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Social cognitive predictors of treatment outcome in cannabis dependence

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ABSTRACT

Background: Drug-related outcomes expectancies and refusal self-efficacy are core components of Social Cognitive Theory. Both predict treatment outcome in alcohol use disorders. Few studies have reported expectancies and refusal self-efficacy in cannabis dependence. None have examined both, although both constructs are key targets in Cognitive-Behavioural Therapy (CBT). This study tests the predictive role of expectancies and refusal self-efficacy in treatment outcome for cannabis dependence.
Design: Outpatients completed a comprehensive assessment when commencing cannabis treatment and predictors of treatment outcome were tested.
Setting: A university hospital alcohol and drug outpatient clinic.
Participants: 221 cannabis-dependent patients participated in a 6-week CBT program where the goal was abstinence.
Measurements: Cannabis Expectancy Questionnaire and Cannabis Refusal Self-Efficacy Questionnaire, cannabis dependence severity [Severity of Dependence Scale], psychological distress [General Health Questionnaire] at baseline; the timeline follow-back procedure at baseline and each session.
Findings: Patients reporting lower confidence in their ability to resist cannabis during high negative affect (*emotional relief refusal self-efficacy*) had a lower likelihood of abstinence ($p = 0.004$), more days of use ($p < 0.001$), and larger amount used ($p < 0.001$). Negative cannabis expectancies predicted greater likelihood of abstinence ($p = 0.024$). Higher positive expectancies were associated with lower emotional relief self-efficacy, mediating its association with outcome ($p < 0.001$).
Conclusions: Emotional relief refusal self-efficacy and negative expectancies are predictive of better treatment outcomes for cannabis dependence. Positive expectancies may indirectly predict poorer outcome because of a negative association with self-efficacy, but this conclusion remains tentative as directionality could not be established.

1. Introduction

Cannabis is the most widely used illicit drug with 2.8–4.5% of the adult global population estimated as cannabis users (Degenhardt and Hall, 2012). In the most recent Australian survey, lifetime prevalence of cannabis dependence is approximately 3% when using criteria from the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; Mewton et al., 2013). Compared to the fifth edition, DSM-IV cannabis dependence is equivalent to moderate-to-severe cannabis use disorder (4+ criteria met; American Psychiatric Association, 2013). Cannabis dependence is associated with a wide variety of adverse physical and mental health consequences (Hall and Degenhardt, 2009; Hall and Pacula, 2003). No medications have been approved for the treatment of cannabis dependence (Justinova et al., 2013). Psychological

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therapies are the first line of treatment (Davis et al., 2015; Litt et al., 2008). Cognitive-behavioural therapy (CBT) is among the most effective (Babor and The Marijuana Treatment Project Research Group, 2004; Budney et al., 2006; Carroll et al., 2006; Hoch et al., 2014). Relapse rates remain high. Determining predictors of outcome is required to inform more effective treatment (McRae et al., 2003; Moore and Budney, 2003).

Social Cognitive Theory (SCT) emphasizes the importance of two domains of cognition in bringing about behaviour change, both of which can be affected by vicarious experience or modeling (Bandura, 1986). *Outcome expectancies* describe an individual's belief that a particular behaviour will produce certain outcomes (Bandura, 1977, 2001; Jones et al., 2001). According to SCT, expectancies about the effects of substance use play an important role in consumption, dependence, and treatment. Evidence links expectancies to all of these outcomes (Boden et al., 2013; Connor et al., 2007; Jones et al., 2001; Papinczak et al., in press; Young et al., 2011). Expectancies have been shown to predict cannabis use and dependence (Connor et al., 2014). Positive cannabis expectancies are predicted to increase motivation to consume cannabis, and negative expectancies to decrease it (Connor et al., 2011b).

Self-efficacy forms the second key component of SCT. Refusal (or abstinence) self-efficacy has received most research attention. This is belief in the ability to refuse an abused substance. Low refusal self-efficacy is hypothesised to undermine motivation for abstinence and predict poorer outcomes (Bandura, 1999; Oei and Baldwin, 1994). In their review, Kadden and Litt (2011) reported low refusal self-efficacy consistently predicted poorer post-treatment outcomes across substances. Self-efficacy for avoiding cannabis after completing treatment predicted cannabis use at 12 months over-and-above past consumption, peer use, temptation, and stress (Stephens et al., 1995). In a comparison of different psychological treatments for cannabis dependence, Litt and colleagues (2008) reported increases in refusal self-efficacy to be a primary common mechanism through which 12-month outcomes were achieved.

