

Higher level of testosterone in women linked to choice of risky careers

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The battle of the sexes rages on, this time from the trading floor. While there has long been debate about the social and biological differences between men and women, new research by the Kellogg School of Management at Northwestern University, the University of Chicago Booth School of Business and the University of Chicago's Department of Comparative Human Development explores how the hormone testosterone plays an important role in gender differences in financial risk aversion and career choice.

Prior research has shown that testosterone enhances competitiveness and dominance, reduces fear, and is associated with [risky behaviors](#) like gambling and alcohol use. However, until now, the impact of testosterone on [gender differences](#) in financial risk-taking has not been explored.

The new paper, "Gender differences in financial risk aversion and career choices are affected by testosterone," has been published in the Aug. 24, 2009 early edition of the [Proceedings of the National Academy of Sciences](#) (*PNAS*). The research was conducted by Paola Sapienza, Associate Professor, Kellogg School of Management at Northwestern University; Luigi Zingales, Robert McCormick Professor, University of Chicago Booth School of Business; and Dario Maestriperi, Professor in Comparative Human Development, University of Chicago.

"In general, women are more risk averse than men when it comes to making important financial decisions, which in turn can affect their

career choices," said Sapienza. "For example, in our sample set, 36 percent of female MBA students chose high-risk financial careers such as investment banking or trading, compared to 57 percent of male students. We wanted to explore whether these gender differences are related to testosterone, which men have, on average, in higher concentrations than women."

The researchers, using an economic-based measure of risk aversion, found that higher levels of testosterone were associated with a greater appetite for risk in women, but not among men. However, in men and women with similar levels of testosterone, the gender difference in risk aversion disappeared. Additionally, the researchers reported that the link between risk aversion and testosterone predicted career choices after graduation: individuals who were high in testosterone and low in risk aversion chose riskier careers in finance.

"This is the first study showing that gender differences in financial risk aversion have a biological basis, and that differences in testosterone levels between individuals can affect important aspects of economic behavior and career decisions," said Maestripieri. "That the effects of testosterone on risk aversion are strongest for individuals with low or intermediate levels of this hormone is similar to what has been shown for the effects of testosterone on spatial cognition."

To investigate the relationship between testosterone and risk aversion, the authors measured testosterone levels in saliva samples (as well as markers of prenatal testosterone such as finger length) from approximately 500 MBA students at the University of Chicago Booth School of Business.

The uncharacteristically large sample—which was global in demographic scope—was familiar with financial risk by virtue of their education, and many pursued financial careers after business school. Also, the

participants were relatively homogeneous in age, cultural and educational background, and socioeconomic status, thereby minimizing the effects of other non-biological variables.

As part of a mandatory MBA course, the students were asked to participate in a laboratory experiment to measure the relationship between risk and hormonal levels. Over two days in October 2006, the participants were asked to play a computer game that evaluated their risk aversion attitudes. They answered a series of questions that asked them to choose between accepting a guaranteed monetary award or choosing a risky lottery with a higher potential payout. Students had to choose repeatedly between the lottery and a fixed payment at increasing values. Two saliva samples were collected, once before the session and once after the test was completed, to measure hormonal changes over that time period.

As expected, more risk-prone participants chose the lottery more often, whereas more risk-averse individuals preferred the guaranteed payout. Overall, men exhibited significantly lower risk aversion than women in the study, and also had significantly higher levels of salivary testosterone than women.

"This study has significant implications for how the effects of testosterone could impact actual risk-taking in financial markets, because many of these students will go on to become major players in the financial world," said Zingales. "Furthermore, it could shed some light on gender differences in career choices. Future studies should further explore the mechanisms through which [testosterone](#) affects the brain."

Source: University of Chicago ([news](#) : [web](#))

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