

Environment, not evolution, might underlie some human-ape differences

July 15 2019



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Apes' abilities have been unfairly measured, throwing into doubt the assumed belief that human infants are superior to adult chimpanzees, according to a new study by leaders in the field of ape cognition.

Researchers studied published work comparing human and ape social cognition and came to the conclusion the studies had got it wrong.

They say it should come as no surprise that apes raised in institutions would not perform well compared with humans raised in western families, especially when tested with western cultural practices, for example, gestures such as pointing.

The study is by Professor Kim Bard, a Comparative Developmental Psychologist at the University of Portsmouth, Professor Bill Hopkins, at University of Texas MD Anderson Cancer Center, in the USA, and lead author Dr. David Leavens, at University of Sussex.

It is published in the current edition of *Animal Cognition*.

The researchers argue that it's possible that apes and humans are equally capable in some aspects of social cognition, for example, social signalling—pointing at a desired object—and scientists have misjudged their abilities because of an underlying bias and poor experimental designs.

They also suggest that without a rigorous, scientific approach to designing experiments and interpreting results, comparative psychology fails to contribute to our understanding of human uniqueness.

Professor Bard said: "Children are taught in primary school how to design a scientific experiment so that the results can be trusted and are reliable, for example, to demonstrate that sunlight is necessary for plants to grow. If you want to know whether sunflowers or tomato plants grow faster in a classroom, therefore, you have to give them equal amounts of sunlight. A bad experiment would be to put all the tomato pots in a dark corner and all the sunflower pots near a sunlit window. You can't answer the question because the tomato and sunflower plants were treated

differently in the amount of sunlight they got.

"In social cognition tests, [previous experience](#) with cultural practices, like pointing, enhances performance. What has happened in countless studies comparing human and ape social cognition is the rules of experimental design have been forgotten. Studies have combined experience and species, for example, designing an experiment comparing humans (who, in our culture, have been given pointing experience) and apes (raised without any pointing experience) and then claiming (falsely) to have demonstrated a species difference in social cognition.

"Most studies, comparing apes with [human children](#), for instance, have been poorly designed, with different relevant experiences given to each species, testing them at different ages in many cases, and then claiming to have found a difference in [social cognition](#) between humans and apes, but the species haven't been treated similarly before or during the tests.

"These studies suffer from the same type of prejudice that once existed in studies of human intelligence, which started from a biased position of assuming northern Europeans were innately more intelligent than southern Europeans. We argue the same type of bias is apparent in cross-species studies."

The researchers say it's vital scientists realise that environmental experiences vary among humans (both between children and adults, and between people with different cultural experiences) and among apes (also from young to old, and between apes with different experiences).

Examples of the widespread weakness, or a 'pervasive collapse' in how experiments are being designed and in how the results are interpreted include samples being of different ages, being set markedly different tests, and being tested in different conditions. Time and again, such

studies have attributed differences in results to [evolutionary history](#), when the experimental design has not made all other relevant variables comparable.

Professor Bard said: "Historically, many researchers have claimed humans are superior to apes in social intelligence, but the research is based on studies of captive adult apes isolated from European-style social interaction and human (usually children) from rich western cities. These experiment designs are simply not valid for the comparative study of species differences.

"If an ape from an ape orphanage doesn't appear to understand a communicative signal that western, middle class humans commonly use, it might not mean the ape is socially less able than a [human](#), because there are many non-western humans that also don't use these signals. To truly understand the abilities of each species, research needs to examine specific individual learning histories within specific ecological circumstances for both humans and for apes.

"We urge researchers to stop using fallacious research designs and reasoning in studies of comparative cognition."

Provided by University of Portsmouth

Citation: Environment, not evolution, might underlie some human-ape differences (2019, July 15) retrieved 28 April 2024 from <https://phys.org/news/2019-07-environment-evolution-underlie-human-ape-differences.html>

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