

# Paradigm shift in memory development

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(PhysOrg.com) -- A new study from UC Davis challenges conventional wisdom on the development of memory in children.

The prevailing view has been that changes in how memories are formed as [children](#) grow are driven by development of the prefrontal cortex, while the role of the hippocampus, a structure located in the middle of the brain and known to be important for forming and recalling memories, is fixed in early childhood, said Simona Ghetti, associate professor at the UC Davis Department of Psychology and the Center for Mind and Brain.

Instead, a new study by Ghetti and colleagues shows that between the ages of eight and 14, the function of the hippocampus continues to change. The study was published this month in the [Journal of Neuroscience](#).

"The development of prefrontal function is important, but we found that the hippocampus also continues to develop," Ghetti said.

Episodic [memory](#) allows us to recall past events with details in context — not just which jacket you wore today, but where you left it. The hippocampus binds those different aspects into a single memory. Between childhood and adolescence, children get better at remembering episodes and reasoning about their memories.

The researchers studied four age groups: eight-year-olds, 10-to-11 year-olds, 14-year-olds and young adults (college students).

In the study, the subjects were asked to carry out a simple task while undergoing [functional magnetic resonance imaging](#) (a type of brain scan).

The task involved looking at a series of pictures, some drawn in red ink and some in green. For each red picture, the subjects were asked to judge whether the image was something that could be found in a house; for each green picture, they were asked to decide if it was a living thing.

Later, outside the scanner, they were shown the pictures again, in black ink and mixed with new ones. The subjects were asked whether they had seen them before and whether they had been red or green.

Younger children were less selective in using brain regions in the hippocampus and the adjacent posterior parahippocampus as new memories were formed, the researchers found. Older children and young adults became more selective and in recruiting specific areas of the hippocampus during [episodic memory](#) formation.

The discovery should open the door to more research, Ghetti said.

"We need to learn how the hippocampus is changing and what the implications of these changes are for the development of episodic memory; we also need to know how the interaction between the [hippocampus](#) and other relevant regions, most importantly the prefrontal cortex, changes during child development," she said.

Provided by UC Davis

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