

Don't I know you? Research sheds light on memorial retrieval

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We have all had the embarrassing experience of seeing an acquaintance in an unfamiliar setting. We know we know them but can't recall who they are. But with the correct cues from conversation or context, something seems to click and we can readily access very rich and vivid memories about the individual.

A team of researchers from the University of Toronto and the Krembil Neuroscience Centre at the University Health Network have shed some light on this mysterious process, discovering that the hippocampus, a brain region in the temporal lobe, is only involved when cues enable us to recall these rich memories.

"We used a technique called [functional Magnetic Resonance Imaging](#) (fMRI) that allows us to identify brain regions engaged during specific types of mental processes," says Melanie Cohn, a postdoctoral fellow in [neuropsychology](#) and lead author of the paper published online today by the [Proceedings of the National Academy of Sciences](#) at www.pnas.org

In the first stage of the study, healthy young adults were exposed to pairings of oddly unrelated words, such as "alligator" and "chair", and invited to learn them by putting them in the same sentence and so on. Next, while being scanned in the fMRI, participants were shown a series of single words - some of which had been studied in the word pairings and some of which had not. Participants were asked to rate their memory for each word in terms of how confident they were that it was a word that they had studied earlier or not.

After each decision, participants were given a cue: the word was presented along with the word it was initially paired with. For about half of the familiar words, ie those that subjects recalled learning earlier, the pairing triggered rich detailed memories of the context -- such as the sentence they had made up to include both words -- in which the original pairing was learned. The fMRI scan showed hippocampus activity only when cues were used to retrieve memories.

"This study is important because it resolves a current debate on the role of the hippocampus in retrieving memories. Some have argued it is the strength of the memory that matters most in retrieval. We have shown it is actually context that activates the hippocampus," explains Cohn. The findings also have direct relevance to understanding the type of memory problems found in Epilepsy or Alzheimer's, diseases in which patients have suffered damage to the [hippocampus](#) "Being able to characterize specific types of [memory](#) loss will lead to development of better clinical measures for diagnosis and monitoring of temporal-lobe dysfunction," she says.

Source: University of Toronto ([news](#) : [web](#))

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