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SHORT COMMUNICATION**TREATMENT SEEKING IN CANNABIS DEPENDENCE: THE ROLE OF SOCIAL COGNITION**

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HIGHLIGHTS

- Cannabis-related cognitions should affect motivation to seek treatment.
- We compared treatment-seeking and non-seeking cannabis dependent individuals.
- Treatment seekers had higher negative expectancies and lower emotional relief self-efficacy.
- Treatment seekers had poorer psychosocial functioning and higher self-perceived cannabis dependence.

ABSTRACT

Background and Aims: Relatively few cannabis dependent individuals seek treatment and little is known about the determinants of treatment seeking. Social Cognitive Theory (SCT) provides a useful framework for examining human behaviour and motivation which may be helpful in explaining treatment seeking. This study examined the differences in cannabis outcome expectancies and cannabis refusal self-efficacy between treatment seekers and non-treatment seekers with cannabis dependence. **Design:** Non-treatment seekers were referred to an illicit drug diversion program. Treatment seekers commenced an outpatient cannabis treatment program and completed a comprehensive assessment that included measures of cannabis outcome expectancies and refusal self-efficacy. **Setting:** A public hospital alcohol and drug outpatient clinic. **Participants:** 269 non-treatment seekers and 195 individuals commencing cannabis dependence treatment. **Measurements:** The Cannabis Expectancy Questionnaire (CEQ), Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ), Severity of Dependence Scale – Cannabis (SDS-C), General Health Questionnaire (GHQ-28) and Readiness to Change Questionnaire (RTC) were completed. **Findings:** Treatment seekers had

significantly higher levels of negative cannabis outcome expectancies and significantly lower levels of emotional relief refusal self-efficacy (belief in ability to resist using cannabis when experiencing negative affect) ($ps < .001$). Treatment seekers had significantly higher levels of psychological distress and self-perceived cannabis dependence compared to non-treatment seekers ($ps < .001$). **Conclusions:** High negative cannabis outcome expectancies and low emotional relief refusal self-efficacy may play a key role in motivation to seek treatment.

KEYWORDS: cannabis, cannabis dependence, self-efficacy, expectancies, treatment initiation, treatment seeking

1. INTRODUCTION

Cannabis is the most widely used illicit drug worldwide, with an estimated 2.8-4.5% of the global population using it (Degenhardt and Hall, 2012). Australia is one of the highest cannabis-using nations, with 10.7% of Australians using in the past year. Despite many individuals meeting the criteria for cannabis dependence, few seek formal treatment (Vendetti et al., 2002). A nationally representative study ($N= 49,093$) found that only 13% of cannabis-dependent individuals sought formal treatment over the course of their lifetime (Khan et al., 2013). In comparison, approximately 13% of alcohol dependent individuals entered treatment in a given year (Teesson et al., 2006).

In order to better understand why cannabis-dependent individuals present for treatment, it is useful to compare the characteristics and attitudes of treatment-seeking and non-treatment seeking individuals with cannabis dependence. These studies have found several characteristics that differ between these groups. Treatment seekers are more likely to have comorbid mental health problems, experience greater impairment as a result of their cannabis use, and encounter more problems (e.g., withdrawal symptoms) when attempting to quit cannabis (Agosti and

Levin, 2009; Pacek and Vandrey, 2014; van der Pol et al., 2013). They also differ in motivation. Those who do not seek formal treatment are more likely to be concerned about the stigma associated with seeking treatment, and are more likely to believe that treatment is not required in order to reduce their cannabis use (Gates et al., 2012; van der Pol et al., 2013). Vendetti and colleagues (2002) found that self-perceived cannabis dependence was a more important predictor of treatment initiation than actual level of cannabis-related problems, which were similar between treatment seekers and non-seekers. Subjective factors may play a prominent role in determining who seeks treatment.

Social Cognitive Theory (SCT) provides a useful theoretical framework for understanding the initiation, maintenance and treatment of substance use disorders (Bandura, 1986, 1997, 1999). It highlights the importance of two determinants of behaviour and motivation: outcome expectancies and self-efficacy. Cannabis outcome expectancies refer to an individual's beliefs about the positive or negative effects of using cannabis. Individuals with low levels of negative expectancies are predicted to have lower levels of perceived cannabis dependence and lower motivation to quit or seek formal treatment. On the other hand, individuals with high levels of negative expectancies are predicted to experience more substantial problems with their cannabis use, have greater perceived cannabis dependence and be more motivated to seek formal treatment (Caviness et al., 2013; Connor et al., 2014). High levels of positive cannabis expectancies may also be associated with lower likelihood of treatment seeking, due to a lack of desire to cease use (Bandura, 1999).

