2

Tackling Underperformance among Boys

This chapter examines gender differences in the activities in which boys and girls engage outside of school, in their ability to regulate their behaviour and emotions, in engagement with school and attitudes towards learning, and in the marks boys and girls receive in school. All of these ultimately have an impact on students' futures, both in school and beyond.

PISA results have consistently shown that boys are more likely than girls to be overall low-achievers, meaning that they are more likely than girls to perform below the baseline level of proficiency in all three of the subjects that are tested in PISA: reading, mathematics and science. And boys are especially more likely to struggle with reading. Why do boys underachieve, particularly in reading?

Sifting through the many stories told through PISA data, the story of gender differences in 15-year-old students' performance involves two main characters: low-achieving boys – particularly in reading – and high-achieving girls – particularly in mathematics and science. How do these characters navigate their way through education while being pushed and pulled by the strong, sometimes contradictory, pressures of adolescence? To what extent do their peers shape their attitudes towards school and learning? In school, how do they behave with their teachers and their fellow students? Which education pathways do they choose, and why? And when they get home from school, how do they spend their afternoons and evenings? What do they do over the weekend and during school holidays? What do they tear themselves away from when their parents call them to the dinner table?

What the data tell us

- On average across OECD countries, only one in four boys, but more than one in two girls, reported that they had never played a one-player game on a computer; and 29% of boys but 71% of girls reported that they had never played collaborative online games.
- Across OECD countries, girls spend 5.5 hours per week doing homework, while boys spend a little less than 4.5 hours, on average. For each hour per week students spend doing homework, their score in reading, mathematics and science is 4 points higher, on average.
- Boys in OECD countries are twice as likely as girls to report that school is a waste of time, and are 5 percentage points more likely than girls to agree or strongly agree that school has done little to prepare them for adult life when they leave school.

Tackling underperformance among boys requires first examining some of the differences in how boys and girls spend their time, both in school and after school, and in their behaviour and attitudes towards each other and towards their teachers. This chapter discusses gender differences in the activities boys and girls engage in outside of school, such as the amount of time they spend on line and how they use this time, and how much they read for enjoyment rather than, for example, playing chess or programming a computer. It then examines gender differences in self-regulation, engagement with school, and attitudes towards learning, such as intrinsic motivation. All of these factors help to explain the gender gap in academic performance in a standardised assessment like PISA. They are also reflected in the marks boys and girls receive in school, which have significant consequences for students' future.

In a nutshell:

- Boys are **more** likely than girls to play video games.
- Boys are **more** likely than girls to spend time on computers and the Internet.
- Boys are **less** likely than girls to read outside of school for enjoyment.
- Boys are **less** likely than girls to enjoy activities connected with reading.
- Boys are **more** likely than girls to play chess and program computers.

- Boys are **less** likely than girls to do homework.
- Boys are **more** likely than girls to have negative attitudes towards school.
- Boys are **more** likely than girls to arrive late for school.
- Boys are **less** likely than girls to engage in school-related work out of intrinsic motivation.

The evidence emerging from PISA is that, while some after-school activities are more popular than others in certain countries, in virtually all countries boys and girls use their free time in distinctly different ways; and these differences have a significant impact on the skills that boys and girls acquire.

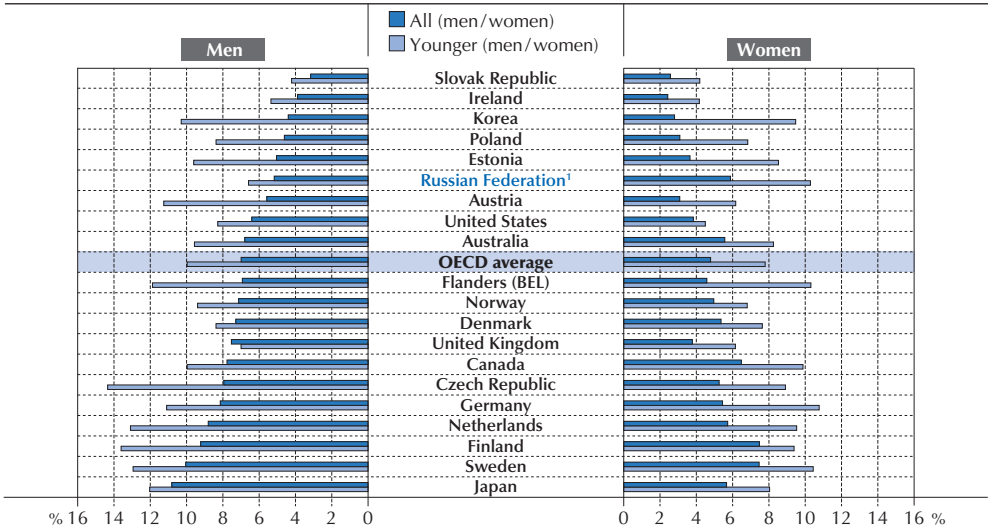
HOW DO BOYS AND GIRLS SPEND THEIR TIME OUTSIDE OF SCHOOL? WIRED AND CONNECTED

Some may joke about future generations having electronic chips implanted somewhere in their bodies to obviate the need for external gadgets, like smartphones or personal computers, but being "connected" now seems as natural a state as, well, just being. The first thing we do in the morning and the last thing we do at night is check our e-mails; our first instinct when missing some kind of information is to consult a search engine, not reach for the nearest paper-and-binding reference book; and if we want to amuse ourselves, the Internet is always available when our friends might not be.

