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Distal and Proximal Minority Stressors on Patterns of Tobacco and Cannabis Use Among Young Bisexual Women

Sarah J. Ehlke, PhD^{1,2}, Samantha A. Fitzer, MS¹, Amy L. Stamatēs, PhD³, Michelle L. Kelley, PhD^{1,2}

¹Department of Psychology, Old Dominion University, Norfolk, VA, USA

²Virginia Consortium Program in Clinical Psychology, Norfolk, VA, USA

³Department of Psychology, University of Rhode Island, Kingston, RI, USA

Abstract

Background: Bisexual women have high rates of tobacco and cannabis use, but few studies have examined co-use behavior in this population. Although the role of distal minority stressors (eg, discrimination) on substance use has been examined, fewer studies have examined proximal minority stressors (eg, negative sexual identity self-schemas). The current study was a secondary data analysis that examined patterns of tobacco and cannabis use, and the role of distal (instability of bisexuality, sexual irresponsibility of bisexual people, and hostility toward bisexual people) and proximal (illegitimacy of bisexuality, anticipated binegativity, internalized binegativity, and identity affirmation) bisexual-specific minority stressors among bisexual women.

Methods: Participants were 224 young (aged 18–30 years old) self-identified bisexual women who reported on their past 30-day tobacco and cannabis use and completed measures of distal and proximal bisexual-specific minority stressors. Participants were categorized into one of 4 patterns: no use, tobacco use only, cannabis use only, and tobacco and cannabis co-use.

Results: The most common pattern of past 30-day use was tobacco and cannabis co-use (39.1%). Results from a multinomial logistic regression revealed that bisexual women who reported higher illegitimacy of bisexuality, a proximal minority stressor, were significantly more likely to engage in tobacco and cannabis co-use, relative to no use.

Discussion: Bisexual women have particularly high rates of substance use, with tobacco and cannabis co-use as the most common pattern. Incorporating the role of proximal minority stressors, and specifically, beliefs about the legitimacy of bisexuality, may be an important target of substance use interventions for bisexual women.

Corresponding Author: Sarah J. Ehlke, Department of Psychology, Old Dominion University, 250 Mills Godwin Life Sciences Building, Norfolk, VA 23529, USA. sehlke@odu.edu.

Author Contributions

SE: Conceptualization, Methodology, Formal analysis, and Writing—Original Draft. SF: Writing—Review and Editing and Visualization. AS: Writing—Review and Editing. MK: Writing—Review and Editing, Supervision and Funding acquisition

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Compliance, Ethical Standards, and Ethical Approval

This study was approved by the Old Dominion University Institutional Review Board.

Keywords

tobacco; cannabis; co-use; bisexual women; minority stress

Tobacco and cannabis use is higher among bisexual women than heterosexual and lesbian women.¹⁻⁴ For example, findings from the 2015 to 2017 National Survey on Drug Use and Health showed that 36.2% of bisexual women reported past-month cigarette use, and 14.2% and 40.0% reported past-year cigar and cannabis use, respectively, which were higher than rates for lesbian (cigarette: 28.1%; cigar: 10.5%; cannabis: 26.1%) and heterosexual (cigarette: 17.1%; cigar: 3.5%; cannabis: 10.3%) women.⁴ A recent study that examined lesbian and bisexual women together as a sexual minority (SMW) group found that they were twice as likely to report past 30-day tobacco and cannabis co-use (defined as using both tobacco and cannabis at least once in the past 30-days), relative to heterosexual women.⁵ These findings are concerning given the greater consequences of tobacco and cannabis co-use such as increased cancer risk,^{6,7} nicotine dependence,⁸ alcohol and other drug use,⁹⁻¹¹ and anxiety and depression.¹¹⁻¹³

