

Some males react to competition like bonobos, others like chimpanzees

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The average man experiences hormone changes similar to the passive bonobo prior to competition, but a "status-striving" man undergoes changes that mirror those found in a chimpanzee, say researchers from Duke and Harvard universities.

A new study published today in [Proceedings of the National Academy of Sciences](#) reveals differing hormone levels in our two closest relatives, [bonobos](#) and [chimpanzees](#), in anticipation of [competition](#).

Chimpanzees live in male-dominated societies where status is paramount and aggression can be severe. In bonobos, a female is always the most dominant and tolerance can allow for more flexible cooperation and food-sharing.

Scientists have frequently questioned whether differences in competitive behavior could in part be explained by differing physiological responses to competition. In their new study, researchers from Harvard and Duke collected saliva from the apes using cotton wads dipped in Sweet Tarts candy, then measured [hormone levels](#) before and after pairs from each species were presented with a pile of food.

They found that [males](#) of both species who were intolerant and could not share with their partners showed hormonal changes in anticipation of competing for the food, but bonobos and chimpanzees were completely different in which hormones increased.

Male chimpanzees showed an increase in testosterone, which is thought to prepare animals for competition or aggressive interactions. By contrast, male bonobos showed an increase in cortisol, which is associated with stress and more passive social strategies in other animals.

"Chimpanzee males reacted to the competition as if it was a threat to their status, while bonobos reacted as if a potential competition is stressful by showing changes in their cortisol levels," said Victoria Wobber, a Harvard graduate student and first author of the study.

Human males usually experience an increase in cortisol before many types of competition in a similar way as seen in the bonobos. However, if men have what is called a "high power motive," or a strong desire to achieve high status, they experience an increase in testosterone before a competition.

"These results suggest that the steroid hormone shifts that are correlated with the competitive drive of men are shared through descent with other apes," Wobber said.

While some men may seem more bonobo-like before competition and others more chimpanzee-like, something unique about human males is that after competition they experience an increase in testosterone if they win or a decrease in testosterone if they lose -- which accounts for giddy or depressed sports fans following a win or loss. This variation in hormones post-competition was not observed in either chimpanzees or bonobos.

"It's exciting because we can see that in some ways we're similar to bonobos, in others we're similar to chimpanzees," said Duke anthropologist Brian Hare, co-author. "But then there's also a part of our biology that seems to be entirely unique."

Provided by Duke University

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