Why does cannabis use make people paranoid? Evidence for a psychological model.
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A show of hands…

A. Cannabis use causes psychosis
B. Cannabis use does not cause psychosis
C. Cannabis is a catalyst/trigger for those already high risk
Epidemiological Research

• Longitudinal general population studies suggest that cannabis use predicts later psychotic diagnosis. (1)

• Earlier and heavier use increase risk further still. (2, 3)
• Evidence now “incontrovertible” that heavy cannabis use increases the risk of psychosis (Prof. Robin Murray, 4).

• Most people begin using cannabis before the emergence of psychosis. (5)
• Onset of psychosis average 2.7 years earlier in cannabis users. (6).

• Onset of psychosis is earlier if cannabis use is earlier, especially if daily use. (7, 8).
Impact of Cannabis Use on Psychosis

• In those with First Episode Psychosis (FEP), half report past use (9) and a third reporting current use (10).

• Evidence that cannabis use increases severity of symptoms (10, 11) and likelihood of relapse (12, 13) in those with diagnosis of schizophrenia.

• In FEP, cannabis use predicts increased symptom severity five years later (14).

• Those at ultra-high risk are more than four times as likely to transition to psychosis if using cannabis (15).
Impact of Cannabis Use on Psychosis

- A meta-analysis found that use in those at ultra-high risk:
  - Increases symptom severity
  - Impairs functioning
  - Increases of risk of relapse and duration of admissions (16).

Self-Medication

- Some people with psychosis report using cannabis to:
  - Reduce tension, elevate mood, socialise and sleep (17-20).
  - Minority use to manage suspiciousness and voices (18, 20).
Does the Relationship Work both ways?

- Some studies suggest that this relationship may be bidirectional: Cannabis use predicts later psychotic symptoms and vice versa (22, 23).
Risk Factors for Psychosis from Cannabis Use

- Male gender (24)
- Childhood sexual abuse (25-27)
- Younger age at first use (28, 29)
- Greater schizotypy (30)
- More frequent (especially daily) use (2, 28, 31, 32)
- High potency ‘skunk’ (31, 32)
- Family history of psychosis (33)
- Specific Genes (34-36)

i.e. More likely is already high risk for psychosis
Acute Effects of Cannabis

Administration of the psychoactive constituent of cannabis, $\Delta^9$-tetrahydrocannabinol (THC), increases psychotic-type experiences in:

- Healthy participants (37)
- Frequent cannabis users (38)
- Those with a diagnosis of schizophrenia (39)
- Those with high levels of paranoia (40)
So does cannabis cause psychosis?

• Dozens of large studies suggest cannabis use does increase risk of psychosis after controlling for other factors.

• Overall, broad agreement cannabis use does not necessarily cause psychosis but increases the likelihood in vulnerable groups (41).

• Suggestion that we need to examine the impact of cannabis use in people at higher risk of cannabis-related psychosis (42).

• But why?

• Several neurological theories: few psychological.
External Attribution

• People with clinical levels of paranoia are more likely make external personal attributions, i.e. blame others, for ambiguous events.

• External attribution is a part of cognitive models of paranoia (45).

• Might external attribution turn effects of intoxication into paranoia e.g. Mis-interpreting hearing a voice as someone communicating with you rather than just because you’re stoned
Cognitive Fusion

• Cognitive fusion is attachment to literal content of your thoughts: thoughts dominate experience and behaviour.

• Individuals have no perspective on their thinking.

• E.g. Someone is out to get me: This this as the truth not a thought.
• Key process of Acceptance and Commitment Therapy (ACT)

• Those with psychosis describe being ‘trapped in thinking’ and unable to distance themselves from their threat beliefs (46)
• Might fusion be important in the impact of cannabis on paranoia?
Aims of Current Research

• See whether external attribution and cognitive fusion might explain:

• Link between psychotic symptoms, paranoia and distress in cannabis users.

• The impact of risk factors such as male gender and childhood sexual abuse on psychotic symptoms in cannabis users.

• Paranoia and psychotic symptoms experienced during acute intoxication.

• Differences in symptoms in those who use cannabis to self-medicate.
Study 1 and 2: Relationships in Gen-Pop and Psychosis

- **Study 1**: 413 participants from general population (44% used cannabis past 3 months, 27% used more than 3 months ago, 28% never used).

