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Childhood Victimization, Internalizing Symptoms, and Substance Use Among Women Who Identify as Mostly Heterosexual

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Abstract

Purpose: The current article examines substance use behavior and associated factors that contribute to risk of substance misuse, such as history of childhood victimization and reports of internalizing symptoms among women from various sexual identity subgroups.
Methods: We recruited a convenience sample of 332 community and university student women (M age = 20.88). Approximately 61.1% of the sample ($n = 203$) identified as *exclusively heterosexual* (or ''straight''; EH) at the time of the survey, whereas 21.4% ($n = 71$) identified as *primarily heterosexual* (or ''mostly heterosexual''), 6.6% ($n = 22$) as *bisexual* (or ''equally gay/lesbian and heterosexual''), 3.0% ($n = 10$) as *primarily gay/lesbian* (or ''mostly gay/lesbian'') and 7.8% ($n = 26$) as *exclusively gay/lesbian.*
Results: Mostly heterosexual women were more likely than EH women to report childhood physical abuse and lifetime tobacco and marijuana use. Mostly heterosexual women also had higher levels of past-year alcohol use disorder symptomology, recent tobacco and marijuana use, and depressive symptoms. Mostly heterosexual women were more likely than bisexual women to have ever tried marijuana, although, among lifetime users, bisexual women reported more frequent recent use.
Conclusion: Mostly heterosexual women reported levels of pathological alcohol use, lifetime rates of tobacco and marijuana use, and recent depressive symptoms that were higher than EH women and relatively similar to lesbian and mostly lesbian women. Bisexual women reported heavier current use of marijuana and were more likely than mostly heterosexual women to report childhood sexual abuse. Implications for mental health services for clients who identify as non-EH are discussed.

Key words: sexuality, sexual minority, substance use, women.

Introduction

Research has consistently shown that women who identify as lesbian or bisexual often report higher levels of substance misuse[1–5] as well as internalizing symptoms and mood disorders[6–9] than do heterosexual women. Women who identify as mostly heterosexual[10] appear to comprise a sizable portion of the general population.[11,12] Despite this, researchers have only recently begun to investigate mostly heterosexual women's psychosocial and health-related functioning relative to women who identify as exclusively heterosexual (EH), bisexual, mostly lesbian, or lesbian.[10–14] Based on their examinations of mostly heterosexual women as a distinct sexual minority subgroup, Thompson and Morgan[10] asserted that researchers should come to appreciate ''the potential for a mostly straight sexual orientation identity to be discrete from an EH or sexual-minority orientation identity in young women'' (p. 20). The current article compares substance use, childhood victimization, and internalizing symptoms among mostly heterosexual women and their EH, lesbian, mostly lesbian, and bisexual peers. These findings will inform the emerging literature that seeks to characterize the health outcomes of mostly heterosexual women relative to their EH and sexual minority counterparts.

A recent review by Vrangalova and Savin-Williams[14] compared effect sizes for physical and psychological health outcomes between mostly heterosexual and EH women and between mostly heterosexual and bisexual women across

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22 samples in five countries. They concluded that mostly heterosexual women appeared to be at risk for a host of mental and physical health issues (e.g., internalizing disorders, substance use, victimization), compared with their EH peers (comparisons were not made to lesbian subgroups). Vrangalova and Savin-Williams'[14] findings that compared health outcomes between mostly heterosexual and bisexual women were more equivocal, but suggested that mostly heterosexual women may be at lower or equivalent risk for various physical and mental health problems.

Alcohol use

Studies reviewed by Vrangalova and Savin-Williams[14] found that heavy episodic drinking (typically 4+ drinks in one 2-hour sitting), was more common among mostly heterosexual than EH women, with effect sizes ranging from small to large in a variety of samples.[15–17] By contrast, comparisons of alcohol outcomes in mostly heterosexual and bisexual women were ambiguous. Some findings showed that both mostly heterosexual and bisexual women were at risk of heavy drinking,[11] whereas others suggested greater risk for mostly heterosexual women.[18,19] More often than not, however, comparisons between mostly heterosexual and bisexual women were not investigated[16,20] due to various limitations of datasets (e.g., sub-sample sizes). Taken together, previous findings suggest that mostly heterosexual women are at greater risk than EH for alcohol misuse, but at similar risk as bisexual women.

