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Sexual Minority Disparities in Substance Use Willingness among Youth

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Abstract

Background—Disparities in substance use have been observed in sexual minority youth, but less is known about willingness to use substances, an important precursor to actual use.

Objective—The goal of this study was to examine willingness to use cigarettes, alcohol, and marijuana among sexual minority youth compared to their non-sexual minority counterparts using both cross-sectional and longitudinal data.

Methods—The present study drew on two waves (Times 1 and 2; 6 months apart) of data collected during high school as part of a prospective study of substance use initiation and progression in Rhode Island. At Time 1, participants (N=443) ranged in age from 15 to 20 years (M age=16.7 years, 26.6% sexual minority, 59.5% female, 72.0% White). Participants self-reported their sexual identity and attraction, lifetime use of alcohol, cigarettes and marijuana, and cigarette, alcohol, and marijuana use willingness (i.e., if offered by a best friend or group of friends).

Results—In cross-sectional multivariate regression models, sexual minority youth were more likely to report willingness to use cigarettes ($p<0.05$) and marijuana ($p<0.01$) compared to their non-sexual minority counterparts. Longitudinal multivariate regression models revealed that sexual minorities were only significantly more likely to report cigarette willingness at Time 2 compared to their non-sexual minority counterparts ($p<0.01$). There were no significant differences in alcohol use willingness in multivariable cross-sectional or longitudinal models by sexual minority status.

Conclusions—Sexual minority youth reported more willingness than non-sexual minority youth to use substances offered by peers; however, longitudinal analyses revealed that peers appear to play a role only in willingness to smoke cigarettes for these youth, and thus peer influence may be a contributing factor in explaining tobacco-related disparities among sexual minority youth. Given that stigma and peer groups may a particular risk factor for tobacco among sexual minority youth, our findings highlight the importance of prevention programs such as social marketing approaches that correct social norms, reduce stigma, and provide refusal-skills training to reduce tobacco-related disparities among sexual minorities.

Keywords

sexual minority; youth; substance use willingness; disparities

Research consistently documents sexual orientation disparities in substance use and substance use disorders, and evidence suggests that these higher rates may originate during adolescence. For example, cigarette smoking, alcohol, and marijuana use are higher among sexual minority youth (i.e., those who identify as lesbian, gay, and bisexual or report same- or both-sex attractions) relative to their non-sexual minority counterparts (Marshal, Friedman, Stall et al., 2008; Goldbach, Mereish, & Burgess, 2017). To date, Minority Stress Theory (Hatzenbeuhler, 2009; Meyer, 2003) has been the most common framework used to understand these disparities in substance use. According to Minority Stress Theory, cumulative exposure to sexual minority-specific stressors related to societal discrimination, prejudice, and interpersonal rejection can undermine health by leading to maladaptive coping responses, such as substance use behaviors (Hatzenbeuhler, 2009; Meyer, 2003). Meta-analytic research has documented the negative impact of sexual minority stressors on higher levels of substance use among sexual minority youth (Goldbach, Tanner-Smith, Bagwell, & Dunlap, 2014).

Among adolescent populations peer groups have a powerful influence on risky behaviors, including substance use (Miller & Prentice, 2016; Neighbors, Lee, Lewis, Foss, & Larimor, 2007). A small but emerging body of literature suggests that aspects of an individual's social network may account for sexual orientation disparities in substance use behaviors (Hatzenbuehler, McLaughlin, & Xuan, 2016; Boyle, LaBrie, Costine, & Witkovic, 2017). As a result of stigma from families and other peers and as a consequence of sexual orientation identity development, friends may be a particularly salient source of support for sexual minority youth (Gamarel, Walker, Rivera, Golub, 2014). Furthermore, peer norms regarding substance use have been associated with coping motives for substance use, in response to experience of stigma among sexual minorities (Boyle et al., 2017). Similarly, sexual minority youth may be associating with more substance using peers, putting them at greater risk for substance use (Dermody et al., 2016).

Adolescents often make judgments about engaging in risk behaviors (e.g., substance use) that are inconsistent with their self-reported intentions; it is possible that risk-conducive circumstances activate young people's heuristic processing and reactive decision making (Albert & Steinberg, 2011). The Prototype-Willingness model posits that young persons' willingness to engage in a particular behavior under conducive circumstances (e.g., if the behavior is supported by a friend or group of friends) may be important for understanding reactive and unintentional behaviors (Gibbons, Gerrard, & Lane, 2003). Substance use willingness assesses individuals' curiosity about and openness to engage in a behavior, regardless of their deliberate planning or intention (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008) and is a strong predictor of future substance use in young adolescent samples (Gerrard, Gibbons, Brody et al., 2006).