- **Study 2**: 60 participants with a psychotic diagnosis under mental health services (63% history cannabis use, only 7% used in past 3 months)


Measures

• Paranoia (Paranoia scale, 52): *I sometimes feel as if I’m being followed*

• Psychotic-Type Experiences (*Prodromal Questionnaire-Brief Version*, 53): *Have you had the sense that some person or force is around you, although you couldn’t see anyone?*

• Questions about distress from these experiences

• Attribution question: what think caused this:
  • *Something about you*
  • *Someone about someone else*
  • *Something about the situation (circumstances or chance)*
  • *Being under the influence of drugs or alcohol*
Measures

- Cognitive Fusion Questionnaire (54): *I tend to get very entangled in my thoughts.*

- Childhood Sexual Trauma Questionnaire (55): *Before the age of 16, did anyone have sexual intercourse with you without your consent?*

- Schizotypal Personality Questionnaire (56): *I believe in telepathy, Other people see me as slightly eccentric (odd).*

- Distress from Paranoia (Paranoia Checklist, 57): *People are laughing at me*
Results: Study 1 (General Population)

- Cannabis users had higher levels of psychotic experiences, distress, external attribution and cognitive fusion.
- External attribution and cognitive fusion mediated the relationship between paranoia and distress (in current, past and non-cannabis users.)
In cannabis users:

- Childhood Sexual Abuse (CSA) = More psychotic-type experience, accounted for by external attribution and cognitive fusion.

- Higher schizotypy = More psychotic-type experiences and distress due to external attribution and cognitive fusion.
Results: Study 2 (Sample with Psychosis)

- Past cannabis users had greater distress due to greater external attribution and cognitive fusion.

**In those with past cannabis use:**
- CSA= Higher Paranoia, accounted for by external attribution and partially by cognitive fusion.
- Higher Schizotypy= Greater distress accounted for by cognitive fusion.
- Starting use earlier= More distress, accounted for by cognitive fusion.
- Those who use cannabis to self-medicate had higher levels of paranoia and distress, accounted for by external attribution and cognitive fusion.
Limitations:
• Cross-sectional.
• Not many current users in clinical sample: Can’t look at impact of skunk.

However results suggest:
• Cognitive fusion and external attribution may explain why more paranoia and distress in cannabis users.

• Cognitive fusion and external attribution may also explain why CSA, early use and schizotypy increase risk of paranoia/psychosis from cannabis use.
Study 3: Acute Effects of Intoxication

- Under acute THC intoxication:
  - Does cognitive fusion predict paranoia/psychotic-type experiences?
  - Is this related to levels of schizotypy and childhood trauma?

- 20 cannabis users with no mental health history recruited.
- Given low dose oral THC or placebo (blind as to which).
Study 3: Acute Effects of Intoxication

- Given cognitive fusion measure, and schizotypy measure (OLIFE, 58)
- Measures of psychotic experiences given before and after THC consumption:
  - Psychotic Symptoms (PANSS, 59) *Is anyone controlling your thoughts?*
  - Unusual Experiences During Intoxication (PSI, 60) *You feel people have it in for you.*
Study 3 (Acute Intoxication): Results

- Those with more childhood trauma and greater schizotypy had a greater increase in psychotic symptoms and unusual experiences after THC consumption.
- This was accounted largely by higher levels of fusion.

Model of Cannabis Use and Paranoia

- Childhood sexual abuse
- High schizotypy
- Cannabis use from young age

Cannabis use

Acute effects of intoxication: Transient psychotic experiences

Self-medication

Activates beliefs, assumptions and appraisals

External threat attribution

Processing of the self as an object of interpersonal threat

Fusion with thoughts

Safety behaviours & urges

Bodily sensations

Feeling

Thinking
Past experiences:

- Sexually abused by my uncle on a number of occasions when I was 7 – always found it hard to trust people after this.
- Felt different from childhood – always thought ‘outside the box’ and noticed and heard things other people didn’t seem to be aware of.
- Started smoking weed aged 14 so don’t think it does me any harm

Feeling: scared

Thinking:

- Jump to conclusions about what others are thinking
- Ruminate to work it all out

Cannabis use

When ‘stoned’ I feel wary of others and hear voices saying “they’re going to get you”

Beliefs: the voices are right, others are dangerous, **they’re going to get me**

Sense of self under threat, in the grip of voices, ‘see’ myself being attacked

**Thoughts seem true – hard to ‘step back’ from them**

Coping:

- Try to ignore others
- Avoid eye contact
- Move away if people come near

Bodily sensations:

- Heart racing, shaking

Feeling: scared
Clinical Implications

In those with psychosis or high risk who are using cannabis:

• Ask about external attribution and cognitive fusion, include in formulation.

• Targeting these processes via CBT, mindfulness or defusion may reduce risk of later paranoia from cannabis use.

• Research planned to extend study of this model in clinical populations, developed and test interventions based on this model.
Thoughts, questions, criticisms?

- Does this make sense?

- Anything missing / not right?

- How does this fit with your clinical experience – can you think of someone you’re working with who might find the framework useful?

- Do you think this would be clinically useful?
References


References


References


