Research Article

Daily Assessment of Positive and Negative Cannabis Use Expectancies in Young Adult Cannabis and Tobacco Co-Users: Differences by Sociodemographics, Mental Health Symptoms, and Possible Cannabis Use Disorder

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ABSTRACT

Objective: Expectancies play a critical role in cannabis use behavior and are influenced by sociodemographic and intrapersonal factors. This study examined daily endorsement of positive and negative cannabis use expectancies using 28 days of ecological momentary assessments (EMAs) in relation to sociodemographics, mental health symptoms, and cannabis use disorder (CUD) among young adult cannabis-tobacco co-users. **Method:** Ninety-seven young adult (ages 18-24) cannabis and tobacco co-users reported on anxiety symptoms, depressive symptoms, and possible CUD at baseline. During the 28 days of EMAs, participants reported on 16 positive ($n = 7$) and negative ($n = 9$) cannabis use expectancies they anticipated would occur in the next 24 hours. Descriptive statistics examined the proportion of EMA days each expectancy was endorsed. Multivariable logistic regressions examined associations of expectancies with anxiety symptoms, depressive symptoms, and possible CUD, controlling for sociodemographics. **Results:** The most frequently endorsed expectancies were positive (e.g., feeling good, getting along with others), while the least frequently endorsed were negative (e.g., drinking too much, having an argument). In regression models, participants endorsing more days of expecting to feel anxious displayed higher odds of anxiety and depressive symptoms; those endorsing more days of expecting to be in a bad mood displayed higher odds of depressive symptoms; those endorsing more days of expecting to feel tired or unmotivated displayed higher odds of possible CUD. **Conclusions:** Expectancies of cannabis benefits and consequences are heterogeneous, endorsed in different frequencies across days, and they may have important implications for mental health symptoms and cannabis use severity among young adults who co-use.

Key words: = cannabis; expectancies; young adults; cannabis use disorder; anxiety; depression; ecological momentary assessment

Nearly a quarter of young adults (22.4%) report past month cannabis use (Substance Abuse and Mental Health Services Administration, 2022). Cannabis use is associated with alcohol, tobacco, and other drug use (Cohn et al., 2015; Hasin et al., 2016), as well as mental health problems (Gobbi et al., 2019). Cannabis-tobacco co-use is also increasingly popular in this age group (Cohn & Chen, 2022; Rubenstein et al., 2024). Because young adulthood is a developmental period when lifelong behaviors are cemented, understanding how young adults' behaviors and attitudes promote or sustain substance use, and vice versa, is critically important.

Expectancies, which are the effects one anticipates to experience from substance use, are important correlates and predictors of cannabis use (Buckner et al., 2013; Livingston et al., 2024). Common positive cannabis use expectancies include relaxation and tension reduction (Hyman & Sinha, 2009), mood enhancement, social facilitation (Buckner et al., 2013; Buckner & Schmidt, 2008), and the alteration of sensory experiences (Cloutier et al., 2022). Common negative cannabis use expectancies include loss of motivation, cognitive impairment, mental health problems, and occupational or social consequences (Foster et al., 2016; King et al., 2020; Livingston et al., 2024). Negative expectancies are associated with less frequent use and use consequences (Arterberry et al., 2013; Foster et al., 2016), and positive expectancies are associated with more frequent and problematic use, initiation, and worse mental health (Amiet et al., 2020; Bolts et al., 2023; Buckner et al., 2013; Curry et al., 2018; Foster et al., 2016; Hayaki et al., 2010). However, some research shows that negative cannabis use expectancies are higher among those with a cannabis use disorder (CUD) and positively correlated with CUD symptoms and cannabis use consequences (Foster et al., 2016; Hides et al., 2009; Schuster et al., 2019; Waddell et al., 2021).

