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Sexual orientation and cannabis outcomes among Black Individuals: The role of cannabis use motives

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ABSTRACT

Sexual minority individuals report greater cannabis use and cannabis use related problems relative to straight individuals. Although sociocultural models suggest that sexual minority individuals may be especially vulnerable to using cannabis for high-risk motives such as coping motives, little attention has been paid to the role of cannabis use motives among sexual minority relative to straight individuals. Thus, the current study examined the role of cannabis use motives and cannabis-related problems among Black sexual minority and straight individuals that reported current (past 3-month) cannabis use ($N = 137$, 28.5 % of whom identify as sexual minority). Sexual minority participants endorsed more frequent cannabis use, and social, coping, enhancement, and expansion motives than straight participants. Conformity motives were not significantly related to sexual minority status. Multiple mediation model with all relevant motives included as putative mediators indicated that sexual minority status was related to cannabis problems indirectly via the effects of coping and expansion motives. Alternative models strengthen confidence in the directionality of these effects, although future prospective research will be an important next step. Findings may help inform treatment efforts among sexual minority individuals to reduce risk of negative cannabis outcomes.

1. Introduction

The use of cannabis among young adults is at the highest on record, with 42.6 % endorsing past-year use and 28.5 % endorsing use in the past month (National Institute on Drug Abuse, 2022). Rates of cannabis use and use-related problems are especially high among sexual minority individuals (i.e., individuals whose sexual orientation is not straight, including but not necessarily limited to individuals who identify as gay, lesbian, bisexual, or pansexual). To illustrate, sexual minority individuals (45.6 %) are significantly more likely to report using cannabis than straight individuals (27.9 %) (Dunbar et al., 2022) and among cannabis users, sexual minority individuals report more frequent use than straight individuals (Dunbar et al., 2022; Walukevich-Dienst et al., 2019). Further, lesbian (6.8 %) and bisexual (8.6 %) women reported greater rates of cannabis use disorder (CUD; Krueger et al., 2020) relative to straight women (1.2 %). Notably, at the same level of cannabis use, sexual and gender minority individuals demonstrate more problems (e.g., being fired, trouble with police, homelessness) than straight individuals (Dunbar et al., 2022).

Minority stress-based models posit that sexual minority individuals are at risk for experiencing negative affect as a result of stressors associated with marginalized status (e.g., discrimination; Meyer, 1995). Thus, these individuals may be at risk for using substances such as cannabis in an attempt to help manage chronically elevated negative affect. Use to cope with chronically elevated negative affect may lead to more frequent use and continued use despite cannabis-related problems. Accumulating evidence supports this conceptualization. For example, among men, sexual minority status is related to CUD indirectly via stressful life events and among women, the relation between sexual orientation and CUD is mediated by stressful life events (Krueger et al., 2020). Further, sexual minority women endorsed more cannabis to cope with negative emotions than straight women, and sexual minority status was related to greater cannabis use frequency via the serial effects of post-traumatic stress disorder symptom severity and cannabis coping motives (Walukevich-Dienst et al., 2019). Further, qualitative interview data revealed that sexual minority women reported using cannabis to cope with stress, anxiety, physical and emotional pain, and perceived biphobia (Robinson, 2015), suggesting that sexual minority individuals may be susceptible to using cannabis to cope with negative affect broadly and specifically for sexual orientation-related experiences.

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Indeed, a similar pattern of findings has been observed among sexual minority men, such that coping-motivated cannabis use was significantly positively associated with cannabis problems, and coping motives mediated the association between sexual-orientation victimization and cannabis problems (Feinstein & Newcomb, 2016). Emerging data indicate that using cannabis to cope may in fact reduce negative affect. Cannabis use moderated the association between sexual and gender minority-related discrimination and negative mood such that those that used cannabis within 2 h of experiencing SGM-related discrimination reported less anxiety and depression than individuals that did not use cannabis following SGM-related discriminatory experiences (Newberger et al., 2022).

Emerging evidence indicates that sexual minority individuals may use cannabis for other reasons beyond coping that may contribute to differential cannabis outcomes among sexual minority individuals relative to straight individuals. For example, using cannabis to enhance pleasure (i.e., enhancement motives) was significantly positively associated with cannabis problems among sexual minority men (Feinstein & Newcomb, 2016). Taken together, these data indicate that although coping and enhancement motives are positively associated with negative cannabis outcomes (more frequent use, more use-related problems), little empirical attention has been paid to other types of motives. Yet just as sexual minority individuals may use to enhance positive affect, they may be especially like to use for other high-risk motives such as to facilitate a sense of belongingness (i.e., conformity motives) or to enhance sociability (i.e., social motives), which may be especially relevant for individuals from marginalized groups. Further, no known studies have examined whether these unexamined cannabis use motives play a role in the relation between sexual minority status and negative cannabis outcomes. Such information could inform prevention and treatment efforts designed to ameliorate the greater cannabis-related problem risk among sexual minority individuals.

