The Influence of Anxiety and Avoidant Coping on Probable Cannabis Use Disorder

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ABSTRACT

Objective: Individuals with anxiety frequently use cannabis to cope and are at greater risk for developing probable cannabis use disorder (CUD). Previous literature suggests avoidant coping styles are associated with higher anxiety levels and risk for problematic cannabis use, while action-oriented coping is associated with lower anxiety and problematic cannabis use. No studies have examined whether anxiety and action-oriented coping or avoidant coping interact to influence risk for CUD, which was the aim of the present study. **Method**: College students were recruited as part of a cross-sectional study on cannabis use. Participants (N = 371; 72.2% female) completed the Depression Anxiety and Stress Subscale (DASS-21), Cannabis Use Disorder Identification Test-Revised (CUDIT-R), and the Brief-COPE (B-COPE). **Results**: The data were analyzed using logistic moderation analysis. After controlling for gender, anxiety was a positive significant predictor of probable CUD, but action-oriented coping and avoidant coping were not. The interaction between anxiety and avoidant coping on probable CUD was significant, indicating that participants with high avoidant coping (regardless of high or low anxiety) and those with high anxiety (even with low avoidant coping) were more likely to have probable CUD than those with both low anxiety and low avoidant coping. No significant interaction was observed with action-oriented coping. **Conclusions**: Results suggest that avoidant coping, but not action-oriented coping, influences the relationship between anxiety and risk for probable CUD. Findings emphasize the importance of targeting both anxiety and avoidant coping when considering risk for probable CUD.

Key words: = cannabis use disorder; anxiety; avoidant coping; action-oriented coping; college students

Despite being illegal for recreational use in many states, cannabis is one of the most frequently used drugs in the United States (SAMHSA, 2019), and its prevalence has been especially increasing among college students (Schulenberg et al., 2019). In addition, college students who endorse greater anxiety levels are more likely to use cannabis frequently (Teeters et al., 2021), and adults with anxiety are also at greater risk for developing cannabis use disorder (CUD; Marel et al., 2019).The association between anxiety and CUD could in part be linked to self-medication, given evidence in the literature that individuals with anxiety are more likely to use cannabis to cope with anxiety symptoms (i.e., substance-related coping; Crippa et al., 2009).

Emerging adults who use cannabis to cope with social anxiety are more likely to endorse problematic cannabis use, regardless of social anxiety levels (Walukevich-Dienst et al., 2022), indicating that coping with anxiety is likely to predict cannabis problems. Coping motives for cannabis use have also been associated with more severe anxiety disorder symptoms among individuals who used cannabis within the past 30 days (Bonn-Miller et al., 2008). Further, coping motives serve as a mediator of the positive relationship between mental health symptoms, such as anxiety and depression, and problematic cannabis use (Metrik et al., 2016; Scarfe et al., 2022), and are a significant predictor of CUD (Moitra et al., 2015).

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Although these data suggest that coping motives for anxiety may contribute to CUD, more research on specific non-substance related coping strategies moderating the relationship between anxiety and CUD is needed, particularly among college students. Given these findings, and the strong relationship between anxiety and cannabis use, it is reasonable to question whether use of specific types of coping strategies interacts with anxiety to predict probable CUD, particularly given that coping strategies are a modifiable treatment target for cannabis use reduction (Litt et al., 2021).

Although coping can be defined in many ways, action-oriented coping and avoidant coping have been among the most well studied relevant to substance use literature (Ahsan et al., 2021; Buckner et al., 2014; Grosso et al., 2014; Mueller et al., 2021; Litt et al., 2021; Ribadier & Varescon, 2019). Action-oriented coping, also known as adaptive coping, is characterized by the features of active coping, such as using informational support and positive reframing. Avoidant coping, also known as maladaptive coping, is characterized by physical or cognitive efforts to avoid confronting the stressor through such strategies as self-distraction and denial. Although research on the role of action-oriented coping within the context of anxiety and CUD is limited, adaptive coping strategies have been associated with improvement of symptoms in the treatment of CUD (Litt et al., 2021), and are negatively associated with anxiety levels (Lopes & Nihei, 2021). By contrast, high avoidant coping is frequently endorsed among individuals with CUD (Ahsan et al., 2021), and avoidant coping is positively associated with problematic cannabis use among individuals with social anxiety (Mueller et al., 2021).