The high levels of tobacco and cannabis use among SMW are often attributed to experiencing sexual minority stressors.¹⁴ Sexual minority stressors can be distal stressors defined as “objective stressors that do not depend on an individual’s perceptions or appraisals” (eg, discrimination, victimization) or proximal stressors defined as “subjective experiences and are therefore related to self-identity as lesbian, gay, or bisexual” (eg, negative sexual identity self-schemas).¹⁴ Bisexual women may experience “double” sexual minority stressors from heterosexual individuals and within the sexual minority community due to their sexual attraction to both men and women. Most studies examining the role of minority stressors on tobacco and cannabis use focus on distal minority stressors, such as discrimination.^{15,16} Findings have shown that distal minority stressors are associated with greater tobacco and cannabis use and related problems.¹⁶⁻²⁰ However, distal stressors may be difficult or impossible to target in substance use interventions, given that these experiences are external events (eg, homophobic slurs, sexual assault victimization, anti-LGBTQ+ legislation). Other research has found that proximal stressors, such as internalized homophobia (negative feelings about one’s sexual identity), was associated with a higher likelihood of past 30-day cannabis use among sexual minority adolescents.²¹ Proximal stressors may be more easily addressed through interventions because they focus on factors at the individual level such as one’s perception of their sexual identity. However, few studies have focused exclusively on bisexual women to examine associations between distal and proximal minority stressors, and tobacco and cannabis use.

Identifying the strongest correlates of risky patterns of tobacco and cannabis use (ie, co-use) may inform future interventions with the goal of reducing substance use and improving the health and well-being of bisexual women. It is also important to focus on young adult bisexual women who may be at particularly heightened risk of substance co-use. National data have shown that young adults are the most likely to identify as bisexual.²² Further, young adulthood is characterized by the transition from adolescence to adulthood and may lead to challenges in managing one’s sexual orientation identity in new environments and

subsequent exposure to marginalization and social difficulties.²³ Thus, the primary aim of the current study was to examine patterns of past 30-day tobacco and cannabis use (no use, tobacco only, cannabis only, tobacco and cannabis co-use) among a sample of young bisexual women, a group with particularly high rates of use. A second aim was to examine the role of distal (instability of bisexuality, sexual irresponsibility of bisexual people, and hostility toward bisexual people) and proximal (illegitimacy of bisexuality, anticipated binegativity, internalized binegativity, and identity affirmation) bisexual-specific minority stressors on patterns of tobacco and cannabis use.

Method

Participants and Procedure

Participants were 224 young self-identified bisexual women who were recruited online (eg, Craigslist) and through the psychology participant research pool to complete a larger study about factors related to substance use and other health behaviors: the larger sample was originally 225. However, one participant had missing cannabis use frequency data; data from this participant were excluded from the analytic sample.¹ Eligibility for the larger study was (1) female, (2) self-identified as bisexual, (3) 18 to 30 years old, (4) report at least one binge drinking episode (defined as consuming 4 or more drinks) in the past 30-days, and (5) engaged in sexual behavior in the past 30-days. Those who were eligible for the current study completed the informed consent and a 30-minute online survey. Participants who were recruited online were entered into a raffle to receive one of twenty \$20 online gift cards. Participants recruited from the research participant pool could select to receive research credit or entered in the raffle. Procedures were approved by the Old Dominion University's Institutional Review Board.

Materials

Tobacco and Cannabis Use.—To measure tobacco use, participants were asked how often in the past 30-days they used: (a) cigarettes, (b) cigars/little cigars/cigarillos, (c) hookah, and (d) electronic cigarettes, with response options of 1 = “never,” 2 = “once or twice,” 3 = “weekly,” 4 = “almost daily,” and 5 = “daily.” Participants who reported using at least one of these products at least “once or twice” were considered past 30-day tobacco users. A sum score of the number of tobacco products used in the past 30-days was also computed for descriptive purposes (range = 0–4). Similarly, participants indicated how often in the past 30-days they used cannabis with identical response options. Those who reported using at least “once or twice” were considered past 30-day cannabis users.

Distal Minority Stressors.—The Anti-Bisexual Experiences Scale (ABES)²⁴ is a 17-item measure of bisexual-specific discrimination experiences. This measure has 3 subscales: *instability* (eg, “People have denied that I am really bisexual when I tell them about my sexual orientation.”; $\alpha = .96$), *sexual irresponsibility* (eg, “People have treated me as if I am obsessed with sex because I am bisexual.”; $\alpha = .90$), and *hostility* (eg, “I have been excluded from social networks because I am bisexual.”; $\alpha = .92$). Participants indicated how often they experienced each type of anti-bisexual discrimination using a scale where 1 = “never”

to 6 = “almost all of the time.” A sum score was computed for each subscale. Higher scores indicated more experiences of anti-bisexual discrimination.