Cannabis refusal self-efficacy is an individual's belief in their ability to abstain from using cannabis in a variety of situations. In SCT, self-efficacy influences initiation of coping behaviors in aversive situations and determines how much effort is exerted to achieve a goal (Bandura, 1986, 1997, 1999). Therefore, individuals with high levels of self-efficacy may be more confident in their ability to quit cannabis on their own, and hence not see treatment as

necessary. SCT also states that self-efficacy for a given behaviour is diminished when repeated attempts have failed (Bandura, 1986, 1997, 1999).

No studies have compared outcome expectancies and self-efficacy in cannabis dependent persons who are seeking treatment and those who are not. Given the hypothesized importance of motivation for behaviour change, a better understanding of the nature of expectancy in treatment seeking could improve outreach efforts. It is hypothesized that treatment-seekers will have greater negative cannabis outcome expectancies, lower positive expectancies, and lower cannabis refusal-self efficacy than non-treatment seekers. Consistent with past research, we predict that treatment seekers will have higher self-perceived cannabis dependence (Vendetti et al., 2002), greater readiness to change, and more impaired psychological functioning (van der Pol et al., 2013).

2. METHOD

2.1 Participants and Procedures

Data for the treatment-seeking group were obtained from 217 cannabis users who voluntarily attended an outpatient alcohol and drug clinic at a large Australian metropolitan teaching hospital. Treatment involved one-on-one Cognitive-Behavioral Therapy (CBT), comprising five 1-hour sessions delivered over six weeks. The treatment goal was abstinence. Treatment was delivered by Masters- or Doctoral-qualified clinical psychologists. Questionnaires were administered at the first session.

Data for the non-treatment seeking group were collected from 680 cannabis users referred for assessment as part of the Queensland Illicit Drug Diversion Initiative (QIDDI). This program is for individuals charged with cannabis-related offences (e.g., possession) and consisted of a two-hour assessment of substance use, psychosocial functioning, and included a motivational interviewing component. Participants attend as an alternative to criminal prosecution. The current study includes only new cases that have not been previously analyzed

(Connor et al., 2014, 2011; Young et al., 2012). Human research ethics approval was obtained. Only participants exceeding the Severity of Dependence Scale-Cannabis (Gossop et al., 1995) cut-off for dependence were included (see 2.2.3). The final sample comprised 464 participants - 269 non-treatment seekers and 195 treatment seekers. Demographic characteristics are reported in Table 1. On average, treatment seekers were older than non-treatment seekers ($p < .001$) and less likely to have completed high school ($p < .001$). Similar differences have been observed in other studies (Agosti and Levin, 2009; Pacek and Vandrey, 2014). The mean Alcohol Use Disorders Identification Test score for non-treatment seekers was 8.32 ($SD = 6.75$), with 17% exceeding the cut-off for likely alcohol dependence (men = 15+, women = 13+; Babor et al., 2001). Treatment seekers had a mean score of 3.41 ($SD = 7.70$), with 10% exceeding the cut-off.

2.2 Measures

2.2.1 Cannabis Expectancy Questionnaire (CEQ; Connor et al., 2011). The 45-item CEQ was assessed positive and negative cannabis outcome expectancies. The two subscales have excellent internal consistency ($\alpha \geq 0.90$) and the CEQ's two-factor structure and criterion validity have been confirmed in clinical samples (Connor et al., 2011).

2.2.2 Cannabis Refusal Self-Efficacy Questionnaire (CRSEQ; Young et al., 2012). The 14-item CRSEQ assessed cannabis refusal self-efficacy. It comprises three subscales: Emotional Relief (six items, e.g., 'When I feel sad'), Opportunistic (five items, e.g., 'When someone offers me a smoke') and Social Facilitation (three items, e.g., 'When I want to feel more accepted by friends'). Internal consistency of the CRSEQ is good-to-excellent ($\alpha = 0.84-0.97$) and the three-factor structure and criterion validity has been established in clinical samples (Young et al., 2012).

