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## Reasons for Cannabis Use Among Youths at Ultra High Risk for Psychosis

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### Abstract

**Introduction**—Cannabis use is prevalent in schizophrenia and its risk states, despite its association with anxiety and positive symptoms. While schizophrenia patients report using cannabis for mood enhancement and social motives, it is not known what motivates clinical high risk (CHR) patients to use cannabis.

**Methods**—Among 102 CHR patients, 24 (23%) endorsed cannabis use, and were queried as to reasons for use, using a scale previously administered in schizophrenia patients (Spencer et al., 2001). We hypothesized a primary motivation for mood enhancement related to anhedonia. We evaluated the “self-medication” hypothesis by examining if motivation for symptom relief was associated with concurrent severity of symptoms.

**Results**—The rank order of reasons for use in CHR patients was similar to that previously reported by schizophrenia patients, with mood enhancement and social motives as primary reasons for use, and the motivation to use cannabis for symptom relief comparatively less common. Motivation for mood enhancement had a trend association with anhedonia. Motivation for symptom relief was entirely unrelated to concurrent severity of positive and anxiety symptoms.

**Conclusion**—As in schizophrenia, CHR patients primarily use cannabis for mood enhancement, especially in the context of decreased motivation to seek pleasure otherwise. Negative symptoms may drive cannabis use in schizophrenia and its risk states, which may exacerbate positive symptoms. By contrast, CHR patients do not report using cannabis to “self-medicate” emergent positive symptoms. The understanding of motives for cannabis use among CHR patients may be informative for treatments aimed at reducing use, such as motivational interviewing.

### Keywords

cannabis; anhedonia; schizophrenia; motivation; psychosis; prodromal

## Introduction

Cannabis use is prevalent in patients with schizophrenia and related psychotic disorders (23–33%)<sup>1,2</sup>, including in young people with recent-onset psychosis<sup>3</sup>, in whom it has a temporal association with increased severity of positive symptoms and anxiety<sup>4</sup>. Likewise, cannabis use is prevalent among adolescents and young adults at heightened clinical risk for psychosis (17%–37.5%)<sup>5–9</sup> which is similar to the general adolescent population (12%–50%)<sup>11</sup>. While cannabis use is not a unique predictor of psychosis onset among young people with clinically relevant subthreshold psychotic symptoms<sup>8, 11, 12</sup> it is nonetheless temporally related in those CHR patients who do use cannabis to greater severity of anxiety and positive symptoms such as perceptual disturbances<sup>8</sup>.

This association between cannabis use and symptom severity raises questions about the motivation for cannabis use. Schizophrenia patients commonly endorse using cannabis to increase pleasure and enhance mood, and for social motives such as reducing social awkwardness and anxiety<sup>14, 15</sup> (Addington & Duchak, 1997; Spencer et al., 2002). By contrast, they rarely endorse using cannabis to aid in symptom relief (i.e. to “get away” from voices, to decrease medication side effects)<sup>13, 14</sup>. A similar pattern is evident for cannabis users who are earlier in the course of psychotic disorder. For example, among patients with first episode psychosis (FEP), the most commonly endorsed motivation for using cannabis was mood and social enhancement<sup>15</sup>. However, the motivations for cannabis use are not known for young people at clinical high risk for psychosis, for whom cannabis may be particularly relevant for subsequent clinical outcome. Understanding the reasons for cannabis use may be instrumental in adapting and employing motivational strategies to try to reduce cannabis use in risk populations<sup>16</sup>.

