	10.7%	0.29	0.593	0.01
Gender ^c					
Male	32.4%	39.9%			
Female	66.3%	60.0%			
Other ^d	1.3%	0.0%			
Interpersonal mistreatment on campus					
Incivility					
Personal	42.5%	29.2%	29.90	0.000	0.11
Ambient	62.2%	57.9%	2.81	0.094	0.03
Hostility					
Personal	12.3%	7.4%	11.61	0.001	0.07
Ambient	31.5%	20.2%	27.23	0.000	0.11
Alcohol and drug use					
Any alcohol use	83.8%	75.6%	13.83	0.000	0.08
Any drug use	28.0%	13.6%	56.07	0.000	0.15
Problematic drinking	32.3%	24.5%	11.53	0.001	0.07
Problematic drug use	11.4%	5.9%	17.50	0.000	0.08

Notes: ^aTest statistics are chi square or t values; ^beffect size is Cohen's d for the continuous measure (age). For all other measures, effect size is represented by the phi-coefficient. Effect size was not available for the Fisher's exact test; ^cthe Fisher's exact test was used for this analysis, as one of the cells was populated with fewer than five respondents. Since Fisher's exact test is not built on any assumption of distributions, there is no test statistic or effect size; ^d"other" is used to capture students who define their gender outside of the traditional gender binary (eg, gender queer).

Abbreviations: M, mean; SD, standard deviation.

The heterosexual group consisted of students who selected completely heterosexual (n = 2046) and the sexual minority group (n = 451) consisted of those who selected mostly heterosexual (n = 275), bisexual (n = 77), mostly lesbian or gay (n = 37), or completely lesbian or gay (n = 56), and six of the 16 individuals who selected "not listed" but who defined themselves as "queer" in response to "please specify." For theoretical and empirical reasons, those who selected mostly heterosexual were included in the sexual minority group. The authors believe that by selecting mostly heterosexual a respondent selected an identity category that is not a part of the sexual majority and likely considers themselves to be a sexual minority. Based on the group's size, mostly heterosexual respondents are a minority group compared to the completely heterosexual group. Further, analyses comparing three groups (completely heterosexuals, mostly heterosexuals, and all others) found the mostly heterosexuals to be statistically different than the completely heterosexuals on all of the mistreatment variables and substance use variables. In addition, the mostly heterosexuals were statistically similar to the "all others" group for personal incivility, ambient hostility, and any drug use. No discernable trends were identified among these two groups for the remaining variables.

Interpersonal mistreatment on campus

After reviewing relevant literature and in consultation with the advisory group, and LGBT office and student affairs staff, the authors constructed eight items reflecting a range of interpersonal mistreatment behaviors applicable to a college campus. Survey respondents were asked how often they had witnessed and personally experienced each behavior on campus in the past 12 months (or since at the university if less than 12 months). Response options for both witnessed and personally experienced questions were: never, once, 2–3 times, 4–9 times, and 10 or more times. Two measures related to uncivil behaviors were then created: ambient incivility and personal incivility, each comprising three items. In addition, the authors created two measures related to hostile behaviors: ambient hostility and personal hostility, each comprised of five items (see Table 2).

The authors first calculated continuous variables for these constructs and assessed internal reliabilities for each scale using Cronbach's alpha (ambient incivility $\alpha = 0.75$; personal incivility $\alpha = 0.76$; ambient hostility $\alpha = 0.79$; personal hostility $\alpha = 0.68$). As there were a substantial number of respondents who did not report witnessing or personally experiencing these behaviors, each variable's distribution was skewed (skewedness

Table 2 Questions forming the incivility and hostility measures**Incivility**

I've seen someone being stared at, sneered at, or given dirty looks
I've seen someone ignored, left out of group activities, or given the silent treatment
I've seen someone being treated rudely or "put down"

Hostility

I've heard of people who have received offensive or threatening phone calls, e-mails, or online messages
I know someone whose personal property was vandalized
I know someone who has been followed in a threatening manner
I've seen/heard someone being verbally threatened, bullied, or intimidated
I've seen someone being physically threatened, bullied, or assaulted

Notes: Survey respondents were initially asked how often they had witnessed each of the above behaviors on campus in the past 12 months (or since at the university if less than 12 months). These responses formed the "ambient" measures. They were next asked "how many times has this happened to you?" These responses formed the "personal" measures. Response options for all items were never, once, 2–3 times, 4–9 times, and 10 or more times.

values were 2.2 ambient incivility, 4.1 personal incivility, 7.8 ambient hostility, and 12.4 personal hostility); therefore, each variable was dichotomized (no = 0, yes = 1).