The aim of the current study was to extend understanding of the role of cannabis use motives in the relation between sexual orientation and cannabis outcomes in several ways. First, we tested whether sexual minority participants differed from straight participants on social, enjoyment, or conformity motives. Second, we sought to extend the finding that coping motives mediated the relation of sexual monitory statusy with cannabis use frequency by testing whether other cannabis use motives related to both sexual minatory status and cannabis frequency also mediated this relation. These relations were tested among college students given that young adults have the highest rates of cannabis use (Substance Abuse and Mental Health Services Administration, 2020).

2. Methods

2.1. Participants and procedures

The sample is a subset of participants from a larger study of the relations of microaggressions with substance use among Black college students at a large, southeastern predominantly White university (Buckner et al., in press). In Fall 2021, undergraduates at this institution identified as White (65.9 %), African American/Black (15.6 %), Hispanic (8.1 %), Asian American (5.1 %), multiracial (1.9 %), international (1.7 %), and Native American/American Indian (0.6 %), with 0.9 % "unknown." Inclusion criteria for the current study included being at least 18 years old, identifying as African American or Black, and current (past three-month) cannabis use. Of the 300 individuals who completed the survey, 140 endorsed current cannabis use. Of those, 1 was excluded due to questionable validity of responses (described below) and two did not report their sexual orientation. Thus, the final sample of 137 (78.4 % female) included 39 participants who identified as a sexual minority (percentage by specific sexual minority subgroup presented in Table 1). Although all identified as Black/African American, the sample also endorsed several additional races/ethnicities (Table 1). Ages ranged from 18 to 28 ($M = 19.4$, $SD = 1.8$). Gender identity, employment, and year in school data also appear in Table 1.

Table 1
Demographic Data.

Variables	%
Sexual Minorities	
Gay or Lesbian	3.6
Bisexual	19.4
Pansexual	5.0
Race/ethnicities[1]	
Asian/Asian American	5.8
Middle Eastern/Arab American	2.2
Native Hawaiian/Pacific Islander	2.9
American Indian/Alaskan Native	1.4
Asian Indian	2.9
White	1.4
Hispanic/Latin	0.7
Gender identities	
Cis-female	68.3
Cis-male	12.2
Agender	9.4
Gender fluid	2.2
Transgender male	1.4
Transgender female	0.0
Genderqueer/Gender non-conforming	0.7
Employment	
Employed part-time	33.8
Employed full-time	7.9
Year in School	
1st year	48.9
2nd year	18.0
3rd year	15.1
4th year	15.1
5th year	1.1

[1] All participants endorsed being Black/African American.

Participants were recruited through the psychology participant and received research credit in their psychology course as compensation. Measures were administered using Qualtrics. Participants provided written informed consent prior to completing the survey. The study was approved by the university's IRB prior to data collection.

2.2. Measures

A demographic form was used to assess demographic variables such sexual orientation, sex assigned at birth, gender identity, race, ethnicity, and year in school. Sexual orientation was assessed by asking "What is your sexual orientation?" and providing a list of options: straight, gay or lesbian, bisexual, pansexual, asexual, or not listed.

The *Marijuana Use Form* (MUF; Buckner et al., 2007) assessed cannabis use frequency in the past month on a scale ranging from 0 (*never*) to 10 (*21 or more times each week*). The MUF has shown convergent validity with ecological momentary assessments of cannabis use (Buckner et al., 2012).

The *Marijuana Problems Scale* (MPS; Stephens et al., 2000) assessed the severity of 19 cannabis-related problems experienced in the past 90 days from 0 (*no problem*) to 2 (*serious problem*). Consistent with prior work (e.g., Buckner, Jeffries, et al., 2016) endorsed items were summed to create a count of problems. The measure had good internal consistency in prior work with Black individuals who use cannabis (Buckner, Shah, et al., 2016; Dean et al., 2017) and in the current sample among sexual minority ($\alpha = 0.91$) and straight ($\alpha = 0.90$) participants.