Intrapersonal factors beyond cannabis use, like mental health, likely have a proximal impact on cannabis use expectancies, particularly positive outcome expectancies (King et al., 2020). According to motivational models of substance use, individuals with anxiety or depression may perceive cannabis as providing temporary relief from negative affect or emotional distress (Cooper et al., 2016). Mood enhancement and anxiety reduction are key drivers of cannabis use among young individuals and may influence, or be influenced by, mental health (Cooper et al., 2016; Lucatch et al., 2018). Individuals with a CUD may also hold positive expectancies that cannabis will improve sleep, negative mood, and impaired motivation associated with withdrawal and/or the acute phase of 'coming down' (Budney et al., 2003; Cousijn & Van Duijvenvoorde, 2018; Hasin et al., 2008; Preuss et al., 2010).

Beliefs about the anticipated effects of cannabis may be shaped by experiences using both cannabis and tobacco. Co-users may have strong positive cannabis use expectancies, such as enhanced high or euphoria (Kong et al., 2018; Reboussin et al., 2021; Schauer et al., 2017), increased positive mood and alertness due to the stimulating effects of tobacco on cannabis use (Berg et al., 2018; Harrell et al., 2022), and facilitation of social interactions (D'Amico et al., 2020). Co-use is associated with greater cannabis dependence and mental health problems (Cohn et al., 2016; Ramo et al., 2012; Tucker et al., 2019), intrapersonal factors that are correlated with cannabis use expectancies. Factors associated with cannabis use expectancies have not been examined among young adults who co-use.

Research has traditionally examined cannabis use expectancies via retrospective reports that provide a "one time" snapshot of behavior. Because cannabis use varies across contexts and time (Hughes et al., 2014; Shrier et al., 2012), expectancies may vary when assessed at the daily level. Existing day-level studies have found reductions in negative affect hours after cannabis use, and other work shows increases in positive affect after cannabis use (Sznitman et al., 2022), specifically among those with CUD (Ross et al., 2018). Positive and negative reinforcing experiences could influence expectancies about cannabis use. We hypothesized that anxiety and depressive symptoms and CUD would be associated with more frequent endorsement of positive expectancies, like mood enhancement and social facilitation, and less frequent endorsement of negative expectancies.

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METHODS

Participants and Procedures

Participants were 97 young adult cannabis and tobacco co-users recruited into a 28-day EMA study via print and social media advertisements from 2 Northeastern U.S. cities (2017 to 2019). EMAs were collected via interactive voice response (IVR) technology (Corkrey & Parkinson, 2002). Eligibility criteria were: aged 18-24, using cannabis ≥2 times per week in the past month, and "someday" or "everyday" tobacco use (including e-cigarettes). Exclusion criteria were: severe psychiatric disturbance; potential for lethal alcohol consumption ≥1x in the past 3 months (as evidenced by self-reported BAC ≥0.20); dependence on substances other than alcohol, cannabis, caffeine, or nicotine; and pregnant, planning to become pregnant, or breastfeeding.

After completing a screener (n = 1,425) and then a baseline survey (n = 137), 97 participants completed a brief EMA training and were enrolled in 28 days of EMAs, during which they received 3 calls/day to their phone at random times (morning, midday, and evening of their typical sleep/wake cycle), resulting in 84 possible surveys/person. Participants received $25 for the baseline survey, and could receive a maximum of $184 for completing EMAs. More details about the methodology can be found here (Niznik et al., 2023; Wilhelm et al., 2020). EMA compliance averaged ~55%, and no baseline factors were associated with compliance (Niznik et al., 2023). This study was approved by the IRB.

Measures

Sociodemographic information, anxiety symptoms, depressive symptoms, and cannabis use behaviors were assessed at baseline. Sociodemographic information included age, sex assigned at birth, race and ethnicity employment, relationship status, income, and education. The Generalized Anxiety Disorder-7 (GAD-7) (Spitzer et al., 2006) assessed past 2-week anxiety symptoms (0=not at all to 3=nearly every day). Summed scores (α=.88) of ≥8 indicated current anxiety symptoms (Kroenke et al., 2007). The 10-item Centers for Epidemiologic Studies Depression Scale-Revised (CESD-R) assessed past week depressive symptoms (0=less than 1 day to 4 = 5-7 days). Summed scores (α = .71) of ≥10 indicated current depressive symptoms (Björgvinsson et al., 2013). The 8-item Cannabis Use Disorder Identification Test-Revised (CUDIT-R) assessed possible CUD (scores of ≥12 indicating possible CUD; α = .62; Adamson et al., 2010). Participants also reported on the number of days they used cannabis in the past 30 and indicated ever use of a range of cannabis modes of use (i.e., joint, bowl, bong, one-hitter or pipe, blunt, spliff, edibles, vaporizer, concentrates).

