The Ventral-Striatum's Role in Learning from Gains and Losses

Submission ID   3000049

Submission Type Poster

Topic   Neuroscience

Status   Submitted

Submitter   Craig Taswell

Affiliation   National Institute of Health/NIMH

SUBMISSION DETAILS

Presentation Type Poster Presentation

Presentation Abstract Summary Much of the literature on reinforcement learning (RL) suggests that the ventral striatum (VS) is crucial to the learning process. However, recent evidence suggests that this is not the case, and that the VS may have a more specific role in RL than previously thought. To assess the role of the VS in RL, we tested rhesus macaques with VS lesions on a stochastic two-arm bandit learning task. Typically, RL studies assessing the VS focus on appetitive learning treating no reward as aversive. Without studying both the appetitive and aversive side of RL, one cannot assess what role the VS plays in aversive learning. To account for this, we conditioned tokens as reinforcers in a task where animals could both gain and lose tokens. This allowed us to assess learning from gains and losses. Monkeys with VS lesions had deficits, but only in conditions where they had to choose among pairs of stimuli that were associated with differently-sized rewards. There were no deficits when choosing between a gain and a loss stimulus. Thus, the VS does not play a general role in all forms of reinforcement learning, but plays a specific role in learning to select between rewarded outcomes.

Paper Upload (PDF) The Ventral-striatum's Role in learning from Gains and Losses.pdf

Co-author Information

* Presenting Author

First Name	Last Name	Affiliation	E-mail
Craig *	Taswell *	National Institute of Health/NIMH	taswellc@mail.nih.gov
Bruno	Averbeck	NIMH	averbeckbb@mail.nih.gov
Vincent	Costa	National Institute of Mental Health	vincent.costa@nih.gov

Keywords

Keywords
Reinforcement learning
Ventral striatum
Behavior
Neural circuits

Keywords
Reinforcement learning
Ventral striatum
Behavior