

## ***For Men Only***

### ***World Congress on Advanced Integrative Rejuvenology OCT 20<sup>th</sup> , 2006 Gulf Shores, Alabama USA***

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### ***Monkeys show gender differences in toy preferences research***

***BY ROBERT S. BOYD  
Knight Ridder Newspapers***

**WASHINGTON** - Just like human boys and girls, male monkeys like to play with toy cars while female monkeys prefer dolls, a research project has shown.

This intriguing discovery is one of many signs of deep-rooted behavioral differences between the sexes that scientists are exploring with the latest tools of genetics and neuroscience.

Researchers report significant differences in the structure and functioning of male and female brains - in humans and in animals - that show up in different behaviors.

The differences apparently date far back in evolutionary history to the time before humans and monkeys separated from their common ancestor some 25 million years ago, according to Gerianne Alexander, a psychologist at Texas A&M University in College Station, who led the monkey experiment.

"Human evolution has created two different types of brains designed for equally intelligent behavior," Richard Haier, a neuroscientist at the University of California in Irvine, wrote in the journal *NeuroImage*.

In the monkey experiment, researchers put a variety of toys in front of 44 male and 44 female vervets, a breed of small African monkeys, and measured the amount of time they spent with each object.

Like little boys, some male monkeys moved a toy car along the ground. Like little girls, female monkeys closely inspected a doll's bottom. Males also played with balls while females fancied cooking pots. Both were equally interested in neutral objects such as a picture book and a stuffed dog.

People used to think that boys and girls played differently because of the way they were brought up. Now scientists such as Alexander say a creature's genetic inheritance also plays an important role.

"Vervet monkeys, like human beings, show sex differences in toy preferences," Alexander wrote in the journal *Evolution and Human Behavior*. "Sex-related object preference appeared early in human evolution," she said.

Alexander speculated that females of both species prefer dolls because evolution programmed them to care for infants. Males may have evolved toy preferences that involve throwing and moving, skills useful for hunting and finding a mate.

Besides observing behavior from the outside, scientists are using the latest brain-scanning techniques to examine what happens inside people's heads when they're thinking or acting.

PET (positron emission tomography) and fMRI (functional magnetic resonance imagery) scans light up in regions of the brain that are most active while performing certain tasks. They've become a key tool of modern brain research.

Many studies have shown that men tend to be better at mathematics and spatial reasoning while women outdo men in verbal and language skills.

For example, in a computerized maze-searching experiment, it took females five minutes longer than males to find their way to a goal, according to Scott Mowatt, a psychologist at Wayne State University in Detroit.

But women outperformed men in a test of verbal fluency conducted by Wei-li Chang and colleagues at the National Institute of Mental Health in Bethesda, Md.

Haier, the University of California-Irvine neuroscientist, reported a striking difference in the structure of male and female brains. Men, he said, have much more gray matter in areas dedicated to general intelligence. Women, on the other hand, have far more white matter in those areas.

Gray matter consists of the clusters of brain cells, or neurons that process information. White matter refers to the network of specialized cells that support and connect the processing centers. Both are necessary for intelligence.

"Men and women apparently achieve similar IQ results with different brain regions," Haier said.

"Many perceptive incongruities are rooted in the brain's structural and functional organization," said Allan Reiss, a neuroscientist at the Stanford School of Medicine in Palo Alto, Calif., who contrasted men's and women's reactions to cartoons and jokes.

Brain images showed that the language center on the left side of the brain lit up more in women than in men. This may explain why men appreciate one-liners and slapstick, while women tend to enjoy more complicated stories and funny situations, Reiss said.

"The long trip to Mars or Venus is hardly necessary to see that men and women often perceive the world differently," he wrote in the Proceedings of the National Academy of Sciences.

For more information on gender differences and the brain, maybe go to [www.womenshealthresearch.org/hs/facts](http://www.womenshealthresearch.org/hs/factsbrain.htm)(underline)brain.htm

More information about the brain in general is at on the Society for Neuroscience Web site, at [www.sfn.org](http://www.sfn.org). Click on "Public Resources" at the top of the page or scroll down to the "Public Education" section.