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Evaluating Age-Related Disparities in Cannabis-Related Problems among LGBT+ versus non-LGBT+ Adults

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Abstract

LGBT+ adults demonstrate greater cannabis-related problems (e.g., Cannabis Use Disorder [CUD]) compared to non-LGBT+ counterparts. No study has explored age-related disparities in cannabis problems across the adult lifespan, nor have studies identified specific CUD criteria that contribute to elevated CUD among LGBT+ adults. The purpose of the study was to examine associations between LGBT+ identity and age with endorsement of CUD criteria in a sample of regular cannabis consumers. An online sample of N=4334 (25.1% LGBT+) adults aged 18-64 residing in the U.S. completed an online survey about cannabis use behaviors and CUD diagnostic criteria. Bivariate contrasts revealed significantly greater CUD criteria endorsement

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Contributors

Cara A. Struble: conceptualization, data cleaning, statistical analysis, writing manuscript; **Jacob T. Borodovsky:** survey design, data collection, statistical analysis, editing manuscript; **Mohammad I. Habib:** data collection, data cleaning, reviewing/editing manuscript; **Ofir Livne:** reviewing/editing manuscript; **Claire Walsh:** data cleaning, reviewing/editing manuscript; **Efrat Aharonovich:** reviewing/editing manuscript; **Deborah S. Hasin:** funding acquisition, reviewing/editing manuscript, supervision; **Alan Budney:** conceptualization, funding acquisition, data collection, writing manuscript, reviewing/editing manuscript, supervision. All authors have confirmed their roles and approved the final article for submission.

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among LGBT+ respondents, largely driven by differences at younger ages. However, this effect disappeared in the majority of adjusted logistic regression models. LGBT+ identity was associated with greater probability of use in larger amounts (adjOR=2.10, 95% CI: 1.22-3.60) and use despite physical/mental health problems (adjOR=2.51, 95% CI:1.23-5.03). No age*LGBT+ identity interactions were detected. Plotted trends depict more pronounced disparities in outcomes among LGBT+ adults under 35 years. Several potential risk and protective factors including employment, education, and reasons for use were identified. There were age-related differences in these characteristics among LGBT+ and non-LGBT+ respondents. Initial findings highlight the need for LGBT+ research examining trends in health outcomes and sociodemographic and cannabis characteristics across the lifespan. The study also provides a substantive contribution regarding specific cannabis-related problems that young LGBT+ cannabis consumers may be more likely to endorse than their non-LGBT+ counterparts.

Keywords

LGBT+; sexual and gender minority; cannabis; cannabis use disorder; disparities

1 Introduction

LGBT+ (e.g., lesbian, gay, bisexual, transgender, etc.) adults routinely demonstrate higher rates of cannabis use and more cannabis-related problems compared to cisgender heterosexual counterparts (e.g., Boyd, Veliz & McCabe, 2020; Dyar, 2022; Schuler, Stein & Collins, 2019; Struble et al., 2022). Prevalence of cannabis use disorder (CUD) varies considerably across subgroups (Hasin, Shmulewitz & Sarvet, 2019). For example, CUD estimates are highest among young adults, a subgroup that is more likely to report consuming cannabis regularly (National Institute on Drug Abuse [NIDA], 2022) AND more likely to endorse an LGBT+ identity (Jones, 2022) compared to older peers.

LGBT+ individuals appear more likely to report frequent cannabis consumption and, among cannabis consumers, have greater likelihood and severity of CUD compared to cisgender heterosexual peers (e.g., Boyd et al., 2019; Bränström & Pachankis, 2018; Liautaud, Barrington-Trimis, Liu et al., 2021; Philbin, Mauro, Green & Martins, 2019; Schofield, Cuttler, Conner, Prince, & Addictions Research Team, 2023; Schuler, Rice, Evans-Polce & Collins, 2018). Most research in this area has yet to examine differences in rates of endorsement of specific CUD criteria. Such granular information can guide clinical efforts to assess and treat cannabis-related problems most common among LGBT+ consumers.