Despite the importance of attending to precursors of the initiation of substance use among sexual minorities and the importance of peers in influencing willingness to use substances,

there is limited research examining whether sexual orientation disparities exist in substance use willingness among adolescents, or in the very early milestones of substance use (i.e., the first sips of alcohol or puffs of a cigarette). A better understanding of the disparities related to sexual orientation is needed to determine the most effective substance use prevention interventions for sexual minority youth. The goals of the present study were: 1) to examine whether sexual minority youth demonstrated disparities in willingness to use cigarettes, alcohol, and marijuana if offered by a best friend or group of friends compared to their non-sexual minority counterparts; and 2) using prospective data, to determine whether sexual minority youth demonstrated increases in willingness to use substances over a six-month follow period compared to their non-sexual minority counterparts.

Methods

Participants and Procedures

Data came from a parent project that initially comprised 1,023 students recruited in six Rhode Island middle schools. Details on study procedures have been described elsewhere (Jackson et al., 2014). Participants were assessed using online surveys in high school, initially on a semi-annual basis for three years and then on a quarterly basis. At the start of a new grant funding cycle 857 of the 1,023 (83.8%) were re-enrolled. Measures of sexual identity and sexual attraction were added to two high school assessments that occurred approximately 6–7 years after enrollment, although 295 participants had already completed the study because they had graduated from high school. Thus, the present study utilized data from 451 participants who re-enrolled, had not yet graduated from high school, and completed these two high-school assessments (henceforth referred to as Time 1 and Time 2). Adolescents with missing data for sexual identity or attraction ($n=8$) were excluded from analyses, yielding a final sample of 443. The Brown University Institutional Review Board approved all project procedures.

Measures

Sociodemographic Variables—At enrollment, participants reported their race and ethnicity and indicated whether they received a lunch subsidy. At Time 1, participants reported their sex assigned at birth (male/female), age, sexual identity, and sexual attraction. Sexual identity was assessed by asking: “Do you consider yourself to be: heterosexual or straight; gay or lesbian; or bisexual.” 3.6% ($n=16$) self-identified as lesbian or gay, 11.5% ($n=51$) as bisexual, and 84.9% ($n=377$) as heterosexual or straight. Sexual attraction was assessed by asking: “People are different in their sexual attraction to other people. Which best describes your feelings? Are you: only attracted to females; mostly attracted to females; equally attracted to females and males; mostly attracted to males; only attracted to males; not sure.” Using this response and sex assigned at birth, 71.3% ($n=318$) reported only opposite-sex attraction, 4.1% ($n=18$) reported only same-sex attraction, 15.9% ($n=71$) reported mostly opposite-sex attraction, 4.9% ($n=22$) reported equal attraction to both sexes, 2% ($n=1$) reported mostly same-sex attraction, and 2.9% ($n=13$) reported that they were unsure of their sexual attractions. Consistent with prior research (Schuster, Bogart, & Klein, 2015), responses to both the sexual identity and attraction variables were used to create a

single item in which sexual minority status comprised anyone who identified as lesbian, gay or bisexual or who did not indicate that they were only attracted to the opposite sex.

Substance Use Willingness—At Time 1 and Time 2 willingness to use cigarettes, alcohol, and marijuana were assessed with items from the University of Missouri-St. Louis (2013) adapted to assess willingness to drink alcohol and smoke marijuana offered by a best friend (e.g., “If your best friend offered you an alcoholic beverage, would you drink it?”). Response options ranged from 0 (*definitely not*) to 3 (*definitely yes*).

Willingness to use if offered by a group of friends was assessed with one additional item for marijuana and three items each for alcohol (willing to sip, consume one drink, consume more than one drink) and cigarettes (willing to take a puff, a full cigarette, smoke more than one cigarette). Response options ranged from: 1 (*definitely willing*) to 4 (*definitely not willing*). Items were reverse coded and a mean was taken across all items ($\alpha=0.95$ for alcohol; $\alpha=0.93$ for cigarettes).

Substance Use Initiation—Substance use data were gathered at each wave of the parent study and youth reporting use at any of these waves were coded as lifetime (ever) users at Time 1 of the present study. For smoking, participants were asked: “Have you ever tried or experimented with cigarette smoking, even a few puffs/drags?” For drinking, participants were asked whether they had ever had a sip of alcohol, not including consumption that was part of a religious service. For marijuana use, participants were asked: “Have you ever used marijuana (pot, hash, hash oil, etc.)?”

