

Analysis on learning a latent structure in a probabilistic reversal learning task

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Abstract

We need to be flexible to adapt to dynamically changing circumstances. A probabilistic reversal learning task is one of the experimental paradigms to characterize flexibility of a subject. In recent studies, it is hypothesized that a subject may utilize not only a reward history but also a cognitive map representing a latent structure of the task. In this study, we conducted an experiment using the task toward understanding a process of learning a latent structure of the task. We found subjects choose a rewarding option with relatively high frequency in a later phase of the task. Analyzing the subjects decision making, it is suggested that they make decision based on their own estimation about the latent structure. A statistical model selection suggested that a reinforcement learning model with state representations fit behavioral data in the later phase. These results suggest the subjects learn the latent structure during the task.