Drinking and drug use

The authors inquired about the frequency of drinking and drug use over the past semester: "How often did you ... drink alcohol [use illicit drugs other than alcohol (including prescription medication outside its intended use)]?" Response options included, not at all, less than once a month, once or twice a month, once or twice a week, 3–6 times a week, and daily. As the authors were interested in the impact of sexual minority status and interpersonal mistreatment on *any* drug or *any* alcohol use, these outcomes were dichotomized as none (coded 0) or any drinking (coded 1), and none (coded 0) or any drug use (coded 1).

Problematic drinking was measured with the CAGE questionnaire⁵⁸ and an adapted version was created for drug use: "As a result of your drinking [using illicit drugs other than alcohol] during the past semester, how often did you ... (1) get annoyed by others criticizing your drinking [drug use], (2) feel bad or guilty about drinking [using drugs], (3) feel you ought to cut down, and (4) have a drink [get high] to get going in the morning." Response formats included: never, sometimes, and often. For this study, these variables were dichotomized: if a respondent answered sometimes or often to any one of the four questions, the individual was coded as having an indicator of an alcohol or drug problem.

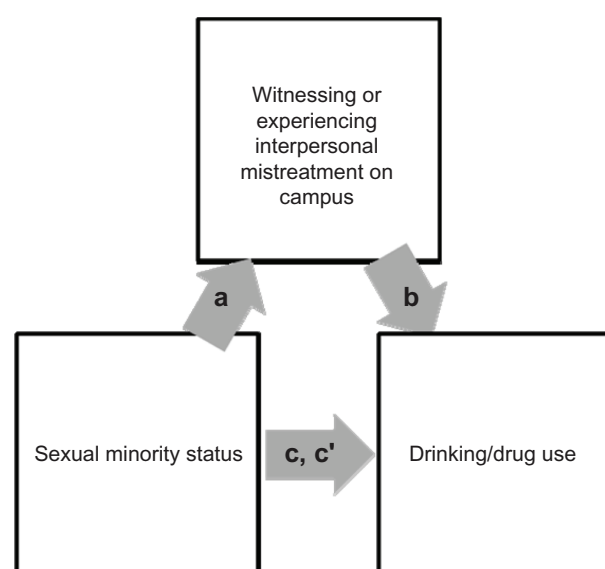
Statistical analysis

Kruskal–Wallis, Chi-Square test, Fisher's exact test, or Student's *t*-test were performed depending on the level of

the outcome variable to evaluate differences between sexual minority students and heterosexual students. Logistic regression was used to assess the strength of each individual path depicted in Figure 1, as follows:

- (1) the path from the independent variable (sexual minority status) to the dependent variable (substance use) (path c);
- (2) the path from the independent variable (sexual minority status) to the mediator (interpersonal mistreatment) (path a);
- (3) the path from the mediator (interpersonal mistreatment) to the dependent variable (substance use) (path b);
- (4) the path from the independent variable (sexual minority status) to the dependent variable (substance use), controlling for the mediator (path c').

Bootstrapping was used to assess the significance of the hypothesized mediation paths. Bootstrapping is largely agreed to be the best technique for testing mediation as it maximizes power, minimizes the probability for Type 1 and Type 2 errors, and is not based on an assumption that the distribution of *ab* is normal.^{59–61} In the current analyses, the standard errors to assess the statistical significance of the mediation paths were based on 2000 bootstrapped samples. Demographic covariates (age, race, gender, student status [undergraduate/graduate], and international student) were included in all models. Statistical analyses were performed using PASW Statistics (v17.0; IBM Corp, Armonk, NY) and Mplus (v6.1; Muthén and Muthén; Los Angeles, CA) calculated bootstrap bias corrected confidence intervals. Missing data for key variables ranged from 0.4% for any

**Figure 1** Mediation path.

Note: Paths a, b, c, and c' are represented in Table 3.

drinking to 1.4% for personal hostility. The analyses reported in Tables 1 and 3 were calculated using listwise deletion of missing data. The analyses in Table 4 were calculated using maximum likelihood estimation of missing data.