2.2.3 Severity of Dependence Scale – Cannabis (SDS-C; Gossop et al., 1995). The SDS-C is a five-item questionnaire that assesses the degree of cannabis dependence. It is sensitive to

severity of cannabis dependence (Swift et al., 2000). The cannabis dependence cut-off is 3 (possible range: 0 to 15; Swift et al., 1998).

2.2.4 Readiness to Change Questionnaire (RTC; Heather and Rollnick, 1993). The 12-item RTC assessed motivation to reduce cannabis use. Individuals were classified as pre-contemplation, contemplation or action stage. The internal consistency of the RTC is good ($\alpha = 0.73 - 0.85$) and concurrent and predictive validity has been established (Heather and Rollnick, 1993).

2.2.5 General Health Questionnaire – 28 (GHQ-28; Goldberg and Williams, 1998). The 28-item version of the GHQ was used to assess recent changes in psychological functioning. It comprises four sub-scales: Somatic Symptoms, Anxiety, Social Dysfunction and Depression. The GHQ is a widely used measure of psychological health and has strong psychometric properties (Goldberg et al., 1997; Wernecke et al., 2000).

3. RESULTS

Forty-two participants had missing data >50% of variables, and were excluded from the analyses, leaving 464 cases. There was 3.17% missing data in the sample analyzed, determined to be Missing Completely at Random (MCAR) by Little's (1988) MCAR test, $\chi^2 = 240.69 (433), p > .99$. Multiple Imputation (5 imputations) was employed, an optimal approach to handling missing data (Graham, 2009).

Independent samples *t*-tests ($\alpha = .01$) were conducted to examine the differences between treatment seekers and non-treatment seekers – see Table 2. Treatment seekers had significantly higher levels of cannabis dependence severity, negative expectancies, somatic symptoms, anxiety, social dysfunction and depression than non-treatment seekers ($ps < .001$). Treatment seekers had significantly lower levels of emotional relief self-efficacy than non-treatment seekers ($p < .001$). All differences were of a medium-to-large effect size, except social

dysfunction. There was no significant difference between groups on positive expectancies, opportunistic or social facilitation refusal self-efficacy.

There was a significant association between stage of change and treatment seeking, $\chi^2(2) = 29.85, p < .001$. The association was moderate, Cramer's $V = 0.26, p < .001$. The odds of being in the action stage of change were 1.74 times higher for a treatment seeker (64.8%) than a non-treatment seeker (51.5%). Interestingly, there was little difference in the proportion of treatment seekers (35.2%) and non-treatment seekers (33.5%) in the contemplation stage of change ($OR = 1.08$). Not surprisingly, no treatment seekers were in the pre-contemplation stage.

A logistic regression revealed that in addition to age and education, only the SCT variables of emotional relief self-efficacy and negative expectancies were significantly associated with treatment seeking status ($ps < .001$). The addition of these predictors significantly improved fit over a model that included age and education, and improved classification accuracy from 63.0% to 76.2%, $\Delta\chi^2(5) = 136.88, p < .001, Nagelkerke-R^2 = 0.41$.

4. DISCUSSION

This study is the first to compare cannabis outcome expectancies and refusal self-efficacy in treatment seeking and non-treatment seeking individuals with cannabis dependence. As predicted, treatment seekers had higher levels of negative expectancies, and this effect size was large. This suggests that negative expectancies play a more substantial role in motivating individuals to change their behaviour and seek help. Past research has suggested negative expectancies play a protective role, and are associated with non-use of cannabis among adults (Schafer and Brown, 1991) and adolescents (Alfonso and Dunn, 2007). Higher negative expectancies have also been observed among those who have quit cannabis (Aarons et al., 2001) and are associated with lower odds of relapse during self-initiated cessation (Boden et al., 2013). Our results suggest that treatment entry may be increased by encouraging

dependent individuals to reflect on the negative impact of cannabis use, perhaps through highlighting the discrepancy between continued use and other life goals (Miller and Rollnick, 2012). The hypothesis that non-treatment seekers would hold higher positive expectancies was not supported; these expectancies may play a greater role in cannabis initiation and escalation of use (Alfonso and Dunn, 2007; Schafer and Brown, 1991).

