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i n F o c u s

Are students trying hard to succeed in PISA?

Programme for International Student Assessment



Are students trying hard to succeed in PISA?

- There is little consistency between students' self-reported effort and their actual behaviour when working on the PISA test (rapid guessing) and questionnaire (non-response).
- Across countries/economies and measures, boys show consistently higher levels of disengagement when working on PISA. This finding is in line with prior research. The gender gap is particularly pronounced for behavioural measures, and less pronounced for self-reported effort.
- Another consistent finding relates to the relationship between engagement and student performance. Across countries/economies and measures, higher levels of disengagement are associated with lower reading scores. These relationships are stronger for behavioural measures than for self-reported effort.

PISA measures and compares how well participating countries and economies prepare their students for future challenges, and PISA results often contribute to policy change. PISA has been designed to assess student learning outcomes under authentic and low-stakes conditions. To this end, the survey is designed such that it does not allow for inferences to be made on the performance of individual students. Research shows that low-stakes assessments elicit lower levels of engagement (Wolf and Smith, 1995^[1]; Finn, 2015^[2]) which, in turn, is associated with lower test performance (Wise and DeMars, 2005^[3]). Test performance can, thus, be regarded a product of students' "skill and will" (Eklöf, 2010^[4]); that is, it reflects what students know and can do and how engaged they are in applying their knowledge and skills.

Measuring engagement is subject to ongoing research, and a number of measures have been proposed. Different sources of information may be used to gauge students' (dis-)engagement when working on the PISA test and questionnaire. This policy brief focuses on the following three disengagement measures among others discussed in a recent working paper¹:

- Self-report: based on the effort thermometer, in which students are asked to indicate the amount of effort they put into completing the PISA test; responses have been inverted so that higher levels indicate higher disengagement (**Effort (R)** ◆);

- Behaviour on the test: based on the percentage of responses to test items given in under five seconds in the computer-based assessment (**Rapid guessing** ▲);
- Behaviour on the questionnaire: based on the percentage of items with missing responses (**Non-response** ■).

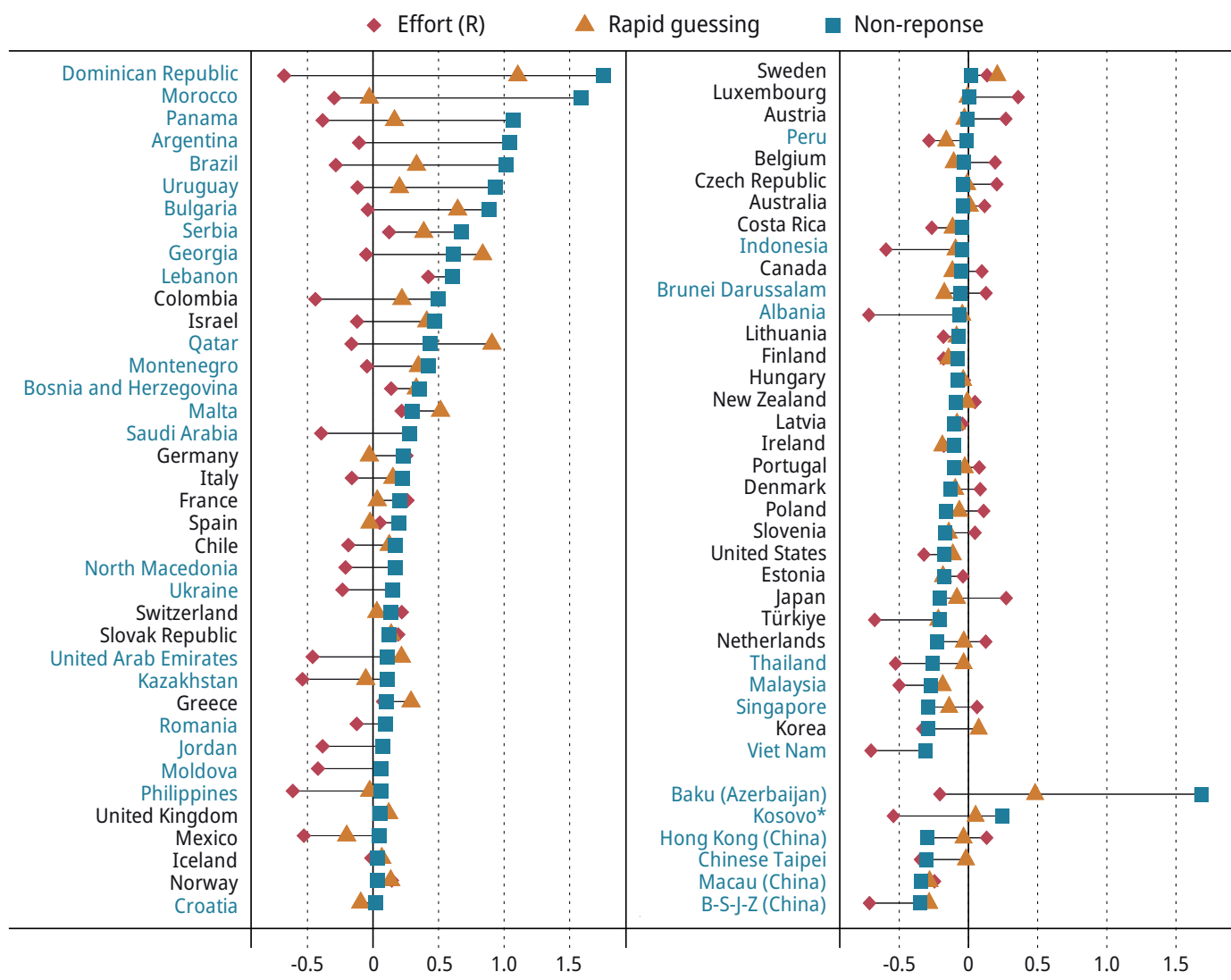
In some countries/economies, students showed disengaged behaviour but reported high levels of effort