Results

Descriptive analysis

The four interpersonal mistreatment variables and the four substance use variables for the sample are displayed in Table 1 by sexual orientation. Sexual minority students were statistically significantly more likely to report personal incivility, personal hostility, and ambient hostility compared to heterosexual students, although the effect sizes were small. Similarly with small effect sizes, sexual minority students were statistically significantly more likely to drink alcohol and use drugs, and more likely to have a drinking problem and drug problem than their heterosexual peers.

Mediation analysis

Table 3 depicts illustrations of the individual paths a, b, c, and c' as presented in Figure 1. Table 4 depicts the test of the significance of each of the hypothesized mediation paths.

Direct effect of sexual minority status on drinking and drug use variables (path c)

In adjusted analyses, there was a significant association between sexual minority status and all four substance use variables. Sexual minority students had over 1.5 times higher odds for any drinking, almost three times higher odds for any drug use, nearly 1.5 times higher odds for problematic drinking, and just over double the odds for problematic drug use compared to their heterosexual counterparts.

Effect of sexual minority status on personal incivility, ambient incivility, personal hostility, and ambient hostility (path a)

In multivariate analyses, there was a significant association between sexual minority status and experiencing/witnessing three of the interpersonal mistreatment variables. Sexual minority students had almost twice the odds of reporting personal incivility, personal hostility, and ambient hostility than heterosexual students.

Effect of personal incivility, ambient incivility, personal hostility, and ambient hostility on drinking and drug use (path b)

In the adjusted analyses, personal incivility and ambient hostility were predictive of greater odds of problematic

Table 3 Tests of the specifications for each path of the mediation analysis

Variable	AOR	95% CI	P
Test of path c: effect of sexual minority status on drinking and drug use variables			
DV: any alcohol use			
Sexual minority	1.61	(1.21, 2.14)	0.001
DV: any drug use			
Sexual minority	2.70	(2.09, 3.48)	0.000
DV: problematic drinking			
Sexual minority	1.47	(1.17, 1.85)	0.001
DV: problematic drug use			
Sexual minority	2.19	(1.53, 3.15)	0.000
Test of path a: effect of sexual minority status on ambient or personal incivility and hostility			
DV: personal incivility			
Sexual minority	1.87	(1.51, 2.33)	0.000
DV: ambient incivility			
Sexual minority	1.21	(0.98, 1.51)	0.079
DV: personal hostility			
Sexual minority	1.76	(1.26, 2.47)	0.001
DV: ambient hostility			
Sexual minority	1.87	(1.48, 2.36)	0.000
Test of path b: effect of ambient or personal incivility and hostility on drinking and drug use variables			
DV: any alcohol use			
Personal incivility	1.10	(0.89, 1.36)	0.392
Ambient incivility	1.39	(1.14, 1.71)	0.002
Personal hostility	0.91	(0.64, 1.28)	0.575
Ambient hostility	1.20	(0.94, 1.53)	0.139
DV: any drug use			
Personal incivility	1.21	(0.95, 1.54)	0.115
Ambient incivility	1.25	(0.99, 1.59)	0.063
Personal hostility	1.30	(0.89, 1.91)	0.181
Ambient hostility	1.23	(0.95, 1.59)	0.114
DV: problematic drinking			
Personal incivility	1.64	(1.35, 2.00)	0.000
Ambient incivility	1.97	(1.61, 2.41)	0.000
Personal hostility	1.25	(0.90, 1.72)	0.187
Ambient hostility	1.53	(1.24, 1.90)	0.000
DV: problematic drug use			
Personal incivility	1.26	(0.90, 1.78)	0.182
Ambient incivility	1.58	(1.58, 1.10)	0.013
Personal hostility	1.46	(0.87, 2.46)	0.154
Ambient hostility	1.26	(0.88, 1.81)	0.215
Test of path c': effect of sexual minority status on problematic drinking controlling for ambient hostility or personal incivility			
DV: problematic drinking			
Sexual minority	1.36	(1.08, 1.71)	0.009
Personal incivility	1.64	(1.35, 2.00)	0.000
DV: problematic drinking			
Sexual minority	1.40	(1.11, 1.76)	0.005
Ambient hostility	1.53	(1.24, 1.90)	0.000

