



Prospective recovery of cannabis use in a psychotic population: A qualitative analysis



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ABSTRACT

Introduction: There is growing evidence for natural recovery from cannabis use by people with psychosis, but mechanisms underpinning it need further exploration. This study prospectively explored this issue.

Method: Twenty-two people with psychosis and cannabis misuse were recruited: 19 provided data for at least one follow-up assessment, and 13 of these (68%) reduced or ceased using cannabis. A semi-structured interview with the latter group explored reasons for initiating the attempt, strategies they employed, and context/s where any relapse occurred. Interpretative phenomenological analysis was used to identify themes.

Results: Participants who reduced or ceased cannabis use had fewer negative symptoms at Baseline, and were more likely to only use cannabis. Major reasons for starting an attempt were worsening mental health, relationship and lifestyle difficulties. Effective strategies fell into psychological, relationship, lifestyle and medication themes. Only three participants reported a relapse: triggers involved substance-using peers, relationship difficulties, and problems with negative emotions including ones from past trauma.

Conclusions: An encouragingly high rate of maintained reductions in cannabis use was seen. Increased awareness of the benefits across multiple life domains from addressing cannabis use may be critical to the initiation and maintenance of attempts, both to maximise motivation, and avoid over-dependence on improvements in any single domain. Negative symptoms, multiple substance use, dysphoria and pressure from substance-using peers clearly offer additional challenges for control.

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1. Introduction

Up to 80% of people with psychosis report cannabis use, which has been associated with a range of adverse psychological, social, and physical health outcomes (Hjorthøj, Fohlmann, & Nordentoft, 2009; van der Meer, Velthorst, & Generic Risk and Outcome of Psychosis (GROUP) Investigators, 2015). Clinical trials of psychological treatments for cannabis use in people with psychosis have not consistently reported better outcomes than control conditions (Hjorthøj et al., 2009; Rebgetz, Kavanagh, & Hides, 2015). This indicates that some people with psychosis cease or reduce using cannabis with little or no related treatment (Childs, McCarthy-Jones, Rowse, & Turpin, 2011; Lobbana et al., 2010). An increased understanding of such 'natural recovery' could be used to strengthen current treatments.

In a recent review, we found people with psychosis had similar reasons for reducing substance use to those reported in the general population (Rebgetz, Kavanagh, et al., 2015). Any differences in these reasons were related to the presence of the psychotic disorder (e.g.

symptom exacerbation) and the amplified functional problems (e.g. homelessness) that occur when someone with psychosis also misuses a psychoactive substance. However, only eight studies have examined the subjective experience of ceasing or reducing cannabis among individuals with psychosis (Rebgetz, Hides, Kavanagh, & Choudhary, 2015; Rebgetz, Kavanagh, et al., 2015), and there is little examination of mechanisms underpinning the phenomenon.

Qualitative methods have begun to provide additional insights into the strategies used by this population. Our recent study found that cessation was linked to the individual's awareness of the multiple negative consequences of cannabis use or a more specific motivator (e.g., loss of employment; Rebgetz, Hides, et al., 2015). Maintenance strategies were associated with the awareness of the impact of cannabis use on mental health symptoms, thinking about incentives and support from others. Reasons for relapse were found to be similar to non-psychotic groups including pressure from others, stressful events, coping with cravings and boredom (Rebgetz, Hides, et al., 2015).

The retrospective nature of the qualitative studies that have explored recovery from cannabis use increases the risk of recall bias. The current study prospectively explored factors influencing the decision to cease and maintain cannabis cessation over a 3-month period among people with early psychosis. Change strategies and the relapse

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context of individuals who ceased and then resumed cannabis use were also explored.

2. Materials and methods

2.1. Participants

Participants were recruited from adult mental health services in the Metro-North Health Service District in Brisbane. They were required to (i) have a current diagnosis of a psychotic disorder (e.g., schizophrenia, schizophreniform disorder, schizoaffective disorder, psychotic disorder NOS); (ii) be in early stages of psychosis (less than three psychotic episodes measured on a Timeline Followback or medical record) and (iii) have used cannabis in the previous 4 weeks. Participants were required to be able to read and speak English without translation. Exclusion criteria were a primary diagnosis of organic psychosis or psychosis due to a general medical condition, intellectual disability, or a developmental or amnesic disorder.

