

Young Chimps are Better than Adults in Numerical Memory Task?

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Sana Inoue and Tetsuro Matsuzawa of Kyoto University showed a computer screen grid of nine numbers to six chimpanzees. The chimps were previously trained to recognize the ascending nature of the numbers. They were also shown to nine college students. When subjects touched one of the numbers, all of the others vanished. They then had to touch the squares in the order of the numbers that used to be there.

When the numbers flashed for just four-tenths of a second or less, one of the chimps beat all of the college students.

Here's the press release from 'Current Biology', a publication of Cell Press:

>Young chimps top adult humans in numerical memory

Young chimpanzees have an "extraordinary" ability to remember numerals that is superior to that of human adults, researchers report in the December 4th issue of Current Biology, a publication of Cell Press. "There are still many people, including many biologists, who believe that humans are superior to chimpanzees in all cognitive functions," said Tetsuro Matsuzawa of Kyoto University. "No one can imagine that chimpanzees— young chimpanzees at the age of five— have a better performance in a memory task than humans. Here we show for the first time that young chimpanzees have an extraordinary working memory capability for numerical recollection— better than that of human adults tested in the same apparatus, following the same procedure." Chimpanzee memory has been extensively studied, the researchers said. The general assumption is that, as with many other cognitive functions, it is inferior to that of humans. However, some data have suggested that, in some circumstances, chimpanzee memory may indeed be superior to human memory. In the current study, the researchers tested three pairs of mother and infant chimpanzees (all of which had already learned the ascending order of Arabic numerals from 1 to 9) against university students in a memory task of numerals. One of the mothers, named Ai, was the first chimpanzee who learned to use Arabic numerals to label sets of real-life objects with the appropriate number. In the new test, the chimps or humans were briefly presented with various numerals from 1 to 9 on a touch-screen monitor. Those numbers were then replaced with blank squares, and the test subject had to remember which numeral appeared in which location and touch the squares in the appropriate order. The young chimpanzees could grasp many numerals at a glance, with no change in performance as the hold duration—the amount of time that the numbers remained on the screen— was varied, the researchers found. In general, the performance of the three young chimpanzees was better than that of their mothers. Likewise, adult humans were slower than all of the three young chimpanzees in their response. For human subjects, they showed that the percentage of correct trials also declined as a function of the hold duration—the shorter the duration became, the worse their accuracy was. Matsuzawa said the chimps' memory ability is reminiscent of "eidetic imagery," a special ability to retain a detailed and accurate image of a complex scene or pattern. Such a "photographic memory" is known to be present in some normal human children, and then the ability declines with the age, he added. The researchers said they believe that the young chimps' newfound ability to top humans in the numerical memory task is "just a part of the very flexible intelligence of young chimpanzees." ### The researchers include Sana Inoue and Tetsuro Matsuzawa, of Kyoto University, Japan.