Avoidance also plays a role in the relationship between anxiety and coping motives for cannabis use (Buckner et al., 2014), and predicts greater cannabis use problems. Researchers suggest that people with anxiety may use cannabis to avoid unpleasant situations associated with anxiety (Walukevich-Dienst et al., 2019). Importantly, much of the previous literature on the influence of avoidant coping on anxiety and cannabis has mostly focused on social anxiety, rather than anxiety symptoms more broadly (Buckner et al., 2014; Mueller et al., 2021; Walukevich-Dienst et al., 2022). Further, no research has examined how

avoidant coping and action-oriented coping might interact with general anxiety levels to predict probable CUD among college students. Turning to the alcohol literature, low action-oriented coping coupled with high avoidant coping among individuals with posttraumatic stress disorder (PTSD) predicted worse alcohol outcomes and greater likelihood of meeting criteria for alcohol use disorder (Grosso et al., 2014). Whether or not similar patterns would be observed with respect to action-oriented coping and avoidant coping in relation to probable CUD warrants investigation.

The aim of the present study was to investigate the influence of action-oriented coping and avoidant coping styles (assessed via the Brief-COPE [B-COPE]; Carver, 1997) on the relationship between anxiety levels (assessed Depression, Anxiety and Stress Scale-21 [DASS-21] anxiety subscale; Sinclair et al., 2012) and probable CUD diagnosis (assessed by the Cannabis Use Disorder Identification Test – Revised [CUDIT-R]; Adamson et al., 2010) in college students. It was hypothesized that high anxiety would be associated with greater risk for probable CUD. Furthermore, an interaction effect was predicted between anxiety and avoidant coping such that those with both high anxiety levels and high avoidant coping would be more likely to endorse probable CUD compared to those with low avoidant coping and high anxiety levels. By contrast, individuals with high action-oriented coping were predicted to be less likely to have probable CUD, even in the presence of high anxiety (i.e., protective effect). Gender was included in current analyses as a covariate, as male college students are at greater risk for CUD via engagement in problematic cannabis use, and greater levels of addiction and dependence (Phillips et al., 2018; Villanueva-Blasco et al., 2022).

METHODS

Participants & Procedures

Participants were undergraduate college students (N = 1,100) enrolled at The University of Texas at San Antonio (UTSA) who participated in a cross-sectional online survey examining the influence of cannabis use on academic functioning. Students were recruited from one of three sources: Introduction to Psychology

research subject pool, other psychology courses, or via advertisement flyers and student emails. Students were compensated with either extra credit if recruited through organized courses or a $10 Amazon gift card if recruited outside courses. Eligibility criteria included students who were 18 years or older, currently enrolled at UTSA, and agreed to grant access to academic transcripts (due to the focus of the parent study). For the current study, the sample was limited to participants who reported past 6-month cannabis use (n = 395). Due to insufficient sample size to run comparisons based on gender, students who identified as non-binary were excluded from analyses (n = 5). After accounting for these criteria, there were an additional 15 participants who were excluded from analyses due to missing data, and 4 participants for not following survey instructions. The final sample included 371 college students.

Measures

The Cannabis Use Disorder Identification Test – Revised (CUDIT-R; Adamson et al., 2010) is an 8-item measure used to assess probable CUD. Items were rated using a 5-point Likert scale ranging from 0 (Never) to 4 (Daily or almost daily). Higher scores on this measure indicate greater cannabis symptom severity. Relevant to the current study, a score of 10 or higher was used to determine probable CUD (Bonn-Miller et al., 2016). While a lower cut-off score of 6 has been found to discern CUD in college students (Schultz et al., 2019), the cut-off score of 10 was utilized, given that it was derived from outpatient and community samples via diagnostic interview and self-report assessments of CUD symptoms (Bonn-Miller et al., 2016), and the former was derived via self-report (Schultz et al., 2019). For the current study, the CUDIT-R measure had acceptable internal consistency (α = .78).

The Depression Anxiety and Stress Scales (DASS-21; Sinclair et al., 2012) is a 21-item self-report instrument designed to measure depression, anxiety, and stress levels. Relevant to this study, only the seven items from the anxiety subscale were used. Items were rated using a 4-point Likert scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). Scores on this scale range from 0 to 21, with higher scores indicating greater levels of anxiety. For the current study, this measure had good internal consistency (α = .85).

