

Having a male co-twin improves mental rotation performance in females

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Having a sibling, especially a twin, impacts your life. Your twin may be your best friend or your biggest rival, but throughout life you influence each other. However, a recent study published in *Psychological Science*, a journal of the Association for Psychological Science, shows that having an opposite-sex twin may impact you even before you are born: females with a male co-twin score higher on mental rotation task than females with a female co-twin.

Males, as young as three months of age, outperform females on mental rotation tasks, tests that require rotation of three dimensional objects in mental space. [Testosterone](#) has been suggested to account, at least partially, for sex differences in this task suggesting that females with exposure to higher levels of prenatal testosterone may perform better than females with lower levels of testosterone.

Eero Vuoksima from the University of Helsinki and co-authors assessed the possible prenatal masculinization of spatial ability in females with a male co-twin. "Earlier studies have tested the possible masculinization of females with a male co-twin, but the measures in those studies have not always been ideal," says Vuoksima. "If prenatal masculinization does occur in female twins from opposite-sex pairs, it would be expected to be most evident in behaviors that are related to testosterone levels and show a large and robust male advantage, such as the mental rotation task."

For the study, mental rotation task scores between twins from same-sex

and opposite-sex pairs were compared. Not surprisingly males scored higher than females, but females with a male co-twin scored higher than did females with a female co-twin. In contrast, there was no difference in the mental rotation task performance of males from opposite-sex and same-sex pairs.

For females with a twin brother, determining if differences in performance are due to prenatal exposure to testosterone or due to their tendency to engage in more male-typical activities is still unclear. "While our results are consistent with the prenatal masculinization hypothesis," says Vuoksima, "girls who grow up with a twin brother experience a different social world than girls growing up with a twin sister. We cannot exclude effects of post-birth socialization."

However, the psychological scientists included a computer game task in their study, a possible indicator of practice effects. "Interestingly, computer game playing experience was not related to mental rotation test performance in our study," says Vuoksima. This suggests that the results are not fully explained by postnatal environment, but the route for masculinization of mental rotation ability remains unknown. "More research is needed to disentangle the origins of the masculinization of [mental rotation](#) performance in [females](#) with a male co-twin."

Provided by Association for Psychological Science

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