Proximal Minority Stressors.—The Bisexual Identity Inventory (BII)²⁵ measures facets of bisexual identity that can be conceptualized as proximal bisexual-specific minority stressors. The BII includes 24-items with 4 subscales: *illegitimacy of bisexuality* (eg, “Bisexual identity is just a fleeting fad.”; $\alpha = .95$), *anticipated binegativity* (eg, “When I talk about being bisexual, I get nervous.”; $\alpha = .78$), *internalized binegativity* (eg, “I wonder if I would be better off if I would identify as gay or straight, rather than bisexual.”; $\alpha = .89$), and *identity affirmation* (eg, “I am comfortable being bisexual.”; $\alpha = .92$). Participants respond to each item using a 7-point scale where 1 = “strongly disagree” and 7 = “strongly agree.” Sum scores were created for each subscale. Higher scores for the illegitimacy of bisexuality, anticipated binegativity, and internalized binegativity scales indicated more negative proximal stress experiences. Higher scores on the identity affirmation scale indicated less proximal minority stress.

Data Analysis

Data were inspected for outliers and normality. Nine values for illegitimacy of bisexuality were outliers and winsorized to the next highest value. All variables were normally distributed. A single variable for past 30-day tobacco and cannabis use pattern was computed: (a) no use, (b) tobacco use only, (c) cannabis use only, and (d) tobacco and cannabis co-use. Analysis of Variance Analyses (ANOVA) were used to examine differences between patterns of past 30-day tobacco and cannabis use and each individual distal (ABES subscale) and proximal (BII subscale) minority stressor. A multinomial logistic regression model examined associations between distal (ABES subscales) and proximal (BII subscales) minority stressors (entered into the model simultaneously) and patterns of past 30-day tobacco and cannabis use (reference group = no use).

Results

Participant characteristics and bisexual-specific minority stressors for the full sample and based on tobacco and cannabis use pattern are presented in Table 1. The largest pattern of use was tobacco and cannabis co-use (39.1%), followed by cannabis use only (20.9%), no use (24.0%), and tobacco use only (15.6%). There were no significant differences on any demographic variable across tobacco and cannabis use pattern. Across all participants, the highest form of distal stress was instability. Identity affirmation was high, and anticipated binegativity was the highest negative form of proximal stress. Table 2 shows ANOVA results examining differences on bisexual-specific minority stressors based on tobacco and cannabis use group.

Multinomial logistic regression findings are shown in Table 3. Bisexual women who reported higher illegitimacy of bisexuality were more likely to be cannabis and tobacco co-users than a non-user (AOR = 1.10, 95% CI: 1.026, 1.181). No other distal or proximal minority stressors were associated with patterns of tobacco and cannabis use.

Discussion

The majority of participants were past 30-day tobacco and cannabis co-users. Although consistent with prior research that tobacco and cannabis co-use is high,⁵ to our knowledge this was the first study to document patterns of use specifically for bisexual women. Given the negative physical and mental health consequences of tobacco and cannabis co-use,^{6–9,12,13} and the prevalence of substance use in this population,^{1–4} interventions tailored to young adult bisexual women may help reduce health disparities among this high-risk group. In turn, reducing health disparities among bisexual women will help advance public health efforts toward reaching the goal of health equity among this group. Further, bisexual identity is the fastest growing sexual orientation in the United States, and young people are the most likely to identify as a bisexual person,²² which puts them at risk for experiencing sexual minority stressors, given this transitional time period of young adulthood.²³ However, by addressing current health disparities, such as the high rates of tobacco and cannabis co-use, it is possible to prevent or at least improve the health equity of this growing group of young individuals.