2.2. Data collection

2.2.1. Demographic and clinical data

Demographic and clinical data included gender, age at interview, years of education, employment and relationship status, ethnicity, living arrangement at interview, current diagnosis, medication, family history of mental illness, psychiatric and cannabis treatment history.

2.2.2. Psychosis and symptoms

The Operational Criteria Checklist (OPCRIT; McGuffin, Farmer, & Harvey, 1991) was used to confirm the presence of a current psychotic disorder, based on the medical record. Psychiatric symptoms were monitored using the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962). BPRS positive, negative and depression-anxiety subscale scores were derived at Baseline only (Ventura, Nuechterlein, Subotnik, Gutkind, & Gilbert, 2000). BPRS items that did not require interviewer observation were included in telephone interviews during follow-up.

2.2.3. Cannabis use

Consumption of cannabis and other substances in the preceding 4 weeks was retrospectively assessed using a Timeline Followback (TLFB; Sobell & Sobell, 1992), in which recollections of past events were used to cue recall of substance use. Participants were also given a calendar to mark the days they smoked cannabis over the month between follow-up assessments.

2.2.4. Semi-structured interviews

If participants had ceased or reduced use since the previous assessment (indexed by $\geq 50\%$ reduction in quantity), they were asked when this occurred, what was happening in their lives, why it occurred, any times it was hard to stay in control and how they did so. If they went back to using, they were asked what was happening and what led them to going back to using. If relapsing participants subsequently attempted to regain control of their cannabis use, the interview protocol included questions about the methods they used to do that. The qualitative interviews lasted approximately 60–70 min long.

2.3. Procedure

Participants were referred to the study by their treating team. The principal service provider gave potential participants oral and written information about the research project and asked if they would like to participate. The lead author then met with the potential participants to obtain informed consent, which included information about the assessment process. At Baseline, demographic data was obtained, and the OPCRIT, BPRS and TLFB were administered. Monthly telephone

follow-up assessments were conducted using the BPRS and TLFB. Each participant was provided with a calendar to assist with the completion of the TLFB. They were asked to record days they used cannabis and other substances as well as information on any mental health symptoms they experienced during the month. The qualitative interviews were undertaken during this phone call. Participants were reimbursed \$10 at Baseline, \$15 at Month 1, \$20 at Month 2 and \$30 at Month 3. Ethical approval to conduct the study was obtained from the Brisbane Metro South and Queensland University of Technology Human Research Ethics Committees (HREC/12/QPAH/606).

2.4. Design

Participants were assessed at baseline, and attempts were made to follow them up monthly to 3 months. Those who had ceased or reduced their cannabis consumption during the previous month (indexed by $\geq 50\%$ reduction in quantity from baseline levels) were asked the qualitative questions. Table 1 provides an overview of each participant's cannabis use and participation in qualitative interviews over the course of the study.

2.5. Qualitative analysis

Interviews were transcribed by the first author, and were then analysed using interpretative phenomenological analysis (IPA; Smith & Osborn, 2003). The first interview was reorganised and interpreted to identify preliminary themes and patterns, with a list of representative quotations illustrating each theme compiled. This procedure was repeated for each remaining interview, resulting in the identification of new themes. The identification of themes for each research question was completed separately. To ensure transparency and reliability, all transcripts were reread and coded by at least one other member of the research team. Coding and interpretations of the transcripts were discussed by all authors in detail until consensus was reached on the key themes. This approach allowed inconsistencies to be debated, and themes to be refined (Lobbana et al., 2010). Interconnections between interviews were examined, and a list of master themes constructed. Selection of master themes was based both on the frequency or “representativeness” of specific themes and on the richness of the theme within an individual's account (Smith & Osborn, 2003). Since all authors had training in cognitive behavioural therapy (CBT) and motivational interviewing (MI), potential related biases in the interpretation of responses were discussed.

3. Results

3.1. Participant characteristics

Twenty-two participants consented to take part in the study: 19 of these (86%) provided at least 1 month of follow-up data, and 16 (73%) completed all 3 months of assessments. Five of those who dropped out of the study were lost to contact by the researcher and the health service, and the remaining participant withdrew because of work commitments. There were no demographic or clinical differences between those who completed the study and those who dropped out of the follow-up assessments.

