Situational determinants of use and treatment outcomes in marijuana dependent adults

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HIGHLIGHTS

- Negative affective use associated with psychological distress and maladaptive coping.
- Negative affective use predicted lower self-efficacy.
- Negative affective use associated with various treatment outcomes.
- Results were broadly consistent with the motives literature.

ARTICLE INFO

ABSTRACT

Research and theory strongly support the importance of situational determinants of substance use as targets for intervention, but few studies have systematically examined situational use characteristics in marijuana dependent adults. The present study describes situational use of marijuana in a population of 87 marijuana dependent adults and reports relationships with outcomes of treatment. Use in negative affective situations was independently associated with psychological distress, maladaptive coping strategies, lower self-efficacy, and poorer outcomes post-treatment. The findings were consistent with research on using drugs to cope with negative affect providing evidence of convergence between two different methods of assessing high risk situations for substance use. The results support continued emphasis on coping with negative affect as a target in treatments for marijuana dependence.

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1. Introduction

Illicit drug abuse and dependence are prevalent problems in the United States. The 2011 Substance Abuse and Mental Health Services Administration (SAMHSA) National Survey on Drug Use and Health estimated that 14.9% of the U.S. population age 12 or older had used illicit drugs in the past year (SAMHSA, 2011). Results indicated that marijuana use was by far the most common illicit drug of use, with 11.5% of the population using the substance in the previous year. Among users, 35.6% meet diagnostic criteria for marijuana abuse or dependence (Compton, Grant, Colliver, Glantz, & Stinson, 2004). Long-term, chronic use of marijuana has been associated with various physical and psychological problems, including respiratory issues and problems with attention, memory, and concentration (see Stephens & Banes, 2013, for a comprehensive review). Additionally, individuals who are chronic users report a variety of problems as a result of marijuana use, such as guilt, lower energy level, lower self-esteem, and relationship problems (Stephens, Babor, Kadden, & Miller, 2002). There is a need to identify

and understand individual differences and processes that predict persistent problematic use and response to treatment.

Substantial research supports a cognitive behavioral theory of substance abuse (e.g., Marlatt, Baer, Donovan, & Kivlahan, 1988; Marlatt & Gordon, 1985, 2005) that views addictive behaviors as learned, maladaptive responses to specific situations. Research on relapse to substance use following treatment clearly identifies commonalities in the types of situations that promote drug use (Cummings, Gordon, & Marlatt, 1980). The most commonly cited relapse situations across a variety of substance abusing populations, accounting for approximately 35% of lapses/relapses into the addictive behavior, involved coping with negative emotional states (e.g., frustration, anger, depression). The next most commonly cited relapse situations were social pressure (20%) and interpersonal conflict (16%). Stephens and colleagues extended this analysis of situational determinants of relapse to marijuana use following treatment and found a similar pattern (Stephens, Curtin, Simpson, & Roffman, 1994).

Findings from these retrospective studies of relapse situations led to the development of situational use inventories to more systematically assess the propensity to use alcohol or drugs in specific situations. For instance, the Inventory of Drinking Situations (IDS; Annis, Graham,

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& Davis, 1987) and Inventory of Drug-Taking Situations (IDTS; Turner, Annis, & Sklar, 1997) assess the frequency of using in the eight categories of relapse situations previously described by Cummings et al. (1980). Situational inventory assessment has been used primarily with alcohol as a way to categorize high-risk situations to predict relapse (Cannon, Leeka, Patterson, & Baker, 1990), to group participants into types of users with specific characteristics and styles of drinking (Annis & Graham, 1995), or to predict alcohol-related problem severity (Cunningham, Sobell, Sobell, Gavin, & Annis, 1995). However, surprisingly few studies have examined particular patterns of situational use as a priori predictors of outcomes following treatment.

Assessment of the characteristics of situations may implicitly relate to the reasons or motives for drug use. For example, use in negative affective situations is related to symptoms of depression, interpersonal sensitivity, and somatization (Turner et al., 1997) suggesting that high rates of use in situations characterized by negative affect indicate that individuals are using to cope. Preliminary research found a correlation between categories of a situational inventory and drinking motives among college students (Carrigan, Barton Samoluk, & Stewart, 1998). The link between situational use and motives has also been found in a community sample of drug- and alcohol-abusing women (Stewart, Samoluk, Conrod, Pihl, & Dongier, 2000), providing further evidence of convergent validity between measures of situational use and motives for use. However, no such research has looked at the relationship between situational inventories and marijuana motives.