Statistical Analyses

Descriptive statistics were obtained for all variables, including the distribution of scale scores, with appropriate tests for normality. Next, bivariate analyses were conducted by using a series of chi-square and t-tests to examine differences by sexual minority status. We conducted a set of multivariable linear regression models for each substance use willingness outcome. Cross-sectional models using Time 1 willingness were first conducted, followed by prospective models using Time 2 willingness as the outcome. For each model, willingness was regressed on sexual minority status as well as covariates that may confound or explain the associations between sexual minority status and substance use willingness (sex assigned at birth, age, race/ethnicity, and lunch subsidy). Models also adjusted for substance use initiation in order to account for prior experience using the substance, and prospective models were adjusted for Time 1 willingness. All analyses were conducted using SPSS version 23.

Results

The overall sample was predominantly female (59.5%) with an average age of 16.7 (Median=16.7, $SD=0.8$; range: 15–20 years), and 28.1% qualified for free/reduced lunch. In total, 26.6% ($n=118$) of participants were classified at Time 1 as a sexual minority based on their sexual identity and attraction. Sociodemographic and substance use information for the sample and bivariate comparisons by sexual minority status are reported in Table 1.

In bivariate analyses, compared to their non-sexual minority counterparts, sexual minority youth were significantly more likely to have female sex assigned at birth and to report each of the substance use behaviors. Sexual minority youth also indicated greater willingness to drink alcohol, smoke a cigarette, and smoke marijuana if it was offered by a best friend or a group of friends compared to their non-sexual minority counterparts.

Table 2 presents results of multivariable linear regression models. After adjusting for covariates, sexual minority youth reported significantly higher levels of willingness to smoke a cigarette if a best friend ($B=0.07$, $SE=0.03$, $p<0.05$) or a group of friends offered ($B=0.12$, $SE=0.06$, $p<0.05$), and were more willing to smoke marijuana if they were offered it from a best friend ($B=0.31$, $SE=0.10$, $p<0.01$) compared to their non-sexual minority counterparts. There were no significant differences by sexual minority status in willingness to use marijuana if offered by a group of friends or in willingness to use alcohol in either scenario.

In a final step, we fit a series of multivariable longitudinal regression models for each Time 2 substance use willingness outcome (see Table 2), using the same set of covariates as well as Time 1 willingness. Sexual minority youth reported significantly greater willingness to smoke a cigarette if a best friend ($B=0.14$, $SE=0.05$, $p<0.01$) or if a group of friends offered cigarettes ($B=0.29$, $SE=0.09$, $p<0.01$).

Discussion

Sexual minority youth reported a greater willingness to use tobacco, marijuana, and alcohol compared to their non-sexual minority counterparts, although the multivariable longitudinal effects held only for tobacco use willingness at follow-up after accounting for several known predictors of willingness to use substances. Given that stigma and social networks have been posited as a risk factor for tobacco and alcohol among sexual minority youth (Hatzenbeuhler, McLaughlin, & Xuan, 2016; Goldbach, Tanner-Smith, Bagwell, & Dunlap, 2014), our findings highlight the importance of accounting for the role of peer influence in explaining and understanding tobacco-related disparities among sexual minority youth.

In longitudinal models, sexual minority youth reported increases in willingness to smoke a cigarette if offered from peers over a six-month period. Sexual minority youth may experience rejection from their families of origin and peer groups while they are exploring and integrating their sexual orientation identities; friends therefore become an important source of support and influence on risky behaviors. Indeed, evidence suggests that peers may play a critical source of support and shape norms for sexual minority youth as a result of negativity from families and other social networks (Boyle et al., 2017). Sexual minority youth thus may be more willing to use substances if offered by a friend than their non-sexual minority counterparts as a function of a desire for peer acceptance and identity affirming group affiliations (Hatzenbeuhler, 2009; Dermody et al., 2016). Additionally, tobacco industries systematically target sexual minority communities, which may make tobacco use more visible and normative in sexual minority youth's close friendship networks (Smith, Thomson, & Offen, 2008). Future research is warranted to understand the ways in which

familial rejection, stigma, different media outlets (e.g., advertising), and social networks impact substance use willingness and behaviors over time among sexual minority youth.