PISA 2018 results show that students in Eastern Asian countries/economies tended to provide an answer to most questions in the questionnaire, which is reflected in the lowest non-response rates. However, findings regarding the other two measures in these countries/economies do not show such a clear pattern: for example, while students in some of these Eastern Asian countries/economies reported low levels of effort, students in other countries and economies reported high levels of effort. There is a second set of countries/economies (e.g. Baku (Azerbaijan), Colombia, the Dominican Republic, as well as Morocco) in which students' behaviour indicates high levels of disengagement (non-responses and rapid guessing) but the students reported having expended much effort. These two observations point to a more general finding: the consistency between measures is low, particularly between self-reported effort and the two behaviour-

based measures.² As neither self-reported effort nor behaviour-based measures represent perfect indicators of engagement, and there is little consistency between them, these findings suggest

that it is important to consider multiple measures of engagement simultaneously as opposed to relying on a single one.

Distribution across countries/economies for three measures of disengagement



* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Notes: All three measures are standardised to have a mean and standard deviation of 0 and 1, respectively, across OECD countries. Higher values indicate higher levels of disengagement. Rapid guessing is only available for countries/economies that administered computer-based assessment. B-S-J-Z (China) refers to the four PISA-participating provinces/municipalities of the People's Republic of China: Beijing, Shanghai, Jiangsu and Zhejiang. Countries and economies are ranked in descending order of the level of non-response.