Motivational models of substance use have characterized motives for use as the "final, common pathway" to use (Cox & Klinger, 1988) and "proximal determinants" of use (Cooper, 1994). Four distinct categories for substance use motivation have been hypothesized: to enhance enjoyable emotions, to cope with negative emotions, to be more social, and to conform with others (Cooper, 1994). One additional factor has been added for use in a marijuana population: to expand the mind (Simons, Correia, Carey, & Borsari, 1998). Although the most frequently endorsed motives for use of alcohol and marijuana are to be more social or for enhancement of enjoyable experiences (Simons, Correia, & Carey, 2000), using alcohol and drugs to cope with negative affect represents one particularly problematic motive. Individuals who use substances with a motive of coping with negative emotions experience more negative consequences than individuals who use for other motives (see e.g., Bonn-Miller, Zvolensky, & Bernstein, 2007; Cooper, 1994; Cooper, Russell, & George, 1988; Neighbors, Lee, Lewis, Fossos, & Larimer, 2007). In a study of the effect of brief Motivational Enhancement Therapy (MET) interventions for adolescent marijuana users, Fox and colleagues found that although the social and enhancement motives were the most commonly endorsed motives, the coping motive was associated with greater marijuana problems and cannabis dependence symptoms (Fox, Towe, Stephens, Walker, & Roffman, 2011). In other studies, individuals who endorse coping motives were also more likely to have higher rates of marijuana use, anxiety sensitivity (Bonn-Miller et al., 2007; Buckner, Heimberg, Matthews, & Silgado, 2012; Zvolensky et al., 2007), and anhedonia (Zvolensky et al., 2007). However, most of the research on motives and marijuana use has been conducted in non-dependent populations (Bonn-Miller et al., 2007; Simons, Gaher, Correia, Hansen, & Christopher, 2005; Zvolensky et al., 2007).

The current study adds to the literature by describing the characteristics of use situations in an adult marijuana dependent, treatment-seeking population. Relationships between particular patterns of situational use and associated psychosocial constructs were examined to establish convergent validity of the situational use inventory in this population. Particular emphasis was given to frequent use in negative affect situations given previous findings that using to cope was predictive of greater debilitating effects. It was hypothesized that negative affect situational use would be positively associated with psychological distress and maladaptive coping strategies and negatively associated with self-efficacy for avoiding use in negative affective situations. Finally, we tested the

relationships between negative affect, positive affect, and social situational use and frequency of marijuana use and related problems both before and after treatment. It was hypothesized that negative affect situational use would be particularly associated with a higher frequency of marijuana use, more dependence symptoms, and more marijuana-related problems.

2. Material and methods

2.1. Overview of parent clinical trial

The present investigation utilized data from a randomized, controlled treatment study conducted between 2002 and 2005 (Stephens et al., 2006). Eighty-seven participants were randomly assigned to one of two intervention conditions: 1) 9 individual sessions of combined CBT, Motivational Enhancement Therapy (MET), and Case Management (CM); or 2) 4-sessions of the same combined treatment components with the option of attending more sessions as needed (PRN) over the following 30 months. The primary hypothesis was that individuals who could return to treatment as needed would achieve superior outcomes compared to a fixed-dose treatment condition. Participants were assessed at baseline, 4 months, 10 months, 16 months, 22 months, 28 months, and 34 months. The results indicated that participants in both conditions made significant reductions in frequency of use, dependence symptoms, and marijuana problems that were sustained across all follow-up assessments ($ps < .01$). Unexpectedly, two-way condition by outcome analyses indicated that there was higher reduction in frequency of use in the 9-session condition relative to the PRN condition, but only at the 4-month follow-up. Contrary to predictions there were no statistically significant differences in marijuana use outcomes between conditions at later follow-ups. The present paper uses measures obtained from the sample at baseline and the 4-, 10-, 16-, and 22-month follow-up assessments when measures of interest were given.

2.2. Participants

Of the 203 individuals screened, 70 were deemed ineligible, due to current involvement in other substance abuse treatment ($N = 27$), dependence on other drugs or alcohol ($N = 26$), using marijuana on less than 50 of the last 90 days ($N = 21$), or other eligibility criteria (i.e., the presence of a medical or psychiatric condition that may require hospitalization, legal problems that may require future incarceration, mandatory drug testing for legal reasons or employment, refusal to be randomized, and non-fluency in English; $N = 15$). Of the eligible participants, 46 individuals chose not to participate in the study. The final sample included 87 participants: 43 participants were randomly assigned to the PRN condition and 44 were assigned to the 9-session condition. Participants were an average age of 35.6 years old ($SD = 8.7$) and were predominantly Caucasian (86%). The majority of participants were male (75%) and were either married or cohabitating (49%). The mean years of education was 14.2. On average, these participants used marijuana on 78% of the days in the month preceding enrollment. On the days when marijuana was used, participants reported smoking an average of 3.9 times per day.

2.3. Procedures

Print advertisements in local newspapers and radio ads offered treatment for marijuana users who wanted to quit. Interested callers were initially screened for eligibility with a brief phone interview and then invited for an in-person meeting to confirm eligibility. At the initial baseline assessment informed consent was obtained through a procedure approved by the University of Washington's Institutional Review Board. Following the provision of informed consent the Structured Clinical Interview for DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 1996) was administered to determine cannabis dependence and the