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Short Communication

Anxiety and cannabis-related problem severity among dually diagnosed outpatients: The impact of false safety behaviors

Julia D. Buckner [a,*], Michael J. Zvolensky [b,c], Anthony H. Ecker [d,e], Emily R. Jeffries [a], Austin W. Lemke [a], Kimberlye E. Dean [a], Michael S. Businelle [f], Matthew W. Gallagher [b]

[a] Department of Psychology, Louisiana State University, 236 Audubon Hall, Baton Rouge, LA 70803, USA
[b] Department of Psychology, University of Houston, Houston, TX, USA
[c] Department of Behavioral Sciences, University of Texas MD Anderson Cancer Center, Houston, TX, USA
[d] VA South Central Mental Illness Research, Education, and Clinical Center, Houston, TX, USA
[e] Menninger Department of Psychiatry and Behavioral Sciences, Baylor College of Medicine, Houston, TX, USA
[f] Department of Family and Preventive Medicine, University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA

HIGHLIGHTS

- False safety behavior use was significantly related to anxiety symptom severity.
- False safety behavior was significantly related to cannabis problem severity.
- False safety behavior utilization was unrelated to frequency of cannabis use.
- Anxiety was indirectly related to cannabis problems via false safety behavior use.

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ABSTRACT

Cannabis use disorder (CUD) co-occurs with anxiety disorders at high rates. Little is known about the mechanisms linking CUD and anxiety disorders. One theoretically-driven perspective is that individuals with anxiety disorders may be more apt to use FSBs (i.e., behaviors that may be effective in decreasing anxiety in the short-term, but can maintain and even exacerbate anxiety in the long-term), which can perpetuate cannabis use despite cannabis-related problems. The present study tested whether FSB use explained the relation of anxiety symptom severity with cannabis quantity and related problems among 77 adults with CUD and comorbid anxiety disorders seeking outpatient CUD treatment. Results indicated that FSB frequency was significantly related to anxiety symptom severity and cannabis problem severity, but not cannabis quantity. Anxiety symptom severity was indirectly (via FSB frequency) related to cannabis problem severity, but not to cannabis quantity. These novel findings suggest that more frequent use of FSBs may play an important role in cannabis problem severity among individuals with CUD and anxiety disorders.

1. Introduction

Cannabis remains the most widely used illicit substance and rates of use have increased over the past decade (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). Approximately 25% of persons who use cannabis are daily users (SAMHSA, 2014). Over 20% of past-year users meet criteria for a current cannabis use disorder (CUD) and CUD is the most prevalent substance use disorder (SAMHSA, 2014).

Anxiety is highly related to CUD—43.5-50% of people with CUD have an anxiety disorder, a rate nearly six times that of those without CUD (Stinson, Ruan, Pickering, & Grant, 2006). Anxiety disorders tend to onset before cannabis dependence among dually diagnosed individuals (Agosti, Nunes, & Levin, 2002) and prospective work supports that anxiety may increase CUD vulnerability—relative to adolescents without social anxiety disorder (SAD), those with SAD were nearly five times more likely to develop cannabis dependence as young adults after controlling for depression and other relevant disorders (Buckner et al., 2008). In fact, generalized anxiety and social anxiety are both prospectively

* Corresponding author.
E-mail addresses: jbuckner@lsu.edu (J.D. Buckner), mjzvolen@central.uh.edu (M.J. Zvolensky), tecker2@gmail.com (A.H. Ecker), emily.jeffries.7@gmail.com (E.R. Jeffries), austin.w.lemke@gmail.com (A.W. Lemke), deankimberlye@gmail.com (K.E. Dean), Michael-Businelle@OUHSC.edu (M.S. Businelle), Matthew.Gallagher@times.uh.edu (M.W. Gallagher).

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related to greater risk of cannabis-related problems (Marmorstein, White, Loeber, & Stouthamer-Loeber, 2010). Anxiety may maintain cannabis use and related problems. Greater anxiety at treatment termination predicts greater post-treatment cannabis use and use-related problems (e.g., Buckner & Carroll, 2010). Further, cannabis dependence may increase risk for developing some types of anxiety (e.g., Zvolensky et al., 2006).

Individuals with CUD may be vulnerable to using false safety behaviors (FSB; i.e., behaviors that help one avoid or alleviate anxiety and related affect), such as avoidance and cannabis use, to help manage anxiety and related conditions. FSBs are utilized across anxiety conditions because they often temporarily alleviate anxiety (e.g., avoiding a situation that engenders fear; Schmidt et al., 2012). Yet, repeated use of FSB maintains pathological anxiety (Hope, Durrheim, d'Espaignet, & Dalton, 2006; Salkovskis, Clark, & Hackmann, 1991). Although not all cannabis use may occur to manage anxiety (e.g., anxiety is also related to conformity-motivated cannabis use; Buckner, Bonn-Miller, Zvolensky, & Schmidt, 2007; Comeau, Stewart, & Loba, 2001), chronically using cannabis to reduce anxiety (i.e., using cannabis as a FSB) may facilitate learning that anxiety should be avoided because it is harmful. Further, some strains of cannabis (especially those with higher levels of THC) can increase anxiety (see Crippa et al., 2009), resulting in a positive feedback loop between anxiety and cannabis use.