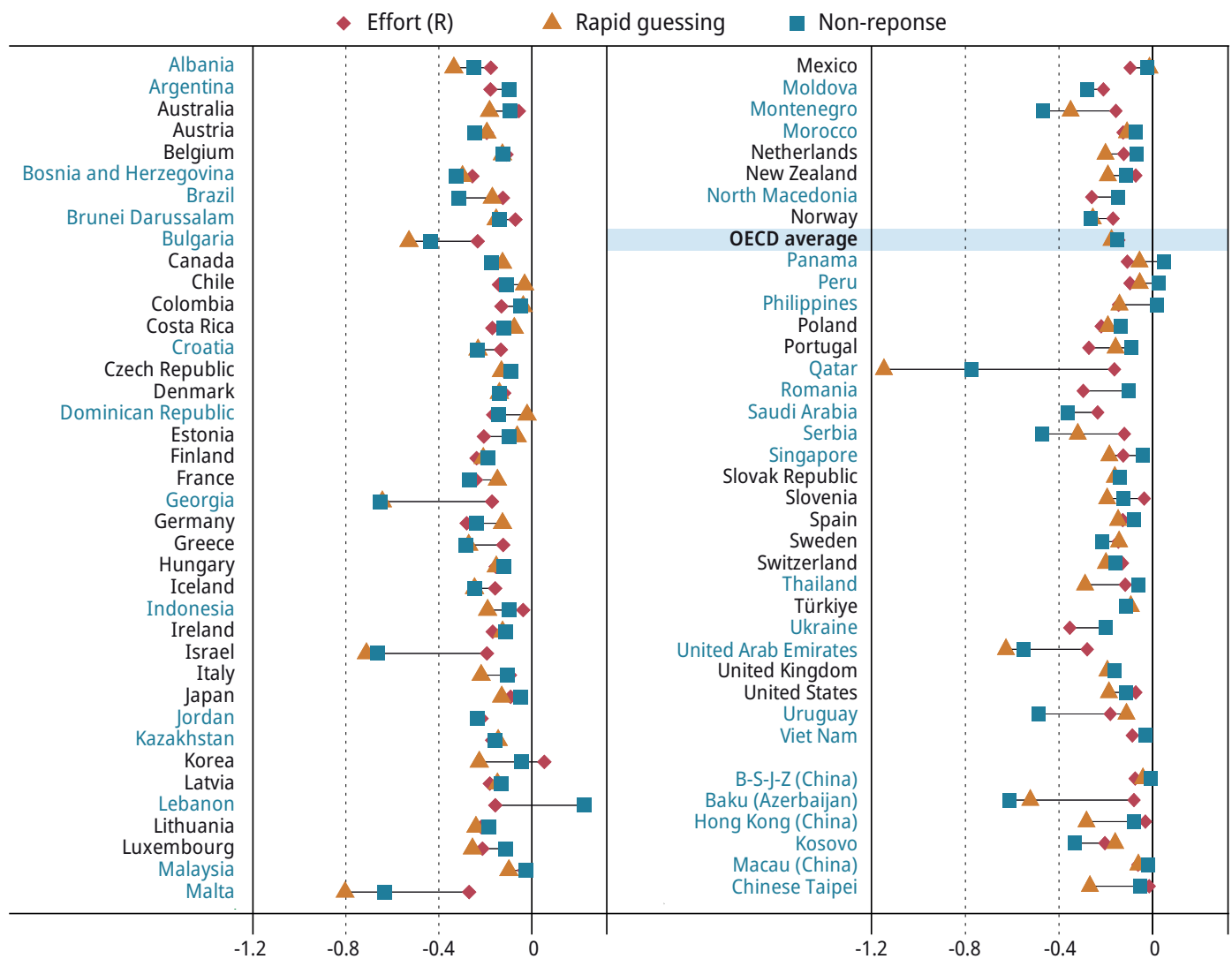
Source: OECD, PISA 2018 Database, from the OECD Working Paper "Developing measures of engagement in PISA" <https://doi.org/10.1787/2d9a73ca-en>, Annex A.

Boys are more disengaged when working on the PISA test and questionnaire

According to PISA 2018 results, and in line with prior research³, boys demonstrated higher levels of disengagement than girls in almost all countries and

economies with available data, with only very few exceptions. For example, in Lebanon, girls showed higher non-response rates than boys. The gender gap tends to be wider for behaviour-based than self-reported measures, and is particularly wide in Baku (Azerbaijan), Bulgaria, Georgia, Israel, Malta, Qatar, Serbia, and the United Arab Emirates.

Differences in disengagement by gender (girls – boys)



Note: Values represent differences between OECD standardised measures (mean and standard deviation of 0 and 1, respectively, across OECD countries). Negative differences (girls-boys) indicate higher disengagement for boys. Rapid guessing is only available for countries/economies that administered computer-based assessment.

Source: OECD, PISA 2018 Database, from the OECD Working Paper “Developing measures of engagement in PISA” <https://doi.org/10.1787/2d9a73ca-en>, Annex B.

