Nature or nurture: is violence in our genes?

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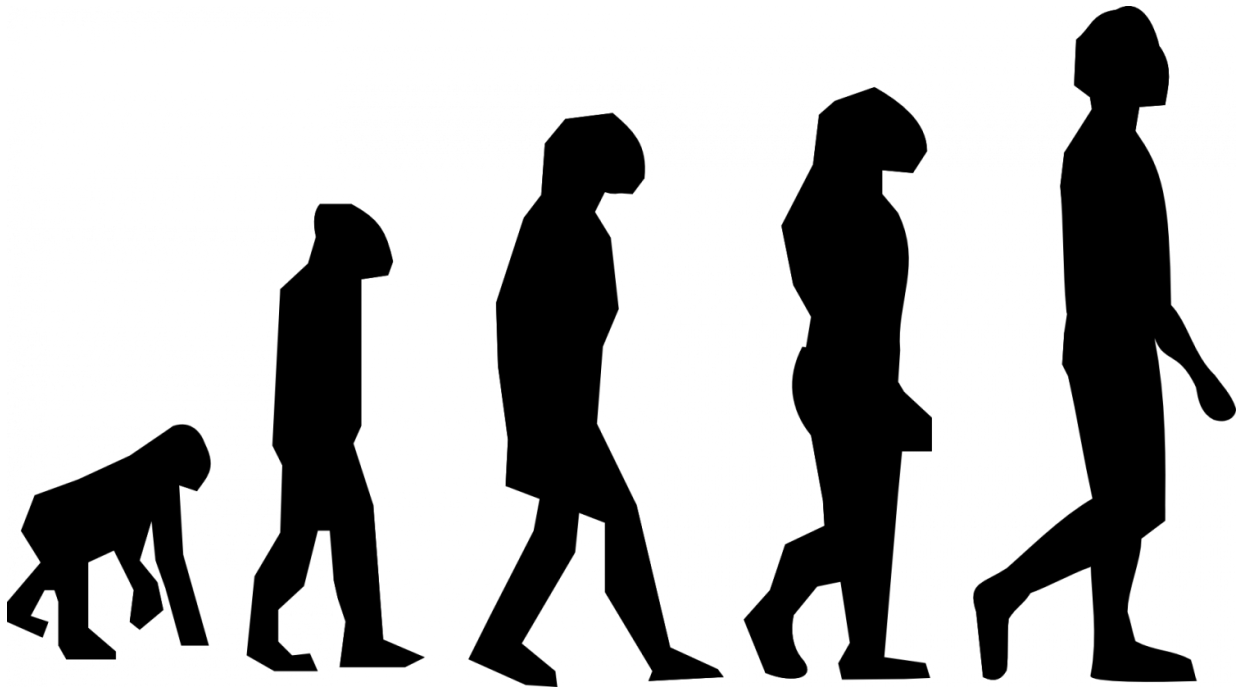

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Nature or nurture? The quest to understand why humans kill one another has occupied the minds of philosophers, sociologists and psychologists for centuries.

Are we innately violent, as Englishman Thomas Hobbes postulated in the 1650s, or is our behaviour influenced more by the environment we grow up in, as Jean-Jacques Rousseau theorised a century later?

On Tuesday, a team of scientists who looked at the question from a new angle—that of evolutionary biology—concluded that our violent nature was at least partly inherited from an ancient ancestor, and shared with other primates.

Lethal violence appears to be "deeply rooted" in the lineage of monkeys, apes and Homo sapiens, the researchers wrote in the science journal *Nature*.

This, in turn, suggests that "a certain level of lethal violence in humans arises from the occupation of a position within a particularly violent mammalian clade."

A clade is the biological term for a group of organisms descending from a common evolutionary ancestor.

The Spanish researchers gathered data on more than four million deaths in 1,024 present-day mammal species, as well as 600-plus human populations from the late Stone Age some 50,000-10,000 years ago until today.

The animals sampled represent some 80 percent of mammal families.

The researchers looked specifically at the proportion of deaths caused by lethal violence perpetrated by a member of the same species—in humans this was war, homicide, infanticide, execution and other intentional killings.

They also searched for similarities between species with common ancestors, which they used to infer how violent those predecessors would have been, and to reconstruct a history of ancestral killing rates.

Overall, the researchers found, intraspecies killing was the cause of

about 0.3 percent of mammal deaths.

Turning it off

But for the ancestor of all primates, rodents and hares, killings caused about 1.1 percent of deaths, rising to 2.3 percent for the next, more recent, common ancestor of primates and tree shrews.

By the time the common human ancestor first appeared around 200,000-160,000 years ago, the rate was about two percent—similar to that for other primates, the team found.

"This means that humans have phylogenetically inherited their propensity for violence," they wrote.

Phylogenetics is the study of the genetic relationship between species over time, giving us the so-called evolutionary tree, with a primordial ancestor at its base from which all organisms developed.

Study co-author Jose Maria Gomez Reyes told AFP the new data showed there was "an evolutionary component to human violence, not that this is the only component."

This evolutionary component are not only genetic, and "most likely" influenced by environmental pressures on survival.

"In fact, social behaviour and territoriality, two behavioural traits shared with relatives of (Homo) sapiens, seem to have also contributed to the level of lethal violence... inherited in humans," said the study.

Commenting on the study, Mark Pagel of the University of Reading said it provided "good grounds for believing that we are intrinsically more violent than the average mammal."

But it also showed that humans are able to curtail such tendencies.

"Rates of homicide in modern societies that have police forces, legal systems, prisons and strong cultural attitudes that reject violence are, at less than one in 10,000 deaths (or 0.01 percent) about 200 times lower than the authors' predictions for our state of nature," he wrote.

"Hobbes has landed a serious blow on Rousseau, but not quite knocked him out."

More information: *Nature*, nature.com/articles/doi:10.1038/nature19758