The *Marijuana Motives Measure* (MMM; Simons et al., 1998) is a 25-item measure assessing the following cannabis use motives: enhancement (e.g., to get high), coping (e.g., to forget my worries), social (e.g., to be more sociable), conformity (e.g., to fit in with a group I like), and expansion (e.g., to expand my awareness). Participants indicate from 1 (*almost never/never*) to 5 scale (*almost always/always*) the degree to which they have smoked cannabis for particular reasons. MMM subscales have demonstrated acceptable internal consistency in prior work

(Chabrol et al., 2005), although it has been somewhat lower for some subscales among Black samples (Buckner, Shah, et al., 2016; King et al., 2022). It was acceptable in the current sample of sexual minority (social a = 0.89; coping a = 0.92; enhancement a = 0.94; conformity a = 0.90; and expansion a = 0.90) and straight (social a = 0.88; coping a = 0.88 enhancement a = 0.87; conformity a = 0.89; and expansion a = 0.93) participants.

Four questions from the Infrequency Scale (IS; Chapman & Chapman, 1983) were used to identify random responders or those who did not pay attention to the survey content. Consistent with other online studies (e.g., Cohen et al., 2009), participants who incorrectly answered three or more questions were excluded from analyses.

2.3. Data analytic strategy

Analyses were conducted in SPSS 27. First, to test whether sexual minority status was related to cannabis variables (motives, frequency, problems), analysis of variance (ANOVA) were conducted. Second, to test whether the relation between sexual minority status and cannabis outcomes occurred via the effect of relevant cannabis use motives (Fig. 1), a multiple mediator model was conducted using PROCESS, a conditional process modeling program that utilizes an ordinary least squares-based path analytical framework to test for both direct and indirect effects (Hayes, 2018). Sexual minority status served as the independent variable and cannabis use frequency served as the dependent variable given that it but not cannabis problems was statistically significantly related to sexual minority status in this sample (Table 2). Motives related to both sexual minority status and cannabis outcome were simultaneously entered into the model. Although mediation models are ideally tested using prospective data, cross-sectional tests of putative indirect effects can be an important first step (Hayes, 2018), establishing that variables are statistically significantly related (Garber & Hollon, 1991). Given the limitations inherent in testing mediation models using cross-sectional data, alternate models were tested using the guidelines outlined by (Kenny, 2021); specifically for each significant indirect effect, we reversed the outcome (cannabis frequency) and the mediator (motive) to test whether cannabis frequency mediated the relation of sexual minority status with the motive. All specific and conditional indirect effects were subjected to follow-up bootstrap analyses with 10,000 resamples from which a 95 % confidence interval (CI) was estimated.

3. Results

3.1. Relations among study variables

Sexual minority individuals endorsed greater cannabis use frequency, and social, coping, enhancement, and expansion motives than straight individuals (Table 2). Sexual minority status was unrelated to number of cannabis problems, age of first cannabis use, and conformity motives (Table 2). Cannabis use frequency was significantly correlated with social ($r = 0.29, p = .004$), coping ($r = 0.60, p < .001$), enhancement ($r = 0.33$, $p = .001$), and expansion ($r = 0.43$, $p < .001$), but not conformity ($r = -0.04$, $p = .708$) motives.

Table 2
Descriptive Information and Study Variables by Sexual Minority Status.

	Sexual Minority Participants ($n = 39$)		Straight Participants($n = 98$)				
Variables	*M*	*SD*	*M*	*SD*	*F* or χ^2	*d* or φ	*p*
Age	19.46	1.47	19.38	1.85	0.06	0.05	0.800
Sex (% female)	**89.74**		**73.47**		**4.32**	**0.40**	**0.038**
Age of first use	15.92	1.98	16.54	2.01	2.65	0.31	0.106
Number of cannabis problems	4.46	4.78	3.37	4.11	1.80	0.26	0.182
Social motives	**13.15**	**5.87**	**10.70**	**4.99**	**6.07**	**0.47**	**0.015**
Coping motives	**14.72**	**5.74**	**10.47**	**5.76**	**15.21**	**0.74**	**<0.001**
Enhancement motives	**19.15**	**4.46**	**15.45**	**6.34**	**11.09**	**0.64**	**0.001**
Conformity motives	6.08	3.21	6.44	3.01	0.39	0.12	0.534
Expansion motives	**14.87**	**6.46**	**9.81**	**5.22**	**22.84**	**0.91**	**<0.001**

Note. Significant group differences are presented in bold.

