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Integrated Cognitive Behavioral Therapy for Comorbid Cannabis Use and Anxiety Disorders

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Abstract

Cannabis use disorders (CUDs) co-occur with anxiety disorders at high rates, presumably because some individuals with anxiety disorders may rely on cannabis to manage anxiety. Motivation enhancement therapy (MET) combined with cognitive-behavioral therapy (CBT) is an efficacious intervention for CUD, yet outcomes are worse for patients with elevated anxiety. The integration of MET-CBT with *False Safety Behavior Elimination Treatment* (FSET) may be useful with anxious CUD patients, as the use of cannabis to manage anxiety can be targeted as a false safety behavior. Here, we describe the integrated treatment and the successful use of it among two patients—one with CUD and comorbid social anxiety disorder (SAD) and one with CUD and comorbid SAD and generalized anxiety disorder. Data support the feasibility of this integrated treatment as a viable approach to the treatment of CUD and comorbid anxiety disorders. Future controlled trials are now warranted to further evaluate the intervention.

Keywords

cannabis; marijuana; anxiety disorders; dual diagnosis; integrated treatment

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Case Study 1: Co-Occurring Cannabis Use Disorder and Social Anxiety Disorder

1 Theoretical and Research Basis for Treatment

Cannabis use disorders (CUDs) are more common than all other illicit substance use disorders combined (Stinson, Grant, et al., 2006). Quitting cannabis is highly challenging (Moore & Budney, 2003), and situations involving negative affect are among the most difficult situations in which to abstain (Buckner, Zvolensky, & Ecker, 2013). Anxiety is one common type of negative affect that is systematically and uniquely related to CUD and poorer CUD treatment outcomes (see Buckner, Heimberg, Ecker, & Vinci, 2013). Nearly one fourth of those with a CUD have a co-occurring anxiety disorder (Stinson, Ruan, Pickering, & Grant, 2006). This relation is clinically significant, as patients who enter treatment for cannabis dependence with elevated anxiety experience more severe cannabis dependence (Buckner & Carroll, 2010), and the co-occurrence of CUD with anxiety disorders is associated with greater distress and impairment than either condition alone (Buckner, Heimberg, Schneier, et al., 2012). Furthermore, anxiety disorders appear to be a risk factor for CUD. For example, relative to adolescents without social anxiety disorder (SAD), those with SAD were nearly 5 times more likely to develop cannabis dependence as young adults after controlling for depression and other relevant Axis I disorders (Buckner et al., 2008). Furthermore, cannabis use prospectively predicts onset of anxiety disorders (Cougle, Hakes, Macatee, Zvolensky, & Chavarria, in press).

Patients with greater anxiety have greater cannabis use and related problems following CUD treatment (Buckner & Carroll, 2010). On the other hand, decreases in anxiety during CUD treatment are related to better outcomes (e.g., Buckner & Carroll, 2010). The high rates of co-occurring anxiety and substance use disorders and the poorer outcomes among these patients have led to explicit calls for the development of treatments for dually diagnosed patients (National Institute of Drug Abuse, 2010), including treating anxiety and substance use disorders in an integrated fashion that addresses the reciprocal nature of these disorders (Stewart & Conrod, 2008).

We know of only one published study testing a treatment designed to treat co-occurring anxiety disorder (SAD) and cannabis dependence (Courbasson & Nishikawa, 2010). In that study, group cognitive-behavioral therapy (CBT) for SAD (Heimberg, 2002) was modified to include discussions of the relations between anxiety and substance use for patients with co-occurring SAD and a substance use disorder. However, that treatment did not include CBT skills designed specifically to help patients manage their substance use. In other words, that treatment did not integrate CBT for anxiety with CBT for substance use disorders. Although that uncontrolled (i.e., no control group) study documented clear decreases in social anxiety, scores remained in the clinical range post-treatment, which is a problem because elevated anxiety at post-treatment is associated with greater cannabis use, cannabis-related problems, and relapse following CUD treatment (Buckner & Carroll, 2010). Also, only 44% of patients completed treatment and only 28% of that sample met criteria for CUD, leaving knowledge of the utility of integrated treatments for co-occurring cannabis dependence and anxiety disorders highly limited.

Transdiagnostic CBTs for anxiety disorders are designed to target behaviors (e.g., avoidance) and cognitions (e.g., catastrophic thinking) that maintain pathological anxiety broadly rather than focusing on the specific cognitions and behaviors of a particular anxiety disorder. Empirical evidence supports the feasibility and utility of transdiagnostic anxiety treatments. Specifically, these treatments reduced anxiety and depressive symptoms, appear superior to waitlist controls, and achieve results that are comparable with diagnosis-specific treatments (Allen, McHugh, & Barlow, 2008; Schmidt, Buckner, Pusser, Woolaway-Bickel, & Preston, 2012). Transdiagnostic treatments offer several advantages over protocols specific to each anxiety disorder (see Allen et al., 2008; Schmidt et al., 2012), and these factors may inhibit the widespread use of empirically supported CBT protocols for anxiety disorders in substance use disorder treatment facilities.

False Safety Behavior Elimination Treatment (FSET; Schmidt et al., 2012) is a transdiagnostic anxiety CBT that addresses several anxiety disorders simultaneously by targeting behaviors that can contribute to the maintenance of anxiety disorders (Salkovskis, Clark, & Hackmann, 1991), false safety behaviors, which are behaviors that help one avoid or alleviate false threats (i.e., phobic stimuli). False safety behaviors are highly utilized across anxiety conditions because they often temporarily alleviate anxiety (e.g., by avoiding a phobic stimulus). FSET involves the identification and elimination of false safety behaviors and has been found to decrease anxiety and depression and improve quality of life (Schmidt et al., 2012).