The leading framework for fostering a comprehensive understanding of disparities in cannabis outcomes among LGBT+ individuals is the Minority Stress Theory (Meyer, 2003) which posits that LGBT+ individuals face excess chronic stressors that contribute to worsened outcomes including substance use (Dyar, Sarno, Newcomb & Whitton, 2020). Exposure and reactivity to daily stressors decrease with age (Almeida, Rush, Mogle, Piazza, Cerino & Charles, 2023). LGBT+ samples have also demonstrated positive associations between age and resilience (Koziara, Mijas, Galbarczyk et al., 2022) that may offset the impact of minority stressors, but little is known about whether cannabis disparities vary as a

function of age. Given that younger age is associated with greater cannabis-related problems in the general population (Substance Abuse and Mental Health Services Administration, 2022), younger LGBT+ consumers may have more risk factors that increase the likelihood of cannabis problems. Other sociodemographic and cannabis characteristics that contribute to disparities in criterion-level CUD problems have not been examined empirically.

The purpose of this study is to explore associations between LGBT+ identity, age, and individual CUD criteria in a sample of regular cannabis consumers aged 18-64. We anticipated that cannabis consumers who identify as LGBT+ would have greater likelihood of cannabis-related problems, and that these disparities would be most pronounced among younger LGBT+ cannabis consumers. Findings will contribute to a better understanding of cannabis problems among LGBT+ individuals across the lifespan, including potential risk and protective factors.

2 Methods

2.1 Sample Population

The sample was recruited as part of a larger study designed to develop accurate measures of cannabis consumption (Budney et al., 2022). Adults aged 18 and older from the United States were recruited from February to April 2022 via Facebook (2022) using keyword-target advertising based on self-reported interests. Advertisements contained a hyperlink to an anonymous survey administered through Qualtrics (2022). Respondents provided informed consent prior to survey access. Study procedures were approved by the Dartmouth College Committee for Protection of Human Subjects. No compensation was provided.

2.2 Survey

Respondents completed a cannabis consumption survey which included sociodemographic and self-reported cannabis use behaviors and problems (American Psychiatric Association; 2022).

2.2.1 LGBT+ Identity.—Respondents selected one option identifying the gender category that best represents them: (a) male/man, (b) female/woman, (c) transgender man, (d) transgender woman, (e) non-binary or gender fluid, (f) prefer to self-describe, and (g) prefer not to say. Respondents identified their sexual orientation by selecting one of the following options: (a) straight/heterosexual; (b) gay, (c) lesbian, (d) bisexual or pansexual, (e) prefer to self-describe, and (f) prefer not to say. Responses to both items were recoded into a single dichotomous variable ‘LGBT+ Identity’. Respondents who reported “prefer not to say” to BOTH items were dropped from analyses. Respondents who reported male/man or female/woman gender identity AND straight/heterosexual sexual identity were coded as ‘non-LGBT+’. Respondents who selected EITHER a sexual or gender minority identity were coded as ‘LGBT+’.

2.2.2 Cannabis Use Disorder Criteria.—Participants completed 16 items assessing the 11 CUD criteria from the Diagnostic and Statistical Manual of Mental Disorders (5th

ed., text rev; [DSM-5-TR]; Grant et al., 2015; Hasin et al., 2015). See supplementary material for item wording and scoring.

2.2.3 Sociodemographic and Cannabis Covariates.—Items surveyed sex, race/ethnicity, education, and employment status. Respondents provided their state of residence which was recoded based on state legalization status as of April 2022. Respondents also reported age of cannabis initiation, past-month frequency, and primary reason for using cannabis.

2.3 Data Analysis

Chi-square and t-tests of independence evaluated differences in sociodemographic and cannabis covariates between non-LGBT+ and LGBT+ groups. Logistic regression models with robust standard errors were used to test the main and interactive effects of LGBT+ identity and age on endorsement of CUD criteria controlling for sociodemographic and cannabis covariates. Adjusted odds ratios (adjORs) and 95% confidence intervals are reported. Descriptive analyses were run in SPSS version 28, while regression models were built and graphed in STATA version 17.

3 Results

3.1 Analytic Sample

Of the 8284 respondents who clicked the link, eligible past-week consumers who completed CUD-related items (n=5001) were included in the present study. Respondents aged 65+ (n=686) were excluded due to low LGBT+ endorsement (8.1%). Among respondents aged 18-64, 74.9% were categorized as non-LGBT+ (n=3248) and 25.1% as LGBT+ (n=1086) resulting in a final analytic sample of N=4334.

3.2. Bivariate Differences

In the overall sample, LGBT+ respondents were younger, more likely to report female-at-birth sex, and less likely to identify as non-Hispanic White than non-LGBT+ respondents. They were also more likely to be students. Regarding cannabis characteristics, LGBT+ participants were more likely to reside in a state with recreational cannabis laws and more likely to report use for recreational reasons only. LGBT+ respondents reported later age of initiation and fewer cannabis using days in the past month than non-LGBT+ respondents.

