

Researches find poop-throwing by chimps is a sign of intelligence

November 30 2011, by Bob Yirka



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

(PhysOrg.com) -- A lot of people who have gone to the zoo have become the targets of feces thrown by apes or monkeys, and left no doubt wondering about the so-called intellectual capacity of a beast that would resort to such foul play. Now however, researchers studying such behavior have come to the conclusion that throwing feces, or any object really, is actually a sign of high ordered behavior. Bill Hopkins of Emory University and his colleagues have been studying the whole process behind throwing and the impact it has on brain development, and have published their results in *Philosophical Transactions of the Royal Society B*.

Hopkins and his team have focused their research on [chimpanzees](#),

mainly due they say, to the fact that [chimps](#) are our closet living relative and that they are the only other species besides humans that regularly throw things with a clear target in mind. He and his team have been watching chimps in action for several years and comparing their actions with scans of their brains to see if there were any correlations between those chimps that threw a lot, and those that didn't or whether they're accuracy held any deeper meaning. Surprisingly, they found that chimps that both threw more and were more likely to hit their targets showed heightened development in the motor cortex, and more connections between it and the Broca's area, which they say is an important part of speech in humans. The better chimp throwers, in other words, had more highly developed left brain hemispheres, which is also, non-coincidentally, where speech processing occurs in people.

Such findings led the team to suggest that the ability to throw is, or was, a precursor to speech development in human beings.

After making their discovery regarding the parts of the brain that appear to be involved in better throwing in chimps, the team tested the chimps and found that those that could throw better also appeared to be better communicators within their group, giving credence to their idea that speech and throwing are related. Interestingly, they also found that the better throwing chimps didn't appear to possess any more physical prowess than other chimps, which the researchers suggest means that throwing didn't develop as a means of hunting, but as a form of communication within groups, i.e. throwing stuff at someone else became a form of self expression, which is clearly evident to anyone who has ever been targeted by a chimp locked up in a zoo.

More information: The neural and cognitive correlates of aimed throwing in chimpanzees: a magnetic resonance image and behavioural study on a unique form of social tool use, *Phil. Trans. R. Soc. B* 12 January 2012 vol. 367 no. 1585 37-47, [doi: 10.1098/rstb.2011.0195](https://doi.org/10.1098/rstb.2011.0195)

Abstract

It has been hypothesized that neurological adaptations associated with evolutionary selection for throwing may have served as a precursor for the emergence of language and speech in early hominins. Although there are reports of individual differences in aimed throwing in wild and captive apes, to date there has not been a single study that has examined the potential neuroanatomical correlates of this very unique tool-use behaviour in non-human primates. In this study, we examined whether differences in the ratio of white (WM) to grey matter (GM) were evident in the homologue to Broca's area as well as the motor-hand area of the precentral gyrus (termed the KNOB) in chimpanzees that reliably throw compared with those that do not. We found that the proportion of WM in Broca's homologue and the KNOB was significantly higher in subjects that reliably throw compared with those that do not. We further found that asymmetries in WM within both brain regions were larger in the hemisphere contralateral to the chimpanzee's preferred throwing hand. We also found that chimpanzees that reliably throw show significantly better communication abilities than chimpanzees that do not. These results suggest that chimpanzees that have learned to throw have developed greater cortical connectivity between primary motor cortex and the Broca's area homologue. It is suggested that during hominin evolution, after the split between the lines leading to chimpanzees and humans, there was intense selection on increased motor skills associated with throwing and that this potentially formed the foundation for left hemisphere specialization associated with language and speech found in modern humans.

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