FSET may be particularly well-suited for integration with CUD treatment given that cannabis use can serve as a false safety behavior (see Buckner et al., 2014). Many anxious individuals use cannabis to help manage anxiety and related negative affect (e.g., Buckner, Heimberg, Matthews, & Silgado, 2012; Zvolensky et al., 2009). Furthermore, regardless of whether anxiety or cannabis use begins first, if anxious people use cannabis to manage their negative affect, a positive feedback loop may result between anxiety and cannabis use. In the absence of adaptive coping strategies, anxious cannabis users may rely on cannabis to manage negative affect. Yet, continued cannabis use may increase negative affect via a number of routes, including cannabis withdrawal. Thus, anxious people who use cannabis to cope with negative affect in the short term may paradoxically increase their anxiety and cannabis use-related problems in the long term.

Anxiety and Cannabis Cessation Treatment (ACCT) integrates FSET with motivation enhancement therapy and CBT (MET-CBT) for CUD (Steinberg et al., 2005) to simultaneously treat CUD and anxiety disorders. MET-CBT for CUD was chosen because data suggest that MET-CBT for CUD results in lower post-treatment anxiety than MET alone (Buckner & Carroll, 2010). ACCT integrates CBT techniques designed to help patients reduce/abstain from cannabis use (e.g., refusal skills, coping with craving) with FSET skills designed to help patients learn to manage their anxiety (e.g., elimination of false safety behaviors). ACCT may also increase confidence to change anxiety and cannabis use behaviors as patients learn alternative, more adaptive coping skills to help them cope with anxiety and other high-risk cannabis use situations. To illustrate the utility of ACCT for CUD with a variety of co-occurring anxiety disorders, two cases are presented.

Case Study 1: Co-Occurring Cannabis Use Disorder and Social Anxiety Disorder

2 Case Introduction

Patient A¹ is an African American woman who presented for the treatment of excessive social anxiety in most social situations and a desire to quit using cannabis.

3 Presenting Complaints

Patient A reported that much of her cannabis use was motivated by a desire to manage anxiety. She presented for treatment to learn to manage her social anxiety because it was interfering with several domains of her life. For example, she wanted to finish college and make more friends, but she avoided these things due to fear of negative evaluation. Her reasons to quit using cannabis included to set a better example for her children, to be able to pass a drug test if she decided to change jobs, and because she noticed that cannabis often increased her anxiety instead of alleviating it.

4 History

Patient A reported a 12-year history of pharmacotherapy (i.e., selective serotonin reuptake inhibitors) for depression and anxiety that she discontinued in 2008. She reported that she believed that the medications did not help her symptoms improve. She denied history of significant medical problems.

5 Assessment

Clinical interviews were conducted by a masters-level doctoral student in clinical psychology, and diagnoses were determined via a group consensus meeting with a licensed clinical psychologist.

Anxiety Disorders Interview Schedule for *DSM-IV* (ADIS)—The ADIS-IV (DiNardo, Brown, & Barlow, 1994) is a structured diagnostic interview designed to provide detailed coverage of anxiety disorders. In addition, it provides coverage of other Axis I disorders, including mood disorders, substance abuse or dependence, somatoform disorders, and psychosis. The ADIS-IV has been shown to be a reliable and valid measure of *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) anxiety and mood disorders (Brown, DiNardo, Lehman, & Campbell, 2001). Additional questions were asked when appropriate to assess *Diagnostic and Statistical Manual of Mental Disorders* criteria (5th ed.; *DSM-5*; American Psychiatric Association, 2013). With regard to SAD, Patient A reported experiencing clinically significant anxiety and avoidance in nearly every social situation she encountered (e.g., parties, participating in meetings, speaking with unfamiliar people, initiating/maintaining a conversation, exams) and that she believed her fear was excessive. She reported that her anxiety interfered with her life in a number of significant ways (e.g.,

¹Informed written consent was obtained for treatment and research purposes. Patients were assured that any data presented from their treatment would be anonymous, and thus these cases have been deidentified and some details of the cases have been changed to protect confidentiality.

prohibiting her from applying for higher-paying jobs, causing her to drop out of college, preventing her from having friends). She reported that she also avoided public places, especially shopping, which she would often do late at night when fewer people were present. She reported that one of her primary reasons for using cannabis was to manage her social anxiety.

Structured Clinical Interview for *DSM-IV* Criteria—Patient Version With Psychotic Screen (SCID)—The SCID (First, Spitzer, Gibbon, & Williams, 2007) was used to assess substance use disorders because the psychometrics of substance use disorder section of the ADIS have not been examined, whereas the SCID substance use disorder section has very good psychometric properties, including good inter-rater reliability (e.g., Buckner, Schmidt, Bobadilla, & Taylor, 2006). At intake, Patient A reported that for the past 3 years, she used cannabis twice per day. She reported that she often spent at least 4 hr per day under the influence of cannabis. She almost always used more than she planned to and reported several unsuccessful quit attempts in the past year. She reported that she experienced paranoia and agitation when she used cannabis, but that she continued to use despite the effects. She endorsed tolerance, strong cravings, and withdrawal (i.e., agitation, insomnia). She also reported that she often drove under the influence of cannabis. Patient A met *DSM-5* criteria for CUD, severe.

Social Phobia Scale (SPS)—The SPS (Mattick & Clarke, 1998) assessed social anxiety using 20 items rated from 0 (*not at all true*) to 4 (*extremely true*). This scale has shown excellent internal consistency in prior work (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992). At intake, Patient A scored 40 on the SPS, indicating clinically elevated social anxiety (Heimberg et al., 1992).

Inventory of Depression and Anxiety Symptoms (IDAS; Watson et al., 2007) was used to assess depression and social anxiety weekly throughout treatment. Patients rated items from 1 (*not at all*) to 5 (*extremely*). Subscales have shown good internal consistency in psychiatric patient samples (Watson et al., 2007). At Session 1, Patient A's scores were 50 on the Depression subscale and 23 on the Social Anxiety subscale.

Timeline Follow Back (TLFB)—A past-week version of the TLFB (Sobell et al., 1996) was administered at each treatment session. The TLFB asks patients to indicate how many cannabis cigarettes (i.e., “joints”) were used on each day in the past week. Per TLFB instructions, if patients used a method other than joints (e.g., pipe), they were asked to estimate the number of joints used. The TLFB for cannabis has demonstrated good test-retest reliability (Fals-Stewart, O’Farrell, Freitas, McFarlin, & Rutigliano, 2000). To ensure patients did not increase use of other substances to replace cannabis use, patients also rated their use of cigarettes and alcohol on the TLFB at each treatment session. During Session 1, Patient A reported daily cannabis use.