Other drug use

Vrangalova and Savin-Williams[14] found more consistent, robust effect sizes for comparisons between mostly heterosexual and EH women on rates of lifetime and recent tobacco use.[21–23] Similarly, a number of studies have found that mostly heterosexual women are more likely than EH women to report lifetime and recent marijuana use.[24–26] Although few studies have compared tobacco and other drug use outcomes between mostly heterosexual and bisexual women, those that have typically found that mostly heterosexual women report lower rates of substance use than bisexual women.[11,15,23–26] Notably, however, at least one study found that mostly heterosexual women were at greater risk for marijuana use than bisexual women.[19] Previous work suggests that mostly heterosexual women are more likely to report any use, as well as more frequent recent tobacco and marijuana use than EH women, but rates and frequencies of use are similar to or slightly lower than their bisexual peers.

Childhood victimization

Past findings have shown that lesbian and bisexual women report higher rates of childhood victimization, including childhood sexual abuse (CSA) and childhood physical abuse (CPA), than EH women.[17,19,27,28] Studies reviewed by Vrangalova and Savin-Williams[14] showed consistent, moderate effect sizes, such that mostly heterosexual women were at greater risk for childhood maltreatment than EH women.[10,29–31] Research findings[14] provide equivocal evidence that mostly heterosexual women may be at lower risk of childhood victimization than bisexual women,[32] but effect sizes were highly variable and small in magnitude.

Depression and anxiety

Internalizing symptoms, including those reflecting depression and anxiety, are more commonly reported by lesbian and bisexual women than by EH women.[33–35] A number of studies reviewed by Vrangalova and Savin-Williams[14] showed higher rates of mood disorders or depressive symptomology among mostly heterosexual women compared with EH women,[6,10,36–39] whereas other studies have found no significant differences in reported levels of depressed mood or symptoms.[11,34,40–42] Mostly heterosexual women also appeared to be at greater risk than EH women for anxiety disorders and symptoms.[38] Some studies have shown that mostly heterosexual women are at lower risk for mood disorders and depressive symptoms compared with bisexual women,[37,39] whereas findings from at least one study have suggested mostly heterosexual women are more likely than bisexual women to report depressive symptoms.[10] Notably, no known study has compared differences in anxiety disorders or symptoms between mostly heterosexual and bisexual women.[14] Extant findings are equivocal in establishing whether mostly heterosexual women are at higher risk than their lesbian and bisexual peers for internalizing symptoms, although effect sizes presented by Vrangalova and Savin-Williams[14] suggest potential differences across various sexual identity groups.

Current study

The current study investigated differences in lifetime and recent alcohol and other drug use as well as history of childhood victimization and recent internalizing symptoms in a cohort of women in emerging adulthood. We contribute to the extant literature by providing comparisons, not only between mostly heterosexual and EH women, but also between mostly heterosexual women and women who identify as lesbian, mostly lesbian, or bisexual. Based on the extant literature, compared with EH women, mostly heterosexual women will report a higher prevalence of lifetime use and more frequent, recent use of alcohol and other substances, a greater number of past-year alcohol use disorder (AUD) symptoms, higher rates of childhood victimization, and higher levels of internalizing symptoms. Given our interest in directly comparing outcomes for mostly heterosexual women relative to lesbian, mostly lesbian, and bisexual women, rather than offering *a priori* hypotheses, we present results from post hoc pairwise comparison tests, corrected for multiple tests, to provide additional information about comparisons among varying sexual identity subgroups.