Notes: Models controlled for age, gender, race, undergraduate student status, and international student status. Gender is controlled for using a dummy variable representing females. A dummy variable representing those who identify as neither male nor female ($n = 7$) was excluded from the model as this variable was perfectly correlated with the sexual minority variable. Analyses were run with and without the dummy variable for those who are neither male nor female without changing the results. In mediation Path b, alcohol and drug use variables were regressed on each hostility variable in separate regressions.

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; DV, dependent variable.

Table 4 Tests of the statistical significance for the hypothesized mediated paths

ab path name	95% CI	P
Sexual minority → personal incivility → any alcohol use	−0.020, 0.044	0.490
Sexual minority → ambient incivility → any alcohol use	0.000, 0.040	0.163
Sexual minority → personal hostility → any alcohol use	−0.044, 0.021	0.606
Sexual minority → ambient hostility → any alcohol use	−0.010, 0.054	0.214
Sexual minority → personal incivility → any drug use	−0.006, 0.062	0.140
Sexual minority → ambient incivility → any drug use	−0.001, 0.034	0.238
Sexual minority → personal hostility → any drug use	−0.009, 0.065	0.250
Sexual minority → ambient hostility → any drug use	−0.006, 0.063	0.163
Sexual minority → personal incivility → problematic drinking	0.039, 0.114	0.000
Sexual minority → ambient incivility → problematic drinking	−0.003, 0.071	0.113
Sexual minority → personal hostility → problematic drinking	−0.006, 0.062	0.221
Sexual minority → ambient hostility → problematic drinking	0.025, 0.096	0.003
Sexual minority → personal incivility → problematic drug use	−0.015, 0.073	0.243
Sexual minority → ambient incivility → problematic drug use	0.000, 0.053	0.192
Sexual minority → personal hostility → problematic drug use	−0.011, 0.087	0.259
Sexual minority → ambient hostility → problematic drug use	−0.016, 0.069	0.272

Notes: 95% CIs are bootstrap bias corrected confidence intervals. Paths a and b controlled for age, gender, race, undergraduate student status, and international student status. Path b also controlled for sexual minority status.

Abbreviation: CI, confidence interval.

drinking, increasing that likelihood by 64% and 53%, respectively. Ambient incivility increased the odds of any drinking by 39%, nearly doubled the odds of problematic drinking, and increased the odds of problematic drug use by 58%. All other tested associations were not significant.

Mediation effect of personal incivility and ambient hostility (path ab)

Table 4 depicts the results of the bootstrapping test for the significance of the hypothesized mediated paths. Two paths were significant: sexual minority college students were more likely than their heterosexual counterparts to experience personal incivility and ambient hostility, and these contextual stressors were related to greater odds of the probability of having a drinking problem. In other words, personal incivility and ambient hostility in part explain the reason why sexual minority college students are at greater risk of having an alcohol problem. The other mediation paths tested were not statistically significant; however, in all but one case (see Table 3, path b) the direction of the relationship is as hypothesized. Results indicated that 20.4% of the direct effect of being a sexual minority on the odds of having a drinking problem was explained by personal incivility, and 14.0% of the direct effect of being a sexual minority on the odds of having a drinking problem was explained by ambient hostility.

Discussion

This study's results advance our understanding of the intersection between sexual orientation, the social environment,

and substance use among college students. It also extends minority stress theory. The study's main findings were that, while controlling for demographics, both personal incivility and ambient hostility mediated the relationship between sexual minority status and problematic drinking. Problematic drinking is associated with a range of negative outcomes and behaviors, such as prescription stimulant use,⁶² among college students. These outcomes, coupled with their potential impact on student growth and development, reinforce the importance of understanding the factors associated with problematic drinking. Minority stress theory directs researchers to investigate the role of interpersonal mistreatment on a minority person's wellbeing; however, a paucity of research exists concerning minor discriminatory events and ambient forms of hostility and incivility. To the best of the authors' knowledge, this is the first study to examine incivility and ambient forms of mistreatment in relation to sexual orientation and substance use. The results add to the existing evidence that can inform clinical and policy interventions, while also helping to close gaps concerning minority stress theory.²³