During each morning survey, participants reported positive (n = 7) and negative (n = 9) cannabis expectancies (yes/no), with the item stem: "*Do you think you will experience the following from using cannabis in the next 24 hours?*" Items were created specifically for this study (See Table 1). Scores were computed to capture the proportion of EMA days each expectancy was endorsed (0 to 100% of days). A variable was also created to indicate whether participants endorsed each expectancy ≥1 of the 28 days. To further characterize the sample, we computed scores reflecting the proportion of days participants used both cannabis and tobacco within a single day (0 to 100% of days).

Data Analysis

Descriptive statistics characterized the sample. Bivariate analyses examined associations between cannabis expectancies (i.e., proportion of days endorsed, endorsing ≥1 days of the 28 days) with anxiety symptoms, depressive symptoms, and possible CUD. Three multivariable logistic regressions examined associations between expectancies with each outcome (anxiety, depressive symptoms, possible CUD). We operationalized expectancies as the proportion of days endorsed to prevent reducing power in multivariable models, and so that EMA compliance was not conflated with expectancy ratings. All expectancies and sociodemographic covariates were allowed to covary. Descriptive and bivariate analyses were conducted with IBM SPSS Statistics (Version 28) and logistic regressions with Mplus 8.8.

RESULTS

The sample was majority 21-24 years old and single, and roughly half were NH White and

employed (Table 1). Over a third (37.1%) reported anxiety symptoms, 46.4% depressive symptoms, and 61.9% possible CUD. Positive cannabis expectancies were most frequently endorsed, specifically feeling good or positive (M = 55.0; % of days), getting along better with people (M = 50.8), and feeling more creative (M = 49.4). Negative expectancies were least frequently endorsed, specifically getting in an accident (M = 2.2; % of days), having an argument (M = 2.2), and drinking too much (M = 3.9). Not shown in the tables, participants reported using cannabis 24.67 (SD = 7.98) of the past 30 days, with the most frequently endorsed modes of ever use being blunts (95.9%), then joints (93.8%), bowls (87.6%) or edibles (87.6%), bong (85.6%), pipe (77.3%), concentrates (74.2%), spliffs (63.9%), and vaporizers (56.7%).

In bivariate analyses (Table 1), participants with (vs. without) anxiety symptoms, depressive symptoms, and CUD more frequently endorsed expectancies of feeling tired or unmotivated and feeling anxious. Participants with anxiety and depressive symptoms more frequently endorsed expectancies related to concentration problems. Participants with depressive symptoms more frequently endorsed expectancies of being in a bad mood or getting in an argument. Participants with depressive symptoms and CUD more frequently endorsed expectancies related to getting in trouble at school or work.

Multicollinearity tests for most expectancies showed that tolerance and VIF values were >.25 (range = .27-.67) and <4 (range = 1.50-3.66), respectively, indicating that multicollinearity was not present (Kim, 2019). However, tolerance and VIF values for expectancies of "getting along better with people," "feeling motivated," and "doing better on a task" were slightly below and above collinearity thresholds (range = .17-.24 and 4.28-5.76, respectively). To ensure that this did not influence findings, we conducted models with and without these variables, and findings were consistent across both models. Multivariable logistic regressions (Table 2) indicated that more frequent endorsement of expecting to feel anxious from cannabis use was associated with higher odds of anxiety (aOR = 1.05, 95% CI = 1.01, 1.10) and depressive symptoms (aOR = 1.07, 95% CI = 1.01, 1.14); more frequent endorsement of expecting to be in a bad mood was associated with higher odds of depressive symptoms (aOR = 1.18, 95% CI=1.02, 1.38); more frequent endorsement of expecting to feel tired or unmotivated was associated with higher odds of possible CUD (aOR = 1.03, 95% CI = 1.01, 1.08). Additionally, more frequent endorsement of expecting to avoid fights was associated with lower odds of possible CUD (aOR = 0.96, 95% CI = 0.92, 0.99); however, this finding should be interpreted with caution, as these variables were unrelated at the bivariate level. Males (vs. females) displayed higher odds of CUD (aOR = 3.84, 95% CI = 1.06, 13.91), and those married or in a relationship (vs. single) displayed lower odds of depressive symptoms (aOR = 0.17, 95% CI = 0.03, 0.94).