■ Figure 2.1 ■

Differences between young and mature men and women in problem solving in technology-rich environments

Percentage of men and women who perform at the highest level, 2012



1. See note at the end of this chapter.

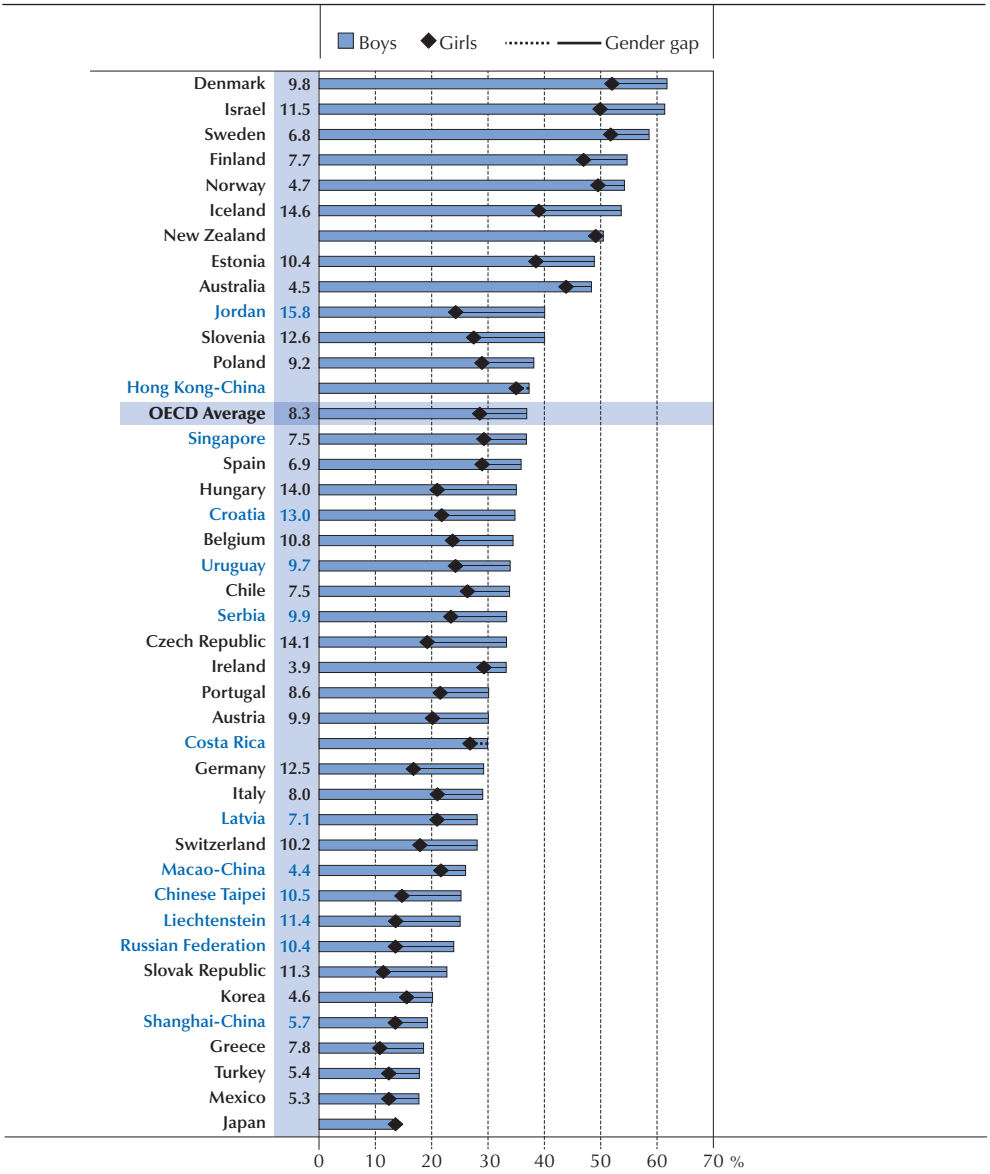
Note: Younger men and women are those aged between 16 and 24 years old.

Countries and economies are ranked in ascending order of the percentage of men (all age groups) who performed at Level 3 in problem solving in technology-rich environments in the 2012 Survey of Adult Skills (a product of the OECD Programme for the International Assessment of Adult Competencies, or PIAAC). Level 3 corresponds to a high level of proficiency.

Source: OECD, PIAAC Database, Table 2.1.

■ Figure 2.2 ■

Percentage of boys and girls who first used a computer when they were 6 years old or younger



Note: The size of the gender gap (in percentage points and when statistically significant) is shown next to the country/economy name and is indicated by a solid line (boys–girls).
Countries and economies are ranked in descending order of the percentage of boys who reported that they had used a computer when they were 6 years old or younger.
Source: OECD, PISA 2012 Database, Table 2.3.

Certainly, knowing how to use digital devices is now essential in the modern workplace and in modern societies. The first results from the Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), show that, as would be expected, young adults are more likely than older adults to know how to use computers and be able to solve problems that are presented to them on computers. However, the survey also finds that in several countries, the proportion of young men and women who can solve more complex problems in computer environments is small (Figure 2.1 and Table 2.1).