Methods

Participants

These secondary data analyses use a subset of respondents from a larger study ($n = 352$) examining associations between women's sexual self-concepts and alcohol consumption behaviors. The current sub-sample included 332 women, ranging in age from 18 to 30 ($M = 20.88$, $SD = 2.86$). Eligible introductory psychology students ($n = 96$) and women from a surrounding community ($n = 236$) were invited to participate using multiple recruitment strategies. In response to the question "Currently, how would you describe your sexual orientation?" ~61.1% of women ($n = 203$) identified as EH; 21.4% ($n = 71$) identified as *primarily heterosexual*, 6.6% ($n = 22$) identified as *bisexual*,

3.0% ($n=10$) identified as *primarily gay/lesbian* and 7.8% ($n=26$) as *exclusively gay/lesbian*. Twenty participants, who identified as *queer* ($n=9$), *unlabeled/questioning* ($n=7$), *asexual* ($n=1$), or *other* (i.e., ''pansexual,'' ''hetero-something''; $n=2$) or who did not complete the sexual identity question ($n=1$), were excluded from the current analyses. Thus, 332 participants comprise the current analytic sample. In a question asking participants to ''choose all that apply,'' ~84% ($n=278$) identified as White or Caucasian, 11% ($n=37$) as Black or African American, 5% ($n=17$) as Asian, and 5% ($n=16$) as Hispanic or Latina.

Procedure

Participants were recruited from fall 2010 to spring 2013 from a mass participant pool at a large Midwestern university and from the surrounding community. Community participants were recruited through community-wide email notices, advertisements in local newspapers, and flyers posted in local businesses. Snowball sampling techniques were also used to facilitate oversampling of non-EH women. Interested women were screened using a brief interview to determine eligibility. Eligible women were emailed a link to a 2½-hour online survey, which was accessible only to participants who provided electronic consent. Before completing questions regarding alcohol consumption, participants were presented with information regarding standard drink size equivalents,[43] including pictures that depicted one standard drink of beer (12 oz.), wine (5 oz.), and liquor (1.5 oz.), along with corresponding volume and percentage of alcohol-by-volume information. Ninety-six percent of individuals who began the online survey completed it. Student participants received course credit in exchange for participation, whereas community participants received a $25 gift certificate to Amazon.com. All relevant federal and institutional research ethical standards were met with regard to the treatment of participants, and human subjects approval was obtained from the University of Missouri Institutional Review Board.

Measures

Sexual identity status. A Kinsey-type scale was used to assess current sexual identity.[44] In response to the item ''Currently, how would you describe your sexual orientation?'' participants were provided with the following response options: (1) *exclusively homosexual* (e.g., *lesbian*); (2) *primarily homosexual*; (3) *equally homosexual and heterosexual* (e.g., *bisexual*); (4) *primarily heterosexual*; (5) EH (e.g., *straight*); (6) *queer*; (7) *unlabeled/questioning*; (8) *no sexual interest*; and (9) *other* (*please specify*). Twenty participants, who did not indicate sexual interest ($n=1$), who reported a queer ($n=9$), questioning ($n=7$) or ''other'' sexual identity ($n=2$), or who did not respond to this item ($n=1$), were excluded from analyses.

Lifetime alcohol intoxication. Lifetime alcohol intoxication was assessed by asking, ''Did you ever drink enough to get drunk, that is, your speech was slurred or you were unsteady on your feet?'' (0=*no*, 1=*yes*).

Recent heavy episodic drinking. Participants' frequency of heavy episodic drinking in the prior month was assessed by asking, ''During the past 30 days, how often did you have four or more drinks containing any kind of alcohol at a single sitting?'' (0=*did not drink four or more drinks at a single sitting;* 1=*once in the past 30 days;* 2=*two to three times in the past 30 days;* 3=*once or twice a week;* 4=*three to four times a week;* 5=*five to six times a week;* 6=*nearly every day;* 7=*every day*).

Recent AUD symptomology. We constructed a count of nine DSM-V-derived[45] AUD symptoms (e.g., tolerance, withdrawal, craving), experienced in the past year, from 14 items contained in the Young Adult Alcohol Problems Screening Test[46] as well as an additional item from the National Epidemiologic Survey on Alcohol and Related Conditions[47] to assess craving. Internal consistency was adequate in the current sample ($\alpha=0.77$).

Lifetime other drug use. A dichotomous variable was created to denote whether participants ever used cigarettes/tobacco or marijuana, respectively, in their lifetime (0=*no*, 1=*yes*).