Disengaged students do worse on the PISA test – even when disengagement is measured based on questionnaire behaviour

Previous studies have consistently found a negative relationship between disengagement and test performance, meaning that disengaged students tend to score lower on tests.⁴ PISA 2018 results also show that disengaged students scored lower almost consistently across different engagement measures and countries/economies. Among the countries/economies in which the differences are

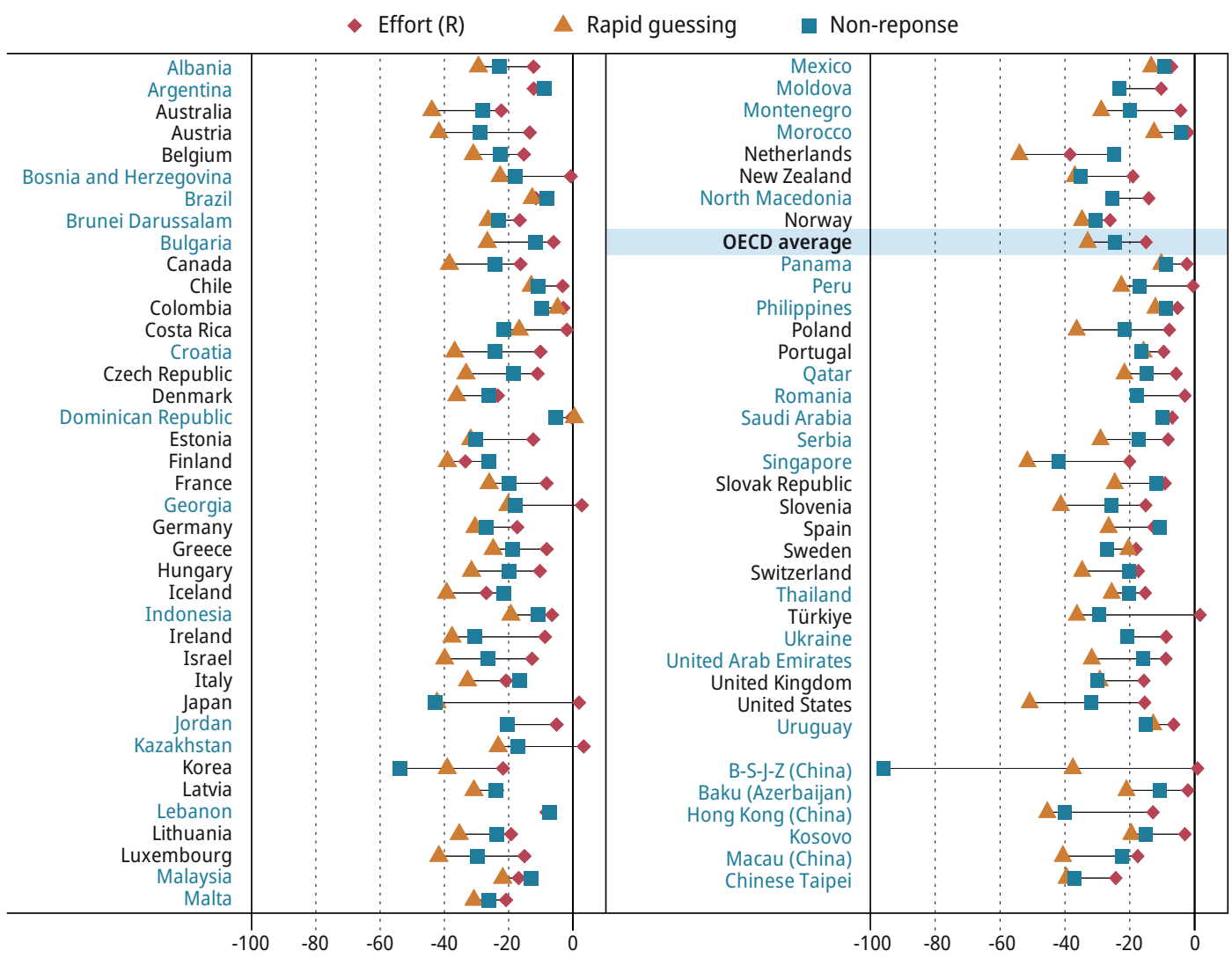
particularly pronounced are B-S-J-Z (China), Korea, and Singapore. These findings, especially the extreme performance gap for the non-response measure in B-S-J-Z (China), might be due to very few outliers as non-response in the questionnaire rarely occurred in these countries/economies.

The relationship with performance is stronger for behaviour-based measures, and less pronounced for self-reported effort. Between the two behaviour-based measures, rapid guessing is more closely related to performance. This is not surprising given that both performance and rapid guessing draw on information collected with the same instrument.

The strong relationship between performance and non-response, however, indicates that disengagement extends across the duration of the assessment session, consisting of a two-hour test and the subsequently administered 35-minute questionnaire: students who perform poorly on the test tend to skip items in the questionnaire.