The 15-year-olds who were assessed in the most recent cycles of PISA, specifically PISA 2009 and PISA 2012, were raised with computers. Being connected is an integral part of their lives: it provides an avenue for entertainment and a way of interacting with their peers anytime, anywhere. Some of their teachers may even encourage them to use computers in class or for homework, with the assumption that learning through digital media is less about consuming knowledge and more about interacting and participating in the acquisition of knowledge (OECD, 2012).

PISA 2012 found that virtually all 15-year-old boys and girls in all participating countries and economies had used a computer and had accessed the Internet by the time they took the PISA test (Table 2.2). Results also show that boys started using computers and the Internet at an earlier age than girls (Figure 2.2 and Table 2.3). On average across OECD countries, around a third of students reported that they had started using a computer before they set foot in a classroom (33% of students reported that they had used a computer before the age of 6), and around 15% of students reported that they had first accessed the Internet before that age. For both activities, boys started earlier than girls. On average, boys are 8 percentage points more likely than girls to have used a computer before the age of 6. In only 3 of the 42 countries and economies surveyed was there no such gender gap; and in the Netherlands, girls were more likely than boys to have used a computer before the age of 6. Similarly, in all but four countries, boys started accessing the Internet at a younger age than girls.

Although computers are becoming familiar pieces of hardware in many classrooms, most 15-year-olds who use computers regularly do so outside of school, on weekends, during their leisure time, and generally not for school work. On average across OECD countries, boys use the Internet for an average of three hours (180 minutes) on a typical weekend day, 17 minutes more than girls (Figure 2.3). During the week, too, boys use the Internet more than girls. On average across OECD countries, boys reported using the Internet for 144 minutes and girls for 130 minutes on typical weekdays. Perhaps surprisingly, boys also reported using the Internet more at school than girls: in 26 countries and economies, boys reported using the Internet for longer at school on a typical weekday than girls (Table 2.4).

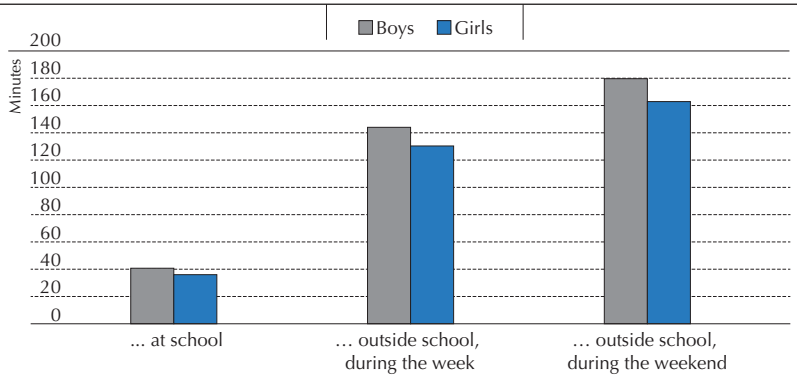
But being familiar with smartphones and computers does not necessarily mean that a student can use those devices competently or know how to critically assess the information he or she collects through them. The learning outcomes that are associated with digital technologies depend, to a great extent, on how – and how frequently – students use them.

PISA results show that boys and girls use computers differently. Boys are more likely than girls to play computer games frequently. On average across OECD countries, only one in four boys, but more than one in two girls, reported that they had never or hardly ever played a one-player game on a computer (Table 2.5a); and 29% of boys but 71% of girls reported that they had never or hardly ever played collaborative online games (Table 2.5b).

■ Figure 2.3 ■

How much time do girls and boys spend on the Internet?

Minutes spent on the Internet, OECD countries

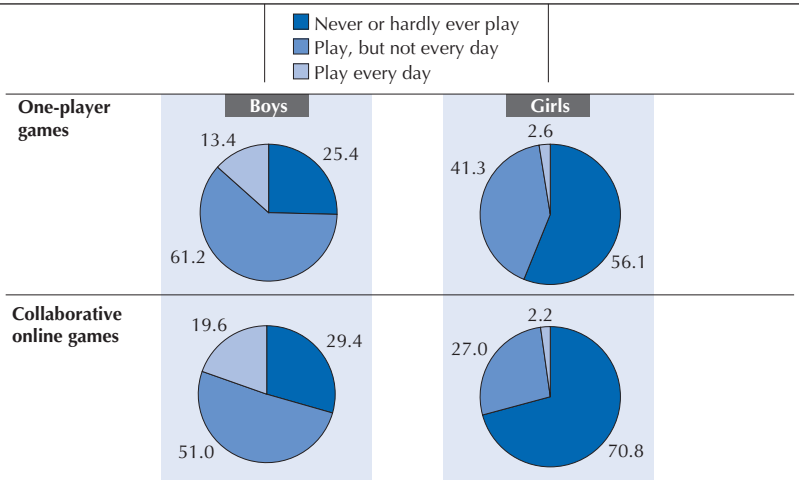


Note: All differences between boys and girls are statistically significant.
Source: OECD, PISA 2012 Database, Table 2.4.

■ Figure 2.4 ■

How often do girls and boys play video games on the computer, outside of school?

Percentage of students, OECD countries



Source: OECD, PISA 2012 Database, Tables 2.5a and 2.5b.