All participants were inpatients at the time of the baseline assessment, and were community patients at each follow-up point. All were prescribed antipsychotic medication while an inpatient, with 16 participants being prescribed paliperidone 100 mg. Only two participants reported receiving any previous cannabis use treatment and all were receiving mental health support. No participants said that they had received substance use treatment during the study, and only one participant file mentioned receiving psychoeducation for psychosis and cannabis use.

Table 1
Participation and cannabis use.

Participant	Baseline	1 month		2 months		3 months	
	THC use	THC use	Qualitative interview	THC use	Qualitative interview	THC use	Qualitative interview
1	Yes	No - A	✓	No - A	✓	No - A	✓
2	Yes	Yes - R	–	No - A	✓	No - A	✓
3	Yes	No - A	✓	No - A	✓	No - A	✓
4	Yes	Yes - U	–	Yes - U	–	Yes - U	–
5	Yes	No - A	✓	... ^a	...	...	...
6	Yes	Yes - U	–	Yes - U	–	Yes - U	–
7	Yes	No - A	✓	No - A	✓	... ^a	...
8	Yes	... ^a	...	...	...	...	...
9	Yes	Yes - U	–	Yes - U	–	Yes - U	–
10	Yes	Yes - U	–	Yes - R	✓	Yes - R	✓
11	Yes	Yes - R	✓	No - A	✓	Yes - R	✓
12	Yes	Yes - U	–	Yes - U	–	Yes - U	–
13	Yes	Yes - U	–	Yes - U	–	Yes - U	–
14	Yes	No - A	✓	No - A	✓	... ^a	...
15	Yes	Yes - U	–	Yes - U	–	Yes - U	–
16	Yes	Yes - U	–	Yes - U	–	No - A	✓
17	Yes	Yes - R	✓	No - A	✓	Yes - R	✓
18	Yes	No - A	✓	No - A	✓	No - A	✓
19	Yes	... ^a	...	...	...	...	...
20	Yes	No - A	✓	Yes - R	✓	Yes - U	–
21	Yes	Yes - R	✓	No - A	✓	No - A	✓
22	Yes	... ^a	...	...	...	...	...

2. U - unchanged or higher consumption than at baseline.

3. R - reduced from baseline (by 50%).

4. A - abstinent.

^a Lost to follow-up.

Comparisons of participants who did and did not reduce their cannabis consumption at some point assumed that the three who provided no follow-up data did not change their usage. Those who reported reduced cannabis use were more likely to have only used cannabis ($\chi^2(1, N = 22) = 7.8, p = 0.005$) and had fewer BPRS negative symptoms ($rho = 0.55, n = 22, p < 0.01$) at Baseline (see Table 2). There were no other significant differences between these groups.

One-way repeated measures ANOVAs assessed changes in cannabis use and BPRS symptoms over each follow-up period. The 16 participants providing data to 3 months had a significant reduction in the average number of days cannabis was used in the preceding month (Baseline $M = 17.13, SD = 6.51$; 3-month $M = 7.56, SD = 7.39$; $F(3,13) = 6.61, p < 0.01$), and in the amount of cannabis used per month than at Baseline (Baseline $M = 4.75, SD = 1.84$; 3-month $M = 1.88, SD = 1.82$; $F(3,13) = 8.91, p < 0.005$). Significant reductions on several BPRS symptoms were also found: Emotional Withdrawal (from $M = 2.00, SD = 0.97$, to $M = 1.38, SD = 0.81$; $F(3,13) = 3.58, p < 0.05$), Guilt (from $M = 2.63, SD = 1.41$, to $M = 1.69, SD = 1.25$; $F(3,13) = 5.12, p < 0.01$), and Unusual Thought Content (from $M = 2.75, SD = 0.78$, to $M = 1.88, SD = 1.02$; $F(3,13) = 3.43, p < 0.05$).

3.2. Reasons for cannabis reduction/cessation

Three themes were identified: mental health, social relationships/connection and lifestyle change. These themes are summarised in Table 2.