Bisexual women may experience sexual minority stressors from the heterosexual community and within the sexual minority community due to their non-monosexual identity. Although rates of tobacco and cannabis co-use are higher among SMW than heterosexual women,⁴ this “double discrimination” may indicate why some research shows that bisexual women are at the greatest risk of use, and potentially co-use.^{1–4} Despite prior research documenting greater substance use among SMW who experience distal minority stressors,^{16–20} this study found that proximal minority stressors may be more strongly associated with tobacco and cannabis co-use. Specifically, believing that their bisexual identity was illegitimate was the only correlate of tobacco and cannabis co-use when all forms of distal and proximal minority stressors were included in the model. Illegitimacy of bisexuality is associated with poor mental health outcomes.^{25,26} Therefore, bisexual women may engage in tobacco and cannabis co-use to alleviate mental health symptoms. As such, interventions to reduce tobacco and cannabis co-use among bisexual women should focus on enhancing the legitimacy of their sexual identity. For example, interventions could incorporate testimonials from other bisexual women discussing the positive aspects of identifying as bisexual. Additionally, these testimonials could include the bisexual women discussing their experiences with bisexual erasure (ie, the tendency to question or deny the existence of bisexuality and assume only monosexual identities are legitimate),^{27,28} and how they have combated negative feelings about their identity and maintained a positive outlook on their sexual identity. In turn, these testimonials from other people who identify as bisexual may result in a stronger sense of their sexual identity and affirm that identifying as bisexual is a legitimate and common identity. Alternatively, without interventions that focus on legitimizing one’s bisexual identity, mental health and substance use rates may continue to be high.

It is important for substance use interventions be tailored for this group to target experiences that are unique to bisexual women and separate from lesbian women. Bisexual women who engage in tobacco and cannabis co-use may benefit from interventions that focus on improving their self-schema about their sexual identity. A recent study of sexual and gender

minority young adults who completed a brief online self-affirmation writing intervention reported reduced drug use problems at a 3-month follow-up.²⁹ Perhaps enhancing bisexual women's self-schema about their sexual identity (ie, reducing proximal minority stressors) subsequently improves their coping skills when they experience distal minority stressors and reduces the likelihood of substance use. That is, they may have more confidence surrounding their sexual identity which helps them cope with distal minority stressors.

None of the distal minority stressors, as measured in the current study, were related to any of the substance use patterns when also accounting for proximal minority stressors. Across prior studies, distal minority stressors have been shown to be harmful for bisexual women.^{16–20} Studies that focus only on distal minority stressors, such as the role of discrimination on substance use, often have clinical implications for enhancing coping skills to manage these experiences. However, bisexual women have little or no control over distal minority stressors. Clearly, distal minority stressors must be addressed at the policy or community level. But addressing distal stressors may take a long time to formally be enacted and could be stalled based on the political climate at the time. It could take years or generations to see distal stressors effectively addressed at the policy level. And, unfortunately, despite advances in the rights of sexual minority individuals (eg, the protection of same-sex couples to marry in 2015), recently there have been a record-breaking number of anti-LGBTQ+ bills presented in state legislatures across the United States.³⁰ It is simply too risky to the mental health of sexual minority individuals to rely solely on legislators to address distal sexual minority stressors. Instead, it may be more beneficial, at least in the immediate term, to develop clinical interventions that can be individualized and focus on proximal sexual minority stressors. Specifically, bisexual women may have greater control over the internalizing impact these events have on their self-perceptions and subsequent substance use. Therefore, interventions for bisexual women may be more effective at reducing substance use if they focus on reducing proximal minority stressors and may support a sense of empowerment or control for the person that they can implement into their daily lives.

Limitations

Several limitations should be noted. This study was a cross-sectional survey and simultaneous use of tobacco and cannabis was not captured. Similarly, it is unknown if bisexual-specific minority stressors predict subsequent tobacco and cannabis use, and if distal stressors perhaps precede proximal stressors. Future studies should use ecological momentary assessment designs to capture tobacco and cannabis use behaviors “in the moment” and identify the temporal sequence of minority stressors and use. Given the binge drinking eligibility criteria of the larger study, participants may have been a sample with particularly high rates of substance use. Although this is a novel study, the sample size of each pattern of use was small. Replicating the current findings with larger samples is important. Only women who self-identified as bisexual were included in the current study. Bisexuality encompasses a wide range of non-monosexual identities (eg, pansexual, polysexual) which may not have been captured in the current study. Future research should incorporate a broader definition of bisexuality to include bisexual+ individuals who may experience similar minority stress experiences. In addition, this study only examined any

tobacco or cannabis use, instead of frequency or intensity of use. It is important for future research to identify the relationship between distal and proximal stressors with how often and how much a person uses these substances.

Conclusions

This study was the first study to document the high prevalence of tobacco and cannabis co-use and the role of distal and proximal bisexual-specific minority stressors. Interventions for bisexual women that focus on enhancing their sexual identity self-schema may be particularly relevant to reduce substance use and related consequences. Given the elevated health consequences of tobacco and cannabis co-use, reducing substance use among bisexual women may promote health equity among this high-risk population.