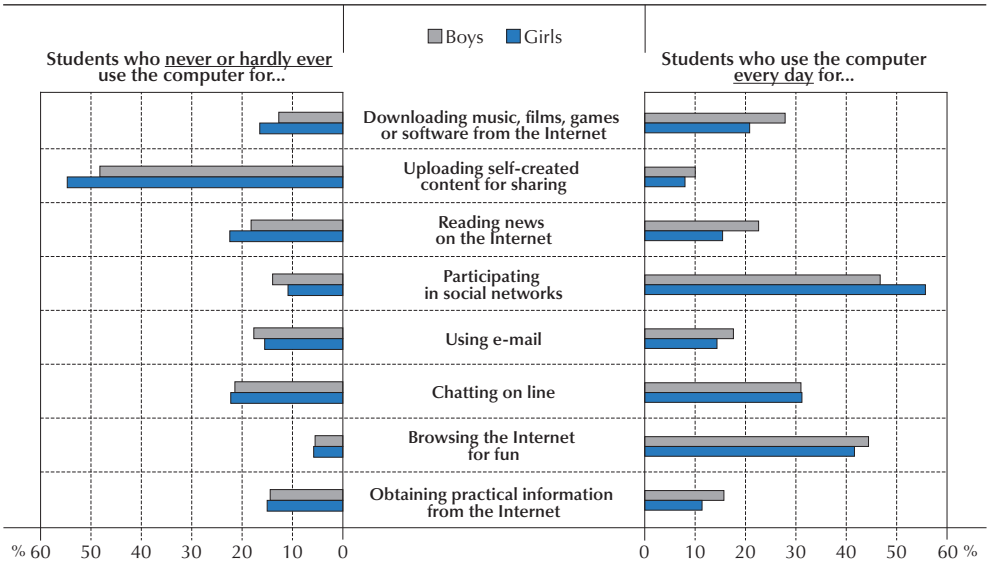
This gender gap was observed in every country and economy that participated in PISA 2012 except Jordan, where boys are more likely than girls to have never played one-player games. Boys were also more likely to report that they play video games every day. They were 11 percentage points more likely than girls to report that they play one-player online games daily (Table 2.5a) and 17 percentage points more likely than girls to report that they play collaborative online games every day (Table 2.5b).

Figure 2.5 shows that boys also download music, films, games and software from the Internet more frequently than girls do. In fact, across OECD countries, the proportion of boys who reported that they use a computer to download music, films, games or software from the Internet every day is 7 percentage points larger than that of girls who so reported (Table 2.5c). Boys were also more likely than girls to report that they upload their own digital content onto the Internet (Table 2.5d). And in 41 of 42 participating countries and economies, boys were more likely than girls to report that they use computers to read the news on the Internet every day; across OECD countries, 23% of boys and 15% of girls so reported (Table 2.5e).

■ Figure 2.5 ■

Gender disparities in how girls and boys use the computer

OECD countries



Source: OECD, PISA 2012 Database, Tables 2.5c to 2.5j.

While video gaming and uploading or downloading content is a more common activity among boys than among girls, girls are more likely than boys to use computers to participate in social networks. Across OECD countries, the proportion of girls who use the computer to participate in social networks every day is 9 percentage points larger than the proportion of boys who do (Table 2.5f). In most PISA-participating countries and economies, differences in the proportions

of boys and girls who reported that they use digital technologies to check e-mails and chat on line, to browse the Internet for fun or to obtain practical information through the Internet are small or non-existent (Tables 2.5g to 2.5j), though boys tend to display more polarised behaviours and be either heavy users or not use technologies at all.

Perhaps not surprisingly, PISA finds no significant differences in how boys and girls use computers for and at school. Gender differences in the extent to which boys and girls use e-mail outside of school to communicate with other students about schoolwork, communicate with teachers, and/or submit homework or other schoolwork are negligible. Gender differences are also nearly non-existent in students' use of computers outside of school to download, upload or browse material from their school's website, to check the school's website for announcements, or to share school-related materials with other students. In general, none of these activities is common; in many countries, more than one in two boys and girls reported that they never or hardly ever engage in these activities (Tables 2.6a to 2.6g).

There are also no overall differences in the ways boys and girls use computers at school to chat on line, use e-mail, browse the Internet for schoolwork, download, upload or browse material from the school's website, post their own work on the school's website, practice drilling, such as for foreign-language learning or mathematics, do homework while at school or use computers for group work and to communicate with other students. And while there are large differences in the extent to which boys and girls use a computer at school to play simulation games, according to the students' reports, this activity is not common. On average across OECD countries, 71% of boys and 86% of girls reported that they never or hardly ever play such games (Tables 2.7a to 2.7i).

Video gaming and student performance

There is extensive research on the addictive nature of gaming and the potentially negative consequences that playing video games could have on academic performance, students' health and lifestyles (Smyth, 2007; Sharif and Sargent, 2006; Drummond and Sauer, 2014; Gentile et al., 2004; Barlett et al., 2009). If students spend more time playing video games, they may have less time to spend doing physical activities or homework, both of which are associated with better learning outcomes.

By their very nature, video games may undermine two of the attitudes that are indispensable for learning at school: focus and attention. While video games demand both, they do so in exciting and fast-paced virtual environments – unlike school curricula, which are rarely developed and delivered in ways that are primarily designed to be entertaining. As a result, students who play video games excessively might not be able to focus on their work at school (Ferguson, 2011), may be less willing to spend time on school work at home (Cummings and Vanderwater, 2007), might develop sleep problems (King et al., 2013), and might be less perseverant if there are no immediate rewards for their efforts, like those offered in gaming (Swing et al., 2010). Excessive gaming is also associated with lower social functioning, greater anxiety and mental health problems (Mentzoni et al., 2011; van Schie and Wiegman, 1997; Desai et al., 2010), and a higher incidence of obesity (Vanderwater et al., 2004); and playing violent games may also be associated with aggressive behaviour (Anderson and Bushman, 2002; Carnagey and Anderson, 2005; Carnagey et al., 2007).

