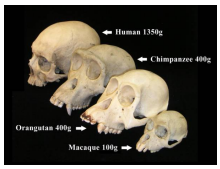
17 June 2009

By: Tudor Vieru, Science Editor



Skull sizes for humans and some of our closest evolutionary cousins
Wikimedia Commons

Primates Display Difference in General Intelligence Tests

The find may explain how we got ours

In an attempt to understand how humans, as a species, got their general intelligence, researchers at the Harvard University conducted a series of tests on the cotton-top tamarin primates, assessing each individual's ability to perform in them. The study revealed that the levels of cognition varied significantly from one monkey to another, which made the scientists divide them into three groups - high- , middle- and low-performing monkeys. The investigation could help anthropologists and other scientists realize how we came to evolve our own general intelligence ("g").

This is the first study ever to look at cognitive variations within the same species of primates. All others before it only sought to determine the differences that existed between various species of monkeys, and were not interested in creating a scale within the fairly limited confines of a single group.

The results of the new investigation are published in a recent issue of the open-access journal PLoS ONE. In charge of the research was Department of Psychology Research Assistant Konika Banerjee. Co-authors of the paper include HU Professor of Psychology Marc Hauser, Union College expert Christopher Chabris, as well as University of Texas Medical School scientist Valen Johnson.

"We found that there was substantial individual variation in performance on these tasks. A significant proportion of that variation can actually be accounted for by something that looks very similar to the general intelligence, or 'g' factor, in humans. It appears to be the case that tamarins have something very similar to our general intelligence," Banerjee explains.

"General intelligence is an important component of human intelligence, but it is also possible that it relies upon ancient neural substrates. If different primate taxa differ in the magnitude of 'g,' with humans standing out from the rest of the pack, this might help explain how we, uniquely, can combine thoughts from different domains of knowledge to create new representations of the world. This cognitive domain general ability, captured by 'g,' is something that you might see to varying degrees in other primate taxa," the expert adds.

Some 22 monkeys were analyzed for this research. They had to perform a series of actions, designed to test their working memory, their inhibitory abilities, their information-processing speed, and so on. For most of these tests, the goal was to get a treat, but not always. The tamarins who performed best, and in the end were classified as high-performing, tended to surpass their "weaker-minded" species members at all of the tests in the battery.