

Patterns Of Gorilla Intelligence And That Of The Other Great Apes

The use of tools in the wild by chimpanzees has been observed and well established for some time now and in fact recently chimps have also been observed successfully hunting lemurs with crude yet self-crafted spears. On the other hand tool use by gorillas in the wild has been little observed and certainly not to the same extent or sophistication as their more rambunctious cousins, the chimpanzee. So then do these observations lay to rest once and for all the age old quandary about "which species of ape is second to man in intelligence"?

PATTERNS OF INTELLIGENCE

It is now recognized that certain regions of the human brain play a more significant role in the processes of functional memory, emotional behavior, creative thought, motor control (movement), planning and decision making as well as language. The aspect of the brain most closely associated with such processes is the frontal lobe.

Many of the sophisticated behavioral patterns and attributes characteristic of humans are believed to originate from the frontal lobe and in fact this area of the brain has been identified as the most likely candidate responsible for species-specific cognitive ability and characteristics.

Bearing this in mind, it is little wonder that researchers and scientists are eagerly studying anatomical comparisons of the brains of the great apes (man inclusive) with particular emphasis on the frontal lobes of the cerebral hemispheres of the brain.

BRAIN COMPARISONS OF THE GREAT APES

Though it is now understood that simple brain-to-body size comparisons are woefully inadequate to assess overall intellectual capability there is still some value in applying it as a tool of measure or at the very least as a comparative assessment.

When evaluating brain size data one has to bear in mind that there is significant sexual dimorphism (variation between females and males) across several of the great apes; most commonly brain capacity/size is larger in male specimens than females, though like humans, the Bonobo chimp (*Pan paniscus*) shows little if any size/capacity variation. That said, although a comparative review of the cranial capacity of the great apes is not a particularly accurate assessment of overall intelligence it does have its merits.

The following figures are mean values generated from varying size samples of both female and male specimens of the various great apes: Humans: 1400cc; Gorillas: 500cc; Chimpanzee: 405cc; Orangutan: 355; Gibbons: 104cc.

From these figures you can see that the brain volume of the human being is almost 3x the size of the nearest contender, the gorilla. With regards to those figures what is of particular note is that the cranial capacity of the gorilla apparently exceeds that of the chimpanzee yet all observed evidence tends to indicate that the chimpanzee is more intelligent than the gorilla.

Again this to some extent reaffirms the earlier observation that brain capacity alone does not fully account for intellectual ability.

It should also be noted that studies conducted by different researchers often resulted with fairly different conclusions notably that the cranial capacity of the orangutan exceeded that of the chimpanzee; for the other great apes the cranial capacities were generally the same across multiple research data.

So if overall cranial capacity is a poor indicator of intelligence what then could be a better tool of measure so to speak?

INTELLIGENCE AND THE ROLE OF SPECIFIC REGIONS WITHIN THE BRAIN

As previously mentioned the frontal lobes of the cerebral hemispheres of the brain are now recognized as the seat or center responsible for those behavioral characteristics that distinguish us as human being.

It quite logically follows then that establishing the variations and morphological differences within the cerebral frontal lobe areas of gorillas, chimpanzees, bonobos and orangutans and comparing them to those of the human being is as good a place as any to best determine which of the great apes is next to man in intelligence and what particular features of the human brain (other than overall volume) account for man's intellectual uniqueness

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About the Author

Ba Kiwanuka is the webmaster of <http://www.gorillahub.com>