The Brief-COPE (B-COPE) is a 28-item questionnaire designed to measure adaptive and maladaptive methods of coping with stressful life events (Carver, 1997). Items were rated using a 4-point Likert scale ranging from 0 (I usually don't do this at all) to 3 (I usually do this a lot). This questionnaire is comprised of 14 subscales to assess different forms of coping: denial, venting, behavioral disengagement, self-blame, active coping, planning, positive reframing, acceptance, religion, emotional support, instrumental support, self-distraction, substance use, and humor. Higher scores on this measure indicated higher endorsement of a particular coping style. A confirmatory factor analysis was used to derive action-oriented coping and avoidant coping subscales using items from the B-COPE (Grosso et al., 2014). Through this factor analysis, active coping (.84), planning (.81), positive reframing (.79), acceptance (.71), religion (.41), emotional support (.60), instrumental support (.57), and self-distraction (.57) subscales comprised the action-oriented coping factor. For avoidant coping, denial (.74), venting (.60), behavioral disengagement (.83), and self-blame (.77) subscales were used. The humor subscale was excluded from this analysis, as it did not factor into either action-oriented coping or avoidant coping. The substance use subscale was excluded to examine non-substance use-related coping (i.e., coping related specifically to cannabis use) and to reduce conceptual overlap with cannabis use on the CUDIT-R.

RESULTS

Sample Characteristics

This sample consisted of 371 students with a mean age of 20.30 years (*SD* = 4.38). Most students identified as female for gender (*n* = 268; 72.2%) and Hispanic for ethnicity (*n* = 244; 65.8%). In terms of race, 74.1% of participants were White (*n* = 275), 9.4% were Black (*n* = 35), 5.4% were Asian (*n* = 20), 2.7% were American Indian/Alaskan Native (*n* = 10), 0.5% were Native Hawaiian/Pacific Islander (*n* = 2), and 7.8% identified as other (*n* = 29; self-reported responses included "Belizean" [*n* = 1], "Middle Eastern" [*n* = 2], "Mexican/Latinx/Hispanic" [*n* = 10],

"Mixed/Biracial" [n = 5], and unsure [n = 1]). Regarding their college classification, 47.7% were freshman (n = 177), 25.6% were sophomores (n = 95), 12.9% were juniors (n = 48), and 13.7% were seniors (n = 51). Approximately 35.6% (n = 132) met criteria for probable CUD. In addition, the average DASS-21 anxiety subscale score was 10.09 (SD = 9.45), suggestive of moderate anxiety. Table 1 displays correlations between predictor and outcome variables.

Table 1. *Bivariate Correlations*

	M	SD	1	2	3	4
1. Gender	-	-				
2. Anxiety Levels	10.09	9.45	.19**			
3. Action-Oriented Coping	13.87	4.67	.00	.03		
4. Avoidant Coping	3.66	2.58	.13*	.63**	.11*	
5. Probable CUD Diagnosis	-	-	-.14*	.09	.07	.08

Note. Gender coded as 1 = male; 2 = female. *p < .05, **p < .001

The data were analyzed through a logistic moderation analysis conducted in HAYES Process Macro in IBM SPSS Statistics (Version 25). After controlling for gender, anxiety (b = .032, SE = .016, p = .046) was a positive significant predictor of probable CUD. In contrast, neither action-oriented coping (b = .030, SE = .025, p = .221) nor avoidant coping (b = .048, SE = .056, p = .392) were significant predictors of probable CUD. The interaction between action-oriented coping and anxiety was not significant (b = .004, SE = .003, p = .134). However, as seen in Figure 1, the interaction between anxiety and avoidant coping on probable CUD was significant (b = -.011, SE = .005, p = .026). Participants with high avoidant coping (regardless of whether anxiety was high or low; probability of CUD diagnosis = .41 and .42, respectively) and those with high anxiety (even when avoidant coping was low; probability of CUD diagnosis = .49) were more likely to have probable CUD than those with both low anxiety and low avoidant coping (probability of CUD diagnosis = .24). The final model had significantly better fit than the constant model, $\chi^2(df = 6)$ = 20.93, p = .002

Figure 1. *Interaction between Anxiety Levels and Avoidant Coping Style on Probable CUD Diagnosis*
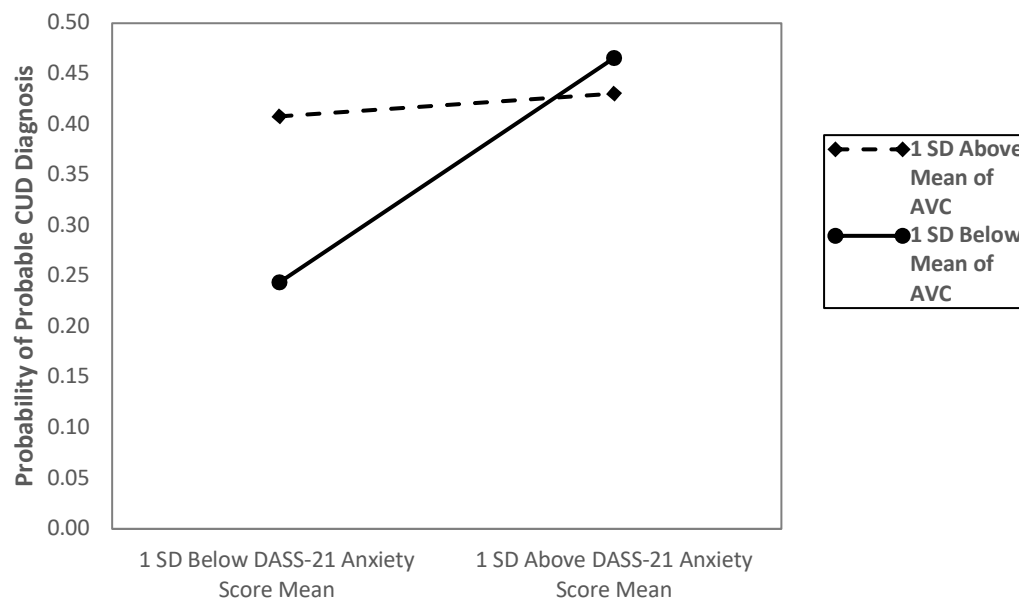
Note. Plot depicting anxiety by avoidant coping style (AVC) levels interaction predicting probable CUD diagnosis among college students.

