

Research shows the sexes have equal spatial cognition skills

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Research by Drs Mark Campbell and Adam Toth of Lero, the Science Foundation Ireland Research Centre for Software and University of Limerick, Ireland shows that men and women have equal spatial cognition skills. Pictured at the launch of the Lero Esports Science Research Lab are Jessica Mangione, Niall Ramsbottom, Dr Adam Toth, Yueying Gong and Dr Mark Campbell. Credit: Diarmuid Greene, TrueMedia

Men are not better than women at spatial cognition—such as map reading—is the principal finding from ground-breaking work by researchers at Lero, the Science Foundation Ireland Research Centre for Software, hosted at University of Limerick (UL), Ireland.

Employing cutting-edge eye-tracking technology researchers Dr. Mark Campbell and Dr. Adam Toth of the Lero Esports Science Research Lab at UL found that there is no male advantage in mental rotation abilities associated with spatial cognition competences.

Dr. Campbell said the skill of spatial cognition or our ability to navigate our environment has been the battleground for almost 40 years for researchers claiming that males have a distinct performance advantage on tests of spatial cognition, notably the mental rotations test.

Studying the cognitive proficiency of individuals and gamers is a key aim of the Lero Esports Science Research Lab which opened in 2019 and is the first of its kind in Ireland.

"Better performance on these tests is strongly associated with higher IQ and better performance in STEM (Science Technology Engineering and Maths) subjects in schools and colleges," Dr. Campbell explained.

Dr. Toth sums up the results: "So males are better than females? Well no, actually. Our study found that there is no male advantage in mental rotation abilities. By lengthening the time allowed to complete the test, the male performance advantage diminished entirely suggesting that the so-called sex difference in mental rotation is simply not there or may be explained by other factors."

The research published in *Nature Scientific Reports* also found for the first time that both males and females frequently employed different gaze strategies during the cognitive tests to get to the correct answer. In

other words, men and women approach the task in a different way to get the same result.

The [research paper](#) is entitled: "Investigating [sex differences](#), cognitive effort, strategy, and performance on a computerised version of the mental rotations test via eye-tracking."

One hundred University of Limerick (UL) undergraduate and postgraduate level psychology and sports science students volunteered to take part in the test carried out by the Lero researchers. The 47 men and 53 women were in [good health](#) and had an average age of 23.

More information: Adam J. Toth et al, Investigating sex differences, cognitive effort, strategy, and performance on a computerised version of the mental rotations test via eye tracking, *Scientific Reports* (2019). [DOI: 10.1038/s41598-019-56041-6](#)

Provided by University of Limerick

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