In bivariate analyses, sexual minority youth reported greater willingness to use alcohol if offered by a best friend or group of friends, but effects were no longer significant in multivariate models which adjusted for covariates and confounders. It is plausible that sexual orientation differences were not found in the multivariate models because there were high rates of prior alcohol use (i.e., 71.3% of the entire sample had ever sipped alcohol by Time 1) whereas a smaller portion of the sample had ever puffed cigarettes (19.2%) or used marijuana (32.5%). Given that prior substance use is associated with greater willingness to use substances, sexual orientation differences in willingness to drink alcohol were more difficult to detect once prior substance use was controlled. Research with larger samples might benefit from examining sexual orientation differences in alcohol willingness for those who are have yet to sip or experiment with alcohol.

The study has several limitations. Sexual orientation is a multidimensional construct consisting of attractions, behavior, and identification, and only attractions and identifications were assessed. Given the small number of sexual minority youth, we collapsed identity and attraction into one composite variable. Thus, we were unable to parse out nuanced differences by sexual identity and attraction, which is particularly important given evidence that bisexual youth are at particularly high risk of substance use (Marshall et al., 2008). Additionally, sexuality is a fluid construct, particularly during adolescence. Thus, longitudinal research is needed to understand whether changes in sexuality are associated with substance use willingness. There was a small number of sexual minority males, so we were unable to examine whether the associations between sexual minority status and substance use willingness were moderated by participants' sex at birth. The sample is not representative of the population; given that Rhode Island was one of the first states to legalize same-sex marriage, the generalizability of findings to communities without any legal protections for sexual minorities remains to be determined. The sample was predominantly White, requiring caution in generalizing findings to more ethnically or racially diverse youth. Finally, our measures of substance use and willingness relied on self-report, and youth may be prone to memory/recall bias, comprehension problems, and social desirability, although this latter concern may not apply as strongly to willingness, which can be effectively assessed with explicit items (Gibbons, Kingsbury, & Gerrard, 2012).

Conclusions

Sexual minority youth showed greater substance use willingness compared to their non-sexual minority counterparts. The effect on cigarette willingness remained significant over time after adjusting for lifetime substance use and other covariates. The results point to the importance of prevention programs that address peer contexts including social marketing approaches which correct social norms and foster refusal-skills training geared towards declining cigarette use when offered from friends. Furthermore, school-based interventions that seek to reduce stigma and discrimination for sexual minority youth (e.g., Gay-Straight Alliances) may provide an important opportunity to develop and foster close friendships and change social norms about substance use behaviors. Given the relational nature of substance

use willingness, future prevention research and interventions must account for the interpersonal and social context to adequately address disparities in substance use among sexual minority youth.

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Table 1

Sociodemographic and substance use comparisons by sexual minority status (N = 443)

	Total		Non-Sexual Minority		Sexual Minority		Test Statistic
	N=443		N=325		N=118		
	M (SD)		M (SD)		M (SD)		
Age	16.73 (0.84)		16.72 (0.85)		16.75 (0.85)		n.s.
Race/Ethnicity	N (%)		n (%)		n (%)		n.s.
White	316 (72.0)		238 (73.7)		78 (67.2)		
Black	16 (3.6)		13 (4.0)		3 (2.6)		
Hispanic	61 (13.9)		43 (13.3)		18 (15.5)		
Other	46 (10.5)		29 (9.0)		17 (14.7)		
Lunch Subsidy	101 (28.1)		71 (27.1)		30 (30.9)		n.s.
Sex at birth							$\chi^2(1)=36.76^{***}$
Female	263 (59.5)		164 (50.6)		99 (83.9)		
Male	179 (40.5)		160 (49.4)		19 (16.1)		
Substance Use Behaviors							
Alcohol Use							
Ever Sip Alcoholic Drink	316 (71.3)		223 (68.6)		93 (78.8)		$\chi^2(1)=4.40^*$
Ever Puff Cigarette	85 (19.2)		48 (14.8)		37 (31.4)		$\chi^2(1)=15.36^{***}$
Ever Used Marijuana	144 (32.5)		95 (29.2)		49 (41.5)		$\chi^2(1)=5.96^*$
Willingness at Time 1							
Best Friend Offer							
Drink	0.89 (1.05)		0.81 (1.01)		1.12 (1.14)		t(441)=2.78**
Cigarette	0.26 (0.44)		0.21 (0.41)		0.42 (0.50)		t(435)=4.64***
Marijuana	0.67 (1.00)		0.55 (0.91)		1.03 (1.16)		t(442)=4.48***
Group of Friends Offer							
Drink	1.89 (0.99)		1.84 (0.98)		2.05 (1.02)		t(442)=2.02*
Cigarette	1.19 (0.51)		1.15 (0.44)		1.32 (0.67)		t(441)=3.11**
Marijuana	1.64 (0.97)		1.55 (0.91)		1.92 (1.09)		t(442)=4.48***