Summing up, disengaged students do worse on the test. Determining the direction of causality, however, is not straightforward as disengagement and performance influence each other: some students might be disengaged because they find the test too difficult. Lower performance on the PISA test, therefore, might be due to lower competence – or higher disengagement.

Relationship between different measures of disengagement and reading performance in PISA 2018



Notes: Values represent the predicted change on the PISA Reading scale associated with a one-standard deviation increase on the respective disengagement measure after accounting for student characteristics (e.g. gender and socio-economic status). Rapid guessing is only available for countries/economies that administered computer-based assessment.

In 2018, some regions in Spain conducted their high-stakes exams for tenth-grade students earlier in the year than in the past, which resulted in the testing period for these exams coinciding with the end of the PISA testing window. Because of this overlap, a number of students were negatively disposed towards the PISA test and did not try their best to demonstrate their proficiency. Although the data of only a minority of students show clear signs of lack of engagement (see PISA 2018 Results Volume I, Annex A9), the comparability of PISA 2018 data for Spain with those from earlier PISA assessments cannot be fully ensured.

Source: OECD, PISA 2018 Database, from the OECD Working Paper “Developing measures of engagement in PISA” <https://doi.org/10.1787/2d9a73ca-en>, Annex E.

The bottom line

Student engagement is an important aspect to consider in the context of PISA because performance in such low-stakes assessments reflects not just students' skill but also their will. Across measures and countries/economies, the PISA 2018 data corroborate previous findings that boys show more disengagement and that this is associated with lower test performance. But disengagement measures, based on different sources of information, show only little agreement among them. Therefore, not just single but multiple measures should be consulted in gauging various aspects of student (dis-)engagement. Further research is needed to better understand the mechanism of disengagement to improve the design of assessments and instruments.

Notes

1. The OECD Working Paper “Developing measures of engagement in PISA” (<https://doi.org/10.1787/2d9a73ca-en>) presents the theoretical background in more detail (relevance, correlates, consequences). It also includes additional disengagement measures, examines group differences based on additional student characteristics (socio-economic status, immigrant background), examines trends across time (PISA 2012-2018), and discusses ways to design assessments to be more engaging.
2. Self-reported effort and non-response: $r = .06$ (student-level), $r = -.05$ (country-level); Self-reported effort and Rapid guessing: $r = .12$ (student-level), $r = .04$ (country-level); Non-response and Rapid guessing: $r = .32$ (student-level), $r = .70$ (country-level); Source: OECD Working Paper “Developing measures of engagement in PISA” (<https://doi.org/10.1787/2d9a73ca-en>), Section 3.2
3. Demars, Bashkov and Socha (2013^[5])
4. For example, see Wise and DeMars (2005^[3])

For more information

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See:

- Demars, C., B. Bashkov and A. Socha** (2013), "The Role of Gender in Test-Taking Motivation under Low-Stakes Conditions", *Research and Practice in Assessment*, Vol. 8, pp. 69-82, <https://eric.ed.gov/?id=EJ1062839>. [5]
- Eklöf, H.** (2010), "Skill and will: test-taking motivation and assessment quality", *Assessment in Education: Principles, Policy & Practice*, Vol. 17/4, pp. 345-356, <https://doi.org/10.1080/0969594x.2010.516569>. [4]
- Finn, B.** (2015), "Measuring Motivation in Low-Stakes Assessments", *ETS Research Report Series*, Vol. 2015/2, pp. 1-17, <https://doi.org/10.1002/ets2.12067>. [2]
- Wise, S. and C. DeMars** (2005), "Low Examinee Effort in Low-Stakes Assessment: Problems and Potential Solutions", *Educational Assessment*, Vol. 10/1, pp. 1-17, https://doi.org/10.1207/s15326977ea1001_1. [3]
- Wolf, L. and J. Smith** (1995), "The Consequence of Consequence: Motivation, Anxiety, and Test Performance", *Applied Measurement in Education*, Vol. 8/3, pp. 227-242, https://doi.org/10.1207/s15324818ame0803_3. [1]

PISA collects reliable and comparable data from participating countries and territories. Following OECD data regulations, a visual separation between countries and territories has been used in all charts to reduce the risk of data misinterpretation.

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