Title:	Effects of Previous Knowledge in Learning and Memory during a Spatial Navigation Task.
Authors:	Mishra, Shubhangi.
Keywords:	Effects of Previous Knowledge in Learning. Effects of Previous Knowledge in Learning and Memory. Effects of Previous Knowledge in Learning and Memory during a Spatial Navigation. Previous Knowledge in Learning and Memory during a Spatial Navigation Task.
Issue Date:	May-2024
Publisher:	IISER Mohali
Abstract:	Memories are rarely stored as individual unit in the networks. They are often consol- idated into the knowledge networks on the basis of association or disassociation with the other nodes present in the network. When unique information is learnt into the system, it gets incorporated faster if there is already a rich previous knowledge network. With time, the consolidation often bypasses the hippocampus, directed by the cortex. This cognitive map facilitates knowledge acquisition and faster and more efficient learning of new infor- mation. To test the effect of the previous knowledge networks on learning and memory, the rat hexmaze behaviour task is used as a model replicating a more complex and natural spatial environment. The effect of the previous knowledge network can be tested based on the performance of the rats over the training period, with the effects on working and long-term memory. Errors in decision-making at every node point is observed to be decreased significantly in the update phase than in the build-up phase, showing better spatial learning and memory because of the formation of spatial map and schema. Three main learning curves can be observed, showing how the new information gets incorporated into the previous knowledge network: 1). Initial slow learning curve of the first new goal location, 2). Faster learning curve after the 2nd session of learning new goal location, 3). Even faster incorporation of new goal location even just after 1st session. The probe trial analysis ideally should take into account all the other nodes, so to opti- mize the analysis, an automated probe trial script is coded in the Python program to gener- ate a heatmap of the hexamze with the time spent on every node for a particular probe trial session, giving a way better to analyze the spatial patterns and search navigation strategies.
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