We predicted that cannabis refusal self-efficacy would be lower among treatment seekers. This was the case for emotional relief refusal self-efficacy but there were no differences for opportunistic or social facilitation self-efficacy. Since treatment seekers in our study also experienced greater levels of psychological distress, these findings suggest they are using cannabis to cope (Benschop et al., 2015; Copeland et al., 2001; Moitra et al., 2015). Lack of self-efficacy to resist cannabis when experiencing distress may motivate individuals to seek help because they believe they are unable to make effective changes on their own. Past research has shown that treatment seekers are likely to have had more prior quit attempts than non-treatment seekers (van der Pol et al., 2013). Treatment seekers' self-efficacy may therefore have been reduced as a result of failed past attempts (Bandura, 1997). This requires investigation in future research.

Treatment seekers reported greater severity of cannabis dependence than non-treatment seekers, despite both groups reporting a significant degree of cannabis-related problems and concern. This was the largest effect size for all variables examined. This result is consistent with past research that self-perceived cannabis dependence is the most important predictor of treatment initiation (Vendetti et al., 2002). Although the non-treatment seeking group did not seek formal help for their cannabis dependence, half of this group was already making self-initiated changes to their cannabis use. Treatment-seekers reported higher motivation to reduce their cannabis use and were more likely to be actively making changes to their behaviour. It may be that non-treatment seekers are at an earlier stage of problematic use or have less co-

occurring psychological distress because of a greater repertoire of alternative coping strategies. A future longitudinal study could provide a clearer understanding of the path to seeking formal treatment. Tracking outcome expectancies, self-efficacy and severity of dependence over time, especially during self-initiated cessation, could determine whether changes in these variables does in fact precede the decision to enter formal treatment. If confirmed, such findings could inform assessment and feedback-based programs, such as the Marijuana Check-Up (Stephens et al., 2007), to facilitate discussion around seeking treatment.

Another limitation of our study was that the non-treatment seeking sample comprised individuals who had been prosecuted by the police as a result of their cannabis use. This may limit generalizability to dependent users who have not experienced legal consequences from use, but has the benefit of being unaffected by self-selection sampling bias.

In conclusion, our findings suggest that formal treatment for cannabis dependence may be sought when individuals experience significant psychosocial impairment as a result of their cannabis use, hold high negative cannabis outcome expectancies and lack confidence in their ability to regulate negative affect without using cannabis.

Conflicts of Interest: No conflict declared.

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Contributions: All authors were involved in designing the study. ZP conducted the literature review, statistical analyses, and wrote the first draft. All authors contributed to editing the manuscript and approved the final submission.

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Table 1. Sample Characteristics

	Non- Treatment Seekers (<i>n</i> = 269)	Treatment Seekers (<i>n</i> = 195)	<i>p</i> -value
Age (<i>M</i> , in years)	26.19	30.03	<.001
Gender (%)			
Male	205 (76%)	144 (74%)	
Female	64 (24%)	51 (26%)	.587
Completed High School (%)			
Yes	185 (70%)	94 (51%)	
No	82 (30%)	92 (49%)	<.001
Currently Unemployed (%)			
Yes	55 (20%)	40 (21%)	
No	214 (80%)	155 (79%)	.986

Table 2. Results from Independent Sample t-tests between Treatment Seekers and Non-Treatment Seekers with Cannabis Dependence

	Non-Treatment Seekers <i>M (SD)</i>	Treatment Seekers <i>M (SD)</i>	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
SDS Total	5.20 (2.42)	9.57 (2.84)	18.02	<.001	1.66
CEQ: Positive Expectancy	52.45 (13.12)	52.24 (12.20)	0.19	.851	0.02
CEQ: Negative Expectancy	61.92 (17.34)	81.10 (19.88)	11.04	<.001	1.03
CRSEQ: Emotional Relief	23.95 (8.80)	19.55 (8.90)	5.40	<.001	0.50
CRSEQ: Opportunistic	17.72 (7.11)	17.24 (8.74)	0.64	.522	0.06
CRSEQ: Social Facilitation	14.14 (3.94)	13.86 (4.08)	0.78	.433	0.07
GHQ: Somatic Symptoms	5.28 (3.87)	7.32 (4.53)	5.23	<.001	0.48
GHQ: Anxiety	5.35 (4.77)	9.55 (5.64)	8.59	<.001	0.80
GHQ: Social Dysfunction	6.78 (3.19)	8.33 (4.67)	4.09	<.001	0.39
GHQ: Depression	3.08 (3.94)	6.65 (6.07)	7.40	<.001	0.70

Note. SDS= Severity of Dependence; CEQ = Cannabis Expectancy Questionnaire; CRSEQ =

Cannabis Refusal Self-Efficacy Questionnaire; GHQ = General Health Questionnaire.