Recent other drug use. Among those reporting lifetime use, the frequency with which participants had used cigarettes/tobacco or marijuana, respectively, in the prior 3 months was assessed. Responses were based on a 7-point, Likert-type scale (0=*used, but not in the past 3 months*, 1=*1 time*; 2=*2–5 times*; 3=*6–10 times*; 4=*11–20 times*; 5=*21–40 times*; 6=*more than 40 times*).

Childhood victimization. Two dichotomous items assessed self-reported history of CSA and CPA. Participants were asked, ''Have you ever experienced sexual assault, molestation, or forcible/unwanted sex (rape)?'' (0=*no*, 1=*yes*). Participants who responded affirmatively to this question and reported that they were below the age of 18 when this experience first happened were coded as reporting a history of CSA, whereas those who responded ''no'' were coded to have no history of CSA. Participants were also asked, ''Have you ever been physically attacked, beaten, or injured by a parent/caretaker?'' Participants who responded affirmatively to this question and reported that they were below the age of 18 when this type of event first happened were coded as having a history of CPA, whereas those who responded ''no'' were coded to have no history of CPA.

Recent depression and anxiety symptomology. Ten items from the Depression Subscale of the Hopkins Symptom Checklist[48] were averaged to assess the severity of recent depressive symptoms. Items were rated on a 4-point, Likert-type scale (1=*Not at all* to 4=*Extremely*) to indicate how much each symptom had been bothersome to the participant in the last 2 weeks. Using the same response scale, 10 items from the Anxiety Subscale of the Hopkins Symptom Checklist were averaged to assess the severity of recent anxiety symptoms. Internal consistency for the depression ($\alpha=0.91$) and anxiety ($\alpha=0.86$) subscales was high and the variables' distributions were reasonably normal (Depression: Skewness=1.28, Kurtosis=1.56; Anxiety: Skewness=0.89, Kurtosis=0.40).

Data analysis

Women who identified as mostly heterosexual at the time of the survey served as the reference group and were

compared with subgroups of women who identified as EH, lesbian, mostly lesbian, or bisexual, respectively, on study outcomes. Separate logistic regression models, conducted in the General Linear Modeling procedure in SPSS v. 22 (IBM, Armonk, NY)—specifying a binomial distribution with a logit link function, tested whether mostly heterosexual women reported distinct rates of lifetime alcohol intoxication, lifetime use of other substances (cigarettes/tobacco, marijuana), CPA and CSA, compared with EH, lesbian, mostly lesbian, and bisexual women. Multiple linear regression, conducted in the General Linear Modeling framework—specifying a normal distribution with an identity link function, allowed for tests of significant differences among sexual identity subgroups for continuous outcomes [i.e., frequency of recent (1) heavy episodic drinking; (2) tobacco use; (3) marijuana use; (4) depression symptomology; and (5) anxiety symptomology]. Follow-up post hoc pairwise comparison tests applying a Bonferroni correction were examined in all models to compare outcomes among all other sexual identity subgroups. Model estimates were adjusted for participants' ethnic minority status (0 = White, 1 = non-White) and age (M = 20.88, SD = 2.86).

Results

Alcohol-related outcomes

Spearman correlations among primary study variables are reported in Table 1. Unstandardized regression coefficients and adjusted odds ratios (OR) with corresponding confidence intervals (CI), are presented in-text and corresponding descriptive information for all sexual identity subgroups is presented in Table 2.

Lifetime intoxication. As shown in Table 2, ~94% of mostly heterosexual women reported that they had been intoxicated at least once in their lifetime, whereas 87% of EH, 96% of lesbian, 100% of mostly lesbian, and 91% of bisexual women reported the same. Rates of lifetime intoxication were not statistically different between mostly heterosexual women and EH (OR = 0.43; 95% CI: 0.14, 1.28), lesbian (OR = 1.45; 95% CI: 0.15, 13.71), mostly lesbian (OR = —; indeterminate), or bisexual women (OR = 0.53; 95% CI: 0.09, 3.18), respectively.