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Demographic Characteristics and Information About Study Variables for the Full Sample and Based on Pattern of Tobacco and Cannabis Use.

Table 1.

Variable	Full sample N = 224	No use n = 54, 24.1%	Tobacco only n = 35, 15.6%	Cannabis only n = 47, 21.0%	Tobacco and Cannabis co-use n = 88, 39.3%
Age (M, SD)	22.78 (3.46)	23.22 (3.25)	23.97 (3.47)	22.02 (3.38)	22.43 (3.51)
Race (n, %)					
NH White	112 (50.0%)	27 (24.1%)	23 (20.5%)	22 (19.6%)	40 (35.7%)
NH Black	58 (25.9%)	15 (25.9%)	5 (8.6%)	16 (27.6%)	22 (37.9%)
NH other race	25 (11.2%)	5 (20.0%)	5 (20.0%)	4 (16.0%)	11 (44.0%)
Hispanic	29 (12.9%)	7 (24.1%)	2 (6.9%)	5 (17.2%)	15 (51.7%)
Relationship status (n, %)					
Single	131 (58.5%)	29 (22.1%)	18 (13.7%)	23 (17.6%)	61 (46.6%)
In a relationship	87 (38.8%)	24 (27.6%)	15 (17.2%)	22 (25.3%)	26 (29.9%)
Other	6 (2.7%)	1 (16.7%)	2 (33.3%)	2 (33.3%)	1 (16.7%)
Income (n, %)					
\$9999	110 (49.1%)	26 (23.6%)	16 (14.5%)	25 (22.7)	43 (39.1%)
\$10 000–19 999	37 (16.5%)	7 (18.9%)	6 (16.2%)	5 (13.5%)	19 (51.4%)
\$20 000–29 999	30 (13.4%)	7 (23.3%)	4 (13.3%)	7 (23.3%)	12 (40.0%)
\$30 000–39 999	21 (9.4%)	5 (23.8%)	4 (19.0%)	7 (33.3%)	5 (23.8%)
\$40 000–49 999	11 (4.9%)	5 (45.5%)	3 (27.3%)	0 (0.0%)	3 (27.3%)
\$50000	15 (6.7%)	4 (26.7%)	2 (13.3%)	3 (20.0%)	6 (40.0%)
Tobacco use variables					
Cigarettes (yes; n, %)	60 (26.8%)	0 (0.0%)	16 (26.7%)	0 (0.0%)	44 (77.3%)
Hookah (yes; n, %)	60 (26.8%)	0 (0.0%)	17 (28.3%)	0 (0.0%)	43 (71.7%)
Electronic cigarettes (yes; n, %)	57 (25.4%)	0 (0.0%)	14 (24.6%)	0 (0.0%)	43 (75.4%)
Cigars/LCCs (yes; n, %)	47 (21.0%)	0 (0.0%)	4 (8.5%)	0 (0.0%)	43 (91.5%)
Any tobacco use (yes, n, %)	123 (54.9%)	0 (0.0%)	35 (28.5%)	0 (0.0%)	88 (71.5%)
Number of tobacco products (n, %)					
0	101 (45.1%)	54 (53.5%)	0 (0.0%)	47 (46.5%)	0 (0.0%)
1	56 (25.0%)	0 (0.0%)	22 (39.3%)	0 (0.0%)	34 (60.7%)
2	42 (18.8%)	0 (0.0%)	10 (23.8%)	0 (0.0%)	32 (76.2%)

