Abstract

Attentional bias (AB) has been a research focus on human cognition in recent years, as its traits include weaker cognitive flexibility and higher susceptibility to reward conditioning, which elevate the risk of the clinical diagnosis of addiction. In addition to the two well-documented modes of AB (goal-driven and stimulus-driven), selective attention that prefers the reward history was raised as the third kind of AB, by which cues associated with previous rewards could also drive the attention priority. Though several previous studies reported the existence of value-driven AB after reward conditioning, the development of such AB during associative learning is left unclear. Due to its role in addiction formation, AB towards alcohol- or substance-related cues was often investigated under the effect of alcohol use disorder (AUD) or substance use disorder (SUD), while limited work has been done to clarify the effect of adolescent alcohol binge drinking (ABD) on value-driven AB towards more general stimuli. To fill these knowledge gaps, the current research investigated the influence of adolescent ABD on the development of AB towards non-alcohol cues in reward learning as well as the neural activity in brain regions involved in reward processing. Results revealed that the more intense adolescent ABD pattern predicts a weaker AB development, along with a decrease in the caudate and LOC activity during reward conditioning. With the aim to better interpret the AB formation progress during conditioned learning, an explanatory paradigm was raised to serve as a hypothetical explanation of the attentional bias dynamic in reward learning.