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Psychological Correlates of Risky Cannabis Use: Alexithymia, Frontal Lobe Dysfunction and Impulsivity

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Background: Recent studies using self-report scales have identified frontal lobe related traits such as alexithymia (i.e., difficulty identifying and describing one's feelings), impulsiveness, disinhibition, and executive dysfunction as factors associated with risky drinking in young adults (Lyvers et al., 2009, 2011). Further, approximately half of alcoholics in treatment may be alexithymic (Thorberg et al., 2009). One interpretation is that such traits preceded alcohol use as factors that predispose to risky substance use in general rather than to alcohol alone, a notion examined in this study.

Method: A community sample of young adult (18-30 yr old) cannabis users of both genders was recruited from Australian locales where cannabis use is common. They completed an online survey at their convenience including the Cannabis Use Disorder Identification Test (CUDIT; Adamson & Sellman, 2003), Alcohol Use Disorder Identification Test (AUDIT; Babor et al., 2001), Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994),

Barratt Impulsiveness Scale (BIS; Patton et al., 1995), and the Frontal Systems Behavior Scale (FrSBe, an index of frontal lobe related dysfunctional symptoms in everyday life; Grace & Malloy, 2001). **Results:** Of the 138 cannabis user participants, 71.7% ($n = 99$) were defined by their CUDIT scores as Low Risk cannabis users (CUDIT < 8) whereas 28.3% ($n = 39$) were defined as Risky cannabis users (CUDIT > 7). Chi-square test showed that CUDIT risk group was associated with TAS-20-defined alexithymia group, $p = .004$. Of the Risky cannabis users 36% were alexithymic or borderline alexithymic by TAS-20 criteria, versus only 14% of Low Risk cannabis users. Further, CUDIT scores were significantly correlated with scores on TAS-20, $r = .37$, BIS, $r = .46$, and FrSBe, $r = .44$, all $p < .01$. Two-way (CUDIT risk group X gender) between-subjects MANCOVA on TAS-20, FrSBe, and BIS, with AUDIT as the covariate to control for known relationships of alcohol use with these variables, revealed a multivariate effect of CUDIT risk group, $F(3, 131) = 3.14$, $p < .05$, observed power = .72. Neither the multivariate effect of gender nor the interaction were significant. The relevant group means are presented below.

	Low Risk Users		Risky Users
TAS-20	40.69 (9.73)	*	48.90 (14.24)
BIS-11	57.19 (7.22)	*	64.69 (10.11)
FrSBe	92.12 (17.84)	*	110.38 (24.24)

* $p < .01$

Discussion: Heavy cannabis use has residual effects on executive functioning that may persist for up to 5 weeks of abstinence (Bolla et al., 2002), likely due to the enduring presence of active levels of THC. Thus it is tempting to regard the association of the FrSBe index of frontal lobe dysfunction with risky cannabis use as reflecting a residual effect of heavy or frequent use. Impulsivity and alexithymia were also strongly associated with risky cannabis use, and both traits have been linked to frontal lobe dysfunction (Chen et al., 2007; Lyvers et al., 2012). However, the direction of causation cannot be ascertained from the present correlational findings. Both directions of causation may apply; e.g., those with inherently poorer emotion regulation and executive functioning may be more likely to abuse substances, and ongoing substance abuse may impair such functioning in a vicious cycle (Lyvers, 2000).

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