Most previous studies have employed *ad hoc* global measures of refusal or abstinence self-efficacy. Young et al. (2012) developed the Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ), a theoretically-driven and psychometrically robust assessment of self-efficacy. The measure assesses situational confidence to refuse cannabis consumption for emotional relief, social facilitation, and opportunistically. These subtypes of refusal self-efficacy may be differentially related to clinical outcomes. In a large sample of court-referred cannabis users, Young et al. reported all three subtypes were associated with lower consumption, but only high emotional relief self-efficacy was related to lower severity of cannabis dependence.

Despite evidence that both cognitive domains individually predict substance use outcomes (Boden et al., 2013; Connor et al., 2007; Jones et al., 2001; Kadden and Litt, 2011; Young et al., 2011), refusal self-efficacy and outcome expectancies have rarely been examined together, particularly in clinical populations. According to SCT, refusal self-efficacy should mediate the relationship between expectancies and treatment outcomes (Bandura, 1999; Oei and Baldwin, 1994). Those holding more positive (or less negative) beliefs about using cannabis should find it more difficult to refuse it in cued situations. Low refusal self-efficacy has been found to mediate the association between positive alcohol expectancies and problematic drinking in patients undergoing treatment, college students, and adolescents (Connor et al., 2011a; Gullo et al., 2010). Given the significant correlation between the two, not including both expectancies and self-efficacy in predictive models could have obscured previous findings and the identification of priority targets for CBT (Connor et al., 2014).

Connor and colleagues (2014) investigated the combined role of expectancies and refusal self-efficacy in 1115 cannabis users referred for assessment by the courts as an alternative to prosecution. In this cross-sectional study, refusal self-efficacy fully mediated the relationship between negative cannabis expectancies and weekly consumption. It partially mediated the effects of positive expectancies on weekly consumption. Expectancies and refusal self-efficacy are also likely to be associated with treatment outcome. To date, no study has investigated the influence of both expectancies and refusal self-efficacy as predictors of treatment outcome in cannabis dependence.

The current study investigated the relationship between outcome expectancies, refusal self-efficacy and treatment outcome among cannabis-dependent outpatients. Outcomes of interest were cannabis abstinence, number of days of use, and amount used. The secondary aim of the study was to test the hypothesised mediational relationship between these constructs as outlined in SCT. According to SCT, refusal self-efficacy should mediate the relationship between expectancies and treatment outcomes. It was predicted that greater positive cannabis expectancies would be associated with lower refusal self-efficacy and, in turn, predict poorer treatment outcomes; fully mediating the relationship between expectancies and outcomes. A similar relationship was hypothesised for negative expectancies, refusal self-efficacy and treatment outcomes, but with lower negative expectancies being associated with lower self-efficacy and greater use.

2. Method

2.1. Participants and procedures

Data were obtained from 221 treatment-seeking cannabis users who presented to an outpatient alcohol and drug clinic at an Australian metropolitan public hospital. All patients attended treatment voluntarily. An initial intake assessment was conducted by a clinical nurse or social worker prior to referral to a cognitive-behavioural cannabis treatment program where the goal was abstinence. The program comprised five 1-h sessions delivered over six weeks, with the final session taking place one fortnight after session four. The program was delivered one-on-one by Masters- or Doctoral-qualified clinical psychologists. It included CBT and elements of motivational enhancement; specifically, craving management, cognitive restructuring, relapse prevention, and motivational interviewing. Patients were not excluded from program if they lapsed, so long as they maintained abstinence as their goal. Questionnaires assessing refusal self-efficacy, cannabis expectancies, severity of dependence and psychosocial functioning were completed at the first treatment session. Dependence severity and psychosocial functioning could impact treatment response and were included as potential covariates (Stephens et al., 1993; White et al., 2004). Abstinence, numbers of days used, and amount of cannabis used were recorded at each session. Therapists were not aware of study aims. Hospital and university human research ethics approval was obtained.

2.2. Measures

2.2.1. Cannabis Expectancy Questionnaire (CEQ; Connor et al., 2011b). The 45-item CEQ assessed positive (18 items, e.g., 'Smoking cannabis makes me feel outgoing and friendly') and negative outcome expectancies (27 items, e.g., 'Smoking cannabis makes me confused'). Responses were rated on a 5-point Likert scale (1 = *Strongly disagree* to 5 = *Strongly agree*). Both subscales have excellent internal reliability $\alpha = 0.89$ and 0.93 for negative and positive expectancies, respectively (Connor, Gullo et al., 2010). The