NEUROSCIENCE

Human replay

Cell <https://doi.org/10.1016/j.cell.2019.06.012>

Humans have a great capacity to learn general rules about the likely relationship of events and to integrate new pieces of information into this structured knowledge. But how do humans achieve this ability, which still trumps the power of artificial intelligence in inference or generalization? Interestingly, the answer may lie in a mechanism that is well-studied in rodents, where it has been found that hippocampal replay of spatial episodes, i.e., paths the rodents previously navigated, fosters learning.

Yunzhe Liu and colleagues at University College London addressed this question in a study with human volunteers who viewed sequences that consisted of a shuffled series of stimuli. Analysing brain activity in short rest periods following the tasks, the researchers found evidence that participants' brains replayed these sequences, not as they were seen, but automatically placing the shuffled stimuli in the right order according to a previously learned rule. There was clear indication that the hippocampus, which is associated with replay in rodents, also drove this replay of non-spatial, abstract sequences in humans.

The new study is an exciting development, building on rodent work to reveal a mechanism that can explain the human ability to integrate new knowledge into abstract known structures.

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Published online: 30 August 2019

<https://doi.org/10.1038/s41562-019-0740-1>