Although college campuses aim to be spaces that promote the growth and development of all students, extant research indicates that sexual minority students often feel unsafe on campus, and some are harassed and subjected to violence.^{10,28} As this study and others show, heterosexual students may also be mistreated on campus.^{10,31} Regardless of sexual orientation, a noteworthy percentage of students in this study experienced at least one incident of interpersonal mistreatment in personal (range 7.4%–42.5%) and ambient (range 20.2%–62.2%)

forms. Personal and ambient incivility were more prevalent than both forms of hostility. Earlier research conducted with marginalized students across various identities directly supports these findings concerning personal mistreatment.³⁵ This earlier research also indirectly corroborates this study's findings regarding ambient mistreatment: if targets report more subtle discrimination than hostility, then the same pattern would likely be reported by bystanders. Rates of personal incivility were considerably lower in this study's sample compared to earlier research;⁴⁴ however, its consequences were no less serious.

The authors hypothesized that sexual minority students would be at increased risk for alcohol and drug use and problematic use (H1), as well as personal and ambient incivility and hostility (H2). They also hypothesized that, regardless of sexual orientation, interpersonal mistreatment would increase students' risk for substance use outcomes (H3). Finally, the authors hypothesized that mistreatment variables would mediate the relationship between sexual minority student status and drug and alcohol outcomes (H4). The authors found partial support for their hypotheses.

First, the findings indicated that sexual minority students were significantly more likely to report any alcohol use, any drug use, problematic drinking, and problematic drug use compared to heterosexual students. These results are consistent with previous studies.^{6,10,11,31}

Second, contrasted with heterosexual students, the authors found sexual minority students were more likely to report personal incivility, personal hostility, and ambient hostility, but significant differences were not found for ambient incivility. Because no other study has examined incivility between sexual minority and heterosexual students, the authors cannot compare their study's rates to extant literature. However, there is support for these findings among the studies of personal incivility that have consistently shown that members of disadvantaged groups (eg, women, racial minorities) report incivility more often than those from privileged groups.⁴⁵⁻⁴⁷ Silverschanz et al's³¹ research into heterosexual harassment also lends support to this study's finding concerning personal incivility. Although these researchers did not report statistical significance, they found higher rates of personal heterosexual harassment among sexual minority students compared to heterosexual students. Likewise, they also found ambient heterosexual harassment to be more common among sexual minority students than their heterosexual peers; the current study found a similar trend concerning ambient incivility, but the differences were not statistically significant. Finding rates of ambient incivility between both groups of students to be statistically similar is intriguing. Because incivility

is not explicitly linked to a particular identity, it is possible that heterosexual and sexual minority students witnessed others being subjected to discourteous behaviors at equivalent rates. Finding higher rates of personal hostility and witnessing hostility among sexual minority students is corroborated by earlier research.^{10,63}

Third, in regard to the relationship between the mistreatment variables and the substance use outcomes among all students, the results indicated that students – both heterosexual and sexual minority – are affected by a negative social environment. Specifically, those who reported personal incivility were more likely to report problematic drinking. Ambient incivility also mattered, with an increased risk for any drinking and both problematic drinking and drug use. Ambient hostility was also positively associated with problematic drinking, while personal hostility was not significant.

Lastly, in terms of the mediating role of mistreatment on sexual minority students' substance use, the authors found an association between sexual orientation, interpersonal mistreatment, and substance use outcomes, which is similar to other studies.^{10,31,40} Specifically, as summarized above, it was found that sexual minority students were more likely to personally experience incivility and more likely to witness hostility, each of which was associated with greater odds of problematic drinking. Similar results were not found for the other dependent variables, although sexual minority students were more likely to engage in alcohol and drug use, and report problematic alcohol and drug use than heterosexual students in this sample in both bivariate and multivariate analyses. Moreover, even though sexual minority students were at significantly higher risk for personal hostility, this variable was not found to be a mediator of sexual orientation and problematic drinking (nor any other outcome).