	Total	Non-Sexual Minority	Sexual Minority	Test Statistic
	N=443	N=325	N=118	
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	
<i>Age</i>	16.73 (0.84)	16.72 (0.85)	16.75 (0.85)	n.s.
<i>Willingness at Time 2</i>				
<i>Best Friend Offer</i>				
Drink	0.95 (1.08)	0.89 (1.04)	1.15 (1.15)	t(395)=2.17 *
Cigarette	1.10 (0.38)	1.05 (0.24)	1.27 (0.64)	t(312)=4.38 ***
Marijuana	0.68 (1.03)	0.55 (0.91)	1.05 (1.23)	t(395)=4.35 ***
<i>Group of Friends Offer</i>				
Drink	1.97 (1.04)	1.96 (1.05)	2.01 (1.00)	t(394)=0.37
Cigarette	1.23 (0.61)	1.19 (0.58)	1.34 (0.67)	t(394)=2.09 *
Marijuana	1.64 (1.00)	1.54 (0.92)	1.93 (1.13)	t(395)=3.45 ***

Note: All data are from Time 1, with the exception of Time 2 willingness and the measures of lunch subsidy and race/ethnicity which were assessed at enrollment.

*** p<0.001;

** p<0.01;

* p<0.05.

Table 2

Cross-sectional multivariate linear regression model examining substance use willingness

	Willingness from a Best Friend at Time 1			Willingness from a Group of Friends at Time 1		
	Alcohol	Cigarettes	Marijuana	Alcohol	Cigarettes	Marijuana
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Sexual Minority	0.09 (0.12)	0.07 (0.03) *	0.31 (0.10) **	0.03 (0.11)	0.12 (0.06) *	0.18 (0.10)
Age	0.09 (0.07)	-0.01 (0.02)	0.09 (0.05)	0.09 (0.06)	0.01 (0.03)	0.11 (0.05) *
Male sex at birth	-0.16 (0.11)	-0.03 (0.03)	-0.07 (0.09)	-0.25 (0.10) *	0.01 (0.05)	-0.13 (0.09)
White race/ethnicity	0.09 (0.12)	0.01 (0.03)	-0.07 (0.11)	0.07 (0.12)	-0.06 (0.06)	-0.07 (0.10)
Lunch Subsidy	-0.28 (0.13) *	-0.03 (0.04)	-0.34 (0.11) **	-0.23 (0.12)	-0.14 (0.06) *	-0.34 (0.11) **
Ever used substance	0.97 (0.11) ***	1.91 (0.04) ***	1.14 (0.10) ***	0.90 (0.11) ***	0.39 (0.07) ***	1.17 (0.09) ***

Longitudinal multivariate linear regression models examining substance use willingness

	Willingness from a Best Friend at Time 2			Willingness from a Group of Friends at Time 2		
	Alcohol	Cigarettes	Marijuana	Alcohol	Cigarettes	Marijuana
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Sexual Minority	-0.07 (0.09)	0.14 (0.05)**	0.07 (0.09)	0.09 (0.02)	0.26 (0.09)**	0.06 (0.10)
Age	0.02 (0.05)	-0.01 (0.02)	0.03 (0.05)	-0.03 (0.05)	0.02 (0.04)	0.02 (0.05)
Male sex at birth	-0.27 (0.08)**	0.03 (0.04)	-0.20 (0.09)**	0.26 (0.09)**	-0.05 (0.06)	-0.17 (0.05)
White race/ethnicity	-0.01 (0.09)	-0.05 (0.05)	-0.06 (0.10)	0.10 (0.10)	-0.15 (0.07)*	-0.09 (0.10)
Lunch Subsidy	-0.12 (0.04)	-0.04 (0.05)	-0.09 (0.10)	0.23 (0.10)*	-0.12 (0.07)	-0.17 (0.11)
Willingness Time 1	0.77 (0.04)***	0.93 (0.07)***	0.72 (0.05)***	0.70 (0.05)***	0.53 (0.06)***	0.65 (0.05)***
Ever used substance	0.10 (0.09)	0.08 (0.06)	-0.01 (0.10)	-0.16 (0.10)	0.15 (0.08)	0.00 (0.11)

Note: Ever used substance indicates lifetime consumption (by Time 1) of the relevant substance (at least a sip of alcohol for alcohol models, ever puff of a cigarette for cigarettes model, and ever used marijuana in marijuana models).

p<0.001;

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p<0.01;

50.0>d
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