

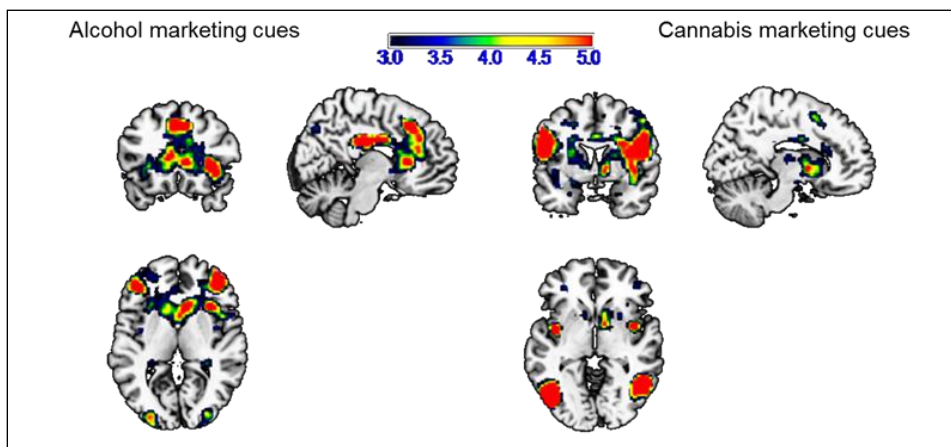
Activation of the brain reward system through alcohol and drug advertisement may directly increase the motivation for actual drug use

marketing
 addictive substances
 brain reward system

This area of work in ALICE RAP consists of a neuroimaging study about the effects of drug marketing exposure on brain activity. The study was aimed to examine the impact of alcohol and cannabis marketing cues on brain reward neurocircuitry in alcohol and cannabis users during both abstinence and intoxication. The striatum is the primary brain region that is activated by stimuli associated with reward and motivation. Brain activation of drug users during abstinence was further compared to a group of non-drug users. Alcohol and cannabis marketing significantly increased blood-oxygen-level-dependent (BOLD) activation in the striatum during abstinence in all three groups (Figure 1). Striatal activation, however, decreased during alcohol and cannabis intoxication. The effect of drug marketing seems to be stronger when one has not consumed any drugs, yet appear to be decreased when one is intoxicated with drugs.

Based on these results the following recommendation for policy can be formulated:

- ➔ Alcohol and cannabis marketing increases reward sensitivity for drug-related cues and can therefore increase the motivation for actual drug use. A reduction of alcohol and drug marketing would diminish its impact, particularly in regular alcohol and cannabis users, by reducing brain exposure to drug marketing cues that motivate and prepare for actual alcohol or drug use.



Note: Images are shown in neurological convention (left=left, right=right) and T-values are presented on a standard MNI T1 brain. The scale represents the T-values associated with the statistical analyses, which depicts the strength of activation in the positive range of a particular brain region compared to other brain regions, from least active (blue) to very active (red).

Figure: BOLD activation (red) following cannabis and alcohol marketing exposure collapsed over all three groups

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Elizabeth de Sousa Fernandes Perna, Eef Theunissen, Kim Kuypers, Elisabeth Evers, Peter Stiers, Stefan Toennes, Jurriaan Witteman, Wim van Dalen and Johannes Ramaekers. (2014). *The effects of alcohol and cannabis marketing on brain activity*. Addictions and Lifestyles in Contemporary Europe: Reframing Addictions Project (ALICE RAP): [Deliverable 11.3](#)