



universität
wien

Faculty of Psychology

Colloquium lecture by Prof. Dr. David Giofrè

Understanding Differences in Performance Between Boys and Girls in Mathematics and Cognitive Abilities

This talk will describe several studies examining sex differences in mathematics and other related fields. I address the ongoing debate about whether boys outperform girls in mathematics. This gap varies across countries, with determinants that remain unclear, potentially influenced by differences in instructional systems, cultures, and variations across school grades.

To explore this issue, we utilized the INVALSI dataset, which encompasses over 13 million observations within a single instructional system (i.e., the Italian system) across grades 2, 5, and 8, from 2010 to 2018. Results showed that boys outperformed girls in mathematics (and vice versa in reading), with gaps widening from grade 2 to grade 8. The gap in mathematics was more pronounced in the wealthier northern Italian regions (characterized by greater gender equality) than in the southern regions. This discrepancy could not be explained by average performance or fully accounted for by economic factors.

In the second study, we investigate whether anxiety contributes to differences in academic achievement between boys and girls. Using data from a nationally representative sample of 146,227 Italian fifth graders, we found that boys exhibited higher mathematics achievement, while girls had higher reading achievement and greater academic anxiety. Meta-analytic procedures confirmed results across multiple samples. Path analyses suggested that academic anxiety accounted for approximately one-third of the differences in mathematics and reading achievement. In particular, controlling for academic anxiety reduced boys' advantage in mathematics and increased girls' advantage in reading.

The third study presents a recent meta-analysis on sex differences in mathematics. This comprehensive analysis found a small overall advantage in mathematics favoring boys. Moderator analyses revealed that differences were larger in Europe compared to other regions and varied based on the mathematical topic considered (e.g., differences were larger in geometry compared to other topics). Additionally, grade level was a significant moderator, with differences more pronounced in later grades.

Dr. David Giofrè

Università di Genova

**This lecture takes place at Liebiggasse 5, 1010 Vienna,
Lecture Hall G 2nd floor and will be streamed.**

Thursday, March 13, 2025; 3pm