The understanding of the negative psychological consequences associated with ongoing cannabis use on a range of levels was highlighted by participants. *Worsening of mental health* was identified as a key motivator for ceasing cannabis, particularly relating to negative experiences from using cannabis and the worsening of psychiatric symptoms:

Well I just had this unpleasant experience... I was just scared and like I don't want to end up back in hospital. - I thought people were out to get me... just trying to sort out my mental health issues.

[(P14)]

A realisation that cannabis did not help with emotional difficulties or was inconsistent with key values or goals (internal conflict) was also commonly reported:

Table 2

Demographic, substance use and clinical characteristics of the patients who ceased/reduced cannabis consumption and did not cease/reduce cannabis use.

	Reduction/cessation		
	Yes (n = 13)	No (n = 9)	p
Demographics			
Age, M (SD)	25.8 (4.1)	23.9 (6.0)	0.38
Gender, male, N (%)	10 (77%)	6 (67%)	0.60
Employed, N (%)	5 (39%)	1 (11%)	0.11
Living arrangements, Live Alone, N (%)	0 (0%)	1 (11%)	0.12
Ethnicity, Australian born, non-Aboriginal, N (%)	11 (85%)	8 (89%)	0.68
Years of education, M (SD)	12 (1.6)	10.7 (1.3)	0.90
Relationship, single, N (%)	12 (92%)	6 (67%)	0.31
Clinical			
First hospital admission, N (%)	8 (62%)	6 (67%)	0.81
Number of previous hospital admission, M (SD)	1.5 (0.8)	1.4 (0.7)	0.79
Prescribed medication, N (%)	13 (100%)	9 (100%)	–
Family history of psychosis, N (%)	6 (46%)	2 (22%)	0.25
Family history of other mental illness, N (%)	5 (39%)	4 (44%)	0.78
Diagnosis, N (%)			
Schizophrenia	5 (39%)	4 (44%)	
Schizophreniform disorder	4 (31%)	4 (44%)	
Substance-Induced	–	1 (11%)	
Schizoaffective disorder	4 (31%)	–	
Symptoms on BPRS			
Total, M (SD)	44.6 (9.5)	47.8 (17.2)	0.82
Negative, M (SD)	7.5 (1.9)	5.7 (1.1)	0.01
Positive, M (SD)	10.0 (2.4)	12.0 (4.5)	0.32
Depression-anxiety, M (SD)	9.5 (4.8)	8.1 (3.7)	0.43
Manic-excitement, M (SD)	9.9 (3.5)	12.2 (9.2)	0.87
Substance use			
Previous treatment, M (SD)	1 (8%)	1 (11%)	0.80
Days used cannabis, M (SD)	18.3 (6.7)	13.3 (5.3)	0.08
Cones per cannabis use day, M (SD)	5.0 (1.7)	3.8 (2.0)	0.01
Polysubstance use, N (%)	4 (31%)	9 (100%)	0.00

I realised that it wasn't helping me, the hurt was still there when I was sober... (P5)

I just saw that my life wasn't going anywhere... (P11)

Receiving medication or other treatment, or being hospitalised also played a role:

...Well it was when I came into hospital.... Well I have been linked in with a case manager. They are helping me sort out my head. I have the psychiatrist to see.... Well they have me on this medication also... (P14)

The second theme related to *social relationships*. Social contexts and relationships are clearly important in the recovery of substance use. Letting others down was mentioned by participants:

Because it was horrible, I thought I was going to die and not be able to continue to support my partner. He is in a wheelchair. I felt I could not leave him, you know what would happen to him if I was to die. (P1)

Trusting others was identified by this participant as important:

Well it was sort to do with trusting people. I have difficulties trusting people and this causes difficulties in my relationship with my partner. Just help with that, you know... (P1)

Having support from others and a change of social network were also seen as important:

My mum came and saw me and I met some nice people. The staff on the ward were really kind to me also. I just thought I would try and give it a go.... I just didn't want it to keep messing with my head. I wanted to try and stay clean so I could have a relationship with mum, try and make some new friends.... Yes, just trying to be a bit more social. (P20)

Another common reason for cannabis cessation/reduction was related to *lifestyle change*. Participants reported that engaging in education/employment and finances triggered changes in their use potentially by providing an alternate to using substances and giving meaning in their daily lives:

I was just having trouble with work. My mind was all over the place. I just didn't think it was helping anymore. (P16)

It sort of stopped me doing things also like having the motivation to get to work. (P7)

I say to myself don't do it you cannot afford it. There are things you need to spend your money on like my son. (P11)

These themes point to the ability to manage psychological difficulties and a strong emphasis on the role of external factors in the decision to make a change in ones cannabis use. For example Participant 2 reported:

...I had this admission to hospital where I met you the first time. I thought I was going crazy and the voices were telling me to take all my medication.... the voices became worse" and "I felt really guilty that I was stuffing up my children's lives...I just saw the impact it was having on my children. I didn't realise how much it affected them. I have stuffed up their lives and I didn't know how much... Also about my mum's health and I feel like I have stuffed up her life.

Importantly it is likely that a combination of motivators is required for a person to make an effective change and the realisation of the

severity of the consequences of substance use experienced by participants. This was highlighted by a number of participants. For example Participant 5 reported:

I realised that it wasn't helping me, the hurt was still there when I was sober... Well with my parents, it was mainly my Dad. I think they knew I smoked but I didn't want to have to admit it to him and be a disappointment to him... Not really. I guess I wasn't hanging out with the same people and I used to smoke with my ex, so it was different. I was trying to study also and I don't think it was helping me out there.

Participant 7 said:

I just didn't want to feel that way anymore.... Not really it was just getting depressed and I don't reckon the weed was helping me. I think it made me more emotional also... Well I thought if I quit smoking weed I might feel better. I guess I also didn't want to let my mum down. My mum also tells me to get to work. Mum doesn't like me just lying around the house. It sort of stopped me doing things also like having the motivation to get to work. Well I have had a bit more motivation. I still feel weird but I am trying to go to work.

3.3. Strategies for maintaining cannabis cessation

Strategies participants used to maintain cannabis cessation/reduction were ordered into four themes: psychological strategies, relationship/connection, social related changes, and medication (Table 3).

A wide range of *psychological strategies* was employed, with a variety of strategies likely needed for effective change. A common cognitive strategy was for participants to reflect on past negative experiences and the effect on their mental illness:

The fear of having an unpleasant experience and the cops coming around again stops me from using. I'm worried about having another breakdown and getting locked up. (P14)

Trying to think about how the pot affects my mental illness. (P2)

For these two participants' motivators for cessation included negative experience and worsening of mental health symptoms. The motivators for change were clearly linked with ongoing effective maintenance strategies.

Other psychological strategies included emotional change:

Just tried not to feel bad and think of not wanting to feel bad again. Realising that smoking weed probably wouldn't help and I would feel guilty afterwards anyway which would make me feel bad. (P7)

Self-belief and self-talk were also seen as important:

Well I just have to get through it. Just telling myself 'no'. It is easy to go back and use. (P11)

Table 3
Motivators, effective strategies for reduction or cessation and relapse contexts of cannabis use.

Motivators	Strategies	Relapse
Worsening mental health	Psychological strategies	Substance using peers
Social relationships/connections	Relationship/connection	Difficulties in relationships
Lifestyle change	Social related changes Medication	Coping with difficult emotions

Behavioural strategies included playing video games, sleeping, breathing, exercising and engaging in other distracting activity. Having a plan appeared to be an important factor:

Just by making sure I had a plan of what I was going to say if I ran into them. Have an excuse that I was busy. (P18)

Relationships played a role in helping participants stay in control, and included the ability to trust others, getting support from others and thinking of others:

Being able to trust them and not feel bad when I need time out.... my partner helps me.... I speak with my mum... I think of the kids. I don't want to stuff them up even more... think about how much I have already messed the kids up. (P2)

Changing their *social network or lifestyle*, and taking *medication* (e.g., antipsychotics) were cited as other ways participants stayed in control.

For participants to stay in control, the realisation that any short-term relief from cannabis was outweighed by more positive outcomes was important. An example was provided by Participant 5 who reported:

Well I just felt like I couldn't be by myself. I felt that if I smoked it would be easier. But I knew that it wasn't going to make it better, I'd feel the same the next day. Anyways I had gotten past the addiction so I just had to keep off it.