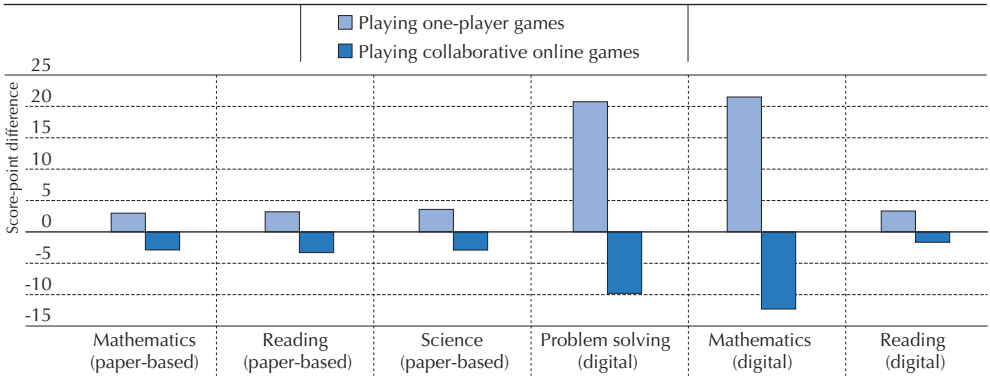
However, some research shows that video gaming could also have positive effects on learning, since video games can be effective cognitive training tools. Many games incorporate good learning principles that can stimulate students' cognitive functioning and assist in their psychosocial adjustment, as well as hone problem-solving and spatial skills (Gee, 2005; Adachi and Willoughby, 2013; Green and Bavelier, 2006; Przybylski, 2014; Subrahmanyam and Greenfield, 1994; Spence and Feng, 2010; Connolly et al., 2012).

PISA 2012 reveals that, across the world, boys are much more likely than girls to play video games and to play such games every day. Is there a link between this behaviour and the gender gap in student performance? Results from PISA suggest that the association between academic performance and video gaming depends on the kinds of games students play and how frequently they play them. Students who play one-player video games between once a month and almost every day perform better in mathematics, reading, science and problem solving, on average, than students who play one-player games every day. They also perform better than students who never or hardly ever play such games. By contrast, collaborative online games appear to be associated with lower performance, regardless of the frequency of play (Figure 2.6 and Table 2.8a). Because boys tend to be daily users of video games and are much more likely than girls to play online collaborative games, the gender gap in video gaming translates into a performance advantage for girls.

■ Figure 2.6 ■

Relationship between performance and video gaming

OECD countries



Note: All performance differences are statistically significant.
Source: OECD, PISA 2012 Database, Table 2.8a.

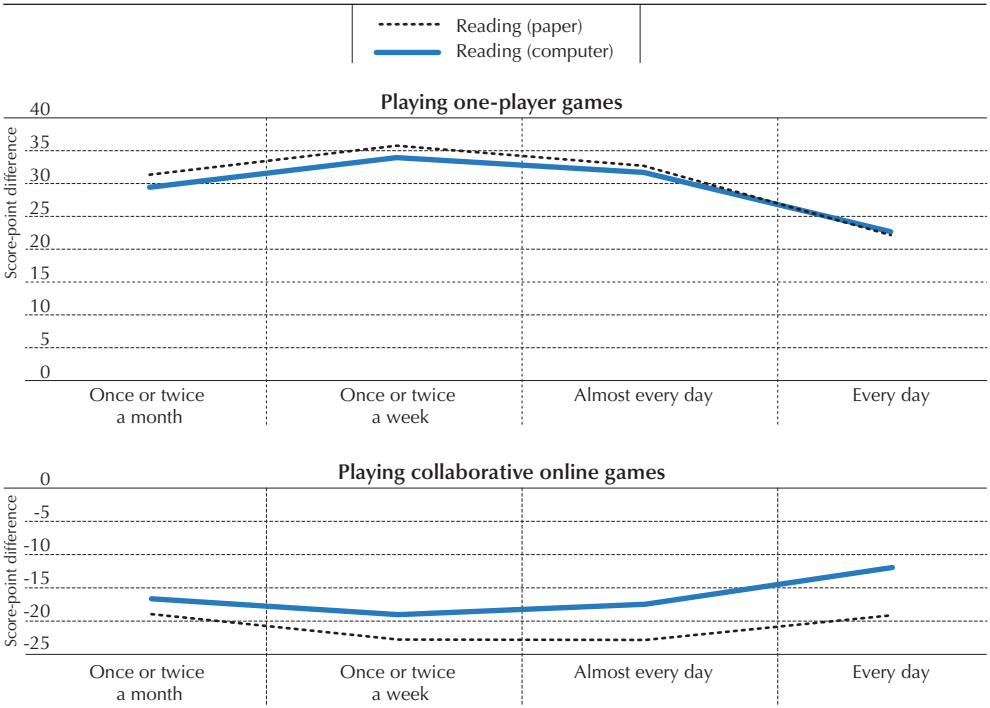
In PISA 2012, students in 26 countries and economies not only answered questions about video gaming in addition to sitting the main paper-based tests, they also sat an additional mathematics and reading assessment that was delivered on computer. The computer-based assessment required students to interact with the test questions. For example, in the computer-based reading assessment, students had to navigate through a set of pages and search for information in a pseudo-online space. In mathematics, students could use the computer to explore three-dimensional shapes or sort datasets according to different criteria. In other words, the computer-based mathematics and

reading assessments differed from the paper-based tests not only because they were delivered on a computer, but also because they assessed a different set of skills – some of which, such as spatial reasoning, have been shown to be associated with video gaming (Feng et al., 2007).