Frequency of recent heavy episodic drinking. Separate regression models tested for differences in frequency of recent heavy episodic drinking and AUD symptomology. The results indicated that, relative to mostly heterosexual women, EH ($b = -0.09$; 95% CI: −0.36, 0.18), lesbian ($b = -0.17$; 95% CI: −0.62, 0.28), mostly lesbian ($b = 0.37$; 95% CI: −0.30, 1.03), and bisexual women ($b = -0.09$; 95% CI: −0.55, 0.39) reported frequencies of heavy episodic drinking episodes in the prior month that were not statistically different. No other pairwise comparisons were significant.

AUD symptomology. EH women reported lower levels of AUD symptomology in the past year than mostly heterosexual women ($b = -0.47$; 95% CI: −0.74, −0.19; $P = 0.001$). By contrast, compared with mostly heterosexual women, there were no statistically significant differences between lesbian ($b = -0.01$; 95% CI: −0.46, 0.44), mostly lesbian ($b = -0.13$; 95% CI: −0.79, 0.54), and bisexual women ($b = -0.19$; 95% CI: −0.67, 0.29), respectively, with regard to past-year AUD symptomology. No post hoc pairwise comparisons were significant. In both of the aforementioned regression models, participant age was inversely related to heavy episodic drinking ($b = -0.08$; 95% CI: −0.12, −0.05; $P < 0.001$) and AUD symptomology ($b = -0.12$; 95% CI: −0.16, −0.09; $P < 0.001$).

Other drug use

Lifetime tobacco use. As shown in Table 2, ~65% of mostly heterosexual women reported that they had used tobacco at least once in their lifetime, whereas 40% of EH, 65% of lesbian, 50% of mostly lesbian, and 77% of bisexual women reported doing so. Compared with mostly heterosexual women, EH women had lower odds of lifetime tobacco

TABLE 1. SPEARMAN CORRELATIONS FOR PRIMARY STUDY OUTCOMES ($N = 332$)

	2	3	4	5	6	7	8	9	10	11
1. LT intoxication (1 = yes)	0.35***	0.29***	0.22***	0.23***	0.22***	0.20***	0.06	0.05	0.00	0.01
2. Frequency of HED—past 30 days	—	0.45***	0.19***	0.23***	0.29***	0.34***	−0.06	−0.02	0.04	0.09
3. AUD symptoms—past year		—	0.26***	0.28***	0.30***	0.38***	−0.06	−0.03	0.29***	0.30***
4. LT tobacco use (1 = yes)			—	0.93***	0.52***	0.51***	0.12*	0.14*	0.26***	0.26***
5. Past 3 months frequency of tobacco use ($n = 163$)[a]				—	0.52***	0.55***	0.15**	0.11	0.31***	0.31***
6. LT marijuana use (1 = yes)					—	0.88***	0.10	0.01	0.20***	0.14*
7. Past 3 months frequency of marijuana use ($n = 195$)[a]						—	0.11	0.01	0.25***	0.23***
8. Childhood sexual abuse (1 = yes)							—	0.21***	0.13*	0.06
9. Childhood physical abuse (1 = yes)								—	0.04	0.05
10. Depressive symptoms									—	0.72***
11. Anxiety symptoms										—

[a]Sub-sample of participants who indicated history of lifetime use.
*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.
LT, lifetime; HED, heavy episodic drinking; AUD, alcohol use disorder.

Table 2. Observed Descriptive Statistics for Primary Study Variables by Sexual Identity Category

	Mostly heterosexual[1] (n = *71*)	*EH* (n = *203*)	*Bisexual* (n = *22*)	*Mostly lesbian* (n = *10*)	*Lesbian* (n = *26*)
	Binary outcomes				
Outcome	%	%	%	%	%
LT intoxication	94	87	91	100	96
LT tobacco use	65_a	40_b	77_a	50	65
LT marijuana use	80_a	53_b	59_b	70	65
Childhood sexual abuse	19_a	11_a	50_b	11	20
Childhood physical abuse	18_a	4_b	27	—	4