Bivariate analyses found that LGBT+ respondents were significantly more likely to report 9 of the 11 individual CUD criteria (only endorsement of interpersonal problems and of use in high-risk situations did not differ between groups), indicating substantial disparities in many types of cannabis-related problems. However, these differences were driven by greater criterion endorsement among younger LGBT+ respondents (aged 18-34 years). See Table 1 for complete bivariate results.

3.3 Adjusted Logistic Regression Models

Age was negatively associated with endorsement of all CUD criteria (adjORs ranged from 0.94–0.99). LGBT+ identity was associated with increased likelihood of endorsement

of two criteria including use in larger amounts or over a longer period than intended, adjOR=2.10, 95% CI: 1.22–3.60; and continued use despite physical or mental health problems, adjOR=2.51, 95% CI: 1.23–5.03. Figures 1a-1b demonstrate more pronounced differences in the probability of endorsing Criteria 1 (Figure 1a) and 9 (Figure 1b) among respondents under 35 years of age, although the overall size of the effect of LGBT+ status was small. No significant age*LGBT+ identity interactions emerged after adjusting for sociodemographic and cannabis covariates.

3.3.1. Sociodemographic and Cannabis Covariates.—The lack of significant LGBT+ effects in adjusted models highlight the substantial impact of covariates as risk and protective factors to CUD problems. Being unemployed (versus employed) was associated with increased odds of endorsing use in larger amounts or over longer periods, failed quit attempts, spending a lot of time using, craving, problems fulfilling obligations, giving up important activities, continued use despite physical or mental health problems, tolerance, and withdrawal (adjORs ranged from 1.21–1.91). In addition, being a student (versus employed) was associated with increased odds of endorsing failed quit attempts, craving, giving up important activities, continued use despite physical or mental health problems, and withdrawal (adjORs ranged from 1.37–2.08). Having a college education was associated with reduced odds of endorsing use in larger amounts or over longer periods, spending a lot of time using, problems fulfilling obligations, and continued use despite physical or mental health problems (adjORs ranged from 0.70–0.87).

In terms of cannabis covariates, cannabis motives (reasons) for use were significantly associated with several cannabis problems. Compared to medical reasons only, use for either recreational reasons alone or combined medical/recreational reasons were associated with increased likelihood of endorsing use in larger amounts or over longer periods, failed quit attempts, spending a lot of time using, craving, giving up important activities, continued use despite physical or mental health problems, and tolerance (Recreational: adjORs ranged from 1.59 – 3.64; Medical/Recreational: adjORs ranged from 1.32–2.71). Use for combined medical and recreational reasons was also associated with increased odds of endorsing withdrawal (adjOR=1.70, 95% CI: 1.27–2.28) compared to medical only reasons for use.

4 Discussion

In an online sample of adult regular cannabis consumers, LGBT+ respondents were more likely than cisgender heterosexual counterparts to endorse using cannabis in larger amounts or over a longer period than intended and continued cannabis use despite physical or mental health problems after controlling for age, sociodemographic and cannabis covariates. Disparities in endorsement of CUD outcomes were most pronounced among young adults, although no interactive effects between LGBT+ status and age emerged.

After adjusting for age and additional sociodemographic and cannabis covariates, fewer differences in CUD criteria endorsement were found between LGBT+ and non-LGBT+ respondents. These covariates may indicate important risk and protective factors that contribute to observed disparities in cannabis problems for LGBT+ (vs. non-LGBT) individuals. These factors can further guide assessing risk of cannabis-related problems

and treatment targets among LGBT+ cannabis consumers. Being unemployed and being a student were risk factors associated with endorsing several cannabis problems, while having a college education and reporting cannabis use for medical reasons reduced the odds of endorsing cannabis problems. These factors are reliably associated with cannabis behaviors and problems in the general population (e.g., Mills, Lintzeris, O'Malley, Arnold, & McGregor, 2022; Thompson, Leadbeater, Ames, & Merrin, 2019). While several sociodemographic and cannabis covariates differed among LGBT+ and non-LGBT+ respondents within the overall sample and at distinct age categories, there is a lack of existing data from national or matched studies to determine whether such differences are related to sampling biases or reflect true differences. Moreover, the observed effects of age, LGBT+ status, and sociodemographic and cannabis covariates ranged from small to medium, highlighting the need to explore additional characteristics that may influence probability of CUD-related problems.