Herein, we evaluated self-reported motivations for cannabis use among clinical high risk (CHR) patients using the Reasons for Use Scale<sup>14, 17</sup>, hypothesizing that CHR patients, like schizophrenia and FEP patients, would report using cannabis primarily for mood and social enhancement, and only rarely for symptom relief. We also evaluated symptom correlates of different endorsed motivations for cannabis use, hypothesizing that desired mood enhancement from cannabis use would be related to trait anhedonia, whereas desired social enhancement might be related to anxiety. Finally, we also evaluated the “self-medication hypothesis” by determining if the motive to use cannabis for symptom relief was related to the severity of anxiety and subthreshold psychotic symptoms

## Methods

### Participants

A cohort of 102 clinical high risk (CHR) patients was ascertained on the basis of the Structured Interview for Prodromal Syndromes/Scale of Prodromal Symptoms (SIPS/SOPS)<sup>19</sup>. Referral was through the internet and from clinicians and schools in a large metropolitan area. Exclusion criteria included attenuated positive symptoms occurring solely in the context of substance use, history of threshold psychosis, IQ < 70, medical or neurological disorders, and serious risk of harm to self or others. Members of the risk cohort were in their teens and twenties, ~75% male, ethnically diverse (> 50% ethnic minority),

with about one third prescribed psychiatric medications (typically antidepressants). Among the 102 CHR patients, 24 endorsed cannabis use in the prior 30 days; there were no demographic or clinical differences between the 24 CHR patients who endorsed recent cannabis use and the 78 who did not (Table 1).

## Measures

**Motivation for cannabis use**—At intake, patients were queried about their history of cannabis and other substance use. Those patients who endorsed at least one episode of cannabis use in the prior 30 days were administered the Reasons for Use scale<sup>14</sup>. This is a 26-item questionnaire which probes five categories of reasons for use: 1) enhancement; 2) social motives; 3) coping with unpleasant affect; 4) conformity and acceptance; and 5) relief of positive symptoms and side effects (Table 2). Each item was rated by the participant along a 5-point Likert scale (0=never/almost never, 1= some of the time, 2=half the time, 3=often, and 4=almost/always). Each category was scored as the mean score of all applicable items (i.e. “to get away from the voices” and “to reduce side effects of medication” were frequently not applicable in this CHR cohort).

**Symptoms**—Subthreshold positive symptoms were assessed using the Structured Interview for Prodromal Syndromes/Scale of Prodromal Symptoms (SIPS/SOPS)<sup>18</sup>. Physical anhedonia was assessed using the Chapman Physical Anhedonia Scale<sup>19</sup> and anxiety was assessed using the Beck Anxiety Inventory<sup>20</sup>.

## Data Analysis

Rates were calculated for each of the five categories of self-reported reasons for use, and the relationship between these categories and demographic characteristics, positive symptoms, anhedonia and anxiety measures were assessed with Spearman correlations (the alpha level was set at .05 for the hypothesized association between self-enhancement and anhedonia and anxiety, and at a Bonferroni-corrected level of .004 for the remaining 14 analyses of correlations between categories and symptoms).

## Results

As expected, “enhancement of mood” was the most commonly endorsed reason for cannabis use, followed by social motives, with relief of symptoms only rarely endorsed: this rank order and these scores are comparable to a prior study in schizophrenia<sup>14</sup> using the same scale (Table 3). While the motive of desire for acceptance was moderately related to age ( $p < .05$ ), there were no other associations of reasons for cannabis use and demographic variables. Symptom correlates are also shown in Table 3. The motive for “enhancement” had a moderate association with anhedonia at a trend level of significance ( $p = .08$ ). Social motives, coping with unpleasant affect, and desire for acceptance were moderately associated with anxiety, although only the association with social motives survived Bonferroni correction ( $p = .003$ ). The motivation for “relief of symptoms” was not correlated with positive symptom severity.

## Discussion

Recent cannabis use was commonly endorsed in this clinical high risk cohort (23%), consistent with other studies<sup>5–9</sup>. The primary reason for using cannabis reported by CHR patients was for enhancement of mood, with social motives second in frequency, and motivation for relief of symptoms relatively rare, similar to what has been observed among schizophrenia patients<sup>13, 14</sup>. Therefore, CHR patients are not simply using cannabis to “self-medicate” emergent psychotic symptoms, as there is no association between the rare motive for “relief of symptoms” and positive symptom severity. Instead, it seems CHR patients are simply using cannabis to feel better and to feel more comfortable, especially among others.