Results in Table 2.8a suggest that boys tend to do better in both mathematics and reading when they sit a computer-based test, compared to their performance on paper-based tests – and that this advantage is largely a by-product of boys' familiarity with video games. The more frequently students play one-player video games and collaborative online games, which boys tend to play more than girls, the worse their relative performance on paper-based tests (Table 2.8b). Very frequent video-gaming appears to "crowd out" other activities, such as doing homework regularly, that help students to acquire reading and mathematics skills. In computer-based tests, the negative effects of video-gaming may be counterbalanced by the positive effect video-gaming may have on acquiring the specific set of skills that is assessed in such tests. And students who frequently play video games will, necessarily, be more at ease – and may even prefer – sitting a test using a computer.

■ Figure 2.7 ■

Performance difference between computer-based and paper-based reading assesments, by the frequency of playing video games



Note: The figure shows the score-point difference between students who never play video games and students who play video games with different levels of frequency.
Source: OECD, PISA 2012 Database, Table 2.8a.

HOW DO BOYS AND GIRLS SPEND THEIR TIME OUTSIDE OF SCHOOL? UNPLUGGED

Reading for enjoyment

It should come as no surprise that results from the PISA 2009 assessment found that students who enjoy reading the most perform significantly better in reading than students who enjoy reading the least (Table 2.9a). Better readers tend to read more because they are more motivated to read, which, in turn, leads to improved vocabulary and comprehension skills.

PISA 2009 asked students how much time they usually spend reading for enjoyment. Students could choose from "I do not read for enjoyment", "I read for up to 30 minutes a day", "I read for more than 30 minutes but less than 60 minutes a day", "I read for between 1 and 2 hours a day" and "I read for more than 2 hours a day".

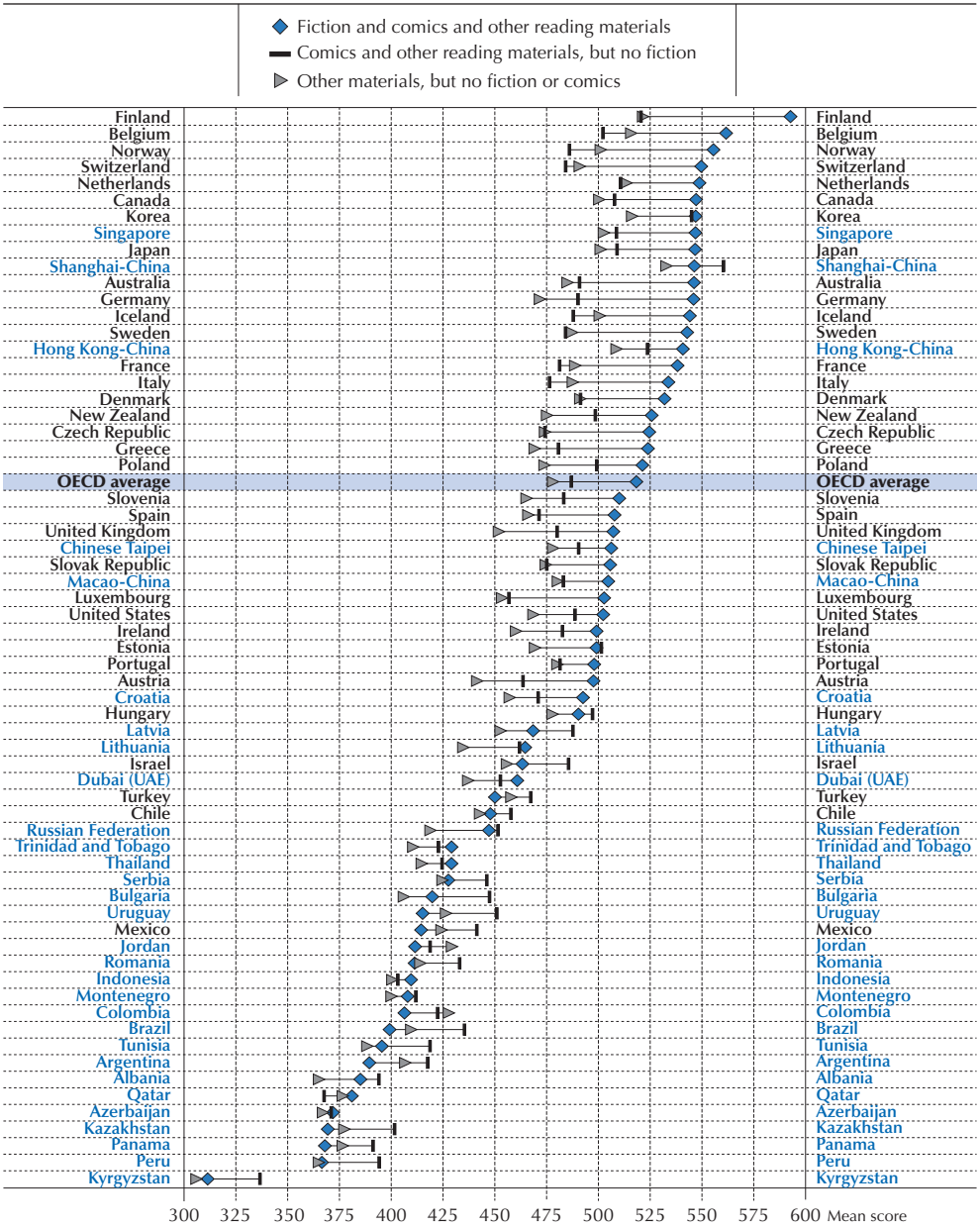
On average across OECD countries, over one-third of students – and 40% or more in Austria, Belgium, the Czech Republic, Germany, Ireland, Japan, Luxembourg, the Netherlands, Norway, the Slovak Republic, Switzerland, the United States, and in the partner countries Argentina and Liechtenstein – reported that they did not read for enjoyment at all (Table 2.9a). On average, these students scored 460 points on the reading assessment, well below the OECD average of 493 points. Another one-third of students across OECD countries read for 30 minutes per day or less. Their mean score of 504 points is above the OECD average. A further 17% of students across OECD countries read for between half-an-hour and one hour per day. They scored 527 points, on average in reading. Students who reported that they read for between one and two hours per day, and assiduous readers, who read for enjoyment for more than two hours daily, scored 532 and 527 points, respectively (Table 2.9a).