3.2. Mediation models

We tested whether the relation of sexual minority status and cannabis use frequency occurred via the effects of motives related to both sexual minority status and cannabis use frequency (Fig. 1). The full model significantly predicted cannabis use frequency, $R^2 = 0.06$, $F(1, 135) = 8.92$, $p = .003$. After controlling for shared variance, coping and expansion motives (but not sexual minority status or social or enhancement motives) remained statistically significantly related to cannabis use frequency (Table 3). Sexual minority status was indirectly related to cannabis use frequency via coping motives, $b = 0.971$, $SE = 0.298$, *95 % CI:* [0.447, 0.1.606] and via expansion motives, $b = 0.616$, $SE = 0.256$, *95 % CI:* [0.190, 1.186], but not social motives, $b = -0.101$, $SE = 0.124$, *95 % CI:* [-0.389, 0.111], or enhancement motives, $b = 0.188$, $SE = 0.149$, *95 % CI:* [-0.084, 0.519].

3.3. Alternative model testing

First, we tested whether the relation between sexual minority status and coping motives occurred via cannabis use frequency with expansion motives included as a covariate; this indirect effect was not statistically significant, $b = 0.402$, $SE = 0.521$, *95 % CI:* [-0.561, 1.507]. Second, we tested whether the relation between sexual minority status and expansion motives occurred via cannabis use frequency with coping motives included as a covariate; this indirect effect was not statistically significant, $b = 0.221$, $SE = 0.310$, *95 % CI:* [-0.323, 0.902].

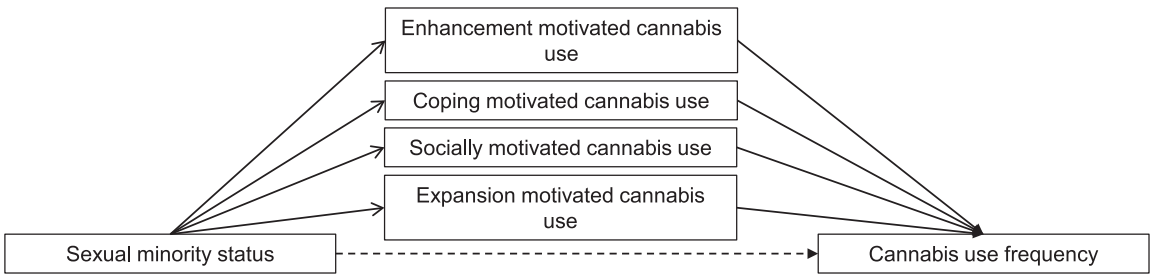

Fig. 1. Hypothesized mediation model of the indirect effect of sexual orientation on cannabis use frequency via cannabis use motives related to both sexual minority status and cannabis use frequency.

Table 3
Regression results for mediation model predicting cannabis use frequency.

Path	*b*	*SE*	*p*	*95 % CI*
Sexual minority status -> social motives (a_1)	2.45	0.99	0.015	0.48, 4.42
Sexual minority status -> coping motives (a_2)	4.25	1.09	0.0002	2.09, 6.40
Sexual minority status -> enhancement motives (a_3)	3.70	1.11	0.001	1.50, 5.90
Sexual minority status -> expansion motives (a_4)	5.06	1.06	<0.0001	2.97, 7.16
Social motives -> cannabis use frequency (b_1)	−0.04	0.04	0.340	−0.13, 0.04
Coping motives -> cannabis use frequency (b_2)	0.23	0.04	<0.0001	0.15, 0.30
Enhancement motives -> cannabis use frequency (b_3)	0.05	0.04	0.179	−0.02, 0.12
Expansion motives -> cannabis use frequency (b_4)	0.12	0.04	0.003	0.04, 0.20
Sexual minority status -> cannabis use frequency (direct effect, c')	−0.10	0.45	0.828	−1.00, 0.80
Sexual minority status -> cannabis use frequency (total effect, c)	1.57	0.53	0.003	0.53, 2.62

4. Discussion

The current study furthers understanding of cannabis use among sexual minority individuals who use cannabis in several ways. First, we replicated prior work that sexual minority status is related to more coping motives (Robinson, 2015; Walukevich-Dienst et al., 2019) and extended this work by determining that sexual minority status is also related to more social, expansion, and enhancement motives. Second, we replicated the finding among sexual minority women that coping motives mediate the relation between sexual minority status and cannabis frequency (Walukevich-Dienst et al., 2019) and extended this work by finding this was the case among participants regardless of gender identity; we also extended that study by finding that the relation between sexual minority status and cannabis use frequency was also mediated by expansion motives.

