

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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

Permalink

<https://escholarship.org/uc/item/08654321>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 41(0)

Authors

Masumi, Akira

Sato, Takashi

Publication Date

2019

Peer reviewed

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

Akira Masumi

National Institute of Technology, Okinawa College, Nago, Okinawa, Japan

Takashi Sato

National Institute of Technology, Okinawa College, Nago, Okinawa, Japan

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.