PISA 2009 found that, in most countries, the difference in reading scores between students who spend less than 30 minutes per day reading for enjoyment and students who do not read for enjoyment at all is greater than the difference in scores between students who spend half an hour to an hour reading for enjoyment and students who spend less than 30 minutes. In general, the score-point difference between different groups of students shrinks as students spend more time reading for enjoyment. This may mean that the returns on the time students spend reading for enjoyment decrease as time invested by students increases, or that poor readers need more time to read a text (Table 2.9a).

Of course, it is not just how long students spend reading, but also the types and complexity of reading materials that make a difference. PISA 2009 asked students to indicate how often they read magazines, comic books, fiction (novels, narratives, stories), non-fiction and newspapers, because they want to. Students could indicate that they read each type of material "Never or almost never", "A few times a year", "About once a month", "Several times a month" or "Several times a week". Students who reported that they read fiction and who may have also reported that they read other material, excluding comic books, attained the highest scores in the reading assessment (Figure 2.8). In most countries, these students perform more than one PISA proficiency level in reading above their peers who do not read any material regularly – the equivalent of around 60 score points (Table 2.9d).

■ Figure 2.8 ■

Reading performance, by the materials students read

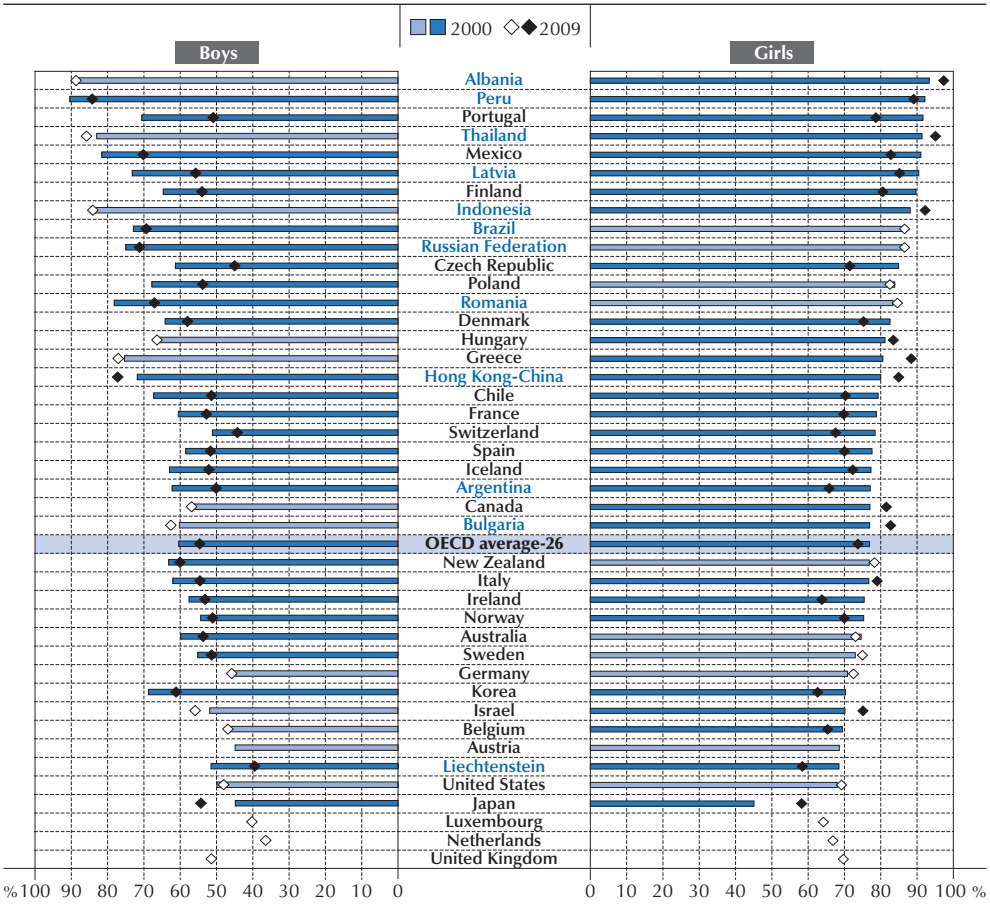


Note: Liechtenstein does not feature in this figure because of its small sample size.
Countries and economies are ranked in descending order of the mean performance of students who read fiction, comics and other reading materials.
Source: OECD, PISA 2009 Database, Table 2.9d.

