

The Role of Experience in Gender Differences in Spatial Aptitude

Elaine Green*, Jorge Limia*, Vanessa Vieites, Bethany C. Reeb-Sutherland, & Shannon M. Pruden

Equal contribution by authors*

Florida International University

Spatial reasoning predicts college students' pursuit of science and math careers, in which women are typically underrepresented (Blair, 2011). Previous research has found gender differences in preschool children's spatial skills (e.g., mental rotation; Levine et al., 1999), with boys typically outperforming girls. This sex difference in spatial reasoning remains prevalent in adulthood. Explanations for sex differences in one type of spatial ability-wayfinding (i.e., navigation) - include higher levels of spatial anxiety in women compared to men (Lawton, 1994). Because spatial skills take time to develop through the interaction of brain development (e.g., the hippocampus) and spatial experience (e.g., navigation, block/puzzle design), the basis for sex differences in spatial aptitude is still debated. The purpose of this study is to determine whether self-reported spatial anxiety, childhood wayfinding experience, and use of particular wayfinding strategies mitigate or enhance sex differences in performance on different kinds of spatial tasks. One hundred eight undergraduate psychology students from FIU reported their anxiety levels, childhood wayfinding experience, and wayfinding strategies, and performed a variety of spatial memory tests. Preliminary analyses revealed significant, predictable gender differences in spatial anxiety ($t(105)=-2.116$; $p<.05$), spatial orientation ($t(105)= 2.071$; $p<.05$), and mental rotation ($t(105)=2.252$; $p<.05$), with women reporting higher levels of spatial anxiety and men scoring higher on both spatial tasks. Furthermore, although non-significant, predictable patterns of gender differences emerged in which men reported higher levels of past wayfinding experience and the use of orientation wayfinding strategies, while women reported higher levels of route wayfinding strategies. The current findings corroborate previous research on sex differences in spatial reasoning, while providing some potential explanations for these differences. Namely, sex differences in past wayfinding experiences, spatial anxiety, and wayfinding strategies may help us understand why men and women perform differently on spatial tasks.