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Brain reactivity to alcohol and cannabis marketing during sobriety and intoxication

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Abstract

Drugs of abuse stimulate striatal dopamine release and activate reward pathways. This study examined the impact of alcohol and cannabis marketing on the reward circuit in alcohol and cannabis users while sober and intoxicated. It was predicted that alcohol and cannabis marketing would increase striatal activation when sober and that reward sensitivity would be less during alcohol and cannabis intoxication. Heavy alcohol (n = 20) and regular cannabis users (n = 21) participated in a mixed factorial study involving administration of alcohol and placebo in the alcohol group and cannabis and placebo in the cannabis group. Non-drug users (n = 20) served as between group reference. Brain activation after exposure to alcohol and cannabis marketing movies was measured using functional magnetic resonance imaging and compared between groups while sober and compared with placebo while intoxicated. Implicit alcohol and cannabis cognitions were assessed by means of a single-category implicit association test. Alcohol and cannabis marketing significantly increased striatal BOLD activation across all groups while sober. Striatal activation however decreased during intoxication with alcohol and cannabis. Implicit associations with cannabis marketing cues were significantly more positive in alcohol and cannabis users as compared with non-drug using controls. Public advertising of alcohol or cannabis use elicits striatal activation in the brain's reward circuit. Reduction of marketing would reduce brain exposure to reward cues that motivate substance use. Conversely, elevated dopamine levels protect against the reinforcing potential of marketing.

Keywords: alcohol; cannabis; craving; cue-reactivity; fmri; marketing.

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