Sensitivity analyses examined associations of the outcomes with day-level expectancies controlling for sociodemographics. Intraclass correlation coefficients ranged from .06-.63 for expectancies. Multilevel regression models indicated that anxiety (B = 0.08, SE = 0.07, p = .021) and depressive symptoms (B = 0.18, SE = 0.06 , p = .003) were associated positively with expecting to feel anxious, depressive symptoms were associated positively with expecting to be in a bad mood (B = 0.10, SE = 0.04, , p = .005), and CUD was associated negatively with expecting to be in a fight (B =-0.16, SE = 0.09, p = .045) and positively with expecting to feel tired (B= 0.22, SE = 0.09, p= .011). We also examined associations of day-level expectancies with day-level cannabis-tobacco co-use (vs. single cannabis use). On average, co-use occurred across 31.93% of EMA days. Multilevel regression models indicated that cannabis expectancies did not differ on days of co-use vs. days of cannabis-only use.

DISCUSSION

Consistent with other work (Cloutier et al., 2019; Gray et al., 2024; Livingston et al., 2024), our study shows that cannabis use expectancies varied by individual-level factors and were not homogenous. Positive expectancies were endorsed more often than negative expectancies. Frequently endorsed positive expectancies were "feeling good or positive," "getting along better with people," and "feeling more creative". There were no differences in frequency of endorsing positive expectancies across those with anxiety/depressive symptoms or possible CUD (vs without). This highlights young people's favorable attitudes about cannabis more generally (Pew

Research Center, 2019) and especially among cannabis-tobacco co-users. The frequent endorsement of expectancies related to stress reduction and mood enhancement also suggests that young people use cannabis to cope with stress, underscoring the need for messaging highlighting cannabis use risks that might outweigh these benefits, like CUD or driving while intoxicated.

Participants infrequently endorsed negative expectancies. This is concerning because 37.1% to 46.9% of the sample reported anxiety and depressive symptoms, and most endorsed possible CUD. In regression models, those who endorsed "feeling anxious" from cannabis use more often were also more likely to report anxiety and depressive symptoms; those who endorsed "being in a bad mood" from cannabis use more often were more likely to endorse depressive symptoms. One speculation is that young adults with anxiety/depression may be more likely to feel anxious or depressed on a given day, independent of cannabis use. It may also be that young adults with anxiety/depression anticipate feeling negative emotions after using cannabis, particularly during the "come down" period. An alternative hypothesis is that young adults with anxiety/depression are more likely to use cannabis to alleviate negative mood in the short-term "moment" (Matheson et al., 2020), but then use again once the mood-enhancing effects fade. This cycle could contribute to the development or worsening of mental health and substance use problems over time (Lucatch et al., 2018; Sideli et al., 2020; Swift et al., 2012). This might also explain, in part, why participants who endorsed the expectancy of "feeling tired or unmotivated" more often were also more likely to report possible CUD. That is, while cannabis use may acutely increase arousal and alertness (Matheson et al., 2020), prolonged or chronic use may decrease motivation (Petrucci et al., 2020) and lead to dependence. Amplifying these potential negative effects of cannabis use via health messaging could help mitigate problematic use.

