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The influence of alcohol-specific episodic memory and cue exposure on value-based decision-making and its role in ad libitum drinking

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Abstract

Experimentally manipulating alcohol value reliably influences alcohol choice and consumption; however, the cognitive mechanisms that underpin these relationships are not well-understood. Here, we explore whether computational parameters of value-based decision-making (VBDM) change when people experience heightened craving to consume alcohol, and whether parameters of VBDM are predictive of actual drinking behaviour. Prior to completing a novel VBDM task, participants recalled either a positive drinking memory while being exposed to an alcoholic cue (alcohol craving), or a positive alcohol-unrelated memory while being exposed to a soft-drink cue (control). A drift-diffusion model (DDM) was fitted to reaction time and choice data to estimate evidence accumulation (EA) processes and response thresholds during the different blocks in each experimental condition. Subsequently, ad libitum alcohol consumption (disguised as a taste test) was measured. Using computational modelling techniques to quantify the internal processes of decision-making could potentially contribute to identifying innovative targets for treatment interventions.