DISCUSSION

The present study indicated that individuals with high avoidant coping, regardless of whether anxiety was high or low, were more likely to endorse probable CUD. Although initially these results imply that avoidant coping amplifies risk for probable CUD, interestingly, it was also observed within the interaction that those with high anxiety, regardless of whether avoidant coping was high or low, had similarly high risk for probable CUD. However, contrary to hypotheses, avoidant coping was not associated with a greater likelihood for probable CUD diagnosis as there was with anxiety, as avoidant coping only predicted risk for probable CUD among individuals with low anxiety. In the context of the current study model, anxiety had a conditional effect according to the level of avoidant coping, and vice versa (e.g., avoidant coping's effect is conditional on the level of anxiety). In addition, there was not a synergistic effect between high avoidant coping and high anxiety to intensify risk for probable CUD; rather the findings suggested that both avoidant coping and anxiety constructs are important, even in the absence of the other. Importantly, both anxiety (Buckner & Carroll, 2010) and coping styles (Litt et al., 2021) are malleable treatment targets for CUD. Specifically, cognitive behavioral therapy in combination with motivational enhancement therapy significantly reduced anxiety levels from pre- to post-treatment, which in turn resulted in greater reduction in cannabis use (Buckner & Carroll, 2010). With regards to coping styles, The Individualized Assessment and Treatment Program (IATP; Litt et al., 2020) was created to specifically treat CUD, and provides training in coping skills specific to the individual. Notably, while increases in active coping styles were associated with reductions in cannabis use, changes in engagement in avoidant coping strategies were not assessed (Litt et al., 2021). It is possible that increased training in active or action-oriented coping is associated with lower engagement in avoidant coping styles, thus resulting in lower cannabis use. Given the results of the current study, future research should assess how avoidant coping interacts with anxiety to influence treatment outcomes.

In contrast to hypotheses, action-oriented coping did not interact with anxiety in predicting the presence of a probable CUD diagnosis, suggesting that there was not a protective effect of adaptive coping. Although we anticipated a positive influence on action-oriented coping, these results were similar with findings observed in alcohol literature. Specifically, Grosso et al. (2014) found that action-oriented coping did not have a significant interaction with PTSD symptoms in influencing heavy drinking or alcohol-related problems. Collectively, these findings suggest that it may be more useful for clinicians to target avoidant coping in the context of cannabis use and CUD than action-oriented coping.

Strengths, Limitations, and Future Directions

Key strengths of the study include the use of psychometrically established measures and a sample of college students with strong representation of Hispanic ethnicity. However, there are several limitations to consider that influence interpretation of the results. First, the current study only included college students and was largely female, which limits generalizability. Second, CUD was not diagnosed, rather the CUDIT-R was used to ascertain probable CUD due to its low burden and scalability within university settings. Further, other co-occurring diagnoses were not assessed, and it was not known whether any students were seeking mental health treatment. Lastly, the cross-sectional study design cannot speak to direction of the relationships among variables. Longitudinal data are needed to examine how anxiety and avoidant coping contribute to the development of CUD over time, including how changes in one variable influence changes in the other, and whether addressing these factors in the treatment of CUD could be beneficial.

Overall, these findings emphasize the potential benefit of targeting both anxiety and avoidant coping among cannabis users when considering risk factors for probable CUD. More research examining how these variables interact for individuals who receive treatment for clinically diagnosed CUD is needed (Roos et al., 2020). In addition, it may be beneficial to examine whether certain avoidant coping strategies have a stronger negative impact than others to devise more targeted interventions.

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