This study had several limitations. Causal associations among the study variables cannot be determined. We did not assess cannabis use expectancies, mental health, or CUD symptoms multiple times per day, as this would have increased survey time and burden. We were unable to assess within-day variability in mental health characteristics as a function of variability in expectancies. Other unmeasured factors, like pro-cannabis messaging, tobacco use expectancies, peer use, and norms promoting cannabis use experiences could impact expectancies and should be examined in future work. Individual modes of cannabis use (combusted, vaped, edible, etc.) were not examined in relation to each expectancy, though this is an important direction for future studies, as young adults perceive different levels of risk across cannabis products (Nguyen et al., 2022). The cannabis legalization landscape has continued to change since data were collected, likely increasing positive attitudes and use among young adults (Manthey et al., 2023; Patrick et al., 2023).

Conclusions

Mental health and CUD risk are associated with how young adult cannabis and tobacco co-users perceive cannabis use harms and benefits on a day-to-day basis. Promoting accurate information about the short- and long-term effects of cannabis use may be crucial to preventing problematic use and co-occurring mental health conditions in young adults. Assessing expectancies can also inform treatment planning by targeting beliefs associated with problematic use.

Table 1. *Descriptive Statistics and Bivariate Associations among Key Study Variables, N = 97*

	Total	Anxiety Symptoms			Depressive Symptoms			Possible CUD		
Variable	Total (*N*= 97, 100%)	Yes (*N*= 36, 37.1%)	No (*N*= 61, 62.9%)	*p*	Yes (*N*= 45, 46.4%)	No (*N*= 52, 53.6%)	*p*	Yes (*N*= 60, 61.9%)	No (*N*= 37, 38.1%)	*p*
Sociodemographics										
Age, N (%) [a]				.894			.138			.993
18-20 years old	34 (36.2)	12 (35.3)	22 (36.7)		19 (44.2)	15 (29.4)		21 (36.2)	13 (36.1)	
21-24 years old	60 (63.8)	22 (64.7)	38 (63.3)		24 (55.8)	36 (70.6)		37 (63.8)	23 (63.9)	
Sex, N (%) [b]				.366			.139			.087
Female	41 (43.2)	13 (37.1)	28 (46.7)		15 (34.9)	26 (50.0)		21 (36.2)	20 (54.1)	
Male	54 (56.8)	22 (62.9)	32 (53.3)		28 (65.1)	26 (50.0)		37 (63.8)	17 (45.9)	
Race, N (%)				.198			.100			.659
Non-Hispanic Black	20 (20.6)	10 (27.8)	10 (16.4)		7 (15.6)	13 (25.0)		14 (23.3)	6 (16.2)	
Non-Hispanic White	49 (50.5)	19 (52.8)	30 (49.2)		28 (62.2)	21 (40.4)		30 (50.0)	19 (51.4)	
Another race or ethnicity	28 (28.9)	7 (19.4)	21 (34.4)		10 (22.2)	18 (34.6)		16 (26.7)	12 (32.4)	
Employment, N (%)				.221			**.037**			.225
Employed	50 (51.5)	21 (58.3)	29 (47.5)		**22 (48.9)[a]**	**28 (53.8)[a]**		35 (53.8)	15 (46.9)	
