

Study shows chimps capable of insightful reasoning ability

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Common chimpanzee in the Leipzig Zoo. Image credit: Thomas Lersch, via Wikipedia.

(PhysOrg.com) -- A new study conducted by researchers from the Max Planck Institute in Germany, with results published in *PLoS ONE*, shows that some apes are capable of using insightful reasoning to achieve goals. When presented with a peanut floating in a tube a quarter filled with water, some chimpanzees were able to figure out that they could raise the water level, and hence the peanut, by filling their mouths with water from a nearby dispenser, then spitting it into the tube. Doing so enough times, raised the floating peanut to such a level that they were eventually able to retrieve and eat it.

The research team conducted nearly the same experiment three times; the first was at a research center in Germany, and was a complete failure

in that none of the [chimps](#) figured out how to get the floating peanut. When the experiment was done again in a facility in Africa, however, the results were quite different; five of the 24 chimp volunteers successfully filled the tube and ate the peanut. Also, interestingly, one actually resorted to urinating into the tube, which also worked.

In the third experiment, instead of testing [apes](#), human children were given nearly the same test; though instead of having to spit water from their mouths, they were allowed a water pitcher which they could use to pour the water into the tube. In this study, three age groups were tested, 4, 6, and eight year olds. Not surprisingly, the youngest group fared quite poorly, while the oldest group outperformed the chimps by a wide margin.

In addition to testing [chimpanzees](#) and children, the researchers also included other primates in their studies. In the first they tested [gorillas](#) in the same way as the chimps, but none of the gorillas were able to solve the riddle. In the second experiment, they included [orangutans](#), which were actually the basis for their experiments as other researchers had shown they were remarkably adept at figuring out the floating peanut problem. Unfortunately, when tested in this study, none of them were able to secure the peanut, leading the researchers to believe that other factors were at work.

And finally, the researchers went back to the first group in Germany and retested the chimps that had failed the first time around, only this time, they installed a second water dispenser, and lo and behold, some of the chimps were then able to get the peanut. This, the researchers suggested meant that the chimps had become so fixated on the original water dispensers as simple thirst quenching devices, that they had become unable to think of using them in any other way; thus, when a new dispenser was added, they were able to see it as an open source sort of tool.

The whole point of the study was to see if primates are capable of the kind of higher level learning known as insight; or in other words, of having that aha moment where an idea sort of pops into the head as possible solution to a problem. As it turns out, it appears some [primates](#) other than humans are indeed capable of such thinking, which means, we might have to take a harder look at what higher actually intelligence means.

More information: Hanus D, Mendes N, Tennie C, Call J (2011) Comparing the Performances of Apes (Gorilla gorilla, Pan troglodytes, Pongo pygmaeus) and Human Children (Homo sapiens) in the Floating Peanut Task. *PLoS ONE* 6(6): e19555.

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Abstract

Recently, Mendes et al. described the use of a liquid tool (water) in captive orangutans. Here, we tested chimpanzees and gorillas for the first time with the same “floating peanut task.” None of the subjects solved the task. In order to better understand the cognitive demands of the task, we further tested other populations of chimpanzees and orangutans with the variation of the peanut initially floating or not. Twenty percent of the chimpanzees but none of the orangutans were successful. Additional controls revealed that successful subjects added water only if it was necessary to obtain the nut. Another experiment was conducted to investigate the reason for the differences in performance between the unsuccessful (Experiment 1) and the successful (Experiment 2) chimpanzee populations. We found suggestive evidence for the view that functional fixedness might have impaired the chimpanzees' strategies in the first experiment. Finally, we tested how human children of different age classes perform in an analogous experimental setting. Within the oldest group (8 years), 58 percent of the children solved the problem, whereas in the youngest group (4 years), only 8 percent were able to find the solution.

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