Why Do Indonesian Adolescent Boys have Poorer Schooling Outcomes than Girls?

KEY FINDINGS

- In a sample of 8th grade Indonesian students, boys have on average lower grades and school attendance than girls.
- Differences in mindsets, socioemotional skills, and other behavioral factors may drive gender differences in schooling outcomes at this level.

CONTEXT

Indonesian secondary students perform worse academically than their peers in other countries, especially boys. In the 2015 Program for International Student Assessment (PISA) tests, Indonesia ranked among the worse of the 72 participating countries. More than half of 15-year-olds could read a text but could not answer simple questions related to it; that was only the case of 14 percent of students in high-performing Vietnam and 20 percent in member countries of the Organization of Economic Cooperation and Development (OECD).¹ While Indonesian boys and girls had similar average scores in math and science, girls outperformed boys in average scores of reading.²

Adolescent boys may learn less because they have lower socioemotional skills, mindsets that demotivate them, and other behavioral factors. Students with more of a growth mindset, namely who believe that they can increase their abilities in school through dedication and hard work, are more motivated, indeed

¹ OECD. 2016. PISA 2015 Results (Volume I): Excellence and Equity in Education. Paris: OECD Publishing.
² Indonesian boys’ average scores in math, reading, and science, were respectively 385, 386, and 401. Girls’ were 387, 409, and 405.
work harder, and get higher test scores in diverse contexts such as Chile and the United States.\textsuperscript{3} Students with higher socioemotional skills, the set of attitudes and behaviors to manage personal and social situations, also have better educational achievement and cognition.\textsuperscript{4} Adolescence is a crucial period in which mature mental abilities and socioemotional skills develop and influence both learning and future outcomes.\textsuperscript{5} Other behavioral factors that could negatively influence learning — and gender differences — are students’ perceptions of a negative classroom environment for learning, low educational aspirations, and behaviors that are not conducive to studying.

**WHAT DID WE DO?**

A team of researchers from the World Bank and the University of California, Davis, in cooperation with the Ministry of Education and Culture of Indonesia as well as local education authorities, collected data on mindsets and socioemotional skills, studying practices, education and career aspirations, grades, and family socioeconomic characteristics from 56,000 8th grade students studying in 2,100 public schools on the Indonesian islands of Java and Sumatera.\textsuperscript{6} These islands are home to 70 percent of the population. The data are the baseline for an impact evaluation of a pilot intervention aimed at improving students’ mindsets and socioemotional skills. Through support to improved socioemotional skills, the intervention may also positively affect schooling outcomes and long-term wellbeing, such as future job opportunities and income.\textsuperscript{7} To our knowledge, this is the first attempt to measure socioemotional skills of Indonesian adolescents at such a scale.\textsuperscript{8} We use these data to explore the relationships between mindsets, perceptions, socioemotional skills, schooling outcomes, and gender. While we cannot establish causal relationships, the data provide some patterns which may be policy-relevant.

**WHAT DID WE FIND?**

Eighth-grade boys have lower grades and miss more classes than girls. In our sample, boys’ average grades are below girls’ in all seven subjects, with differences ranging between 2 and 3 grade points, the equivalent of 0.34 and 0.55 of a standard deviation (Figure 1, panel A).\textsuperscript{9} Most girls, rather than just a few excellent students, drive these differences since girls not only have higher grade averages but have better grades all along the distribution. Besides, while secondary school-aged boys and girls are enrolled in a similar proportions, enrolled boys in the survey are more likely to miss school: 55 percent of boys miss at least one day per month compared to 43 percent of girls.\textsuperscript{10} Apart from being sick, boys are more likely to miss school because of all the other reasons, including being suspended, being bored, and working for the family (Figure 1, panel B).

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\textsuperscript{3} Claro, S., D. Paunesku, and C. S. Dweck. 2016. “Growth mindset tempers the effects of poverty on academic achievement.” *Proceedings of the National Academy of Sciences* 113(31): 8664–8668.

\textsuperscript{4} West, M. R., M. A. Kraft, A. S. Finn, R. E. Martin, A. L. Duckworth, C. F. Gabrieli, and J. D. Gabrieli. 2016. “Promise and paradox: Measuring students’ non-cognitive skills and the impact of schooling.” *Educational Evaluation and Policy Analysis* 38(1): 148–170.

\textsuperscript{5} OECD. 2015. *Skills for Social Progress: The Power of Social and Emotional Skills*. OECD Skills Studies, Paris: OECD Publishing.

\textsuperscript{6} Farrington, C. A., M. Roderick, E. Allensworth, J. Nagaoaka, T. Seneca Keyes, D. W. Johnson, and N. Beechum. 2012. “Teaching Adolescents to Become Learners: The Role of Noncognitive Factors in Shaping School Performance.” Chicago, IL: University of Chicago Consortium on School.

\textsuperscript{7} Guerra, N., K. Modecki, and W. Cunningham. 2014. “Social-Emotional Skills Development across the Life Span: PRACTICE”. *Policy Research Working Paper 7123*. Washington, DC: World Bank.

