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The benefits of single-sex schools on girls' performance in high-stakes Mathematics exams

Key insights from recent research:

- A recent case study from South Korea suggests that an **all-girls' environment has a significant influence on girls' performance in high-stakes Mathematics exams.**
- Drawing on administrative data, test results and surveys from students, researchers found that **girls' performance in University/College entrance exams was positively influenced by attending a girls' schools.**
- The report highlighted that within the all girls' context, **it was behavioural factors rather than any specific type or characteristics of girls' schools, which were impactful.**
- Researchers identified that girls attending single-sex schools, and who perform better in high-stakes Mathematics exams, **benefit from experiencing less pressure to downplay their academic ambitions and abilities compared to their peers in co-educational schools.**
- The researchers pointed out **the need to be aware of girls' propensity to internalise stressors** related to performance, suggesting this internalisation may have an impact on mental health and wellbeing. They suggest there is a disconnect between girls' perceptions of their performance and their actual results and that girls may need support in managing this.

Much research has considered how and why boys often perform better than girls in high-stakes Mathematics exams. This includes a focus on the question of gender differences under pressure. A new discussion paper released by the IZA Institute of Labor Economics tackles this question through a case study of South Korean single-sex schools. The authors found that girls attending single-sex schools perform significantly better in high-stakes Mathematics exams, with a flow-on effect of a higher enrolment rate in STEM degrees at university. They suggest that this is due to girls being freed from peer attitudes and social normalisation of gendered approaches that can influence their approach to academic ambition. Yet these outcomes appeared to also correlate with higher levels of stress among girls and worsening mental health. This raises the question of balancing effort and performance in exams with support for students as they navigate and sustain "higher effort in competitive and male-dominated domains".

This study was focussed on university entrance exams, with a comparison of outcomes for students attending single-sex and co-educational schools. In addition to administrative data, the authors drew on the Korean Youth Panel Survey to better understand students' self-reported stress levels, academic performance and study habits. They looked at several factors including specifically whether or not school characteristics (such as private schools, access to resources, and funding levels) were key driving impacts on girls. This was then compared to behavioural factors to determine if these characteristics were the most significant influence on students, or whether it specifically was the impact of the single-sex learning environment that had a positive effect on closing the gap in exam performance.

The researchers identified a number of positive benefits for girls attending single-sex schools. This included the presence of female peers and female teachers as role models. But this alone did not account for the benefits the researchers observed in these girls' exam results. Most single-sex schools in the study were private, which in this context included greater autonomy, resources and the presence of specific school cultures. Again, when the researchers isolated and analysed these factors, they were not sufficient to explain the difference in student performance compared to co-educational schools.

From this basis, the researchers turned to behavioural factors rather than schools and resources alone. After analysing data and test scores across single-sex schools, they found that this is "not a story about only elite schools or low-performing schools reacting differently; rather, it indicates a behavioural response that is common to single-sex schools regardless of their specific characteristics". In fact, these benefits were more prominent for girls than boys attending single-sex schools. This administrative data is important in identifying girls' higher levels of exam performance. Combining these results with the Korean Youth Panel Survey allowed the authors to consider why these outcomes occurred.

The survey considered a number of areas including student stress induced by parents, self-perceptions of low grades, and homework or exams. Girls reported a significant increase in stress after enrolling in single-sex schools, especially in relation to their perceptions of low grades, homework, and performance in important exams. Yet girls' self-perceptions of their performance did not match the reality of their actual results – their self-perceptions were much harsher and negative than their actual performance. This suggests that girls internalise pressure with increased self-criticism and may require support in this area. This extended into girls' general mental health and wellbeing, with students in the study also reporting a decline in general wellbeing after commencing enrolment at a girls' school.

The impact of this self-reported stress and influence on mental wellbeing was observed to be an increase in effort, specifically, time spent studying Mathematics at home, alone, or outside of the classroom, in addition to accessing increased levels of private tutoring. The authors indicate that the influence of these factors on university enrolments was not fully conclusive in this study. However, the data did indicate there was an increased rate of enrolment in STEM degrees. They suggest that based on this study, the all-girls' educational environment may ultimately increase students' enrolments in traditionally male-dominated STEM fields at university.

This study raises a number of relevant points for educators. The authors suggest the project's most significant finding is that the single-sex school environment and behavioural factors, rather than school characteristics or resources, is one of the key driving factors behind girls' performance in high-stakes exams when compared to peers attending co-educational schools. While there is a positive benefit from factors such as teacher gender, school resources and other school characteristics, this was not determined to be the sole driving factor behind girls' performance. Girls attending single-sex schools who perform better in high-stakes Mathematics exams benefit from experiencing less pressure to downplay their academic ambitions and abilities compared to their peers in co-educational schools.

The authors attribute this to girls' personal internalisation of pressures, and link this to girls' increasing their own study efforts and private tutoring. Yet this internalisation comes with a corresponding drawback to consider, which is a potential decrease in students' general wellbeing. While this may not be a factor impacting girls in all schools, the risk of internalising these pressures and the disconnect between girls' perceptions of their performance and actual results highlight an area where awareness is key. This is a space where students may require additional support to navigate these challenges. This will assist girls in maintaining and experiencing the benefits of increased academic performance, while also supporting their wellbeing and helping them navigate the pressures of self-internalised stress.

Editor's Note: *The researchers who developed this article write about the stress girls self-report after enrolling at a single-sex school, and in connection with assessment/exams. This research study is situated within the broader cultural context of South Korean education. This sense of competition and parental expectations in the South Korean education system can be linked with outcomes that sit within a broader framework of intense focus on academic success and socioeconomic status. This context can mean that girls' experiences of studying in a single-sex school may differ across different locations and cultural frameworks of experience.*

References

Calsamiglia, C., Fawaz, Y., Fernández-Kranz, D., & Lee, J. (2025). *Freed from the Boys: How Single-Sex Schooling Shapes Girls' Effort and Performance in High-Stakes Exams* (Discussion Paper No. 18208). IZA Institute of Labor Economics. https://docs.iza.org/dp18208.pdf.