Neural mechanisms of affective instability in substance use.

by

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Abstract

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Substance use disorders (SUDs) are a growing concern in today’s society. Substantial research has advanced our understanding of how cognitive control, reward processing, and emotional difficulties may contribute to the development and maintenance of SUDs; however, the impact of affective instability in SUDs has received limited attention. I sought to examine how different dimensions of affective instability interact to increase substance misuse, and to investigate the impact of affective instability and substance use on neural mechanisms of reward and emotion processing. Specifically, I was interested in two event-related potential (ERP) components, the reward positivity and the late positive potential (LPP), which respectively reflect the neural mechanisms of reward and emotion processing. Toward this end, I recorded the ongoing electroencephalogram (EEG) from undergraduate students as they navigated two T-maze tasks in search of rewards. Further, one of the tasks included neutral, pleasant, and unpleasant pictures from the International Affective Picture System (IAPS). Participants also completed several questionnaires pertaining to substance use and personality. A principal components analysis (PCA) revealed a factor related to affective instability, which I named reactivity. This factor significantly predicted increased substance use. Interestingly, individuals reporting higher levels of affective reactivity also displayed a larger reward positivity following stimuli with emotional content. The current study identified a group of high-risk substance users characterized by greater levels of affective reactivity and increased reward processing. It is my hope that these results further elucidate the complexities of SUDs and help to create efficacious, individually-tailored treatment programs for those struggling with SUDs.