Substance use may be a coping mechanism for dealing with a biased and discriminatory social environment.²⁷ It is possible that personal incivility and ambient hostility may increase one's stress level, thus contributing to one's risk for negative outcomes, namely problematic drinking, as this study discovered. As suggested by Meyer and associates in their recent discussion of minor or everyday stressors minority persons experience,²³ being subjected to dirty looks, being ignored, or being "put down" may be a fairly regular reminder of one's stigmatized social status on campus (and beyond), which may contribute to increased stress and, in turn, poor outcomes. Although uncivil events are ambiguous and often low in intensity, it is possible that a stress reaction occurs because of the event's symbolic meaning – a reminder of one's marginalized status.²³ In the case of this study's participants,

such a stress reaction may contribute to problematic drinking among sexual minority students.

Experimental research shows that observing racist events can negatively affect bystanders' health,⁴⁸ which lends support to this finding concerning ambient hostility. Extending Meyer et al's recent theorizing about the consequence of everyday stressors,²³ it is possible that ambient hostility may increase one's stress because witnessing others being subjected to physical attacks and other hostilities may be additional reminders of one's disadvantaged social position as a sexual minority. For sexual minority students, this process may be especially powerful when witnessing sexual minority friends being the target of hostility. Future research should investigate these propositions.

Finding personal hostility to be insignificant is intriguing and contrary to previous research.¹⁰ Several reasons may account for these findings. Rates of personal hostility among the sample were considerably lower among both sexual orientation groups than in early research.¹⁰ In fact, personal hostility was the least common form of mistreatment reported among the sample, and the lack of statistical variability may help to explain why hostility was not significant. Moreover, it is possible that some students may not consider vandalism of personal property and other blatant mistreatment to be overly serious. Recent qualitative research with lesbian, gay, and bisexual college students about the meanings they assign to heterosexism and homophobia in their lives identified the tendency for students to minimize such experiences.¹⁷ Students reported not taking homophobic slurs personally. Others essentially were desensitized and accustomed to mistreatment, including some severe incidents. One student recounted an experience of violence and referred to it as a "learning experience." These findings cause the authors to posit that targeted students may not have been offended by hostility, especially those who may have frequently experienced such events prior to attending college. Rates of violence, discrimination, and harassment targeting sexual minority adolescents and high school students tend to be much higher than among college students.^{10,30,31,64}

Implications

This study's findings underscore the importance of creating an inclusive campus climate for the wellbeing of all students, with specific emphasis on optimizing the social environment in substance use prevention and treatment interventions targeting sexual minority students. Specifically, it is necessary to consider subtle discrimination in the form of incivility as well as hostility. Considerable attention is currently being given

to preventing bullying and violence targeting sexual minority youth. The results presented here imply that such efforts may be helpful in decreasing problematic drinking among sexual minority students, in particular by reducing the frequency of ambient hostility. Yet, the findings regarding personal incivility suggest that this form of subtle prejudice can also exacerbate problematic drinking. Therefore, policies and programs that address subtle, ambiguous forms of mistreatment and discrimination may help to prevent and/or reduce problematic drinking among sexual minority students. Addressing disrespectful, discourteous behaviors on campus may seem unimportant compared to addressing overt discrimination and violence, but this study's results suggest otherwise.

The results also suggest that it will be important to help sexual minority students to develop effective coping mechanisms when faced with campus-based mistreatment. Obviously, counseling staff and other health professionals will need to assess for various types of mistreatment, and work with students to strengthen healthy coping mechanisms. Models of healthy development, including sexual orientation, emphasize the importance of receiving affirming support and developing networks involving other sexual minority students. Ally and safe space programs may be beneficial in preparing interested members of the university community to offer confidential and culturally competent support to sexual minority students in need.⁶⁵ Student organizations targeting sexual minority students may also be beneficial; however, these initiatives can present a "catch-22 situation" in that as students support one another, some may become exposed to ambient hostility, which this study's results show is a risk factor for problematic drinking. It will be important that student leaders be trained to help their peers to debrief their experiences in healing and empowering ways. In some cases, working from a critical theory/social change perspective, students may wish to develop and implement strategies to address mistreatment on campus.⁶⁶