Unemployed	18 (18.6)	8 (22.2)	10 (16.4)		**13 (28.9)[a]**	**5 (9.6)[b]**		14 (21.5)	4 (12.5)	
Student	29 (29.9)	7 (19.4)	22 (36.1)		**10 (22.2)[a]**	**19 (36.5)[a]**		16 (24.6)	13 (40.6)	
Relationship Status, N (%)				.064			**<.001**			.376
Single	65 (68.4)	28 (80.0)	37 (61.7)		**38 (88.4)[a]**	**27 (51.9)[b]**		45 (71.4)	20 (62.5)	
Married or in a serious relationship	30 (31.6)	7 (20.0)	23 (38.3)		**5 (11.6)[a]**	**25 (48.1)[b]**		18 (28.6)	12 (37.5)	
Income				.642			.662			.736
≤$19,999	43 (44.8)	18 (50.0)	25 (41.7)		22 (48.9)	21 (41.2)		30 (46.2)	13 (41.9)	
$20,000-$39,999	21 (21.9)	8 (22.2)	13 (21.7)		10 (22.2)	11 (21.6)		15 (23.1)	6 (19.4)	
≥$40,000	32 (33.3)	10 (27.8)	22 (36.7)		13 (28.9)	19 (37.3)		20 (30.8)	12 (38.7)	
Education				.749			.197			.280
Less than high school	5 (5.2)	2 (5.6)	3 (4.9)		3 (6.7)	2 (3.8)		2 (3.1)	3 (9.4)	
High school or GED	23 (23.7)	10 (27.8)	13 (21.3)		14 (31.1)	9 (17.3)		14 (21.5)	9 (28.1)	
Some college or higher	69 (71.1)	24 (66.7)	45 (73.8)		28 (62.2)	41 (78.8)		49 (75.4)	20 (62.5)	
Cannabis Use Expectancies – Proportion of Days Endorsed, M (SD)										
1. Feeling good or positive	55.00 (26.56)	53.98 (30.16)	55.61 (24.40)	.773	54.85 (29.69)	55.12 (23.90)	.961	54.14 (25.60)	56.81 (28.83)	.648
2. Getting along better with people	50.76 (29.41)	54.90 (28.78)	48.28 (29.74)	.228	56.32 (29.94)	46.06 (28.39)	.089	50.14 (29.77)	52.08 (29.08)	.764
3. Feeling more creative	49.39 (30.22)	51.57 (28.94)	48.08 (31.13)	.586	54.04 (29.30)	45.46 (30.71)	.167	48.72 (29.29)	50.80 (32.54)	.755
4. Laughing more than usual	43.21 (32.21)	43.54 (34.66)	43.01 (30.95)	.938	46.98 (33.96)	40.02 (30.62)	.294	42.01 (32.21)	45.74 (32.59)	.598
5. Avoiding fights	37.96 (30.02)	40.10 (30.69)	36.67 (29.79)	.591	41.68 (30.71)	34.81 (29.34)	.266	35.04 (29.12)	44.09 (21.42)	.168
6. Doing better on a task or studying better	36.01 (31.26)	36.13 (31.17)	35.94 (31.57)	.977	36.61 (32.36)	35.49 (30.60)	.862	33.66 (29.62)	40.92 (34.42)	.290
7. Feeling motivated to get things done	36.48 (31.19)	35.49 (30.04)	37.07 (32.10)	.811	38.13 (32.01)	35.08 (30.73)	.635	35.13 (29.67)	39.30 (34.52)	.543
8. Feeling tired or unmotivated	21.10 (25.28)	**28.38 (23.78)**	**16.74 (23.78)**	**.028**	**32.06 (28.14)**	**11.83 (18.22)**	**<.001**	**25.25 (27.34)**	**12.41 (17.72)**	**.007**
9. Having concentration problems	15.36 (21.08)	**21.82 (25.26)**	**11.48 (17.22)**	**.034**	**21.58 (23.89)**	**10.10 (16.89)**	**.009**	17.91 (22.04)	10.01 (18.12)	.086
10. Feeling anxious	13.63 (18.04)	**22.54 (21.43)**	**8.28 (13.19)**	**<.001**	**22.06 (21.62)**	**6.50 (9.94)**	**<.001**	**16.18 (18.80)**	**8.27 (15.24)**	**.031**
11. Smoking too many cigarettes or using too much tobacco	8.31 (17.43)	8.97 (17.74)	7.91 (17.37)	.774	12.24 (21.72)	4.98 (11.97)	.052	9.07 (18.37)	6.71 (15.42)	.538

