DBT-NBRC researchers study how episodic memory gets organized

New Delhi, Oct 09: Imagine you are entering your office and you see your favourite actor sitting in your chair. Such an event would be unforgettable. One reason for a strong memory of the event is the low possibility for such an event to occur within the presented context of events. Our daily life is full of such events tagged with specific context and largely constitute what is known as episodic memories.

In a new study, researchers at DBT-National Brain Research Centre have uncovered the role of `prediction errors' (PEs) in strengthening declarative memory and provided critical insight into how episodic memory in humans gets organized over time. They used a 3-day movie viewing experimental paradigm, wherein memorized events are subjected to expectation violations and later tested for sequence memory recall.

The results showed prediction error fundamentally weakens older memory sequences while strengthening newer memory traces with prediction error compared with memories consolidated with repeated exposure. In summary, these results suggest that the temporal arrangement of naturalistic episodic memories are reorganized by contextual prediction errors.

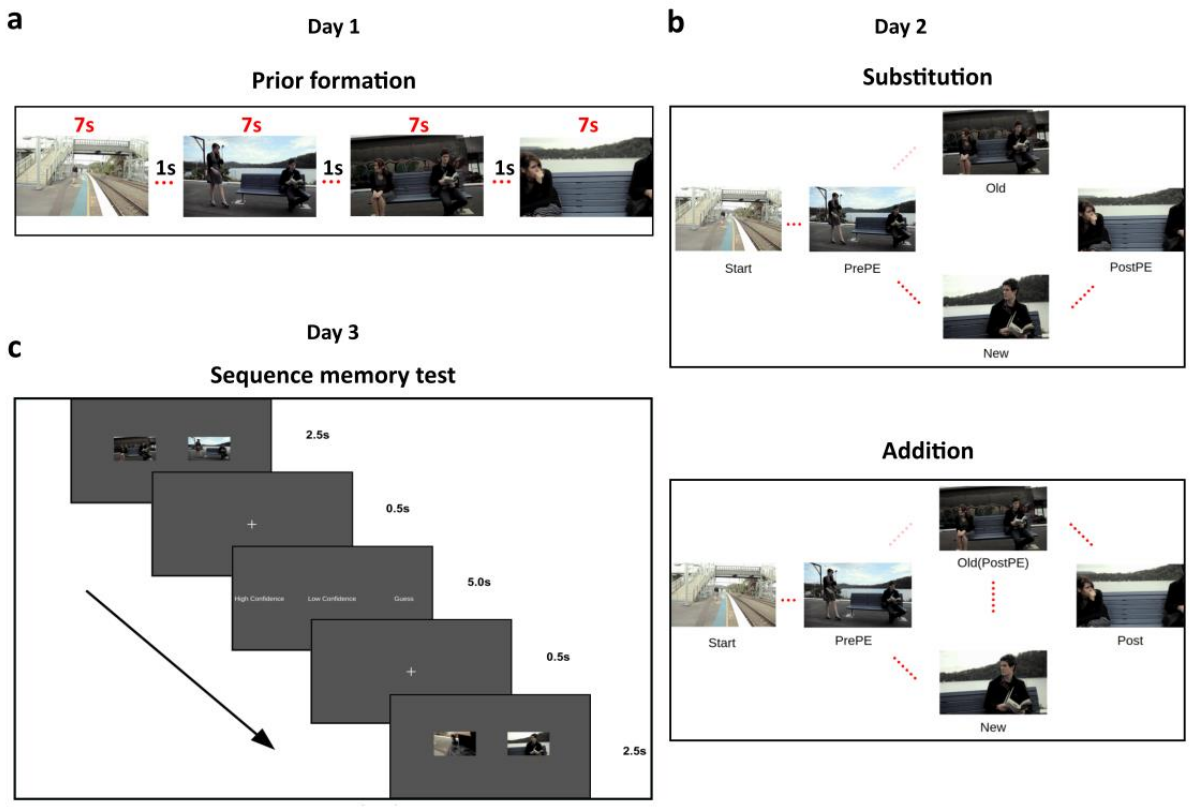

Fig 1: Experiment Design. a) Example of an event seen on Day1. Each segment is 7s with 1s blank screen in between (not shown). b) Day2 conditions. Faded red dots represent predicted sequences while bold red dots represent actual sequences viewed. Representative event of

this Day in Substitution(top), Addition (bottom). c) Schematic of Day3 Sequence memory test block.

Research paper: Fahd Yazin, Moumita Das, Arpan Banerjee, Dipanjan Roy "Contextual Prediction Errors Reorganize Episodic Memories in Time." bioRxiv (2020)

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Link: http://www.nbrc.ac.in/newweb/