	Continuous outcomes									
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Frequency of HED—past 30 days	2.49	1.46	2.49	1.22	2.32	1.43	2.70	1.16	2.31	1.19
AUD symptoms—past year	2.76_a	2.48	2.42_b	2.03	2.45	2.28	2.40	1.71	2.73	2.52
Past 3 months frequency tobacco use ($n = 163$)[2]	5.00_a	2.38	3.56_b	1.94	$4.65_{a,c}$	2.42	2.80_b	0.84	4.35_c	2.12
Past 3 months frequency marijuana use ($n = 195$)[2]	4.04_a	2.15	3.74_b	1.86	5.15_c	2.38	4.14	2.27	$3.76_{a,b}$	2.05
Depressive symptoms	1.96_a	0.67	1.58_b	0.56	1.68	0.61	1.70	0.56	1.68	0.50
Anxiety symptoms	1.92	0.62	1.69	0.51	1.66	0.55	1.49	0.39	1.77	0.58

Subscripts that differ denote a significant pairwise comparison between women in the corresponding sexual identity subgroups in logistic and linear regression models for binary and continuous outcomes, respectively, adjusting for participant age and ethnic/racial minority identity status.

[1]Reference group.

[2]Sub-sample of participants who indicated history of lifetime use.

EH, exclusively heterosexual.

use (OR = 0.37; 95% CI: 0.21, 0.65; $P = 0.001$). By contrast, lesbian (OR = 1.03; 95% CI: 0.40, 2.64), mostly lesbian (OR = 0.52; 95% CI: 0.14, 1.98), and bisexual women (OR = 1.81; 95% CI: 0.60, 5.52), respectively, each had log odds of lifetime tobacco use that were not statistically different from mostly heterosexual women. Post hoc pairwise comparisons also showed that bisexual women had a higher likelihood of reporting lifetime tobacco use than EH women ($\Delta M = 0.37$, SE = 0.10, $P = 0.002$).

Frequency of recent tobacco use. Among lifetime tobacco users ($n = 163$), we tested an adjusted linear regression model to examine frequency of tobacco use in the prior 3 months. Mostly heterosexual women reported using tobacco products more frequently than EH ($b = -1.44$; 95% CI: −1.80, −1.07; $P < 0.001$), lesbian ($b = -0.65$; 95% CI: −1.21, −0.09; $P = 0.02$), and mostly lesbian women ($b = -2.08$; 95% CI: −3.03, −1.13; $P < 0.001$). Notably, reported frequencies of recent tobacco use between mostly heterosexual and bisexual women were not statistically different ($b = -0.33$; 95% CI: −0.89, 0.24). Post hoc pairwise comparisons also showed that bisexual women reported more frequent tobacco use than EH ($\Delta M = 1.11$, SE = 0.27, $P < 0.001$) and mostly lesbian women ($\Delta M = 1.76$, SE = 0.52, $P = 0.006$). Finally, lesbian women also reported more frequent use of tobacco than EH women ($\Delta M = 0.79$, SE = 0.27, $P = 0.035$) and mostly lesbian women ($\Delta M = 1.43$, SE = 0.52, $P = 0.06$).

Lifetime marijuana use. Compared with mostly heterosexual women, EH (OR = 0.30; 95% CI: 0.16, 0.59; $P < 0.001$) and bisexual (OR = 0.35; 95% CI: 0.12, 0.99; $P < 0.05$) women had lower odds of reporting lifetime marijuana use. Prevalence of lifetime marijuana use was not statistically different between mostly heterosexual and lesbian women (OR = 0.48; 95% CI: 0.18, 1.30) or mostly heterosexual and mostly lesbian women (OR = 0.54; 95% CI: 0.12, 2.38). After adjusting for multiple comparisons, no other pairwise comparisons were significant.

Frequency of recent marijuana use. Among women who reported that they had used marijuana at least once in their lifetime ($n = 195$), we tested an adjusted linear regression model to examine sexual identity subgroup differences in the frequency of marijuana use in the prior 3 months. EH women reported less frequent recent use of marijuana than mostly heterosexual women ($b = -0.51$; 95% CI: −0.84, −0.18; $P = 0.002$). By contrast, bisexual women's frequency of marijuana use was significantly higher than mostly heterosexual women's frequency of marijuana use ($b = 1.22$; 95% CI: 0.61, 1.83; $P < 0.001$). Compared with mostly heterosexual women, lesbian women ($b = -0.30$; 95% CI: −0.85, 0.24) and mostly lesbian women ($b = 0.47$; 95% CI: −0.34, 1.28) did not report significantly different levels of recent marijuana use. In general, increasing age was associated with less frequent marijuana use ($b = -0.16$; 95% CI: −0.21, −0.11; $P < 0.001$). Post hoc pairwise comparisons also showed that bisexual women reported more frequent use of marijuana than EH ($\Delta M = 1.73$, SE = 0.30, $P < 0.001$) and lesbian women ($\Delta M = 1.52$, SE = 0.37, $P < 0.001$).

