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Dynamics of spatio-temporal scope of attention: Temporal Correlations in reaction time data

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Abstract

Recent studies have emphasized on the idea that attention is a multi-faceted phenomenon that emerges from interaction between a number of different selection-based processes, and is influenced both by the expectations from the environment as well as the constraints of the underlying cognitive system. Dynamical system approach enables us to look at temporal structure of behavior and talk about the underlying system. With help of three experiments, the study looks at how the temporal structure of reaction time is influenced by predictability of the environment as well as the task, manipulating both spatial scope of attention as well as temporal scope of attention. Reaction time of participant is treated as a time-series and Hurst component is estimated to measure nature of long-range temporal correlations. Results show an interaction between task-demands and predictability of the environment on LRTC, suggesting that task-related constraints and environmental constraints are handled by interdependent processes.