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Adolescent marijuana users have elevated risk-taking on the balloon analog risk task.

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Abstract

OBJECTIVE: Adolescents who engage in regular marijuana use may have a higher propensity to take unsafe risks despite the possible negative consequences. We compared adolescents with a history of regular marijuana use to non-using teens on a behavioral measure of risk-taking. Given the involvement of the pre-frontal cortex in both risk-taking and executive functioning, we also examined whether risk-taking was associated with measures of executive functioning.

METHOD: Fifty-eight demographically similar community youth (ages 17-20; 29% female), including 24 marijuana users and 34 non-using controls, completed the computerized Balloon Analog Risk Task (BART; Lejuez et al., 2002) and measures of substance use and executive function. Primary BART outcome measures included total number of popped balloons and average adjusted pumps (mean pumps excluding popped balloons).

RESULTS: Marijuana users had more popped balloons than controls ($p<0.05$) but did not differ on average adjusted pumps. Using hierarchical multiple regression controlling for age, riskier BART performance (popped balloons) was predictive of past 18-month hard drug use ($\beta=0.30$; $p<0.05$). Having a higher number of popped balloons was also predictive of past 18-month marijuana use ($p<0.05$), but age was a stronger predictor than marijuana use. Marijuana users performed worse on one test of executive functioning (psychomotor set-shifting, $p<0.05$), but this did not correlate with risk-taking.

CONCLUSIONS: Our finding of elevated risk-taking among marijuana users is consistent with previous research that substance users may have impaired risk processing. Further, our results suggest that risk-taking is not always associated with executive dysfunction, implying the involvement of distinct neural subsystems.

KEYWORDS: Adolescent; cannabis; cognition; drug users; executive function; neuropsychology; risk-taking

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