Childhood victimization

Compared with mostly heterosexual women, bisexual women were more likely to report CSA (OR = 4.26; 95% CI: 1.51, 11.99; $P = 0.006$). By contrast, EH (OR = 0.56; 95% CI: 0.26, 1.21), lesbian (OR = 1.11; 95% CI: 0.35, 3.53), and mostly lesbian women (OR = 0.48; 95% CI:

0.05, 4.26) did not differ from mostly heterosexual women in their odds of CSA. Post hoc pairwise comparisons also showed that bisexual women were more likely than EH women to report CSA ($\Delta M = 0.36$, $SE = 0.11$, $P = 0.011$).

EH women (OR = 0.20; 95% CI: 0.07, 0.62; $P = 0.005$) had lower odds of reporting CPA than mostly heterosexual women. Rates of CPA for mostly heterosexual women were not significantly different from rates reported by lesbian (OR = 0.21; 95% CI: 0.03, 1.74), mostly lesbian (OR = —; indeterminate), and bisexual women (OR = 1.72; 95% CI: 0.54, 5.46).

Depression and anxiety symptoms

We ran separate linear regression models to compare recent levels of internalizing symptoms among sexual identity groups. Compared with mostly heterosexual women, EH women reported less severe depressive symptoms in the past 2 weeks ($b = -0.40$; 95% CI: −0.67, −0.12; $P = 0.005$). By contrast, lesbian ($b = -0.27$; 95% CI: −0.72, 0.18), mostly lesbian ($b = -0.21$; 95% CI: −0.88, 0.45), and bisexual women ($b = -0.25$; 95% CI: −0.73, 0.23) reported levels of depressive symptoms that were not different from those of mostly heterosexual women. Mostly heterosexual women reported levels of anxiety symptoms in the past 2 weeks that were not significantly different from EH ($b = -0.25$; 95% CI: −0.52, 0.03), lesbian ($b = -0.14$; 95% CI: −0.60, 0.31), mostly lesbian ($b = -0.40$; 95% CI: −1.07, 0.27), and bisexual women ($b = -0.24$; 95% CI: −0.72, 0.24). No post hoc comparisons were significant with regard to severity of internalizing symptoms (i.e., depression, anxiety).

Discussion

This study is among the first to directly compare mostly heterosexual women's substance use and associated risk factors to those of EH, lesbian, mostly lesbian, and bisexual women. These findings support, as others have concluded[10,49] that mostly heterosexual women may be more similar to their sexual minority peers than to their EH counterparts with regard to reported AUD symptomology, lifetime tobacco and marijuana use, histories of CPA, and depressive symptoms.

In contrast to previously published results,[15–17] the current findings indicated that rates of lifetime intoxication and recent heavy episodic drinking did not differ among EH, mostly heterosexual, bisexual, mostly lesbian, and lesbian women in emerging adulthood. Nevertheless, mostly heterosexual women reported a higher level of past-year AUD symptomology than EH women, suggesting that the former group's alcohol use may be more pathological in nature. A lack of expected differences among alcohol use outcomes across sexual identity subgroups may have been due to a selection bias (i.e., as a result of utilizing a convenience sample; see Limitations) or to the relatively high levels of hazardous drinking in *all* sexual identity subgroups in emerging adulthood or both.

