Trajectories of Alcohol and Cigarette Use among Sexual Minority and Heterosexual Girls

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Abstract

Purpose—To examine disparities between sexual minority girls (SMGs) and heterosexual girls in trajectories of substance use over time.

Method—Girls were included in the analyses if they were age 12–18 years old at Wave 1 and not missing sexual orientation data at Wave 4 (n=7765). Latent curve models were estimated across all 4 waves (extending from middle adolescence into young adulthood) to examine trajectories of cigarette and alcohol use.

Results—Initial levels of substance use were higher for SMGs than they were for heterosexual girls. SMGs also exhibited sharper escalations in use over time across all substances as they were transitioning into young adulthood.

Conclusions—Persistent rates of cigarette and heavy alcohol use among SMGs may increase their risk for a host of mental and physical health problems in adulthood. Clinicians should be prepared to discuss SMG health topics effectively and in private, and discuss prevention and intervention programs with girls at risk.

Keywords

LGBT health; sexual minority girls; homosexuality; adolescent substance use; alcohol use; cigarette use; adolescent health disparities

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Introduction

Sexual minority girls (SMGs; Girls who report same-sex sexual or romantic attraction, same-sex sexual behavior, or a same-sex orientation/identity) are 400% more likely to report substance use than heterosexual girls [1]. Average longitudinal trajectories of substance use among sexual minority youth show that substance use disparities begin in early adolescence and increase as youth transition into young adulthood [2–4]. Minority Stress Theory (MST) suggests that sexual minority individuals might be at higher risk for substance use problems due to higher levels of discrimination and victimization associated with their sexual orientation, and there is robust support for these disparities among adults [5]. However, MST does not address the unique needs of sexual minority youth as a function of their age and developmental stage. Thus, little is known about whether or not substance use disparities are maintained or change over time among SMGs, which may be best articulated using a developmental psychopathology theory [6]. This theory suggests that in order to understand change over time among this important group, trajectories of substance use behavior across developmental stages such as adolescence and young adulthood should be estimated in order to identify and describe longitudinal pathways of risk. Examining individual trajectories of behavior over time is an ideal methodological tool to accomplish this goal [7]. Although individual trajectory modeling has been used for over two decades to describe and explain longitudinal health problems among youth, there are no studies to date that focus specifically on substance use among SMGs. Our primary aim was to examine differences between SMGs and heterosexual girls in trajectories of substance use and misuse as they transition into young adulthood.

Method

The National Longitudinal Study of Adolescent Health [8] ("Add Health") survey data were used (N=20,745). Average ages at each wave were: W1=15 (SD=1.7); W2=16 (SD=1.6); W3=22 (SD=1.8); W4=28 (SD=1.8). Participants were included in this analysis if they were female, ages 12–18-years-old at Wave 1, not missing Wave 1 age information, and not missing sampling weights or information regarding sexual orientation at Wave 4 (n=7,765 of 10,482 girls at Wave 1 [74%]). Retention was excellent within this subsample at each follow-up (W2= 76%, W3= 85%, W4= 99%). There were no differences among those with missing data at follow-ups in terms of ethnicity or sexual orientation, but girls with missing data at W2 (but not W3) did report higher levels of substance use at the first time point (all $p's$<.01). The sexual orientation measure at Wave 4 was: "Please choose the description that best fits how you think about yourself: '100% heterosexual (straight),' 'mostly heterosexual (straight), but somewhat attracted to people of your own sex,' 'bisexual that is, attracted to men and women equally,' 'mostly homosexual (gay), but somewhat attracted to people of the opposite sex,' '100% homosexual (gay).' The following categories were used for our analysis: Heterosexual (n=6241), mostly heterosexual (n=1200), bisexual (n=182), and gay/ mostly gay (n=142).

Four latent curve models were estimated, one for each outcome. Outcome variables included: Number of days smoked cigarettes in the past thirty days (range: 0–30); and frequency in the past 12 months of alcohol use, drinking five or more drinks in one sitting, and drunkenness. The response scale for the three alcohol variables ranged from '0' (never) to '7' (every day to almost every day).

Latent curve models [7] were estimated using Mplus software [9]. We accounted for missing data by using full information maximum likelihood model estimation assuming ignorable missingness at random. We used sampling weights and clustering variables, available from Add Health [10] for all analyses to increase generalizability to the larger population and to

reduce bias due to interdependence in the data. Model fit was assessed using expert guidelines. Age, race, and ethnicity at Wave 1 were included as covariates.

Results

We estimated initial levels and change over time from W1 to W4 using a linear change model with the final time point freely estimated to improve model fit. For all models RMSEA<.05, suggesting close fit of the model to the data. Across all models, initial levels and rates of change in substance use significantly differed from zero and were characterized by significant individual differences in both levels and rates of change (all p's<.05). Using nested model comparisons, we tested whether trajectory means differed by sexual orientation. Across all outcomes, initial levels of use were higher among those who later identified as "mostly heterosexual" or "bisexual" or "gay," and lowest among those who identified as "100% heterosexual." Moreover, SMGs exhibited the greatest escalations in use across all substances from W1 to W4, while "100% heterosexual" individuals exhibited the slowest increases in use into emerging adulthood. Results indicated that bisexual and gay identified youth did not differ on the outcomes examined, so their combined outcomes are presented in Table 1 and Figure 1. Table 1 provides intercept and slope means and effect sizes, which were small to medium in size, for group differences from the four latent trajectory models. Figure 1 depicts trajectories of self-reported drunkenness in the past year across the four waves of Add Health.