6 Case Conceptualization

ACCT was recommended to treat Patient A's comorbid SAD and CUD. By the patient's report, she relied heavily on cannabis use to cope with social anxiety both in anticipation of

social events and after social events to cope with post-event processing (i.e., detailed review of one's performance following a social situation; Brozovich & Heimberg, 2008) and to alleviate depressed mood. She reported that she no longer derived pleasure from cannabis use, and that her primary motive was to cope with negative affect, especially anxiety.

ACCT consists of 12 sessions that integrate FSET for anxiety disorders with MET-CBT for CUD. Because the patient's cannabis use could have interfered with anxiety treatment (e.g., if fading false safety behaviors initially increased state anxiety), the first two treatment sessions consist of MET to explore and resolve ambivalence about quitting cannabis and to strengthen commitment to change problematic cannabis use. Diagnostic feedback and psychoeducation on the relationships between SAD and CUD are included in the initial sessions. Psychoeducation included describing the prevalence of anxiety disorders and CUD, an adapted version of the mutual maintenance model (Stewart & Conrod, 2008) of anxiety and cannabis use (i.e., coping-motivated cannabis use increases reliance on cannabis, which in turn can exacerbate anxiety symptoms), and rationale for fading false safety behaviors to modify fear structures.

Sessions 3 to 11 focus on the fading of false safety behaviors, increasing antiphobic activities (i.e., intentionally bringing about an anxiety-provoking situation), and CBT modules for CUDs per Steinberg et al. (2005). Both aspects of treatment (i.e., managing anxiety and quitting cannabis) are addressed each week to facilitate integrated, simultaneous recovery given that patients' anxiety and cannabis use can be very much related (e.g., increases in anxiety through exposure to anxiety-provoking stimuli could result in increased desire to use cannabis, decreases in cannabis use related to increased anxiety). Specifically, Session 3 introduces the notion of false safety behaviors and specific techniques of delaying use, decreasing degree of use, and decreasing frequency of false safety behaviors. Session 4 focuses on substance use as a false safety behavior. To further examine the relationship of patients' cannabis use to their anxiety, Session 4 also includes functional analysis of cannabis use to begin to identify triggers of use, thoughts related to use, and consequences of use. Conceptualizing cannabis use as a false safety behavior allows for integration of key anxiety treatment components (e.g., exposure to feared stimuli when not under influence) and CUD treatment components (i.e., understanding triggers, related thoughts/feelings, and consequences of cannabis use) in one session.

In Session 5, antiphobic exercises are introduced. In the case of fear of negative evaluation, such exercises may include intentionally wearing non-matching clothes or making a statement that could elicit negative evaluation from others. Given that increased anxiety as a result of practicing antiphobic exercises can be a trigger for cannabis use, alternative coping strategies for cannabis craving (e.g., *urge surfing*, *delaying decisions to use*, *using self-talk*) from the MET-CBT for CUD manual (Steinberg et al., 2005) are presented in this session.

Sessions 6 through 8 include discussions of specific categories of false safety behaviors (e.g., situational avoidance, cognitive avoidance). These discussions are integrated with discussions of CBT skills for reducing cannabis use to provide the patient with alternative coping strategies other than cannabis use to cope with increased anxiety experienced during fading of false safety behaviors. To illustrate, during Session 6, the CBT for CUD skill

challenging thoughts about cannabis use is presented after discussing fading the false safety behaviors, given that patients may experience thoughts about using cannabis to cope with increased anxiety as response to fading and eliminating these safety behaviors. Sessions 9 through 11 are dedicated to continued identification and fading of false safety behaviors and engaging in antiphobic exercises. Given that decreases in social avoidance could result in risk of cannabis use, to help patients manage new challenges that accompany engagement in social interactions, the CBT for CUD skill of *problem-solving* training is introduced in Session 9. In Session 10, the CBT for CUD skills of *refusal skills* and *assertiveness* are introduced given that at this point in treatment, patients are ideally engaging in less social avoidance and may potentially be experiencing social pressure to use. Socially anxious patients have also ideally learned to manage their anxiety to the point that they are able to practice refusal and assertiveness skills by Session 10. In Session 11, *planning for emergencies and cannabis use lapse* is introduced to prepare patients for termination and to help generalization of cannabis reduction techniques to new, anticipated situations. Session 12 focuses on relapse prevention for both anxiety and CUDs. Motivational Interviewing (MI) is incorporated throughout the treatment when necessary, especially to explore and resolve ambivalence about substance use and treatment adherence.

7 Course of Treatment and Assessment of Progress

Patient A experienced reductions in cannabis use and social anxiety during the course of ACCT. The first two sessions were comprised mainly of MET focused on cannabis use behaviors and psychoeducation. MET consisted primarily of presenting the patient with personalized feedback related to her cannabis use and exploring and resolving ambivalence regarding changing her cannabis use. In Session 3, Patient A identified false safety behaviors in which she engaged, including avoiding eye contact with others and using her phone as a distraction when in public places. The therapist explained how engaging in such false safety behaviors maintains anxiety disorders, and that by gradually decreasing their use, Patient A will begin to change the associations between feared stimuli and the anxiety response. Patient A began to fade these false safety behaviors for homework. She also identified alternative coping strategies she could use instead of using cannabis, including exercise and using distracting activities (e.g., reading). Session 4 integrated functional analysis of cannabis use with discussions of cannabis use as a false safety behavior, facilitating Patient A's understanding of her particular cannabis use patterns (both coping and non-coping-motivated use) as well as positive/negative consequences of using cannabis. In Session 5, Patient A's cannabis use had reduced from daily use to two occasions in the past week (Figure 1). Patient A discussed ways she had transitioned from used smoking as "a crutch" to abstaining by thinking about the negative consequences of smoking and about her goal to quit using cannabis. She went on to describe that in addition to fading cannabis use as a false safety behavior, she reduced her use by avoiding cannabis cues (e.g., paraphernalia) and using alternative coping strategies when she wanted to use. Also in Session 5, antiphobic exercises were introduced, and the patient gave several examples of antiphobic exercises she could conduct (e.g., seeking out conversations with her superiors at work). To help Patient A cope with increases in cannabis craving that may occur as a result of engaging in antiphobic exercises, the CBT for CUD skill of *coping with craving* was presented during this session. Skills to help Patient A coping with cannabis cravings included using distractions and using

self-talk (e.g., reviewing reasons for quitting, reviewing positive consequences of abstinence, reviewing negative consequences of use).