Many maintenance strategies identified by participants were similar to the initial reasons for change. An example is provided by Participant 1 who reported an initial reason as: I had this negative experience where after having bongs I collapsed to the floor. I was really scared and I was never going to use again as a result. And maintenance strategies as: Thinking about that time when I collapsed on the floor. I never want that shit to happen again. It really freaked me and my partner out.

3.4. Relapse

Only 3 of the 11 interviewed participants who ceased cannabis use altogether reported a relapse (a return to using cannabis). Their accounts identified the presence of substance using peers, difficulties in relationships and coping with difficult emotions related to past trauma, depressed or lonely feelings as triggers for this relapse:

I was just lonely, my family are not around and I don't have any friends so I just started smoking again.... Just as a comforter, rather than thinking about my childhood. Just to shut my body down for a bit, stop having to deal with it all. (P20)

For those participants that relapsed there appeared to be less emphasis on social aspects in their reported effective maintenance strategies and relationship difficulties and associated negative emotions played a role in relapse.

4. Discussion

This qualitative prospective study explored natural recovery from cannabis use among people with early psychosis over 3 months. Consistent with previous research, worsening mental health symptoms were identified as a major reason for reducing/ceasing cannabis use (Rebetz, Hides, et al., 2015; Rebetz, Kavanagh, et al., 2015). Relationship issues were identified as another major reason for making a change in cannabis use—particularly concerns about letting others down. While these issues appeared to be powerful motivators for change, a focus on past difficulties may undermine self-efficacy and coping. Focusing users' attention on instances where they maintained control of cannabis use and fulfilled their responsibilities may allow these concerns to sustain a control attempt without triggering distress and hopelessness.

Relationships with others were also identified as key motivator for maintaining cannabis reduction/cessation. Maisto, Carey, Carey, Purnine, and Barnes (1999), also found the receipt of emotional and practical support was a key therapeutic factor in reasons for change for substance use disorder in schizophrenia. Treatments focused on developing and maintaining healthy relationships could help to reduce the use of illicit drugs to cope with problematic attachments (Alexander, 2008).

An important finding of the current study was the breath and severity of the adverse substance use consequences experienced by participants. As we identified in our recent review (Rebetz, Kavanagh, et al., 2015), the psychotic symptoms, distress, narrowing of social networks and activities and poverty that are experienced by people with psychosis, renders this group particularly susceptible to negative effects of substance use on relationships, discretionary incomes, activities and wellbeing. The negative nature of some of these experiences is likely to amplify motivation to reduce cannabis use, to the extent seen among more extreme substance users in the general population (which may help to explain the frequency of their attempts to control use, even when the amounts consumed are relatively small). Among these impacts were financial and employment-related reasons for change, which have also been identified in previous research (Rebetz, Kavanagh, et al., 2015). Emphasising the negative effects of cannabis on multiple life domains may maximise the chance that people with psychosis will begin an attempt to control cannabis use and may offer a key to successful control (Green, Yarborough, Polen, Janoff, & Yarborough, 2015).

While distress about these issues may be motivating, difficulties dealing with distress more generally constituted a perceived risk for control, as did the limited range of coping mechanisms they appeared to have to cope with it. In common with dysfunctional substance use in other contexts, maintenance of control required relinquishing any short-term relief from cannabis in favour of more positive distal outcomes. Where people with psychosis have experienced trauma, maintaining control despite negative emotions may be particularly challenging. Links between lifetime cannabis consumption, childhood abuse and psychosis are well documented (Houston, Murphy, Adamson, Stringer, & Shevlin, 2008; van Dam et al., 2015). There were some indications in the current study that trauma may be important, particularly in relation to relapse, but as only three participants with a trauma history reported a relapse, these results must be viewed with caution. Examination of relationships between trauma and relapse in a larger study may clarify the extent of its role.

Our results are consistent with previous research on relapse in substance users from both the general population and in people with serious mental disorders (Rebetz, Hides, et al., 2015). They also support relapse models of substance use that highlight the interaction between situational risk factors and individual characteristics (Anderson, Frissell, & Brown, 2007), and emphasise the need to develop strategies for emotion regulation as an important component of treatments. Schema therapy may also assist, given emerging evidence on its application to substance use by people with personality disorders (Kellogg & Tatarsky, 2012).

