

# Testosterone levels found to rise in women in dominant role regardless of behavior

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Credit: George Hodan/public domain

(Medical Xpress)—A trio of researchers with the University of Michigan has found that testosterone levels in women rise when engaging in a dominant behavior regardless of whether they act in more masculine or feminine ways while doing it. In their paper published in *Proceedings of the National Academy of Sciences*, the team describes the study they carried out with male and female volunteers and what their results might mean for the role women play in modern society.

In our [modern society](#), testosterone has come to be synonymous with manliness—high levels of the hormone in female athletes has even been used to try to ban some [women](#) from competing in Olympic events with other women who have "normal" levels. But, as the authors of this new study argue, gender socialization may have an impact on [testosterone levels](#) as well, particularly in women.

Both men and women have testosterone in their bodies, men simply have more of it. To learn more about how levels are impacted during a stereotypical masculine behavior, the researchers enlisted the assistance of 41 volunteers (26 male,

15 female)—actors who were asked to perform a short monologue depicting a boss firing someone. Each actor was asked to do the monologue twice, once in a masculine way, and once in a feminine way. A control group was asked to watch a travel documentary. Testosterone levels were measured before and after each performance to see if performing the monologue caused any changes.

In studying the results, the researchers found that levels rose in all the women regardless of whether they were doing the monologue in a masculine or feminine way, while levels for the males remained relatively steady. These findings show, the group claims, that a rise in testosterone levels in women was due to exercising power rather than ways in which they behaved, which they suggest may mean that societal pressures may have more to do with testosterone levels in males versus females than has been thought. The researchers did not know why testosterone levels for the males did not change much, but suggest it might have had something to do with males being more used to being put into traditional masculine roles.

**More information:** Sari M. van Anders et al. Effects of gendered behavior on testosterone in women and men, *Proceedings of the National Academy of Sciences* (2015). [DOI: 10.1073/pnas.1509591112](#)

## Abstract

Testosterone is typically understood to contribute to maleness and masculinity, although it also responds to behaviors such as competition. Competition is crucial to evolution and may increase testosterone but also is selectively discouraged for women and encouraged for men via gender norms. We conducted an experiment to test how gender norms might modulate testosterone as mediated by two possible gender?testosterone pathways. Using a novel experimental design, participants (trained actors) performed a specific type of competition (wielding

power) in stereotypically masculine vs. feminine ways. We hypothesized in H1 (stereotyped behavior) that wielding power increases testosterone regardless of how it is performed, vs. H2 (stereotyped performance), that wielding power performed in masculine but not feminine ways increases testosterone. We found that wielding power increased testosterone in women compared with a control, regardless of whether it was performed in gender-stereotyped masculine or feminine ways. Results supported H1 over H2: stereotyped behavior but not performance modulated testosterone. These results also supported theory that competition modulates testosterone over masculinity. Our findings thus support a gender?testosterone pathway mediated by competitive behavior. Accordingly, cultural pushes for men to wield power and women to avoid doing so may partially explain, in addition to heritable factors, why testosterone levels tend to be higher in men than in women: A lifetime of gender socialization could contribute to "sex differences" in testosterone. Our experiment opens up new questions of gender?testosterone pathways, highlighting the potential of examining nature/nurture interactions and effects of socialization on human biology.

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