In Session 6, Patient A reported that she found using self-talk especially helpful for coping with cravings as a result of increased anxiety from antiphobic exercises, as well as craving experienced in response to non-anxiety triggers (e.g., being in the presence of others who are using cannabis, times of day in which she would usually use cannabis). Although Patient A initially communicated some reluctance to fade false safety behaviors, she reported experiencing several benefits of completing fading and antiphobic exercises after completing homework exercises for several weeks: She reported to the therapist that situations she would normally avoid (e.g., making eye contact with strangers, becoming the center of attention of her co-workers) were not nearly as threatening as she believed they were. Fading false safety behaviors therefore exposed the patient to anxiety-provoking stimuli, thereby facilitating self-discovered cognitive restructuring.

In Session 8, Patient A denied all anxiety-coping-motivated cannabis use. From Session 8 to 12, she reported several additional improvements related to social anxiety such as applying for a new job, and at Session 8, her IDAS Social Anxiety score (5) represented minimal social anxiety. In Session 10, Patient A described ways in which she had ceased cannabis use as a false safety behavior, nearly eliminating her cannabis use. However, ceasing cannabis as a false safety behavior was not sufficient to attain her goal of abstinence. Rather, the therapist taught additional MET-CBT skills from which she could benefit from to manage her cannabis use (e.g., learning effective refusal skills).

8 Complicating Factors

Patient A reported that individuals targeting her adult son had shot at her house with guns. In response, she moved out of the house and did not have a stable residence for approximately 1 month. She cancelled and rescheduled several sessions due to difficulty with her living situation. Her housing instability also contributed to increased depressed mood and anxiety, which were triggers for her cannabis use.

9 Access and Barriers to Care

Patient A cancelled one session due to anxiety regarding driving in inclement weather. Avoiding driving during inclement weather was thus included as a false safety behavior to fade, and she reported at the end of treatment that she no longer avoided such driving.

10 Follow-Up

During the course of treatment, Patient A made marked improvements concerning her anxiety and cannabis use. Regarding her social anxiety, her SPS score decreased from the clinical range at intake (40) to below the clinical cut score (Heimberg et al., 1992) at termination (14). Importantly, she used cannabis on only two occasions during the 30 days preceding the termination assessment, representing a significant reduction from daily use at intake (Figure 1). It is also noteworthy that her daily cannabis use at intake consisted of several use periods per day, but that at termination her two use days consisted of 1 cannabis cigarette on each occasion. Furthermore, she denied experiencing any cannabis-related

problems in the past month at termination. Given her treatment gains and results of a SCID administered at post-treatment, the patient was considered in remission for both SAD and CUD.

Case Study 2: Co-Occurring Cannabis Use Disorder, Social Anxiety Disorder, and Generalized Anxiety Disorder

1 Theoretical and Research Basis for Treatment

The utility of ACCT for CUD will be illustrated here for a patient with CUD and both SAD and Generalized Anxiety Disorder (GAD).

2 Case Introduction

Patient B was a Caucasian woman who presented to the clinic with a strong desire to manage her anxiety and reduce her cannabis use.

3 Presenting Complaints

Patient B reported excessive anxiety in social situations and difficulty controlling her worries. The patient expressed a desire to manage her anxiety so that she could feel better and stop relying on cannabis to relax. She also reported that she and her partner planned to have children, and that she did not want to be “dependent” on cannabis while raising a child.

4 History

Patient B endorsed a history of anxiety and worry, and described distress related to “over thinking,” and worry that was difficult to control. She reported a history of relying on her partner in social situations and related distress in social settings (e.g., at parties or when talking with unfamiliar people). Patient B reported that she had not sought treatment for anxiety or cannabis use in the past and denied current and past suicidal ideation. Regarding medical history, she reported that she experiences upper back/neck pain as a result of a herniated disc. However, she denied using cannabis to manage pain.

5 Assessment

Patient B was assessed using the ADIS and the SCID, and follow-up questions related to *DSM-5* diagnostic criteria were asked by the assessing therapist. Regarding SAD, Patient B reported that she experienced excessive fear and anxiety in social situations (i.e., parties, participation in meetings/classes, talking in front of a group, speaking with unfamiliar people or people in authority, refusing unreasonable requests, asking others to change her behavior, being late). Patient B reported that she experienced anxiety nearly every time she experienced the above situations and that she believed the fear was excessive. She reported experiencing her SAD symptoms for as long as she could remember. She reported anticipatory anxiety prior to engaging in social situations as well as fear of negative evaluation throughout the situations. Patient B reported clinically elevated distress. She reported that she avoided many social situations (e.g., going shopping in crowded stores, attending parties), and she believed that her friends, at times, did not invite her to events because they did not think she would come.

Regarding GAD, Patient B reported that she experienced excessive worry that she described as difficult to control for the past 4 years. She reported worry about minor matters (e.g., errands, appointments), work, finances, and the health of her partner. Patient B reported that she spent approximately 30% of her day worrying, and she stated that the worries often came to mind with no clear antecedent. In addition, Patient B reported that, more days than not, she experienced clinically significant restlessness, fatigue, and irritability. She reported that she was very bothered by the amount of time she spent worrying and believed that her worry often “spirals out of control.”

Patient B also met *DSM-5* criteria for CUD, severe. She stated that for the past 4 years, she smoked cannabis cigars approximately 5 to 6 times per day. She reported that she often smoked more than she was planning to, spent a majority of her waking hours intoxicated, and often spent most of the day using cannabis rather than engaging in other planned activities. She reported tolerance, strong urges to use, and withdrawal symptoms (e.g., increased irritability, lower appetite, and increased anxiety) when she used cannabis less often. Patient B reportedly drove while under the influence of cannabis almost every day.

