

ABSTRACT

A Computational Model and Psychological Investigation of Event Segmentation and Learning

Event is a fuzzy term that refers to bounded spatio-temporal units, which guide behavior to allow adaptation to complex environments. The study of event segmentation investigates mechanisms behind detecting these spatial-temporal units. Event segmentation theory states that people predict ongoing activities and monitor their prediction errors for segmentation. In this study, the mechanism underlying the event segmentation ability was enlightened with computational models and psychological experiments. Firstly, inspired by event segmentation theory and predictive processing, a computational model of event segmentation and learning was introduced. The performance of the model was compared with humans in point-light displays-based psychological experiments to verify that it can segment ongoing activity into meaningful units, learn them via passive observation, and represent them in its internal representational space. Results indicated that the computational model reached a comparable performance to humans in event segmentation and event representation experiments. Secondly, focusing on the role of prediction errors in event segmentation, several psychological experiments were conducted with the aim of revealing the effect of sensory information (bottom-up processes) and expectation (top-down influence) on perceived event boundaries. Results of psychological experiments were discussed in light of possible implications and future directions.