Variable	Full sample N = 224	No use n = 54, 24.1%	Tobacco only n = 35, 15.6%	Cannabis only n = 47, 21.0%	Tobacco and Cannabis co-use n = 88, 39.3%
3	16 (7.1%)	0 (0.0%)	3 (18.8%)	0 (0.0%)	13 (81.3%)
4	9 (4.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	9 (100.0%)
Cannabis use (yes; n, %)	135 (60.3%)	0 (0.0%)	0 (0.0%)	47 (34.8%)	88 (65.2%)
Distal minority stressors (M, SD)					
ABES: Instability	25.82 (11.94)	24.53 (11.61)	25.77 (11.99)	24.12 (11.32)	27.52 (12.40)
ABES: Irresponsible	10.92 (5.97)	10.08 (5.98)	10.60 (5.75)	9.89 (5.06)	12.11 (6.36)
ABES: Hostility	11.28 (6.30)	10.53 (6.33)	11.14 (5.95)	10.87 (6.11)	12.02 (6.53)
Proximal minority stressors (M, SD)					
BII: Illegitimacy of bisexuality	12.87 (8.46)	10.45 (6.47)	13.26 (7.91)	12.11 (7.19)	14.59 (9.94)
BII: Anticipated binegativity	17.83 (7.35)	17.81 (7.11)	16.66 (7.30)	16.06 (7.24)	19.24 (7.40)
BII: Internalized binegativity	10.75 (7.25)	9.95 (6.82)	11.44 (6.95)	9.41 (5.59)	11.67 (8.27)
BII: Identity affirmation	30.21 (9.27)	31.38 (8.08)	29.22 (8.47)	29.40 (10.70)	30.33 (9.50)

Abbreviations: NH, not Hispanic; LCC, little cigars/cigarillos; ABES, Anti-Bisexual Experiences Scale; BII, Bisexual Identity Inventory.

ANOVAs Results Examining Differences on Distal and Proximal Stressors Based on Patterns of Tobacco and Cannabis Use.

Table 2.

Variable	F	P	No use			Tobacco only			Cannabis only			Tobacco and cannabis co-use		
			M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Distal minority stressors														
ABES: Instability	1.12	.342	24.53	11.61	25.77	11.99	24.12	11.32	27.52	12.40				
ABES: Irresponsible	2.04	.109	10.08	5.98	10.60	5.75	9.89	5.06	12.11	6.36				
ABES: Hostility	0.72	.539	10.53	6.32	11.14	5.95	10.87	6.11	12.02	6.53				
Proximal minority stressors														
BII: Illegitimacy of bisexuality	2.88	.037	10.45 ^a	6.47	13.26 ^{a,b}	7.91	12.11 ^{a,b}	7.19	14.59 ^b	9.94				
BII: Anticipated binegativity	2.33	.075	17.81	7.11	16.66	7.30	16.06	7.24	19.24	7.40				
BII: Internalized binegativity	1.33	.266	9.95	6.82	11.44	6.95	9.41	5.59	11.67	8.27				
BII: Identity affirmation	0.54	.657	31.38	8.08	29.22	8.47	29.40	10.70	30.33	9.50				

For significant overall ANOVAs (ie, BII: Illegitimacy of Bisexuality), values with different subscripts indicate they are significantly different means ($p < .05$).

Abbreviations: BII, Bisexual Identity Inventory; ABES, Anti-Bisexual Experiences Scale; ANOVAs, Analysis of Variance Analyses.

Multinomial Logistic Regression Analysis Results Examining the Association Between Distal and Proximal Minority Stressors on Patterns of Tobacco and Cannabis Use.

Table 3.

Variable	Tobacco only (vs No use)		Cannabis only (vs No use)		Tobacco and cannabis o-use (vs No use)	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
Distal minority stressors						
ABES: Instability	1.04	0.979,1.108	1.02	0.965,1.083	1.02	0.94,1.075
ABES: Irresponsible	0.99	0.875,1.126	0.96	0.852,1.085	1.06	0.961,1.172
ABES: Hostility	0.98	0.867,1.116	1.03	0.915,1.163	0.94	0.847,1.039
Proximal minority stressors						
BII: Illegitimacy of bisexuality	1.07	0.983,1.155	1.08	0.990,1.168	1.10	1.026,1.181
BII: Anticipated binegativity	0.93	0.849,1.011	0.95	0.882,1.030	1.01	0.941,1.079
BII: Internalized binegativity	1.02	0.927,1.112	0.94	0.859,1.038	0.96	0.890,1.036
BII: Identity affirmation	0.98	0.929,1.032	0.97	0.925,1.021	0.98	0.936,1.024

Reference group = no past 30-day tobacco or cannabis use. Significant values are in bold for emphasis. Results were identical when including demographic variables as covariates. Therefore, to present the most parsimonious model, results presented in this table do not control for demographic variables.

Abbreviations: ABES, Anti-Bisexual Experiences Scale, BII, Bisexual Identity Inventory.