Chimpanzees show ability to plan route in computer mazes

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Image: Wikipedia.

Chimpanzees are capable of some degree of planning for the future, in a manner similar to human children, while some species of monkeys struggle with this task, according to researchers at Georgia State University, Wofford College and Agnes Scott College.

Their findings were published on March 23 in the *Journal of Comparative Psychology*.

The study assessed the planning abilities of chimpanzees, two monkey species (rhesus macaques and capuchin monkeys) and human children (ages 28 to 66 months old) using a computerized game-like program that presented 100 unique mazes to the participants and required them to move a cursor through a maze to reach a goal at the bottom of the screen.

"The chimpanzees proved to be quite good at the task, although monkeys showed more trouble with the harder mazes that required greater inhibition and more anticipation of future 'trouble spots' in the mazes," said Dr. Michael Beran, associate director of the Language Research Center at Georgia State. "These data highlight the capacity of chimpanzees - and to a more limited degree, monkeys - to anticipate and plan future moves in these game-like tasks, a prerequisite for more complicated types of future-oriented cognition."

The study found variability in the performance within each species and across ages in children, suggesting that a number of other cognitive processes may influence planning. The performance differences could be attributed to differences in focused attention, overall brain size and social systems, the study said.

Children were good at negotiating their way through the maze, although older children performed better than younger children. Chimpanzees were better at the computerized maze task than both species of monkeys. Monkeys had difficulty with the task when they were required to change directions or move away from the ultimate goal in order to eventually reach it, suggesting limited abilities to plan movements through this form of maze.

The mazes varied in difficulty, and participants had to make one, two or three choices within the maze that could potentially have irreversible errors. The easiest mazes could be completed by simply moving the

cursor in the direction of the goal, but others required a reversal of direction at one of the choice points or movement away from the goal in order to eventually reach it.

To achieve the best performance, subjects sometimes had to plan ahead to the end of the maze in order to move the cursor in the correct direction, avoid traps and reverse directions, if needed. Human children from a local preschool were included in the study to see how closely the nonhuman primates matched their performance.

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