Future studies might incorporate measures of minority stress, daily stress, resilience, and reactivity to enhance understanding of the reasons that cannabis-related problems may be elevated in LGBT+ samples, particularly among young adults. Minority stressors can contribute to worsened mental health outcomes, such as depression and anxiety among LGBT+ adults (Baams, Grossman, & Russell, 2015), which may impact the disparity in continued cannabis use despite emotional/physical problems. Further, use in larger amounts or over a longer period may reflect efforts to cope with negative mental health outcomes and/or minority stressors. Recent literature indicates that LGBT+ individuals may be more likely than non-LGBT+ counterparts to be motivated to use cannabis to cope with mental health symptoms (e.g., Schofield et al., 2023). Younger LGBT+ adults may benefit from treatments that seek to explore coping motives for use throughout the day (e.g., continued use to cope with stressors or chronic mental health conditions). Such an intervention might focus on building adaptive coping skills to counter use despite negative physical and/or emotional problems (London-Nadeau et al., 2021; Sherman & McRae-Clark, 2016). Further, interventions that reduce exposure to or impact of minority stressors and improve self-regulation may be particularly beneficial in reducing continued use throughout the day. Data on cannabis coping motives, self-regulation, and both physical and mental health correlates are needed to guide identification of these potential intervention targets.

There are several limitations of this initial study. CUD may be more likely and/or more severe among certain subgroups within the LGBT+ community including bisexual, female-at-birth, and gender diverse individuals (Schofield et al., 2023, Struble et al., 2022). Our study was limited in sample size of diverse LGBT+ identities, particularly at older ages which prevented examination of subgroup trends. Future recruitment strategies will also attempt to engage older LGBT+ respondents aged 65+ to examine extended age and subgroup-specific disparities in cannabis-related problems. Data were obtained from an online sample of regular cannabis consumers, limiting generalizability of the findings. The data are cross-sectional, limiting our understanding of longitudinal trends. The observed disparities across age groups may represent cohort (generational) disparities in cannabis use behaviors and resultant problems or true changes in CUD endorsement throughout the lifespan.

Conclusions

LGBT+ identity was associated with greater endorsement of two CUD criteria, use in larger amounts or over longer periods, and continued use despite physical/emotional problems. While age and LGBT+ identity did not interact, graphs show that disparities are most pronounced among young adults. Several sociodemographic and cannabis covariates may substantially impact endorsement of cannabis problems beyond LGBT+ identity. Employment, college attainment, and use for medical reasons all reduced likelihood of endorsement of CUD. Older LGBT+ adults demonstrated greater rates of these potential protective factors than younger LGBT+ respondents. These trends point to the continued need to understand LGBT+ health outcomes across the lifespan. Future survey iterations will collect data on potential confounds, such as mental and physical health correlates.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- Sexual and gender minority (LGBT+) disparities in cannabis use and problems exist.
- Few studies have examined differences in cannabis problems across the lifespan.
- LGBT+ identity associated with CUD and endorsement of CUD Criteria 1 and 9.
- No age*identity interactions emerged in adjusted models.
- Being employed, college attainment, and medical use protected from problems.

