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Restless Sleep, Uncertain Minds: Learning and Inhibitory Control Under Partial Sleep Deprivation.

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Abstract

This study assesses how partially sleep-deprived individuals learn regularities in a predictable yet uncertain environment and evaluates the impact of their expectations on inhibitory control performance. Participants were randomly assigned to undergo either an 8-hour (well-rested, WR, n=36) or a 4-hour (sleep-restriction, SR, n=32) sleep period before performing a Go/No-Go task in which we systematically varied the proportions of Go and No-Go trials (20%-80%, 80%-20%, 50%-50%). Preliminary results showed faster reaction times with increasing "Go" probability for both groups. The WR group showed a growing Go-Probability effect over time, unlike the SR group, suggesting potential differences in the underlying learning styles (e.g., meta- learning). As for accuracy, commission errors were more frequent as the probability of "Go" increased, irrespective of the group. To delve further into the effects of sleep deprivation on learning, a Bayesian model for individual learning under uncertainty will be implemented.