

# Monkey recall memory mirrors that of humans

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A new study shows for the first time that monkeys can recall and reproduce simple shapes from memory. Identifying this recall ability is critical to our understanding of the evolution of memory and other cognitive abilities, and it could be applied to better diagnosing and treating memory impairments in humans.

The finding by Emory University [psychologists](#) and Yerkes National Primate Research Center researchers Ben Basile and Robert Hampton was published today (April 28) in the journal [Current Biology](#). The psychologists developed a computer touchscreen method to test the recall power of rhesus [monkeys](#) at the Yerkes Research Center at Emory.

"Our observations of recall in Old World monkeys suggest it may have been adaptive in [primates](#) long before humans evolved, and that it does not depend on language or anything else that is uniquely human," Basile says.

"We believe we have found a new method for testing animals that opens a whole new window into the world of nonhuman memory research," Basile adds. "For the first time, monkeys can actually show us what they recollect, and their test results are directly comparable to human tests."

Such human tests may include reciting a poem or sketching the face of someone you met yesterday. These are recall tasks because they require retrieving information about something that isn't present. Recognition, in

contrast, demonstrates the ability to detect that something is familiar when it is seen again.

In humans, recognition and recall tests can be supported by two different types of memory. This difference is most clearly seen in some rare cases of [amnesia](#), where patients can easily recognize objects that are before them but have lost the ability to recall those same objects when they are out of sight.

Previous research has established the ability of monkeys and many other animals to recognize objects. The lack of language, however, has thwarted efforts to test recall in nonhumans.

The Emory researchers overcame the language barrier by teaching the [rhesus monkeys](#) to "draw." The monkeys were shown simple two- and three-box shapes on a computer screen. Later, they were presented with a computer touchscreen that allowed them to recreate those shapes by touching the corresponding areas of a grid. The monkeys learned through trial and error that reproducing the shapes they had seen previously would bring a food reward. Once trained, the monkeys were able to transfer their memory skills to novel shapes.

The performance of the monkeys on the computer touchscreen paralleled that of humans using the Rey-Osterrieth Complex Figure Test, a standard human recall test, in which subjects draw a complicated shape from memory.

"Humans certainly recall more complex and sophisticated things over longer time periods," Basile says. "But we've shown that for simple shapes, monkeys have a pattern of performance for recognition and recall that mirrors that of humans. And their ability to immediately transfer their performance to new shapes suggests we're tapping into some general cognitive capacity. With this type of information, we are

moving closer to better diagnosing and developing treatments for memory impairments in humans," Basile continues.

Different types of memory may have evolved to solve distinct problems. Recognizing something as familiar, for instance, is quick and might allow for rapid responses to sightings of food and predators.

Recollecting absent information is slower, but supports a more detailed and flexible use of [memory](#). The authors speculate that recollection might help monkeys return to out-of-sight places where they previously found food, or to flexibly plan social interactions with other monkeys based on previous behavior.

**More information:** Basile et al.: "Monkeys Recall and Reproduce Simple Shapes from Memory." *Current Biology* - May 10, 2011 print issue

Provided by Emory University

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