

Is sharing the key to advanced society?

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A teacher helps children make origami in Washington, DC in 2011. The ability to share knowledge and learn from each other may be the key difference between people and chimpanzees that helped humans to dominate the modern world, scientists suggested on Thursday.

The ability to share knowledge and learn from each other may be the key difference between people and chimpanzees that helped humans to dominate the modern world, scientists suggested on Thursday.

The research in the journal Science aimed to discover what has allowed humans to establish what is known as cumulative culture, or a gathering of knowledge that ratchets up with technology improvements over time.

While previous studies have shown that chimps can learn from each other, none have compared their abilities to humans in the same tests, and scientists have long debated what exactly is needed to build up increasing complex cultural knowledge.

The current study compared groups of three- and four-year-old children to separate groups of chimpanzees and capuchin monkeys, all of whom attempted to get treats out of a three-step puzzle box.

Chimps and capuchins largely failed to advance in the three levels, with just one chimp reaching stage three after 30 hours and no capuchins attaining that level in 53 hours.

However, five of the eight groups of children tested had at least two members who reached stage three of the puzzle in just 2.5 hours.

The difference was that children were better able to learn from watching demonstrators and to communicate and share their knowledge with peers than the monkeys, the team of US, French and British researchers said.

Kids also showed measures of goodwill, or prosociality, that their beastly cousins did not.

"Teaching, communication, observational learning, and prosociality all played important roles in human cultural learning but were absent (or played an impoverished role) in the learning of chimpanzees and capuchins," said the study.

Children were often observed to tell each other how to advance, saying things like, "push that button there," or they gestured to show a comrade what to do.



Kopatch, a 15-year-old weeper capuchin monkey, carries her one-week-old baby at Ramat Gan Safari, an open-air zoo near Tel Aviv in 2011. The ability to share knowledge and learn from each other may be the key difference between people and chimpanzees that helped humans to dominate the modern world, scientists suggested on Thursday.

Children also copied each others' actions more often than monkeys did, and 47 percent spontaneously shared a treat with a pal. Chimps and capuchins never shared their treats this way.

That kind of sharing shows that humans understand the need to advance for the greater good, suggested the study.

"If individuals voluntarily give rewards to others, this signifies an understanding that others share the motivation of achieving the goal that they had achieved," it said.

"In contrast, the chimpanzees and capuchins appeared to interact with the apparatus solely as a means to procure resources for themselves, in an entirely self-serving manner, largely independent of the performance of others, and exhibiting restricted learning that appeared primarily asocial in character."

The study was led by Lewis Dean of the University of Saint Andrews in Britain, and included colleagues from the University of Durham, the University of Texas, and University of Strasbourg in France.

In an accompanying Perspective article, Robert Kurzban of the department of psychology at University of Pennsylvania and H. Clark Barrett of the department of anthropology at University of California, Los Angeles suggested the riddle of human advancement may be more complicated.

"This work provides many valuable new insights into the question of cumulative culture," they wrote.

But given the complexity of the human psyche, "unmeasured third variables might be responsible for both between-species differences and within-species effects," such as the ability to sense whether a comrade needs help learning.

Also, since the human culture has evolved to such a high degree, any number of steps in that process may have set us apart from apes, and it may have happened many centuries ago and thus cannot be measured today, they argued.

More information: "Identification of the Social and Cognitive Processes Underlying Human Cumulative Culture," by L.G. Dean, *Science* (2012).

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