12. Getting in trouble at school or work	4.71 (12.34)	7.88 (18.63)	2.80 (5.41)	.119	**7.82 (17.21)**	**2.07 (4.28)**	**.036**	**6.30 (14.53)**	**1.36 (3.81)**	**.012**
13. Being in a bad mood	5.12 (9.10)	5.51 (7.86)	4.89 (9.83)	.752	**8.31 (11.52)**	**2.43 (5.14)**	**.003**	5.32 (9.78)	4.72 (7.64)	.767
14. Drinking too much	3.88 (10.57)	4.82 (13.63)	3.31 (8.30)	.501	6.14 (14.49)	1.96 (4.80)	.073	4.29 (12.22)	3.02 (5.88)	.585
15. Having an argument	2.24 (4.85)	3.13 (6.17)	1.70 (3.81)	.165	**3.33 (6.20)**	**1.31 (3.08)**	**.041**	2.71 (5.63)	1.25 (2.33)	.076
16. Getting in an accident	2.24 (4.72)	2.20 (2.92)	2.26 (5.55)	.949	3.15 (5.80)	1.47 (3.43)	.095	2.59 (5.34)	1.51 (2.99)	.298
Cannabis Use Expectancies –Endorsed ≥1 of the 28 days, N (%)										
1. Feeling good or positive	93 (96.9)	34 (94.4)	59 (98.3)	.289	42 (95.5)	51 (98.1)	.462	62 (95.4)	31 (100.0)	.244
2. Getting along better with people	90 (93.8)	35 (97.2)	55 (91.7)	.276	43 (97.7)	47 (90.4)	.139	61 (93.8)	29 (93.5)	.955
3. Feeling more creative	90 (93.8)	34 (94.4)	56 (93.3)	.828	43 (97.7)	47 (90.4)	.139	61 (93.8)	29 (93.5)	.955
4. Laughing more than usual	86 (89.6)	31 (86.1)	55 (91.7)	.388	40 (90.9)	46 (88.5)	.696	56 (86.2)	30 (96.8)	.111
5. Avoiding fights	82 (85.4)	33 (91.7)	49 (81.7)	.179	40 (90.9)	42 (80.8)	.161	55 (84.6)	27 (87.1)	.747
6. Doing better on a task or studying better	79 (82.3)	30 (83.3)	49 (81.7)	.836	36 (81.8)	43 (82.7)	.911	53 (81.5)	26 (83.9)	.780
7. Feeling motivated to get things done	76 (79.2)	28 (77.8)	48 (80.0)	.795	35 (79.5)	41 (78.8)	.933	52 (80.0)	24 (77.4)	.771
8. Feeling tired or unmotivated	65 (67.7)	**31 (86.1)**	**34 (56.7)**	**.003**	**39 (88.6)**	**26 (50.0)**	**<.001**	46 (70.8)	19 (61.3)	.353
9. Having concentration problems	59 (61.5)	26 (72.2)	33 (55.0)	.093	**33 (75.0)**	**26 (50.0)**	**.012**	43 (66.2)	16 (51.6)	.171
10. Feeling anxious	56 (58.3)	**27 (75.0)**	**29 (48.3)**	**.010**	**31 (70.5)**	**25 (48.1)**	**.027**	42 (64.6)	14 (45.2)	.071
11. Smoking too many cigarettes or using too much tobacco	38 (39.6)	16 (44.4)	22 (36.7)	.451	22 (50.0)	16 (30.8)	.055	28 (43.1)	10 (32.3)	.311
12. Getting in trouble at school or work	33 (34.4)	15 (41.7)	18 (30.0)	.244	18 (40.9)	15 (28.8)	.215	**27 (41.5)**	**6 (19.4)**	**.032**
13. Being in a bad mood	40 (41.7)	19 (52.8)	21 (35.0)	.087	**26 (59.1)**	**14 (26.9)**	**.001**	28 (43.1)	12 (38.7)	.685
14. Drinking too much	23 (24.0)	9 (25.0)	14 (23.3)	.853	13 (29.5)	10 (19.2)	.238	14 (21.5)	9 (29.0)	.421
15. Having an argument	28 (29.2)	**15 (41.67)**	**13 (21.7)**	**.037**	**18 (40.9)**	**10 (19.2)**	**.020**	20 (30.8)	8 (25.8)	.617
16. Getting in an accident	29 (30.2)	15 (41.7)	14 (23.3)	.058	**18 (40.9)**	**11 (21.2)**	**.036**	21 (32.3)	8 (25.8)	.517

Note. Bolded values denote statistical significance at $p<.05$. [a] 3 participants with missing data on age. [b] 2 participants with missing data on sex.