This study explicitly distinguished between strategies that may assist with initiating reduction or cessation from those involved in maintaining it. We previously identified a number of strategies that could support users at both stages (Rebetz, Kavanagh, et al., 2015). Psychological strategies (remembering negative experience; self-belief; behavioural change; effect on mental illness), social reinforcement related to family and significant others, lifestyle change and using medication were the main factors which respondents said had helped them stay in control. However, there was a limited range of coping strategies to control use, and these strategies tended to be relatively basic (e.g. escaping a high-risk situation, rather than being able to deal with the risk). Implications include the importance of ensuring that treatments focus on behavioural rather than cognitive strategies, and on ones that are both readily trained and likely to be effective.

This study appears to be the first to prospectively follow a sample of cannabis users with psychosis to qualitatively explore – the initiation of cannabis cessation, strategies to maintain abstinence, and risk factors for relapse in cannabis use. While there were many similarities in the themes relating to these contexts, the emergence of some key differences in responses suggests that treatment approaches may need to emphasise different aspects at each point in the recovery journey. The use of psychological approaches that address emotional issues including any past trauma may be particularly important for relapse prevention.

Limitations of this study include relatively small group of purposively sampled participants. However, recruitment continued until no new themes emerged, which suggests that a larger sample was unlikely to identify additional themes. As all participants were inpatients at the time of recruitment and were under the care of outpatient case managers from their local mental health services during follow up, it is possible that their responses may have been influenced by their interactions with staff or patients (e.g. reflecting staff opinions of key factors and effective strategies), which were not recorded on file. Only one file mentioned “psychoeducation for psychosis and substance use”. While no such interactions were reported as a motivator or maintenance strategy during the qualitative interviews, results of the current study should be confirmed in a community sample with less service exposure. Biases relating to the research team’s knowledge of and theoretical adherence to CBT and MI were considered, but that may not have been sufficient to avert an influence from those perspectives on the perceived themes. The perceptions of respondents were potentially affected by the order of questions and by repeated questioning over time. It is also likely that tracking cannabis use may have influenced participants’ decisions in regards to ongoing substance use. Future research could minimise these risks by using respondent validation and applying experience sampling or mixed methods (e.g. with a sufficient sample to compare themes within subgroups that have varying mental health symptoms, stress, and motivation).

4.1. Conclusion

Increasing people’s awareness of the adverse impact of cannabis use across multiple life domains may be critical to cannabis cessation and maintenance of change, both in order to maximise motivation, and to avoid over-dependence on one life area. Development of a range of coping strategies to manage stress, alleviate boredom and deal with pressure from substance-using peers also appears important, if users are to effectively meet these common challenges. Focusing on emotion regulation and developing and maintaining healthy relationships appear to be areas worthy of particular additional exploration.

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Contributors

Rebgetz, Hides, and Kavanagh designed the study. Rebgetz and Choudhary collected the data. All authors contributed to the data analysis and paper, and approved the final manuscript.

Conflict of interest

All authors declare that they have no conflicts of interest.

