Layered Time: Circadian States Selectively Modulate Congruent vs. Incongruent Time-Space Mappings

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Abstract

Although the literature has differentiated various levels of time experience and their effects on human cognition, an individual's cognition occurs simultaneously across these levels. So, how are cognitive processes related to or determined by the interactions between these levels of time experience, if any? The aim of this study was to describe the relationships between chronotypes and the conceptualization of time. The study predicted that the latencies and accuracy of congruent (left-past-right-future) mappings would be similar in optimal and non-optimal schedules. It also predicted that in the asynchronous schedule, latencies would be longer and the accuracy of incongruent (left-future-right-past) mappings would be lower compared to their values in the synchronous schedule. The results partially supported the predictions: incongruent mappings showed longer latencies during non-optimal schedules, but congruent mappings did not perform similarly across schedules. The three-way interaction demonstrates that circadian states modulate time-space mappings, supporting multilevel temporal interactions in cognition.

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