

Humans and chimps register faces by using similar brain regions

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Chimpanzees recognize their pals by using some of the same brain regions that switch on when humans register a familiar face, according to a report published online on December 18th in *Current Biology*, a Cell Press publication. The study—the first to examine brain activity in chimpanzees after they attempt to match fellow chimps' faces—offers new insight into the origin of face recognition in humans, the researchers said.

"We can learn about human origins by studying our closest relatives," said Lisa Parr, a researcher at the Yerkes National Primate Research Center, Emory University. "We can discover what aspects of human cognition are really unique and which are present in other animals."

Earlier studies had shown that chimpanzees, like humans, are adept at recognizing their peers. "We knew [from behavioral studies] that chimps and humans process faces similarly," Parr said. "We wondered whether similar brain regions were responsible, and, for the most part, they seem to be."

In the study, the researchers examined brain activity (as reflected by blood sugar metabolism) in five chimpanzees by using Positron Emission

Tomography (PET) scans. (Parr noted that the Yerkes National Primate Research Center is the only center of its kind to have on-site MRI, PET, and cyclotron facilities, making studies like Parr's possible.) The chimps were shown three faces, two of which were identical, while the third was of a different chimp. Subjects were then asked to indicate the faces that matched. In other trials, the chimpanzees did the same matching task with clip art images.

The imaging studies revealed significant face-selective activity in brain regions known to make up the distributed cortical face-processing network in humans. Further study showed distinct patches of activity in a region known as the fusiform gyrus—the primary site of face-selective activity in humans—when chimps observed faces.

The researchers concluded that the brain regions that are active during facial recognition may represent part of a distributed neural system for face processing in chimpanzees, like that proposed in humans, in which the initial visual analysis of faces activates regions in the occipital and temporal lobes of the cerebral cortex (a portion of the brain involved in memory, attention, and perceptual awareness) followed by additional processing in the fusiform gyrus and other regions.

Parr emphasized, however, that there have been decades of research on face processing in the human brain. As the first such study in chimpanzees, the new findings raise more questions than they can answer, and follow-up studies are underway.

Source: Cell Press

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