\textsuperscript{8} The sample excludes Islamic schools and technical or remedial schools, which approximately 13 percent of students attend. However, it is representative of students attending public, secular junior secondary schools in Java and Sumatera.

\textsuperscript{9} For the details of the intervention, please visit www.worldbank.org/eapgil.

\textsuperscript{10} A pilot study of the currently-evaluated intervention collected measures of socioemotional skills for a smaller sample of 114 students.

\textsuperscript{11} As a benchmark, grades can range from 0 to 100, with 75 being the passing grade in most subjects. Girls’ higher 2–3 grade points compared to boys is a large difference given that only 15 percent of students have grades below 75 — the passing grade — and that three quarters of students have grades within a 10-point range between 75 and 85.

\textsuperscript{12} Boys also miss more days on average: boys miss 1.5 days on average in the past month of the survey while girls miss 1.0 days. Boys and girls who miss at least one day of class miss an average of 2.7 and 2.3 days, respectively.
Boys lower grades and higher absenteeism may be partially related to lower socioemotional skills, demotivating mindsets, and how they feel in their classroom environment. Apart from self-esteem, boys in our sample have significantly lower levels in all the mindsets, perceptions of their classroom environment, and socioemotional skills measured in the survey (see table A.1. for the definitions). Data suggest that there is a strong positive association between students’ mindsets, perceptions, and socioemotional skills, and their grades.\(^\text{12}\) The association is especially strong for growth mindset and learning orientation (the perception that effort to learn is valued in their classroom): an increase of one standard deviation in growth mindset and learning orientation correlate on average with an

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**FIGURE 1. BOYS LAG GIRLS IN SCHOOLING OUTCOMES**

A. Average grades of 8th grade students, by gender

| Subject             | Boys | Girls |
|---------------------|------|-------|
| Mathematics         | 76   | 77    |
| English Language    | 77   | 78    |
| Science             | 76   | 78    |
| Social Science      | 77   | 78    |
| Citizenship Education | 79   | 81    |
| Bahasa Indonesia    | 80   | 84    |
| Religious Education | 81   | 83    |
| Average             | 78   | 82    |

B. Share of 8th grade students who missed school in the past month by the main reason for missing school, by gender

| Reason                  | Boys | Girls |
|-------------------------|------|-------|
| School Suspension       | 20   | 10    |
| Boredom                 | 30   | 20    |
| Missing Teacher         | 10   | 5     |
| Natural Disaster        | 50   | 40    |
| Transport Issues        | 60   | 50    |
| Work to Bring Money Home| 40   | 30    |
| Taking Care of a Family Member | 10 | 5     |
| Help with Family Work   | 20   | 10    |
| Sickness                | 50   | 40    |

Notes: Bars represent the average for both gender. In panel A, grades range from 0 to 100, with an average of 79 and a standard deviation of 5. Panel B only includes students who missed school at least one day in the past month (48 percent of all students). Students who miss several days may respond several reasons. All differences between boys and girls in both panels are significant.

Source: Survey “Getting to Know 8th Grade Students”, February-March 2018.\(^\text{11}\)

As all the data presented in the graphs are from the “Getting to Know 8th Grade Students,” references to the source will be omitted henceforth.

The association between grades and performance-avoidance orientation is negative given that the later reflects students’ propensity to hide mistakes and pretend they know material (see definitions in table A.1.). Hiding mistakes is not conducive to learning and one may consider that lower performance-avoidance orientation is desirable.
increase of 0.7 and 0.6 grade points of the average grade (increases of 0.9 and 0.8 percent, respectively), even when holding fixed other mindsets, skills, perceptions, and confounding factors such as their gender, age, and where they live (Figure 2, panel A). Each of the skills is also associated with a reduction in absenteeism (Figure 2, panel B). More of a growth mindset and higher learning orientation are also highly associated with lower absenteeism. This is the case for a higher sense of belonging to the school as well: an increase of one standard deviation in the score of sense of belonging is associated with missing 0.1 fewer days of school per month (a reduction of 8 percent of the 1.2 days that are missed on average).

**FIGURE 2. BETTER MINDSETS, PERCEPTIONS, AND SOCIOEMOTIONAL SKILLS, ARE ASSOCIATED WITH HIGHER GRADES AND LOWER ABSENTEEISM**

Panel A. Change in average grade point associated with a change in mindsets, perceptions, and socioemotional skills

Panel B. Change in number of missed school days associated with a change in mindsets, perceptions, and socioemotional skills

Notes: Bars are coefficients from a regression of an outcome of interest — average of grades in panel A, number of missed school days in the past month in panel B — on standardized measures of mindsets, perceptions, and socioemotional skills that keep constant other measures and four demographic factors (age, sex, location in urban or rural areas, and location in Java or Sumatra). Slim bars are confidence intervals for the estimates at the 95-percent level; Coefficients are statistically significantly different from zero if they do not overlap the zero line. Standardized measures of mindsets, perceptions, and socioemotional skills have a mean of 0 and a standard deviation of 1. In panel A, grades can range from 0 to 100, with an average of 79 and a standard deviation of 5. All coefficients are significantly different from zero at the 99-percent level but that of self-esteem and perseverance, which are not significant, even at the 90-percent level. In panel B, all coefficients are significantly different from zero at the 99-percent level but that of effort belief, which is not significant, even at the 90-percent level.