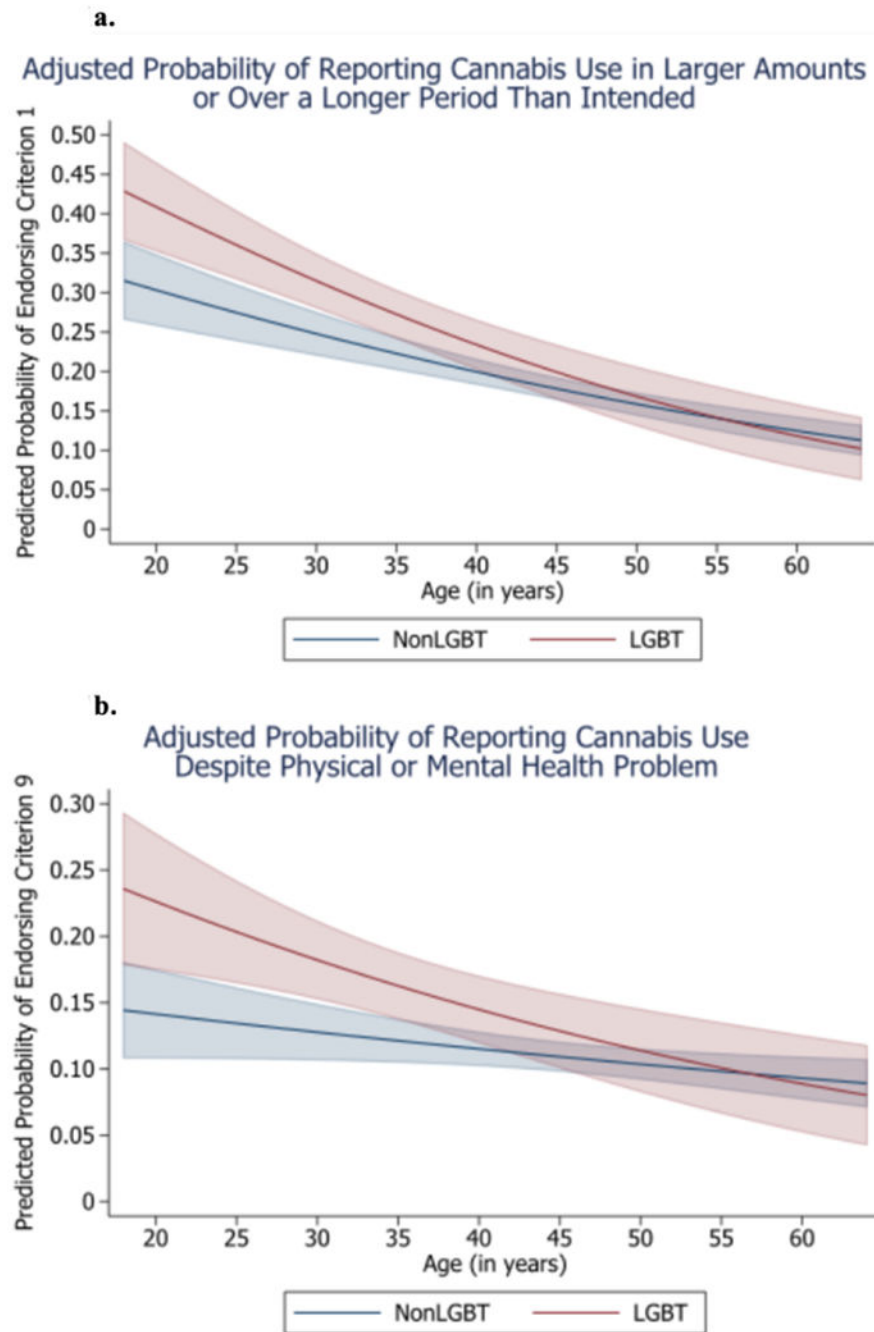


Figure 1: Interaction Plots from Generalized Linear Models

Estimated margins and 95% confidence interval (CI) bands graphed.

a. Adjusted probability of reporting cannabis use in larger amounts or over a longer period of time (Criterion 1). Main effects for LGBT+ identity (adjOR = 2.10, 95% CI: 1.22 – 3.60, $p = .007$) and age (adjOR = 0.97, 95% CI: 0.96 – 0.98, $p < .001$). Interaction non-significant (adjOR = 0.99, 95% CI: 0.97 – 1.00, $p = .069$).

b. Adjusted probability of reporting cannabis use despite it contributing to or worsening physical or mental health problem (Criterion 9). Main effects for LGBT+ identity (adjOR =

2.51, 95% CI: 1.23 – 5.03, $p = .009$) and age (adjOR = 0.99, 95% CI: 0.9 – 0.99, $p = .019$).
Interaction non-significant (adjOR = 0.98, 95% CI: 0.97 – 1.00, $p = .073$).

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Table 1.

