Increased psychoticism in young cannabis users

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Introduction

• Cannabis is the most widely used illicit drug in the United States with a one-year prevalence of around 4% (Compton et al., 2004)

• Cannabis use has been associated with increased schizotypy and schizotypal traits, as well as an increased risk for schizophrenia of at least two-fold (Skosnik et al., 2001; Arseneault et al.,2004)

• Past studies have shown increased cognitive deficits (especially attentional disinhibition) in chronic cannabis users. (Skosnik et al., 2001).

• Many studies have assessed the acute effects of cannabis use, but few have looked at long-term residual effects of cannabis use.

Methods

Sixty-four control subjects (26 M, 38 F), 37 current users (26 M, 11 F), and 22 past users (13 M, 9 F) participated in the study. All current users used cannabis in the previous 30 days. The current user category was divided into heavy and moderate users based on the frequency of cannabis use in the previous 30 days. The heavy and moderate users were determined by a median split (median=10). Subjects were undergraduates and matched for education and intelligence. Polydrug users were excluded from the study. Drug status was confirmed by drug testing.

	Controls (n=64)	Current Users (n=37)	Past Users (n=22)
Age	19.89(1.5)	20.03(1.2)	21.09(2.9)
WASI Full Scale IQ	118.20(7.9)	119.00(7.6)	118.39(7.5)
WASI Performance IQ	112.97(9.4)	114.74(8.6)	113.96(8.2)
WASI Verbal IQ	119.00(9.3)	118.95(7.7)	118.39(8.4)
Edinburgh	61.54(43.9)	66.97(34.4)	50.87(60.4)
* Mean(SD)			

Participants were given a battery of questionnaires that assess personality, mood, and schizotypal traits.

Schizotypal Personality Questionnaire (SPQ)

• Consists of 9 sub-scales corresponding to the 9 features of schizotypal personality disorder outlined in the DSM-IV

• Sub-scales can be organized into syndromes corresponding to symptoms in schizophrenia (positive, negative, and disorganized)

Positive Syndrome	Negative Syndrome	Disorganized Syndrome
Ideas of Reference	Excessive Social Anxiety	Odd or Eccentric Behavior
Unusual Perceptual Experiences	No Close Friends	Odd Speech
Odd Beliefs or Magical Thinking	Constricted Affect	
Suspiciousness	Suspiciousness	

Eysenck Personality Questionnaire (EPQ)

• Consists of 3 scales measuring extraversion, neuroticism, and psychoticism.

• The psychoticism scale includes items related to empathy

• Would you feel very sorry for an animal caught in a trap?

as well as schizotypal traits

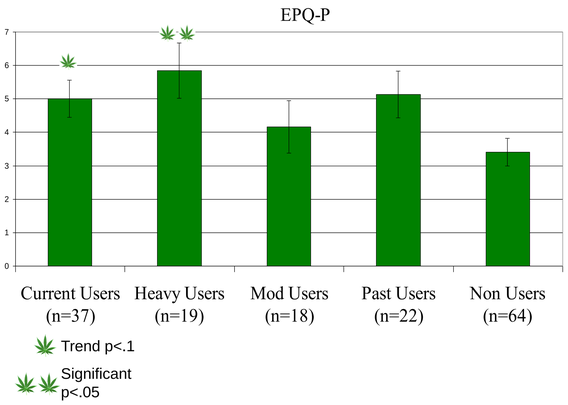
• Are there several people who keep trying to avoid you?

Positive and Negative Affect Schedule

• Questionnaire includes 10 positive and 10 negative affect items rated on a scale from 1 (not at all) to 5 (extremely).

Results

Cannabis use was associated with increased schizotypal traits as well as increased psychoticism on the EPQ scale. Heavy users were found to have significantly higher EPQ-P scores than Non Users. Furthermore, heavy users had significantly higher scores on the SPQ Disorganized syndrome, as well as on the SPQ subscales Odd Behavior and Odd Speech.



Group Differences in Personality and Affect

	Current Users (n=37)	Heavy Users (n=19)	Mod Users (n=18)	Past Users (n=22)	Non Users (n=64)
EPQ-P	***5.00(2.7)***	**5.84(3.3)**	4.16(1.7)	5.13(3.6)	3.41(3.7)
SPQ Disorganized	4.89(4.0)	**6.90(3.9)**	2.53(2.7)	5.00(3.7)	3.59(3.0)
Odd Behavior	2.16(2.1)	**3.15(2.0)**	1.00(1.5)	2.05(1.7)	1.39(1.6)
Odd Speech	2.73(2.5)	**3.75(2.6)**	1.53(1.6)	2.95(2.4)	2.20(1.9)
SPQ Score	13.62(9.9)	16.50(10.1)	10.24(8.8)	15.27(11.7)	12.17(9.4)
SPQ Positive	4.30(3.77)	5.30(3.5)	3.12(3.8)	5.32(4.7)	4.59(5.0)
SPQ Negative	5.30(4.9)	5.25(5.0)	5.35(5.0)	6.45(6.8)	4.97(4.6)
PANAS PA	36.21(5.3)	35.57(7.0)	36.86(3.2)	32.14(8.5)	36.42(5.2)
PANAS NA	17.43(5.0)	16.29(1.8)	18.57(6.9)	20.29(8.3)	19.82(5.8)
italicized = trend					
- p<.05					
- p<.01					

Significant Correlations between Personality and Marijuana Use

	Marijuana 1M	Marijuana 12M	Marijuana Lifetime
EPQ-P	**0.48**	0.02	0.03
SPQ Score	**0.39**	***0.26***	0.15
Disorganized	**0.57**	**0.42**	**0.30**
Odd Behavior	**0.45**	**0.42**	***0.25***
Odd Speech	**0.55**	**0.34**	***0.28***
Positive	**0.35**	**0.30**	0.12
Ideas of Reference	***0.32***	**0.38**	0.22
Suspiciousness	***0.31***	-0.03	-0.01
Negative	N.S.	N.S.	N.S.
Constricted Affect	**0.42**	0.15	0.10
Social Anxiety	-0.25	**-0.29**	***-0.26***
italicized - Trend			
- p<.05			
- p<.01			

Discussion

General Conclusions

Subjects who used cannabis frequently over a 30 day period had higher levels of psychoticism and schizotypal traits similar to the positive symptoms observed in schizophrenia. Moderate cannabis use was not associated with increased schizotypy or psychoticism. Correlational analyses indicates that there could be a relationship between cannabis and personality. These findings are consistent with previous literature suggesting that Δ-9-THC agonizes CB1 receptors, which in turn would increase dopamine activity in the mesolimbic dopamine system. This increase in activity could explain the relationship between cannabis use and schizotypal traits similar to positive symptoms in schizophrenia. No significant difference was observed in affect between current, past, and non users of cannabis.

It is unclear, however, whether the heightened level of psychoticism and schizotypal traits were an effect of cannabis use or if people with higher scores on these measures were predisposed to cannabis use.

Future Directions

Subjects are currently being followed for one year to observe any changes in personality and cannabis use. Preliminary schizotypy data indicates that heavy users show more schizotypal traits after one-year of continued cannabis use, but this is a very small number of subjects so the change in schizotypy is unclear at this stage.

References

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