13 48 percent of students in the survey missed at least one school day in the past month. Those who missed school missed 2.5 days on average.
Lower educational aspirations may also contribute to lower levels of boys’ learning. Educational aspirations are the future years of education students wish to achieve and that drive their effort to reach that goal. Adolescent students aspiring to complete secondary and tertiary education in Ethiopia and India, respectively, ended up completing more schooling than those with lower educational aspirations. Given the strong link between educational aspirations, effort and school attendance, it is possible that higher aspirations may also be linked with greater learning while school and better grades.

In our survey, 84 percent of 8th grade girls state that they would like to complete a general tertiary degree, and more than half state that they would like to get a PhD if they had no constraints. Among 8th grade boys, just 64 percent aspire to general tertiary education and 37 percent to a PhD. Boys are more likely to state that they wish to complete technical or vocational high school with no further formal education (20 percent compared to less than 10 percent of girls). Consistent with evidence from other countries, our survey results suggest that higher aspirations are associated with better schooling outcomes. Students who, in the absence of other constraints, wish to complete postsecondary school have higher average grades by 1.6 points and lower absenteeism by 0.3 days compared to those who only wish to complete high-school or a lower level of education, when controlling for demographic factors.

**Boys are less likely to engage in behaviors conducive to learning.** Girls report spending more time studying outside of school than boys: more than five hours per week compared to less than four hours for boys. Girls also consistently receive more homework help at this education level from family members and others: 83 percent of girls receive help, compared to 78 percent of boys (Figure 3). These differences in behaviors may emerge from different social expectations of boys and girls.

![FIGURE 3. 8TH GRADE GIRLS RECEIVE MORE HELP FOR STUDIES AND STUDY MORE](image)

Help for studies received by students from family members and other people

Note: All differences are statistically significant between boys and girls.

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14 Ray, D. 2006. “Aspirations, poverty and economic change.” in A. Banerjee, R. Benabou, and D. Mookherjee (eds.). *Understanding Poverty.* pp. 409–22. Oxford: Oxford University Press.

15 Beaman, L., E. Duflo, R. Pande, and P. Topalova. 2012. “Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India.” *Science* 335(6068): 582–586.

Favara, M. 2017. “Do Dreams Come True? Aspirations and Educational Attainments of Ethiopian Boys and Girls.” *Journal of African Economies* 26(5): 1–23.
POLICY IMPLICATIONS

Our data suggest some possible contributing factors driving Indonesian boys' underachievement in grade 8. We observe gender gaps in mindsets, socioemotional skills, perceptions of the classroom environment, aspirations, and help-seeking behaviors. While we cannot establish causal links, our descriptive findings point to important directions for future research and policy work. Specifically:

1. There is a need to develop and test further interventions aimed at increasing mindsets, socioemotional skills, and aspirations. In Indonesia, such interventions could focus on increasing boys' low aspirations, mindsets, and socioemotional skills, and provide tools to bolster the academic performance of both boys and girls. Such interventions are generally low cost and easily scalable. The impact evaluation associated with the baseline survey used in this brief will test the effectiveness of two such interventions. The first is a 6-week growth mindset based curriculum that includes comics to introduce the topic of the week, guided classroom discussions, student reflection, small group discussions, and other interactive activities. The second includes additional tools and activities that classroom teachers may integrate into their daily interactions with students in order to reinforce the impacts of the 6-week curriculum.

2. There might be some social expectations that discourage help-seeking outside of school and lower academic motivation for boys at this educational level. A better understanding of the gender specific impacts of social expectations on students' behaviors is needed.

### TABLE A.1. DEFINITION OF MEASURES OF MINDSETS, PERCEPTIONS, AND SOCIOEMOTIONAL SKILLS IN THE SURVEY

| Mindset, perception, skill | Definition |
|---------------------------|------------|
| Effort beliefs            | The extent to which students believe that exerting effort will lead to improved ability |
| Growth mindset            | The extent to which students believe that they can improve their abilities and become smarter through dedication and hard work |
| Learning Orientation      | The extent to which student perceive that classmates and teachers value hard work, learning progress, and learning from mistakes |
| Performance Avoidance Orientation | The extent to which student perceive that classmates and teachers disparage mistakes and lack of knowledge |
| Perseverance              | The extent to which students keep up effort to achieve their goals despite difficulty, delays, and failure |
| Self-esteem               | The degree of positive self-evaluation of the student's own worth |
| Sense of belonging        | The extent to which students feel they are accepted members of the school community |

Note: Socioemotional skills are a set of learned attitudes and behaviors that allow people to manage personal and social situations effectively. Mindsets are ways in which students perceive their own abilities, in particular regarding how smart they are, and whether they can change it or not. Perceptions of the classroom environment refer to students' perceptions of what teachers and classmates value in the learning process. Measured constructs that are featured in the table fall into one category or overlap over several ones.