Penn State Worry Questionnaire (PSWQ)—The PSWQ (Meyer, Miller, Metzger, & Borkovec, 1990) is a 16-item self-report measure of GAD-related worry in which the patient responds on a scale from 1 (*not at all typical of me*) to 5 (*very typical of me*). The PSWQ has achieved good internal consistency and test-retest reliability (for review, see Molina & Borkovec, 1994). Patient B scored a 62 prior to treatment, a score consistent with other GAD patients (Brown, Antony, & Barlow, 1992).

Patient B also completed the SPS, IDAS, and TLFB. At intake, Patient B scored a 39 on the SPS, which indicated clinically elevated social anxiety (Heimberg et al., 1992), and Patient B’s IDAS social anxiety score was 16, consistent with the mean social anxiety scale scores in a sample of psychiatric patients. At intake, the patient reported smoking four to eight joints daily.

6 Case Conceptualization

ACCT was recommended to treat Patient B’s SAD, GAD, and CUD. The patient reported that she smoked cannabis to cope with negative emotional states, including anxiety and depression. She also reported using cannabis to relax and for social use with friends. She also reported using cannabis prior to and during social encounters to cope with fear of negative evaluation.

7 Course of Treatment and Assessment of Progress

The skills presented in each of the 12 sessions were presented in the same order as for Patient A. The first two sessions focused on MET and psychoeducation, during which Patient B reported many reasons to quit using cannabis, including to be more present, to set a good example for her future family, to open up opportunities for new jobs that might require drug testing, to decrease her risk of cancer, to expand her social life to people who do not use, and to reduce her anxiety. By Session 2, Patient B was able to identify other false safety behaviors that she used to cope with anxiety (e.g., wearing sunglasses to avoid eye

contact, avoiding social situations). Also in Session 2, the patient was asked to discuss new coping strategies as alternatives to using cannabis as a false safety behavior. She readily identified actions and lifestyle changes that would be more adaptive, such as staying more active, exercising more, and avoiding cannabis use triggers (e.g., watching TV after work). She stated that she was excited to use these alternative coping strategies.

In Session 3, additional false safety behaviors were identified. Patient B stated that she used cannabis to cope with anxiety, avoided situations such as crowded stores, used her partner as a companion to attend social functions, engaged in reassurance seeking at work and with her partner, and checked her belongings ritualistically (e.g., phone, clothing). She also identified alternative coping strategies to using cannabis, including exercising, walking her dogs, and using positive self-talk. By Session 4, the patient demonstrated successfully fading false safety behaviors (e.g., going to the mall to try on clothes and not smoking cannabis beforehand).

During Session 4, which focused on cannabis use as a false safety behavior, Patient B reported that she was no longer concerned about drug testing, as she had been offered a promotion at work, and she and her partner were considering a move closer to her workplace. She had completely abstained from cannabis use during Weeks 2 and 3, but had used on four occasions in the past week. She reported that she was very happy with her overall progress, although she felt somewhat guilty about her increased cannabis use in the past week. She reported that half of the time, the intention of her use was to manage anxiety, and the other half of the time, she described her use as being because she “wanted to” rather than “to fix” something (i.e., decrease anxiety or cope with stress). She stated that she had used with friends when it was offered to her because she found it to be enjoyable; however, she stated that she was still motivated to decrease the frequency of such use in the future to “special occasions only” a few times per year. She stated that keeping busy and using positive self-talk were the most effective strategies to cope with cravings and deal with high-risk situations. Her IDAS social anxiety score was 11 at this session.

During Session 5, antiphobic exercises were added as a weekly homework assignment. The patient understood the purpose of the exercises; however, she was hesitant to engage in these exercises due to her extreme fear of facing her fears. The therapist worked with the patient to develop antiphobic exercises in which she was willing to engage. The patient feared being negatively evaluated for her appearance, and she was initially unwilling to go out in public dressed in a manner that could evoke negative evaluation (e.g., go out in public with a stained shirt, intentionally spill her drink in the middle of a restaurant). Thus, she initially made very small changes to her appearance to make herself more the center of attention (e.g., wearing suspenders instead of a belt). By the final weeks of treatment, she engaged in more difficult antiphobic behaviors such as going to a store while dressed in stained clothes, without her hair done, and without shaving her legs. When the patient made gains in fading avoidance, going places without her partner, or completing antiphobic exercises, she reported feeling very proud of herself, and she was excited to share her successes during treatment sessions.

From Sessions 3 to 11, skills from CBT modules for CUDs were integrated with FSET skills, including the fading of safety behaviors and antiphobic exposures. As the patient exposed herself to increased anxiety, she was taught skills to cope with the anxiety so as not to increase cannabis use and allow her to reach her goals for reduced use. Skills related to reducing cannabis use included functional analysis of triggering situations and thoughts as well as consequences of use, coping strategies, challenging thoughts related to cannabis use, coping with cravings, problem solving, and dealing with high-risk situations. The patient responded very well to challenging thoughts and identifying thinking errors, and these skills were reported to be effective both to deal with cravings and anxiety.

Session 7 consisted of skills to manage negative moods including depression, which was a substantial trigger for cannabis use for Patient B. Challenging maladaptive automatic thoughts as an alternative way to cope with negative moods was reported to be helpful. Her IDAS social anxiety score was 11 at Session 9. Session 9 explicitly focused on teaching problem-solving skills. A recurring theme that caused negative affect and had led to increased cannabis use was depressive feelings. Although the patient did not meet criteria for a mood disorder, she reported that she struggled with feelings of sadness related to her brother's sudden death several years ago. Her family relationships were addressed in Session 9 within the framework of problem solving. Problem-solving steps were introduced and included recognition of a problem, elaboration of the problem, consideration of multiple options followed by selection of the most promising approach, and implementation and evaluation of effectiveness. The patient needed considerable guidance to come up with options, which was difficult due to her emotionality during the discussion. Following the session, she reported improved perceptions of family dynamics and a move toward acceptance of her mother's behavior and her brother's death during subsequent sessions.

