Where Does Time Go during Value-Based Decisions? The Case for the Hippocampus

Submission ID   3000275

Submission Type Poster

Topic   Cognitive Science

Status   Submitted

Submitter   Akram Bakkour

Affiliation   Columbia University

SUBMISSION DETAILS

Presentation Type Poster Presentation

Presentation Abstract Summary The speed and accuracy of many decisions conform to regularities of bounded evidence accumulation. Such models have proven successful for understanding perceptual decisions made from dynamic sensory input, where integration of independent samples of evidence is normative. However, the same framework applies to value-based decisions, such as choices between snacks, where the stimuli are static. This begs the question: what is the source of independent samples of evidence in value-based decisions? Here, we test the hypothesis that samples of evidence are derived and constructed through a process that involves memory retrieval. Combining drift diffusion models, functional brain imaging, and behavioral analyses, we showed that value-based decision time correlated with magnitude of BOLD activity in regions within the hippocampus that are related to memory retrieval. This effect was weaker in the perceptual task. Furthermore, we found stronger functional connectivity between the hippocampus and striatum for value-based choices that took longer. These findings suggest a link between decision time, value, and memory retrieval and raise the possibility that the striatum and hippocampus cooperate to inform decisions by constructing value or by conveying evidence about relative value bearing on choice behavior.

Paper Upload (PDF) Bakkour_CCN_2017.pdf

Co-author Information

* Presenting Author

First Name	Last Name	Affiliation	E-mail
Akram *	Bakkour *	Columbia University	ab4096@columbia.edu
Yul	Kang	Columbia University	kh2699@columbia.edu
Michael	Shadlen	Columbia University	shadlen@columbia.edu
Daphna	Shohamy	Columbia University	ds2619@columbia.edu

Keywords

Keywords
value-based decision making
episodic memory
sequential sampling models