

Could playing 'boys' games help girls in science and math?

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The observation that males appear to be superior to females in some fields of academic study has prompted a wealth of research hoping to shed light on whether this is attributable to nature or nurture. Although there is no difference in general intelligence between the sexes, studies over the past 35 years have consistently found that overall men do much better in tests of spatial ability than women. This difference may have something to do with why there are still fewer women in tertiary education studying science, technology, engineering and math – all subjects where it helps to have good spatial ability.

More in-depth assessment, however, reveals that this might be an oversimplification of the facts. A new review, published in Springer's journal *Sex Roles*, sheds light on one of the factors contributing to these [gender differences](#) in [spatial ability](#), that of gender-roles. Although children are born either male or female, individuals differ in their degree of masculine and feminine identification and endorsement of masculine and feminine gender roles. The review was carried out by David Reilly and David Neumann from Griffith University in Queensland, Australia.

Reilly and Neumann note that studies in their review reported finding larger within-gender variations in spatial ability than between-gender. This then led them to look more specifically at the data on variables within [males and females](#) which might be able to explain this.

The researchers analyzed twelve studies which had looked specifically at one aspect of spatial ability, namely mental rotation, in high school

pupils, college attendees and young adults. Collectively these studies showed a significant association between masculinity and mental rotation performance for both men and women. In other words, men and women with either a strong masculine or androgynous gender-identity fared better in [mental rotation](#) tasks.

The authors suggest that it is the considerable variation in the levels of typically masculine and feminine traits and behaviors, that children of the same sex develop, which account for the inter-gender variability. Masculine identification leads to cultivation of mathematical and scientific skills whereas feminine identification facilitates verbal and language abilities. These [gender-roles](#) are not mutually exclusive, with some children of both genders developing a healthy integration of both roles.

Development of spatial ability is refined through play and recreational activities, with traditionally masculine activities helping to promote development of spatial ability. Therefore improving girls' performance in subjects which require good spatial ability may involve the deliberate inclusion of what are commonly seen as stereotypically male activities into their daily lives, rather than encouraging sex-segregation of activities.

The authors conclude: "We have seen many changes in society's beliefs about gender equality in the intervening decades since Sharon Nash proposed her gender-role mediation hypothesis of intellectual development in 1979. However, for spatial ability at least, this association seems as relevant today as when the claim was first made."

More information: Reilly, D. and Neumann, D.L. (2013), Gender-role differences in spatial ability: a meta-analytic review, *Sex Roles*. [DOI 10.1007/s11199-013-0269-0](https://doi.org/10.1007/s11199-013-0269-0)

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