The final session consisted of relapse prevention. High-risk situations were identified and discussed as opportunities to become her own therapist, implement problem-solving techniques, and cope with high-risk situations related to anxiety/depression and cannabis use. The patient reported feeling more confident to deal with using thought challenges and problem solving during these high-risk cannabis use situations.

During the course of treatment, Patient B made marked improvements concerning her anxiety and cannabis use. Regarding her social anxiety, her SPS score decreased from the clinical range at intake (39) to below the clinical cut score (Heimberg et al., 1992) at termination (14). Her IDAS social anxiety score decreased from 16 at intake to 10 at termination, under the range scored in psychiatric samples (Watson et al., 2007). Her PSWQ decreased from 62 at intake to 54 at termination, below the clinical range (Brown et al., 1992). Notably, although depression was not explicitly targeted in any session other than one session on strategies to manage negative mood, Patient B's IDAS depression score decreased from 50 at intake to 39 at Session 6 and to 38 at termination, under the range evidenced by psychiatric samples (Watson et al., 2007).

8 Complicating Factors

Patient B's treatment was complicated by several factors. For example, the clinic was a 1- to 2-hr commute from the patient's home; yet the patient often was able to schedule sessions

after work and did not miss any sessions due to the commute. During Session 3, Patient B reported decreased use of cannabis; however, an initial increase in alcohol use was noted as cannabis use decreased. The therapist assessed the increase in alcohol use during weekly monitoring forms of substance use, and the therapist brought this increase in alcohol use to the patient's attention. The patient acknowledged that she was replacing cannabis with alcohol and reported that she did not want to introduce a new false safety behavior, especially one that was related to substance use. She reported that because she has a family history of alcohol use problems, she did not want to increase her alcohol use and place herself at risk of alcohol-related problems. She refrained from alcohol use by challenging alcohol-related thoughts and reminding herself of her goals were helpful strategies.

9 Access and Barriers to Care

One barrier to care was that the patient was injured in a car accident that resulted in serious back pain. As a result, she cancelled one session and had to reschedule. In addition, that week and subsequent weeks, she reported that she had less time to complete some homework assignments that required her to attend events or go places after work because she had to go to physical therapy. This also reportedly increased negative affect and was a stressor for the patient. Despite these difficulties, the patient still engaged in assignments and attended sessions, and this was not thought to interfere significantly with progress.

10 Follow-Up

Throughout treatment, cannabis use was low (Figure 2), with triggers including availability of the drug, friends smoking in front of her, and stress. Frequency of cannabis use decreased from daily at intake to 3 times in the week prior to Session 6 to twice in the week prior to termination. Notably, she only smoked one joint per occasion on the majority of times she used, a large improvement from the five to six joints smoked per day at intake. At termination, she denied past-month problems related to her cannabis use. Given her treatment gains, the patient was considered in remission for CUD, SAD, and GAD.

11 Treatment Implications of the Cases

Although preliminary, these case reports point to the potential utility of ACCT, psychosocial treatment that integrates FSET for anxiety disorders (Schmidt et al., 2012) with MET-CBT for CUD (Steinberg et al., 2005) in the treatment of CUD with comorbid anxiety disorders. ACCT resulted in remission of CUD (even severe cases of CUD), SAD, and GAD for the two patients presented here. Importantly, ACCT resulted in decreases in cannabis use among two individuals who used cannabis daily or nearly daily and several times per day when they did use. Importantly, ACCT also resulted in remission of pathological anxiety for Patient A who had not responded to previous anxiety treatment. Furthermore, our data suggest that ACCT can reduce associated depressive symptoms. Importantly, decreases in anxiety, cannabis use and use-related problems, and depression were evident even in a case with comorbid anxiety disorders. These data are therefore very promising, especially when considered in light of data suggesting that co-occurring anxiety results in poorer CUD treatment outcomes (Buckner & Carroll, 2010). Decreases in cannabis use were also evident in a patient with low confidence to change her cannabis use at intake (Patient B).

Providing patients with skills to manage their cannabis cravings and high-risk use situations while teaching them skills to manage their anxiety is a unique strategy of this treatment, and it shows great promise. The manual was developed such that techniques from FSET (Schmidt et al., 2012) could work in concert with those from MET-CBT (Steinberg et al., 2005) to increase motivation to change problematic cannabis-related behaviors while also targeting the patient's anxiety.

Patients with elevated anxiety tend to have poorer CUD outcomes after outpatient MET or MET-CBT for CUD (Buckner & Carroll, 2010). Prior attempts to combine anxiety treatment with substance use disorder treatment show promise (Courbasson & Nishikawa, 2010); yet, scores on anxiety measures remained in the clinical range post-treatment and treatment dropout rates were high. The clinical improvement shown by the two patients in our case studies suggests that ACCT may be a promising treatment for patients seeking treatment for comorbid CUD and anxiety disorders. Future work would benefit from investigation of efficacy and retention.

12 Recommendations to Clinicians and Students

Consistent with the ACCT format, we recommend that initial treatment sessions begin with psychoeducation about the nature of anxiety as well as the relationship between each patient's anxiety and cannabis use. It is also important to note in the initial sessions that not all cannabis use will be for anxiety management. As evidenced in the case of Patient B, some cannabis use will be for other reasons (e.g., to have fun with friends). Thus, it is important to teach patients skills to not only manage their anxiety without using cannabis, but ways to manage cannabis cravings that occur outside of the context of anxiety.

Utilizing MET in the initial sessions allows the therapist and patient to explore and resolve ambivalence about changing problematic cannabis use and facilitates the development of a change plan so that the therapist and the patient are clear regarding the patient's goals regarding his or her cannabis use. In the case of Patient B, for example, MI techniques were used to explore and resolve ambivalence about engaging in antiphobic exercises. MI techniques have been used successfully with patients with anxiety disorders to explore and resolve ambivalence about treatment (Buckner & Schmidt, 2009; Westra, Arkowitz, & Dozois, 2009).