However, it is interesting to note that these perceived rewarding motivations for cannabis use in CHR patients occur in the context of a more generalized deficit in the anticipation of and motivation for pleasure derived from non-drug sources i.e., anhedonia. Likewise, perceived social motives for cannabis use were related to the severity of anxiety symptoms in this study. Therefore, effective strategies to reduce cannabis use in CHR patients may need to involve targeting the anhedonia and anxiety symptoms that are prevalent in CHR patients, such as cognitive behavioral therapy and anxiolytics<sup>21, 22</sup>. This is clinically relevant given that the estimated attributable risk of cannabis use for schizophrenia is 8%<sup>23</sup>. We propose that cannabis is used across stages of schizophrenia, including its risk states, primarily to reduce negative symptoms and dysphoria. This could occur through cannabis increasing striatal dopamine release, which could also result in worsening positive symptoms<sup>24</sup>.

Overall, this is the first study of self-reported reasons for cannabis use in a small CHR cohort, which finds a similar pattern of motivations for cannabis use in CHR patients as in schizophrenia. Our findings require replication in a larger cohort more fully characterized in terms of lifetime use of cannabis and other drugs, as well as substance misuse diagnoses. However, while preliminary, our data suggest that cannabis use may be related to anhedonia and anxiety, such that their treatment may reduce levels of cannabis use in this risk population.

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**Table 1**

Demographics and clinical features in the CHR cohort

	Recent cannabis use	No recent cannabis use
Mean age (SD)	20.9 (3.8)	21.2(3.78)
Gender (% male)	75%	78%
Ethnicity (% Caucasian)	46%	48%
Medication (%)	29%	33%
Positive symptoms (range 0 – 30)	12.8(4.4)	13.1(4.7)
Anhedonia (range 0 – 61)	20.7(10.0)	25.8(8.8)
Anxiety (range 0 – 63)	18.0(12.9)	16.3(12.7)

Positive symptoms were assessed using the Structured Interview for Prodromal Syndromes/Scale of Prodromal Symptoms (Miller et al., 2003); physical anhedonia was assessed using the Chapman Physical Anhedonia Scale (Chapman et al., 1976); and anxiety was assessed using the Beck Anxiety Inventory (Beck et al., 1988).

**Table 2**

## Reasons for Use (Spencer et al., 2002)

**Enhancement**

Because it makes you feel good

Because it's fun

To get high

**Social Motive**

Because it's what most of your friends do when you get together

Because it makes social gatherings more enjoyable

As a way to celebrate

To be sociable

**Coping with Unpleasant Affect**

To relax

Because it helps when you are feeling nervous

Because it helps when you are feeling depressed

To forget your worries

To feel motivated

To make it easier to sleep

To help me concentrate

Because you feel more self-confident or sure of yourself

To relieve boredom

To decrease restlessness

To slow down racing thoughts

**Conformity and Acceptance**

So you won't feel left out

To be liked

To help you talk to others

To be part of a group

Because your friends pressure you to do it

**Relief of positive symptoms and side effects**

To get away from the voices

To reduce side effects of medication

To feel less suspicious/paranoid



Motives for cannabis use and correlations of self-reported reasons for use with symptoms

**Table 3**

	CHR (Current study)	Schizophrenia (Spencer et al., 2002)	Positive Symptoms	Anxiety	Anhedonia
Enhancement	2.6(1.2)	2.7(1.2)	-0.09	0.05	0.38+
Social motives	1.2(1.0)	2.5(1.0)	-0.23	0.58*	-0.04
Coping with unpleasant affect	1.0(1.0)	2.1(0.9)	0.12	0.42 <sup>^</sup>	-0.13
Desire for acceptance	0.5(0.9)	1.7(0.7)	-0.06	0.41 <sup>^</sup>	0.02
Relief of symptoms	0.2(0.4)	1.6(1.0)	-0.21	0.34+	--

\* p < .004,

<sup>^</sup> p < .05,

+ p < .10