Stop on red! The effects of color may lie deep in evolution...

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(Medical Xpress) -- Almost universally, red means stop. Red means danger. Red means hot. And analyzing the results in the 2004 Olympics, researchers have found that red also means dominance. Athletes wearing red prevailed more often than those wearing blue, especially in hand-to-hand sports like wrestling.

Why? Is it random? Is it cultural? Or does it have evolutionary roots? A new study of male rhesus macaques strongly suggests it's evolution. "The similarity of our results with those in humans suggests that avoiding red or acting submissively in its presence may stem from an inherited psychological predisposition," says Dartmouth College neuroscientist Jerald D. Kralik, who collaborated on the study with his research assistants Sara A. Khan and William J. Levine, and anthropologist Seth D. Dobson, also at Dartmouth.

Their findings will be published in an upcoming issue of *Psychological Science*, a journal of the Association for Psychological Science.

The study involved male rhesus macaques—a species of Old World monkeys that is sensitive to red, green, and blue—ranging freely in Cayo Santiago, Puerto Rico. Two human experimenters, one male and one female, entered the monkeys' colony and found isolated males to test. Both people knelt down, placed a Styrofoam tray in front of them, drew an apple slice from their backpacks, held the slice at chest level for the monkey to see, then placed the apple on the trays. Both stood up simultaneously and took two steps back.

The monkey typically went directly to the slice he wanted, ran off, and ate it.

The humans wore T-shirts and caps, whose colors—red, green, and blue—were changed in each of four conditions: red on female, green on male; then vice-versa; red versus blue; blue versus green.

The results were striking. The monkeys paid no mind to the sex of the experimenter. Green or blue made little difference to them either. But in the significant majority of cases, they steered clear of the red-clad humans and stole the food from the other tray.

The researchers believe that this aversion to red reflects an evolutionary adaptation. It is no accident, then, that humans know that red means no.

“We – primates and then humans – are very visual,” Kralik explains. “We are also very social.” In both realms, color has important effects, from telling us which food is edible to helping us gauge the emotions of others by the relative redness of their skin. Put the two together, he says, “and we start to see that color may have a deeper and wider-ranging influence on us than we have previously thought.”

While we learn what those influences are, the researchers warn the organizers of competitive activities, such as sporting events and even academic exams, to avoid using color “in ways that may unfairly influence people,” says Kralik. What they don’t say: If you want to scare the pants off your rival, wear bright red.

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