

Evolutionary forces explain why women live longer than men

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Despite research efforts to find modern factors that would explain the different life expectancies of men and women, the gap is actually ancient and universal, according to University of Michigan researchers.

"Women live longer in almost every country, and the sex difference in lifespan has been recognized since at least the mid-18th century," said Daniel J. Kruger, a research scientist in the U-M School of Public Health and the Institute for Social Research. "It isn't a recent trend; it originates from our deep evolutionary history."

This skewed mortality isn't even unique to our species; the men come up short in common chimps and many other species, Kruger added.

Kruger and co-author Randolph Nesse, a professor of psychology and psychiatry and director of the Evolution and Human Adaptation Program, argue that the difference in life expectancy stems from the biological imperative of attracting mates.

"This whole pattern is a result of sexual selection and the roles that males and females play in reproduction," Kruger said, "Females generally invest more in offspring than males and are more limited in offspring quantity, thus males typically compete with each other to attract and retain female partners."

For example, in common chimps, the greatest difference in mortality rates for males and females occurs at about 13 years of age, when the

males are just entering the breeding scene and competing aggressively for social status and females.

From the tail of the peacock to the blinged-out SUV, males compete aggressively for female attention, and that costs them something. In nature, it means riskier physiology and behavior for the males, such as putting more resources into flashy plumage or engaging in physical sparring.

And even in modern life, where most dueling is a form of entertainment, male behavior and physiology is shortening their lifespans relative to women, Kruger said. In fact, modern lifestyles are actually exacerbating the gap between male and female life expectancies.

Male physiology, shaped by eons of sexual competition, is putting the guys at a disadvantage in longevity. Male immune systems are somewhat weaker, and their bodies are less able to process the fat they eat, Kruger said. And behavioral causes—smoking, overeating, reckless driving, violence—set men apart from most women. "Because mortality rates in general are going down, behavioral causes of death are ever more prevalent," Kruger said.

Looking at human mortality rates sliced by socioeconomic status shows that the gender gap is affected by social standing. Human males in lower socio-economic levels tend to have higher mortality rates than their higher-status peers. The impact of social standing is greater on male mortality than on female mortality, Kruger noted, partially because males who have a relatively lower status or lack a mate engage in a riskier pattern of behaviors in an attempt to get ahead, he said.

The paper "An evolutionary life-history framework for understanding sex differences in human mortality rates," appears in the spring 2006 edition of *Human Nature*.

Source: University of Michigan

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