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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 42(0)

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Publication Date

2020

Peer reviewed

Impact of sleep deprivation on EEG markers of emotion regulation in young adults

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Abstract

Sleep deprivation (SD) has negative effects on emotional regulation, but few studies have evaluated electroencephalographic (EEG) indices and none of these have used a within-subject design. Twenty-nine participants (17 female) completed a repeated-measures study protocol involving a night of normal sleep (NS) and a night of SD, followed by resting-state EEG during the following morning. Established EEG indices of emotion regulation, frontal alpha asymmetry (FAS) and slow wave/fast wave (SW/FW) ratio in frontal sites (F3, F4, Fz), were investigated. Our results did not reveal SD effects in FAS ($t_{28} = -.960$, $p = .345$) or in SW/FW ratio ($t_{28} = 0.737$, $p = 0.467$). Although other studies have demonstrated emotional dysregulation after SD, two well-studied EEG markers of emotional dysregulation did not reflect altered emotional states after SD in the current within-subject study. Future studies combining EEG and other indices of emotional regulation may help elucidate these results.