As expected, our results showed that mostly heterosexual women may be more likely than their EH peers to report lifetime use and more frequent recent use of tobacco[21–23] and marijuana.[24–26] Consistent with one previous study,[19] bisexual women in the current sample had slightly lower odds of reporting lifetime marijuana use than mostly heterosexual women; notably, however, bisexual women who reported using marijuana recently did so more frequently than their mostly heterosexual counterparts. This latter finding is consistent with the literature and our hypothesis that bisexual women would report using marijuana more frequently than mostly heterosexual women.[11,15,23–26] Finally, mostly heterosexual women were similar to their lesbian and mostly lesbian peers with regard to both lifetime use of tobacco and marijuana and frequency of recent marijuana use, yet reported more frequent recent use of tobacco than these same peer groups.

Similar to previous findings,[10,29–31] mostly heterosexual women were more likely than EH women to report CPA. Compared with mostly heterosexual women, lesbian and bisexual women reported similar rates of CPA. Past work suggests that sexual minority women may be more likely to experience CPA and peer victimization due to gender nonconforming behaviors[50–52] and associated experiences with peer and family rejection.[53,54]

It has been argued that, compared with women with monosexual identities (e.g., EH, exclusively lesbian), women with non-monosexual identities (e.g., bisexual, mostly lesbian) may experience greater levels of internalized homonegativity, stigma sensitivity,[55] and lack of a visible community[56]—factors that are potential sources of psychological distress. Given that mostly heterosexual women in our study were as likely as EH women to report heavy episodic drinking, but higher levels of past-year AUD symptoms and recent depressive symptoms, it may be that they engage in alcohol use that is motivated by maladaptive efforts to cope with distress or gain peer approval, as opposed to enhancing social interactions.[57,58]

Limitations

Although the current study contributes to a growing literature suggesting that identifying as mostly heterosexual may relate to increased vulnerability for particular risky health behaviors and outcomes, these findings should be interpreted with several limitations in mind. First, the use of a convenience sample may have introduced inherent bias into our findings. Women self-selected into the study, which was advertised as a study of ''female sexuality and alcohol use.'' This wording may have resulted in a disproportionately higher number of participants who used alcohol and other drugs. This selection bias may have resulted in a sample that reported relatively similar levels of alcohol use across various sexual identities. Moreover, all women were between the ages of 18 and 30—a developmental period characterized by heavier drinking, regardless of sexual identity,[59] which may have obscured differences in alcohol use that have generally been found in other studies.[24] Future work should seek to replicate the current findings in a more diverse and representative sample.

Second, we used data from a cross-sectional online survey of women in emerging adulthood. Previous work suggests that individuals are often reticent to report illicit and sensitive behaviors and experiences (e.g., substance use, childhood victimization) in surveys,[60–62] contributing to potential underreporting of these behaviors and experiences. Moreover, we assessed only participants' self-ascribed sexual identity at the time of the survey. Although we adjusted estimates for participant age, our findings do not address the potential influence of

previous sexual identities, other facets of sexual orientation (e.g., behavior, attraction), or levels of sexual orientation disclosure. Given these limitations, our findings do not allow for causal interpretations and may not generalize to individuals across other life stages. Longitudinal, population-based studies are needed to clarify pathways among substance use behaviors and associated risk factors over time for women in varying sexual identity groups.

Third, researchers have only recently begun to investigate the mental health of mostly heterosexual individuals and there is a noticeable lack of developed theory with regard to mostly heterosexual women's psychosocial functioning and health behavior. Future theory development is needed to guide the generation of hypotheses that seek to explain physical and mental health disparities for various sexual identity groups, particularly for those with non-monosexual identities.[63]

Conclusion

These findings contribute to a growing literature suggesting that women who ascribe to a mostly heterosexual identity may be at heightened risk of particular risky health outcomes. As such, these findings may serve to create awareness among researchers and mental health providers about this under-recognized group of women. Providers should be educated to better assess potential risk for substance misuse and comorbid internalizing symptoms by assessing individuals' sexual orientation at intake or early in the progression of therapy or treatment. Awareness of women's sexual identity in health interventions may improve providers' ability to appropriately and accurately assess and diagnose substance-related pathology, as well as potential comorbid mood pathology. In instances where sexual minority women report current internalizing symptoms or substance misuse, it is important to address aspects of their sexual identity that may be pertinent for improving their psychosocial functioning and overall health.

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Disclaimer

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Author Disclosure Statement

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