Table 2. *Multivariable Logistic Regression Analyses Predicting Anxiety Symptoms, Depressive Symptoms, and Possible CUD, N = 97*

	Anxiety Symptoms		Depressive Symptoms		Possible CUD	
Variable	**aOR**	**95% CI**	**aOR**	**95% CI**	**aOR**	**95% CI**
Sociodemographics						
Age						
18-20 years old	REF	REF	REF	REF	REF	REF
21-24 years old	0.76	0.19, 3.03	0.49	0.09, 2.68	0.68	0.18, 2.52
Sex						
Female	REF	REF	REF	REF	REF	REF
Male	1.19	0.38, 3.74	1.07	0.26, 4.30	**3.84**	**1.06, 13.91**
Race						
Non-Hispanic Black	3.61	0.80, 16.38	0.11	0.01, 1.09	2.78	0.51, 15.09
Non-Hispanic White	REF	REF	REF	REF	REF	REF
Another race or ethnicity	0.41	0.10, 1.64	0.66	0.14, 3.09	1.20	0.31, 4.67
Employment						
Employed	0.79	0.16, 3.88	0.06	0.01, 1.00	1.10	0.20, 6.08
Unemployed	REF	REF	REF	REF	REF	REF
Student	0.28	0.05, 1.72	0.13	0.01, 1.35	0.26	0.04, 1.59
Relationship Status						
Single	REF	REF	REF	REF	REF	REF
Married or in a serious relationship	0.35	0.09, 1.34	**0.17**	**0.03, 0.94**	0.53	0.15, 1.93
Cannabis Use Expectancies						
1. Feeling good or positive	0.98	0.94, 1.02	0.94	0.87, 1.01	1,00	0.96, 1.05
2. Getting along better with people	1.06	0.99, 1.12	1.10	0.99, 1.20	1.02	0.98, 1.07
3. Feeling more creative	1.01	0.98, 1.05	0.99	0.94, 1.05	1.00	0.96, 1.04
4. Laughing more than usual	0.99	0.96, 1.01	1.00	0.97, 1.03	0.99	0.96, 1.02
5. Avoiding fights	1.00	0.97, 1.04	1.00	0.96, 1.04	**0.96**	**0.92, 0.99**
6. Doing better on a task or studying better	1.01	0.97, 1.05	0.97	0.93, 1.02	1.00	0.96, 1.04
7. Feeling motivated to get things done	0.95	0.91, 1.00	1.02	0.95, 1.10	1.02	0.98, 1.07
8. Feeling tired or unmotivated	0.97	0.93, 1.01	1.05	0.98, 1.12	**1.03**	**1.01, 1.08**
9. Having concentration problems	1.02	0.98, 1.07	1.00	0.94, 1.06	1.00	0.95, 1.06
10. Feeling anxious	**1.05**	**1.01, 1.10**	**1.07**	**1.01, 1.14**	0.99	0.95, 1.04
11. Smoking too many cigarettes or using too much tobacco	0.98	0.94, 1.02	0.99	0.94, 1.03	1.01	0.97, 1.05
12. Getting in trouble at school or work	1.05	0.94, 1.17	1.03	0.90, 1.16	1.09	0.94, 1.27
13. Being in a bad mood	1.01	0.93, 1.09	**1.18**	**1.02, 1.38**	0.94	0.86, 1.02
14. Drinking too much	1.03	0.95, 1.11	0.95	0.86, 1.06	0.97	0.89, 1.06
15. Having an argument	0.91	0.75, 1.09	0.87	0.68, 1.11	1.06	0.85, 1.31
16. Getting in an accident	1.05	0.91, 1.21	1.25	0.96, 1.63	1.11	0.93, 1.31

Note. Bolded values denote statistical significance at $p < .05$.

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