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References

- Alexander, B. K. (2008). *The globalization of addiction: A study in poverty of the spirit*. Oxford, UK: Oxford University Press.
- Anderson, K. G., Friswell, K. C., & Brown, S. A. (2007). Relapse contexts for substance abusing adolescents with comorbid psychopathology. *Journal of Child & Adolescent Substance Abuse*, 17, 65–82. http://dx.doi.org/10.1300/J029v17n01_04.
- Childs, H. E., McCarthy-Jones, S., Rowse, G., & Turpin, G. (2011). The journey through cannabis use: A qualitative study of the experiences of young adults with psychosis. *The Journal of Nervous and Mental Disease*, 199, 703–708. <http://dx.doi.org/10.1097/NMD.0b013e318229d6bd>.
- Green, C. A., Yarborough, M. T., Polen, M. R., Janoff, S. L., & Yarborough, B. J. H. (2015). Dual recovery among people with serious mental illnesses and substance problems: A qualitative analysis. *Journal of Dual Diagnosis*, 11, 33–41. <http://dx.doi.org/10.1080/15504263.2014.975004>.
- Hjorthøj, C. R., Fohlmann, A., & Nordentoft, M. (2009). Reprint of “treatment of cannabis use disorders in people with schizophrenia spectrum disorders – A systematic review”. *Addictive Behaviors*, 34(10), 846–851.
- Houston, J. E., Murphy, J., Adamson, G., Stringer, M., & Shevlin, M. (2008). Childhood sexual abuse, early cannabis use, and psychosis: Testing an interaction model based on the National Comorbidity Survey. *Schizophrenia Bulletin*, 34, 580–585. <http://dx.doi.org/10.1093/schbul/sbm127>.
- Kellogg, S. H., & Tatarsky, A. (2012). Re-envisioning addiction treatment: A six-point plan. *Alcoholism Treatment Quarterly*, 30, 109–128. <http://dx.doi.org/10.1080/07347324.2012.635544>.
- Lobbana, F., Barrowclough, C., Jeffery, S., Buccini, S., Taylor, K., Mallinson, S., et al. (2010). Understanding factors influencing substance use in people with recent onset psychosis: A qualitative study. *Social Science & Medicine*, 70, 1141–1147. <http://dx.doi.org/10.1016/j.socscimed.2009.12.026>.
- Maisto, S. A., Carey, K. B., Carey, M. P., Purnine, D. M., & Barnes, K. L. (1999). Methods of changing patterns of substance use among individuals with co-occurring schizophrenia and substance use disorder. *Journal of Substance Abuse Treatment*, 17, 221–227. [http://dx.doi.org/10.1016/S0740-5472\(99\)00005-7](http://dx.doi.org/10.1016/S0740-5472(99)00005-7).
- McGuffin, P., Farmer, A. E., & Harvey, I. (1991). A polydiagnostic application of operational criteria in studies of psychotic illness. Development and reliability of the OPCRIT system. *Archives of General Psychiatry*, 48, 764–770. <http://dx.doi.org/10.1001/archpsyc.1991.01810320088015>.
- Overall, J. E., & Gorham, D. R. (1962). The brief psychiatric rating scale. *Psychological Reports*, 10, 799–812. <http://dx.doi.org/10.2466/pr0.1962.10.3.799>.
- Rebgetz, S., Hides, L., Kavanagh, D. J., & Choudhary, A. (2015). Natural recovery from cannabis use in people with psychosis: A qualitative study. *Journal of Dual Diagnosis*. <http://dx.doi.org/10.1080/15504263.2015.1100472>.
- Rebgetz, S., Kavanagh, D. J., & Hides, L. (2015). Can exploring natural recovery from substance misuse in psychosis assist with treatment? A review of the current research. *Addictive Behaviors*, 46, 106–112. <http://dx.doi.org/10.1016/j.addbeh.2015.03.006>.
- Smith, J. A., & Osborn, M. (2003). Interpretative phenomenological analysis. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to methods*. London: Sage.
- Sobell, L. C., & Sobell, M. B. (1992). Timeline followback: A technique for assessing self-reported alcohol consumption. In R. Litten, & J. Allen (Eds.), *Measuring alcohol consumption: Psychosocial and biological methods*. Totowa, NJ: Humana Press.
- Ventura, J., Nuechterlein, K., Subotnik, K. L., Gutkind, D., & Gilbert, E. A. (2000). Symptom dimensions in recent-onset schizophrenia and mania: A principal components analysis of the 24-item Brief Psychiatric Rating Scale. *Psychiatry Research*, 97, 129–135. [http://dx.doi.org/10.1016/S0165-1781\(00\)00228-6](http://dx.doi.org/10.1016/S0165-1781(00)00228-6).
- van Dam, D. S., van Nierop, M., Viechtbauer, W., Velthorst, E., van Winkel, R., Bruggeman, R., et al. (2015). Childhood abuse and neglect in relation to the presence and persistence of psychotic and depressive symptomatology. *Psychological Medicine*, 45, 1363–1377. <http://dx.doi.org/10.1017/S0033291714001561>.
- van der Meer, F. J., Velthorst, E., & Generic Risk and Outcome of Psychosis (GROUP) Investigators (2015). Course of cannabis use and clinical outcome in patients with non-affective psychosis: A 3-year follow-up study. *Psychological Medicine*, 45, 1977–1988. <http://dx.doi.org/10.1017/S0033291714003092>.