It is noteworthy that ACCT is 12 sessions as opposed to the 9 sessions of MET-CBT (Steinberg et al., 2005). This slightly longer course of treatment was necessary to permit the incorporation of FSET materials into the MET-CBT manual and is consistent with the notion that comorbidity can result in a longer course of treatment. Given that patients with elevated anxiety have poorer MET-CBT outcomes after nine sessions (Buckner & Carroll, 2010), we recommended that patients receive a longer course of treatment that would incorporate specific anxiety-management skills to help improve outcomes. This longer treatment "dose" seems promising as despite Patient A having met criteria for CUD, severe at intake, she was able to achieve abstinence from cannabis by Session 12 as well as experience remission from her comorbid anxiety disorder. It is also noteworthy that ACCT was effective for Patient B, who was diagnosed with two co-occurring anxiety disorders (SAD and GAD), suggesting that ACCT is also promising for cases of more severe anxiety pathology.

In sum, although additional research is warranted to test the efficacy of ACCT for comorbid CUD and anxiety disorders, initial data from these case studies are promising. The excellent response demonstrated by these patients suggests that integrating FSET (Schmidt et al., 2012) with MET-CBT for CUD (Steinberg et al., 2005) may be useful in helping anxious patients achieve their cannabis use goals while learning to manage their chronically elevated anxiety. Given that nearly one fourth of individuals with CUD suffer from at least one comorbid anxiety disorder (Stinson, Ruan, et al., 2006) combined with data that these patients have more severe pathology and poorer outcomes (Buckner & Carroll, 2010), treatments aimed at ameliorating these patients' symptomatology and associated functional impairment while improving quality of life have the potential to benefit a great many patients.

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References

- Allen, LB., McHugh, RK., Barlow, DH. Emotional disorders: A unified protocol. In: Barlow, DH., editor. *Clinical handbook of psychology disorders: A step-by-step treatment manual*. 4. New York, NY: Guilford Press; 2008. p. 216-249.
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 4. Washington, DC: Author; 2000. text rev
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 5. Arlington, VA: American Psychiatric Publishing; 2013.
- Brown TA, Antony MM, Barlow DH. Psychometric properties of the Penn State Worry Questionnaire in a clinical anxiety disorders sample. *Behaviour Research and Therapy*. 1992; 30:33–37. DOI: 10.1016/0005-7967(92)90093-v [PubMed: 1540110]
- Brown TA, DiNardo PA, Lehman CL, Campbell LA. Reliability of DSM-IV anxiety and mood disorders: Implications for the classification of emotional disorders. *Journal of Abnormal Psychology*. 2001; 110:49–58. DOI: 10.1037/0021-843X.110.1.49 [PubMed: 11261399]
- Brozovich F, Heimberg RG. An analysis of post-event processing in social anxiety disorder. *Clinical Psychology Review*. 2008; 28:891–903. DOI: 10.1016/j.cpr.2008.01.002 [PubMed: 18294745]
- Buckner JD, Carroll KM. Effect of anxiety on treatment presentation and outcome: Results from the Marijuana Treatment Project. *Psychiatry Research*. 2010; 178:493–500. DOI: 10.1016/j.psy-chres.2009.10.010 [PubMed: 20537406]
- Buckner JD, Heimberg RG, Ecker AH, Vinci C. A biopsychosocial model of social anxiety and substance use. *Depression and Anxiety*. 2013; 30:276–284. DOI: 10.1002/da.22032 [PubMed: 23239365]
- Buckner JD, Heimberg RG, Matthews RA, Silgado J. Marijuana-related problems and social anxiety: The role of marijuana behaviors in social situations. *Psychology of Addictive Behaviors*. 2012; 26:151–156. DOI: 10.1037/a0025822 [PubMed: 22004129]
- Buckner JD, Heimberg RG, Schneier FR, Liu S, Wang S, Blanco C. The relationship between cannabis use disorders and social anxiety disorder in the National Epidemiological Study of Alcohol and Related Conditions (NESARC). *Drug and Alcohol Dependence*. 2012; 124:128–134. DOI: 10.1016/j.drugalcdep.2011.12.023 [PubMed: 22266089]