Although no studies have tested the relation of FSB in the anxiety-cannabis link, indirect evidence highlights that FSBs may play an important role. Relaxation/tension-reduction and coping with negative affect are among the most common reasons for cannabis use (Buckner et al., 2015; Reilly, Didcott, Swift, & Hall, 1998) and coping-motivated use partially accounts for cannabis-related problems among anxious users (e.g., Buckner et al., 2007; Buckner, Heimberg, Matthews, & Silgado, 2012). Individuals with more cannabis-related problems engage in FSBs such as avoidance (e.g., social avoidance; Buckner, Heimberg, & Schmidt, 2011) and avoiding social situations if cannabis is unavailable (Buckner & Zvolensky, 2014). Importantly, avoidance behaviors mediate the relation between social anxiety and cannabis problems (Buckner et al., 2011) and coping motivated cannabis use (Buckner, Zvolensky, Farris, & Hogan, 2014).

The current study sought to evaluate the role of FSB on anxiety-cannabis relation among adult treatment-seeking patients with CUD and anxiety disorders. First, we tested whether more severe anxiety would be related to more frequent FSB use. Second, we tested whether FSB would be related to cannabis quantity and related problems. Third, we tested whether FSB frequency would explain the relation of anxiety severity with cannabis quantity and related problems.

2. Method

2.1. Participants and procedures

Participants ($n = 77$) were adult treatment-seeking cannabis users ($M_{age} = 24.0$, $SD = 8.0$; 41.6% female) recruited from the community (via flyers, newspaper and online advertisements) to participate in a trial of two psychosocial interventions for CUD (clinicaltrials.gov #NCT01875796). Because one of the interventions targeted comorbid CUD and anxiety disorders, inclusion criteria included having used cannabis in the past week to manage anxiety, cannabis as drug of choice to manage anxiety, and being interested in treatment to manage anxiety and cannabis in addition to 18–65 years of age, endorsing motivation to quit smoking cannabis, and willing to complete treatment and assessment appointments. Exclusion criteria included currently receiving psychological or substance use treatment, being mandated for treatment, and currently being pregnant or interested in becoming pregnant during the study timeframe. The current study is based on secondary analyses of pre-treatment data.

The racial/ethnic composition of the current sample was non-Hispanic White (63.6%), Hispanic White (13.0%), non-Hispanic African American (19.5), Asian/Asian American (1.3%), and other (2.6%). Participants were well educated with 65.3% indicating that they completed at least part of college and 14.7% indicating they had a bachelor's degree. Regarding relationships, 78.7% reported marital status as single, 8.0% as cohabitating, 5.3% as divorced, 4.0% as "other", 2.7% as married, and 1.3% as separated. Age of first cannabis use was on average 16.2 years old ($SD = 3.2$). The majority (96.1%) used at least four times in the past month, with 59.7% endorsing using at least 24 days in the past month ($M = 21.5$, $SD = 8.9$). The majority (83.3%) reported at least one serious previous cannabis quit attempt ($M = 3.7$. $SD = 13.5$). Only 9.8% endorsed a history of treatment for drug use whereas 41.0% endorsed a history of anxiety treatment. Primary DSM-5 diagnoses were: CUD (45.5%), SAD (32.5%), generalized anxiety disorder (13.0%), panic disorder (3.9%), other specified anxiety disorder (2.6%), and other (2.6%; e.g., agoraphobia).

Participants provided written informed consent prior to participation and study protocol was approved by the university's Institutional Review Board. Participants underwent a clinical interview and completed a computerized battery of self-report questionnaires.

2.2. Measures

The clinician-administered *Timeline Follow Back* (TLFB; Sobell & Sobell, 1992) assessed cannabis use quantity in the past 90 days.

Table 1
Descriptives and bivariate correlations among demographics and study variables.

	1	2	3	4	5	6	7	8	9	10
1. Age										
2. Sex	−0.08									
3. Race	−0.11	−0.18								
4. Education	0.42**	−0.17	0.03							
5. Social anxiety	−0.03	0.09	0.20	−0.01						
6. Worry	−0.16	0.25*	−0.10	0.08	0.17					
7. Panic attack severity	−0.14	0.46**	−0.05	−0.11	0.01	0.28*				
8. FSB frequency	0.06	0.26*	−0.07	−0.03	0.35**	0.53**	0.36**			
9. Cannabis quantity	−0.01	0.20	−0.11	0.07	−0.08	0.01	0.00	0.00		
10. Cannabis problems	−0.05	−0.02	0.07	−0.08	0.18	0.18	0.09	0.34**	−0.02	
M (*SD*)	23.8 (8.1)				36.5 (16.0)	47.1 (11.1)	32.3 (26.6)	99.5 (42.5)	65.4 (70.3)	12.3 (7.0)
Range	18–56				2–63	16–66	0–106	10–279	3–461	2–27
Skewness	2.58				−0.20	−0.36	0.64	1.07	**3.38**	0.45
Kurtosis	6.89				−0.87	−0.62	−0.34	3.28	**15.04**	−0.78

Note. Significant skew and kurtosis statistics (skew > 3, kurtosis > 10) are presented in bold.
* $p < .05$
** $p < .01$