An important next step in this line of work will be to identify sociocultural factors related to more frequent use for these motives and whether psycho-sociocultural factors impact whether use for these reasons is related to more frequent use and/or use related problems. To illustrate, results are consistent with the minority-stress based model (Meyer, 1995) that suggests that sexual minority individuals use cannabis more frequently to cope with negative affect which is experienced more often given marginalized status. Yet we did not directly test whether sexual minority individuals in this sample experienced more negative affect as a result of sociocultural factors related to marginalized status (e.g., discrimination), and future work testing this piece of the model will be an important next step. Further, no known studies have tested the role of expansion motives among sexual minority individuals, yet among predominantly straight White undergraduates expansion motives are similarly related to cannabis frequency (but not problems) (Buckner, Shah, et al., 2016); however these motives were unrelated to cannabis frequency among Black undergraduates in that sample. Taken together, these data suggest that future work is necessary to determine whether there are sociocultural factors specific to the sexual minority community that play a role in expansion motives' relation to more frequent cannabis use. Similarly, little empirical work has examined social influences on cannabis use among sexual minority individuals (Kidd et al., 2018) and future work testing whether use for more social motives among sexual minority individuals is harmful or reflects a type of culturally normative socialization will be another important next step.

Interestingly, sexual minority status was not statistically significantly related to cannabis-related problems. This finding in consistent with prior work with sexual minority undergraduate women (Walukevich-Dienst et al., 2019), in which sexual minority status was related to more frequent cannabis use but unrelated to cannabis-related problems; thus, our finding may reflect that our sample was predominantly female and that perhaps sexual minatory status is unrelated to cannabis problems among women. However, our finding is counter to epidemiological data indicating that among women, sexual minority women were more likely to meet criterial for CUD (Krueger et al., 2020). Further, bisexual men report more cannabis problems than gay men (Feinstein & Newcomb, 2016). Taken together, these data suggest that it may be that factors such as sex, gender, age, and/or sexual minority subgroup status influence the relation bewteen sexual minority status and cananbis problems.

The study has clinical implications. To illustrate, sexual minority individuals reported using cannabis for a variety of high-risk motives related to more frequency cannabis use: social, coping, enhancement, and expansion motives. Given the relation of coping and expansion motives to cannabis frequency, patients using cannabis for these reasons may benefit from cognitive behavioral interventions (Steinberg et al., 2005) geared toward helping patients learn alternative ways to cope with negative affect, etc. without the use of cannabis. In fact, among samples unselected for sexual minority status, decreases in coping motives are associated with better post-treatment cannabis outcomes (Banes et al., 2014; Blevins et al., 2016); however decreases in expansion motives were associated with worse outcomes (Banes et al., 2014), suggesting additional work is necessary to determine the role of expansion motivated cannabis use in clinical outcomes.

This study has several limitations. First, data were correlational; although we tested an alternate model to strengthen confidence in our proposed model (per Kenny, 2021) prospective and experimental work will be an important next step to determine causal relations among study variables (Garber and Hollon, 1991). Second, data were collected using retrospective self-reports and an important next step will be utilization of other methodologies (e.g., ecological momentary assessment of in vivo motives for use). Third, we did not examine cannabis use quantity; given variations in cannabis composition regarding active compounds such as cannabinoid (CBD) and tetrahydrocannabinol (THC), future work testing whether sexual minority individuals are vulnerable not only to more frequent use but whether they also use cannabis in greater quantities and/or use different compositions of these active ingredients when they use cannabis. Fourth, the sample was predominantly female, and all participants were undergraduate students; thus, future work is necessary to test whether results generalize to more diverse groups of individuals who use cannabis. Fourth, the sample was non-treatment-seeking, and future work is necessary to test whether results generalize to those meeting criteria for CUD. Fifth, qualitative interview data revealed that sexual minority men reported using cannabis to increase sexual pleasure and foster intimacy with sexual partners (Parent et al., 2021). Given we did not examine sex- or intimacy-related motives, future work doing so will be an important next step to determine whether these motives are related to use or use-related problems. Sixth, the sample was comprised of Black individuals and future work is necessary to test the intersectionality of race and sexual minority status to test whether observed relations are specific to this group or vary as a function of race; if so, future work aimed at identifying sociocultural factors that play a role in those differential relations will be an important next step. Despite these limitations, results highlight the important role of cannabis use motives in more frequent cannabis use among sexual minority individuals.

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Contributors

Julia D. Buckner formulated research aims, developed methodology,

conducted statistical analyses, and contributed to the creation, review and editing of the manuscript. Evan M. Threeton conducted literature searches and contributed to the creation, review and editing of the manuscript. Paige E. Morris conducted literature searches and contributed to the creation, review and editing of the manuscript. Faith Stoneking contributed to the creation, review and editing of the manuscript and data presentation. All authors contributed to and have approved the final manuscript.

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CRediT authorship contribution statement

Julia D. Buckner: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Evan M. Threeton:** Writing – original draft, Writing – review & editing. **Paige E. Morris:** Writing – original draft, Writing – review & editing. **Faith R. Stoneking:** Writing – original draft.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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