- Buckner JD, Schmidt NB. A randomized pilot study of motivation enhancement therapy to increase utilization of cognitive-behavioral therapy for social anxiety. *Behaviour Research and Therapy*. 2009; 47:710–715. DOI: 10.1016/j.brat.2009.04.009 [PubMed: 19467647]
- Buckner JD, Schmidt NB, Bobadilla L, Taylor J. Social anxiety and problematic cannabis use: Evaluating the moderating role of stress reactivity and perceived coping. *Behaviour Research and Therapy*. 2006; 44:1007–1015. [PubMed: 16168950]
- Buckner JD, Schmidt NB, Lang AR, Small JW, Schlauch RC, Lewinsohn PM. Specificity of social anxiety disorder as a risk factor for alcohol and cannabis dependence. *Journal of Psychiatric Research*. 2008; 42:230–239. DOI: 10.1016/j.jpsychires.2007.01.002 [PubMed: 17320907]
- Buckner JD, Zvolensky MJ, Ecker AH. Cannabis use during a voluntary quit attempt: An analysis from ecological momentary assessment. *Drug and Alcohol Dependence*. 2013; 132:610–616. DOI: 10.1016/j.drugalcdep.2013.04.013 [PubMed: 23664121]
- Buckner JD, Zvolensky MJ, Schmidt NB, Carroll KM, Schatschneider C, Crapanzano K. Integrated cognitive behavioral therapy for cannabis use and anxiety disorders: Rationale and development. *Addictive Behaviors*. 2014; 39:495–496. DOI: 10.1016/j.addbeh.2013.10.023 [PubMed: 24290210]
- Cogle JR, Hakes JK, Macatee RJ, Zvolensky MJ, Chavarria J. Probability and correlates of dependence among regular users of alcohol, nicotine, cannabis, and cocaine: Concurrent and prospective analyses of the National Epidemiological Survey on Alcohol and Related Conditions (NESARC). *Journal of Clinical Psychiatry*. in press.
- Courbasson CM, Nishikawa Y. Cognitive behavioral group therapy for patients with coexisting social anxiety disorder and substance use disorders: A pilot study. *Cognitive Therapy and Research*. 2010; 34:82–91. DOI: 10.1007/s10608-008-9216-8
- DiNardo, P., Brown, T., Barlow, D. *Anxiety Disorders Interview Schedule for DSM-IV: Lifetime Version (ADIS-IV-L)*. New York, NY: Oxford University Press; 1994.
- Fals-Stewart W, O'Farrell TJ, Freitas TT, McFarlin SK, Rutigliano P. The Timeline Followback reports of psychoactive substance use by drug-abusing patients: Psychometric properties. *Journal of Consulting and Clinical Psychology*. 2000; 68:134–144. DOI: 10.1037/0022-006x.68.1.134 [PubMed: 10710848]
- First, MB., Spitzer, RL., Gibbon, M., Williams, JBW. *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition With Psychotic Screen (SCID-I/P W/PSY SCREEN)*. New York: Biometrics Research, New York State Psychiatric Institute; 2007.
- Heimberg RG. Cognitive-behavioral therapy for social anxiety disorder: Current status and future directions. *Biological Psychiatry*. 2002; 51:101–108. DOI: 10.1016/S0006-3223(01)01183-0 [PubMed: 11801235]
- Heimberg RG, Mueller GP, Holt CS, Hope DA, Liebowitz MR. Assessment of anxiety in social interaction and being observed by others: The Social Interaction Anxiety Scale and the Social Phobia Scale. *Behavior Therapy*. 1992; 23:53–73. DOI: 10.1016/S0005-7894(05)80308-9
- Mattick RP, Clarke JC. Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*. 1998; 36:455–470. DOI: 10.1016/S0005-7967(97)10031-6 [PubMed: 9670605]
- Meyer TJ, Miller ML, Metzger RL, Borkovec TD. Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*. 1990; 28:487–495. DOI: 10.1016/0005-7967(90)90135-6 [PubMed: 2076086]
- Molina, S., Borkovec, TD. The Penn State Worry Questionnaire: Psychometric properties and associated characteristics. In: Davey, GCL., Tallis, F., editors. *Worrying: Perspectives on theory, assessment and treatment*. Oxford, UK: John Wiley; 1994. p. 265-283.
- Moore BA, Budney AJ. Relapse in outpatient treatment for marijuana dependence. *Journal of Substance Abuse Treatment*. 2003; 25:85–89. DOI: 10.1016/S0740-5472(03)00083-7 [PubMed: 14629990]
- National Institute of Drug Abuse. Strategic plan. 2010. Retrieved from <http://www.drugabuse.gov/about-nida/2010-strategic-plan>

- Salkovskis PM, Clark DM, Hackmann A. Treatment of panic attacks using cognitive therapy without exposure or breathing retraining. *Behaviour Research and Therapy*. 1991; 29:161–166. DOI: 10.1016/0005-7967(91)90044-4 [PubMed: 2021378]
- Schmidt NB, Buckner JD, Pusser AT, Woolaway-Bickel K, Preston JL. Randomized controlled trial of False Safety Behavior Elimination Therapy (F-SET): A unified cognitive behavioral treatment for anxiety psychopathology. *Behavior Therapy*. 2012; 43:518–532. DOI: 10.1016/j.beth.2012.02.004 [PubMed: 22697441]
- Sobell, LC., Sobell, MB. Timeline FollowBack user's guide: A calendar method for assessing alcohol and drug use. Toronto: Addiction Research Foundation; 1996.
- Steinberg, KL., Roffman, RA., Carroll, KM., McRee, B., Babor, TF., Miller, M., ... Stephens, R. Brief counseling for marijuana dependence: A manual for treating adults. Rockville, MD: Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration; 2005. DHHS Publication No. (SMA) 05-4022
- Stewart, SH., Conrod, PJ. Anxiety disorder and substance use disorder co-morbidity: Common themes and future directions. In: Stewart, SH., Conrod, PJ., editors. *Anxiety and substance use disorders: The vicious cycle of comorbidity*. New York, NY: Springer; 2008. p. 239-257.
- Stinson FS, Grant BF, Dawson DA, Ruan WJ, Huang B, Saha T. Comorbidity between DSM-IV alcohol and specific drug use disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Alcohol Research & Health*. 2006; 29:94–106.
- Stinson FS, Ruan WJ, Pickering R, Grant BF. Cannabis use disorders in the USA: Prevalence, correlates, and co-morbidity. *Psychological Medicine*. 2006; 36:1447–1460. DOI: 10.1017/s0033291706008361 [PubMed: 16854249]
- Watson D, O'Hara MW, Simms LJ, Kotov R, Chmielewski M, McDade-Montez EA, ... Stuart S. Development and validation of the Inventory of Depression and Anxiety Symptoms (IDAS). *Psychological Assessment*. 2007; 19:253–268. DOI: 10.1037/1040-3590.19.3.253 [PubMed: 17845118]
- Westra HA, Arkowitz H, Dozois DJA. Adding a motivational interviewing pretreatment to cognitive behavioral therapy for generalized anxiety disorder: A preliminary randomized controlled trial. *Journal of Anxiety Disorders*. 2009; 23:1106–1117. DOI: 10.1016/j.janxdis.2009.07.014 [PubMed: 19665347]
- Zvolensky MJ, Marshall EC, Johnson K, Hogan J, Bernstein A, Bonn-Miller MO. Relations between anxiety sensitivity, distress tolerance, and fear reactivity to bodily sensations to coping and conformity marijuana use motives among young adult marijuana users. *Experimental and Clinical Psychopharmacology*. 2009; 17:31–42. DOI: 10.1037/a0014961 [PubMed: 19186932]

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Figure 1.

Number of days cannabis used in past week for Patient A.

Note. Cannabis use frequency was assessed by the *Timeline Follow Back* (Sobell et al., 1996).

Figure 2.
Number of days cannabis used in past week per *Timeline Follow Back* for Patient B.
Note. Cannabis use frequency was assessed by the *Timeline Follow Back* (Sobell et al., 1996).