Sociodemographic and Cannabis Differences – Bivariate Results

		Overall Sample			18 – 34 Years			35 – 49 Years			50 – 64 Years		
		Non-LGBT	LGBT	Test Stat	Non-LGBT	LGBT	Test Stat	Non-LGBT	LGBT	Test Stat	Non-LGBT	LGBT	Test Stat
Sociodemographic and Cannabis Covariates													
Age (<i>M</i>)		46.8	35.6	25.7	26.9	24.8	7.1	42.1	41.1	3.8	57.6	57.1	1.4
Sex (%)	Female	50.7	77.2	228.9	48.8	84.4	157.3	50.5	72.8	46.7	51.6	64.2	11.9
	Male	48.3	22.8		51.2	15.6		49.5	27.2		48.4	35.8	
Race (%)	Non-Hispanic White	86.1	83.0	6.0	81.8	82.0	0.7	83.9	82.5	0.3	89.3	86.5	2.1
	Non-Hispanic Minority	7.3	8.9		7.7	8.7		8.9	9.8		5.9	8.4	
	Hispanic	6.6	8.1		10.5	9.4		7.2	7.7		4.8	5.1	
Employment (%)	Employed	60.7	62.3	243.0	70.9	62.4	12.2	75.4	72.2	7.8	45.3	49.1	4.8
	Unemployed	35.6	21.2		9.1	8.8		23.6	24.7		54.5	50.0	
	Student	3.8	16.5		19.9	28.9		1.0	3.1		0.2	0.9	
Education (%)	No College	46.3	43.2	3.1	53.8	52.7	0.1	42.7	36.1	4.1	46.4	26.9	29.4
	Any College	53.7	56.8		46.2	47.3		57.3	63.9		53.6	73.1	
Age of Onset (<i>M</i>)		16.2	16.8	-3.2	16.2	17.0	-3.9	16.7	17.0	-0.9	15.8	16.2	-1.0
Past-30 Days (<i>M</i>)		27.1	25.7	5.9	26.3	24.7	3.5	27.4	27.2	0.5	27.1	26.4	1.8
Cannabis Law (%)	No Law	21.5	17.9	11.3	20.7	17.0	2.9	21.8	20.8	0.9	21.6	16.2	8.5
	Medical Law Only	33.9	32.1		33.3	33.3		34.4	32.3		33.7	28.7	
	Recreational Law	44.6	50.0		46.0	49.7		43.8	46.9		44.7	55.1	
Reason (%)	Medical Only	16.3	10.8	30.1	7.3	6.0	1.5	17.9	15.3	1.1	18.3	17.6	0.1
	Recreational Only	14.0	19.0		26.8	24.9		11.0	11.8		11.8	12.5	
	Both	69.7	70.3		65.9	69.1		71.1	72.9		69.9	69.9	
Cannabis Use Disorder Outcomes (% Yes)													
Using more than intended		17.8	28.0	52.6	25.0	36.8	18.2	20.4	19.4	0.1	13.1	15.7	1.1
Failed quit attempts		13.7	25.9	86.5	31.8	37.6	4.1	12.5	13.2	0.1	8.2	11.1	2.1
Spending a lot of time using		51.7	58.0	13.2	62.8	64.6	0.4	54.0	57.3	1.0	45.9	41.2	1.7
Craving		54.4	63.4	26.5	64.8	71.0	4.9	54.5	55.9	0.2	50.7	52.8	0.3

	Overall Sample			18 – 34 Years			35 – 49 Years			50 – 64 Years		
	Non-LGBT	LGBT	Test Stat	Non-LGBT	LGBT	Test Stat	Non-LGBT	LGBT	Test Stat	Non-LGBT	LGBT	Test Stat
Problems fulfilling obligations	3.0	7.4	40.6	7.3	11.0	4.7	2.6	4.2	2.1	1.7	1.9	0.03
Use despite relational problems	6.1	6.7	0.5	8.4	7.7	0.2	5.1	5.2	0.01	6.1	6.0	0.01
Giving up important activities	2.7	6.7	35.9	5.8	11.0	9.8	2.5	1.4	1.3	1.8	2.3	0.2
Use in high-risk situations	32.0	31.4	0.1	39.7	34.5	3.2	31.6	29.5	0.5	29.6	25.5	1.6
Use despite health consequences	10.9	16.2	21.6	15.5	21.0	5.7	7.9	11.1	3.0	11.6	10.2	0.4
Tolerance	24.2	34.3	42.8	36.3	43.8	6.5	25.5	26.4	0.1	18.9	19.4	0.04
Withdrawal	13.8	24.8	71.5	26.3	33.3	6.7	13.1	19.8	8.4	9.8	8.3	0.5

Note.

Overall Sample: Non-LGBT $n = 3248$, LGBT $n = 1086$.

18-34 Years: Non-LGBT $n = 537$, LGBT $n = 582$.

35-49 Years: Non-LGBT $n = 1197$, LGBT $n = 288$.

50-64 Years: Non-LGBT $n = 11515$, LGBT $n = 216$.

Bolded test statistic (stat) values denote omnibus group differences at $p < .05$.