Discussion

Substance use disparities among SMGs in this study began in adolescence and continued as they transitioned into young adulthood. This pattern of effects is robust in that there were significant heterosexual and SMG group differences in the initial levels of substance use and in the longitudinal acceleration of use across all outcome variables. Persistently higher rates of alcohol and tobacco use among SMGs relative to heterosexual girls may increase their risk for a host of mental and physical health problems in adulthood. Clinicians should acquire the knowledge and skills to work effectively with this population, emphasize their privacy and confidentiality policies with teenagers regarding all sensitive topics, assess patients' sexual orientation and substance use histories in a private setting, and be prepared to address prevention and intervention needs for girls at risk. Sexual minority girls, their families, and health care providers would benefit from future research that attempts to identify mediators (e.g., perceived stress) and moderators (e.g., social support) of this disparity in order to inform the development of prevention and intervention programs.

Acknowledgments

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10. Chantala, K.; Tabor, J. National Longitudinal Survey of Adolescent Health: Strategies to perform a design-based analyses using the ADD Health Data. Carolina Population Center, University of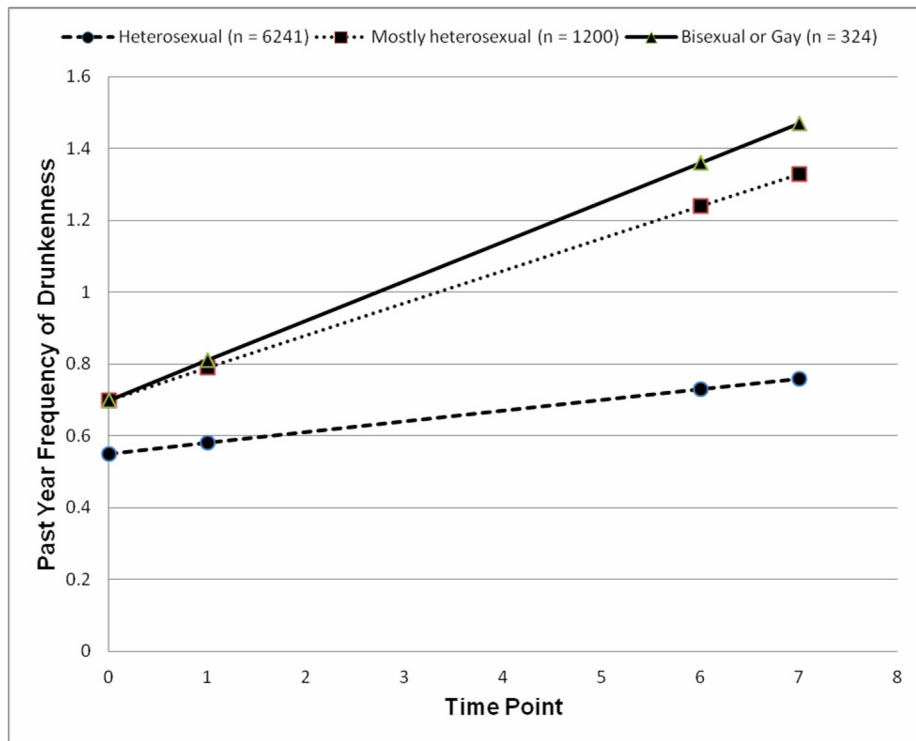 North Carolina; Chapel Hill: 2010. Retrieved 4/13/2011 from http://www.cpc.unc.edu/projects/addhealth/data/guides/weight1.pdf

Figure 1.
Average trajectories of drunkenness in the previous 12 months reported by sexual minority
girls and heterosexual girls in the Add Health study (n=7765)

Table 1

Group differences in initial levels of substance use (intercepts) and increase in substance use (slopes) from mid-adolescence through young adulthood

	Heterosexual (n=6241)	Mostly Heterosexual (n=1200)	Bisexual/Gay (n=324)	Cohen's d
Wave 1 Age Mean (Std Dev)	15.57[a] (1.72)	15.29[b] (1.69)	15.17[b] (1.76)	0.16 – 0.22
% Non-White	38%[a]	30%[b]	41%[a]	OR = 1.41 – 1.66
% Hispanic	16%[a]	13%[a]	17%[a]	n/a
Alcohol Frequency Level	.976[a]	1.28[b]	1.06[c]	.07–0.27
Alcohol Frequency Change	0.14[a]	0.19[b]	0.19[b]	0.24
Times Drunk Initial Level	0.55[a]	0.70[b]	0.70[b]	0.16
Times Drunk Change	0.03[a]	0.09[b]	0.11[c]	0.12–0.52
5+ in a Row Level	0.53[a]	0.67[b]	0.67[b]	0.15
5+ In a Row Change	0.05[a]	0.09[b]	0.12[c]	0.17–0.45
Tobacco Frequency Level	4.71[a]	6.84[b]	6.84[b]	0.22
Tobacco Frequency Change	0.50[a]	0.76[b]	0.76[b]	0.16

Note. Estimates not sharing superscripts are significantly different ($p < .001$). Std Dev= Standard Deviation; OR=Odd Ratio.