This study's results also add to minority stress theory by demonstrating that commonplace low-intensity forms of mistreatment, as well as ambient mistreatment, can contribute to negative outcomes among sexual minorities. This study reinforces recent calls for minority stress researchers to move beyond concern for blatant discrimination, such as violence, and to study more ambiguous, everyday forms of discrimination.²³ Although attitudes toward sexual minorities might be becoming more liberal, especially among younger cohorts, sexual prejudice remains a reality and tends to be expressed in covert ways. Without an understanding of the various ways in which prejudice occurs today, our clinical and policy interventions

will be ineffective. It is important for researchers to investigate incivility and other minor events as well as ambient forms of mistreatment in order to recommend effective strategies to address the consequences of contemporary discrimination.

Limitations and future research

This study advances new knowledge and has several methodological strengths, most notably, the use of an anonymous online survey to collect data regarding substance use, sexual orientation, and mistreatment, which minimizes social desirability when reporting sensitive information.⁶⁷ The sample's size and the inclusion of a large comparison group of heterosexual students are other strengths. However, limitations exist, some of which suggest directions for future studies. Alongside the limitations associated with cross-sectional studies (eg, the inability to determine causality) and survey research (eg, measurement error), the findings may only be generalizable to institutions with similar demographics. As noted, the authors were unable to determine if all the students who were selected to be included in the census or random sample actually received the invitation/reminder messages. The use of a convenience sample added more sexual minority students to the study, yet prohibits generalizability to the host institution. Possible differences between respondents and non-respondents cannot be examined because of the use of an anonymous survey.

The use of self-report data is another limitation; however, studies have shown the validity of self-reports of substance use.^{68,69} Concerns exist about the use of subjective measures to evaluate mistreatment, especially because of the reliance on individual appraisal processes.⁷⁰ Further, an individual's perceptions of discrimination can be confounded by other factors, including mental health status, thus biased estimates may be produced.^{70,71} Recently, some investigators have used institutional-level factors, such as the presence of resources for sexual minority students, as objective indicators of the social environment.^{72,73} The authors recommend future studies, especially multi-college investigations, use such institutional measures. However, they also recommend that subjective measures continue to be used (despite their limitations) because even in the presence of resources and protections for sexual minorities, discrimination can still occur.⁷⁰ Also, it is possible that safe space programs, gay-straight alliances, and other resources for sexual minority students and anti-discrimination policies may be established because of an unwelcoming or hostile environment.

Future research should explore possible differences between sexual minority subgroups, including by gender

and gender expression. Moreover, future investigations should also examine other factors related to minority stress (eg, level of disclosure of sexual identity, internalized homophobia, other minority or marginalized identities). To better understand the potential consequences of interpersonal mistreatment, it will be important to assess factors related to resiliency^{23,74} and one's interpretation of exposure to negative behaviors. In cases of targeted acts, who the perpetrator is may be influential. Likewise, in terms of ambient forms of interpersonal mistreatment, the proximity of the relationship to those who experienced the uncivil or hostile behaviors may be important. Additional research is needed to examine these issues.

Conclusion

Much of the literature concerning sexual minority college students and health outcomes, including substance use, has focused on major discrimination. This study examined incivility and hostility in both their ambient and personal forms, and found that, while controlling for demographics, personal incivility mediated the relationship between sexual minority status and problematic drinking. It found a similar pattern for ambient hostility. The results of this study are informative in reducing problematic substance use among sexual minorities, which will hopefully prevent adverse outcomes associated with substance use and misuse.

Acknowledgments

Funding for this study was provided by the National Center on Institutional Diversity, University of Michigan, and the Curtis Center, School of Social Work, University of Michigan. Support for Dr Krentzman's work came in part from a grant from the National Institute on Alcohol Abuse and Alcoholism (T32 AA007477). This article was made available as Open Access with the support of the University of Michigan COPE Fund, <http://lib.umich.edu/cope>. Thank you to Dr Brian Perron, School of Social Work, University of Michigan, for feedback on an earlier version of this manuscript and to Laura Klem, Senior Research Associate, Center for Statistical Consultation and Research, University of Michigan, for statistical consultation.

Disclosure

The authors report no conflicts of interest in this work.

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