

Gender Differences in Space

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Gender stereotypes were put to the test in APS Fellow and Charter Member Nora S. Newcombe's Psi Chi Distinguished Lecture at the APS 21st Annual Convention, entitled "Women Hate Maps, Men Won't Ask for Directions: Fact or Myth?"

Newcombe, a Professor of Psychology and the James H. Glackin Distinguished Faculty Fellow at Temple University, contends that any difference between the sexes in navigation ability has been overblown and is not supported by research. Although there are some real differences between the sexes in spatial functioning (men are more skilled at mental rotation, horizontality and verticality tasks, and mechanical reasoning), discrepancies between the sexes in navigation abilities cannot be directly attributed to these spatial ability differences. According to Newcombe, lack of navigation ability among females is more likely related to their individual level of navigational experience, socially-inspired female anxiety about navigation, or pressures to adhere to set social roles rather than evolution-based biological differences. She argued that evolutionary explanations are potentially viable but that advocates have done insufficient scientific work to support their approach.

Some research shows adult women are more likely to use landmarks and men are more likely to use Euclidean distances and geometry while navigating, but no such sex differences have been reported in young children; only in human adults do significant sex differences appear. In one study, Newcombe found that women did use fewer north, south, east, or west terms than men in giving directions from a map. However, the sex differences disappeared when women were informed of the virtues of using directional terms or subtly manipulated by the addition of multiple compass roses. Additionally, Newcombe points out that some sex differences are relative to historical periods and that the differences in spatial cognition have actually shrunk over time. Men used to test as more mathematically minded, but their overrepresentation at the top end of math proficiency is shrinking, displaying the malleability of human cognition.

Although much attention is focused on whether sex differences in spatial reasoning are biological, Newcombe said that the key question is whether or not spatial ability can be changed and if that change can lead to success in careers like engineering. A variety of training studies has found that spatial ability can be improved. According to Newcombe, these findings suggest that if individuals, particularly women, were exposed to more training in spatial reasoning tasks, they would have increased spatial ability and would be more likely to pursue careers in science and technology.