To read, or not to read, there's really no question: reading anything for enjoyment is better for student performance than reading nothing. Compared with not reading for enjoyment at all, reading fiction for enjoyment is associated with the largest score difference in the PISA 2009 reading assessment, but reading magazines or comic books is also associated with higher reading proficiency (Table 2.9i). PISA 2009 found that, in all countries and economies except Korea, girls read more for enjoyment than boys (Table 2.9a). In fact, PISA found that the gender gap in reading for enjoyment is widening: between 2000 and 2009, both boys and girls lost interest in reading; but the drop in the proportion of boys who read for enjoyment was greater than the decline in the proportion of girls who read for enjoyment (Figure 2.9 and Table 2.9c).

■ Figure 2.9 ■

Change between 2000 and 2009 in the percentage of boys and girls who read for enjoyment



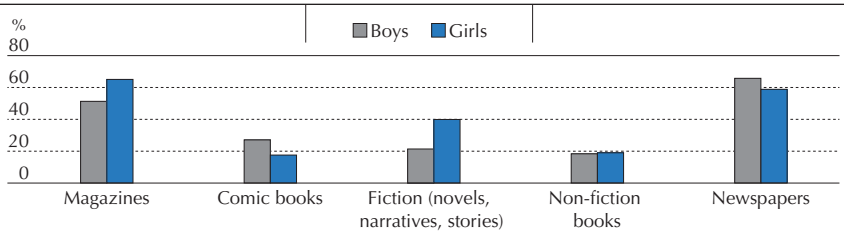
Note: All statistically significant changes are marked in a darker tone (PISA 2009 – PISA 2000).
Countries and economies are ranked in descending order of the percentage of girls who read for enjoyment in 2000.
Source: OECD, PISA 2009 Database, Table 2.9c.

In almost all countries, boys were not only less likely than girls to report reading for enjoyment, they also have different reading habits. On average across OECD countries, 66% of boys read newspapers for enjoyment regularly, while only 59% of girls do. Although reading comic books regularly is much less common, on average across OECD countries, boys are much more likely than girls to read comic books several times a month or several times a week (27% for boys and 18% for girls). By contrast, in every participating country, girls are more likely than boys to be frequent readers of fiction; and in almost all countries, girls are more likely than boys to read magazines (65% for girls and 51% for boys) (Figure 2.10 and Table 2.9d).

■ Figure 2.10 ■

What boys and girls read for enjoyment

Percentage of boys and girls who reported that they read the following materials because they want to "several times a month" or "several times a week", OECD average

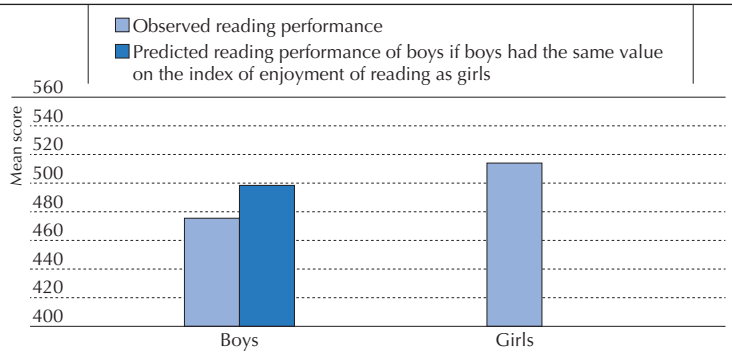


Note: All gender differences are statistically significant.
Source: OECD, PISA 2009 Database, Table 2.9d.

Results from the PISA 2009 assessment of reading suggest that a large share of gender differences in reading performance may stem from disparities in how much boys and girls read for enjoyment and in how much boys and girls engage in reading activities. Indeed, the assessment found that if boys enjoyed reading to the same extent as girls do their reading scores would be 23 points higher, on average across OECD countries (Figure 2.11 and Table 2.9k).

■ Figure 2.11 ■

Boys' reading performance if they enjoyed reading as much as girls do



Source: OECD, PISA 2009 Database, Table 2.9k.

While PISA results suggest that any reading is better than no reading, teachers and parents often discourage boys from reading such material as sports magazines or comic books in the belief that these materials are not the best for developing reading skills. But, for a variety of reasons, boys may not like or choose to read fiction, and discouraging them from reading what they prefer may alienate them from the habit of reading altogether.

Doing homework

PISA 2012 asked students to report how much time per week they spend doing homework or other study set by teachers. Figure 2.12 shows that boys are overwhelmingly less likely than girls to spend time doing homework. On average across OECD countries, girls spend 5.5 hours per week doing homework while boys spend a little less than 4.5 hours (Table 2.10a). In Croatia, Estonia, Italy, Latvia, Lithuania, Poland, the Russian Federation and Singapore, boys spend over 2 hours less than girls, on average, doing homework. In Italy, for example, boys spend an average of 7 hours doing homework while girls spend an average of over 10 hours. And while in Poland boys spend an average of 5 hours doing homework, girls clock in around 8 hours per week. Albania, Korea, Liechtenstein and Viet Nam are the only countries where girls do not spend more time than boys doing homework or other study set by teachers.

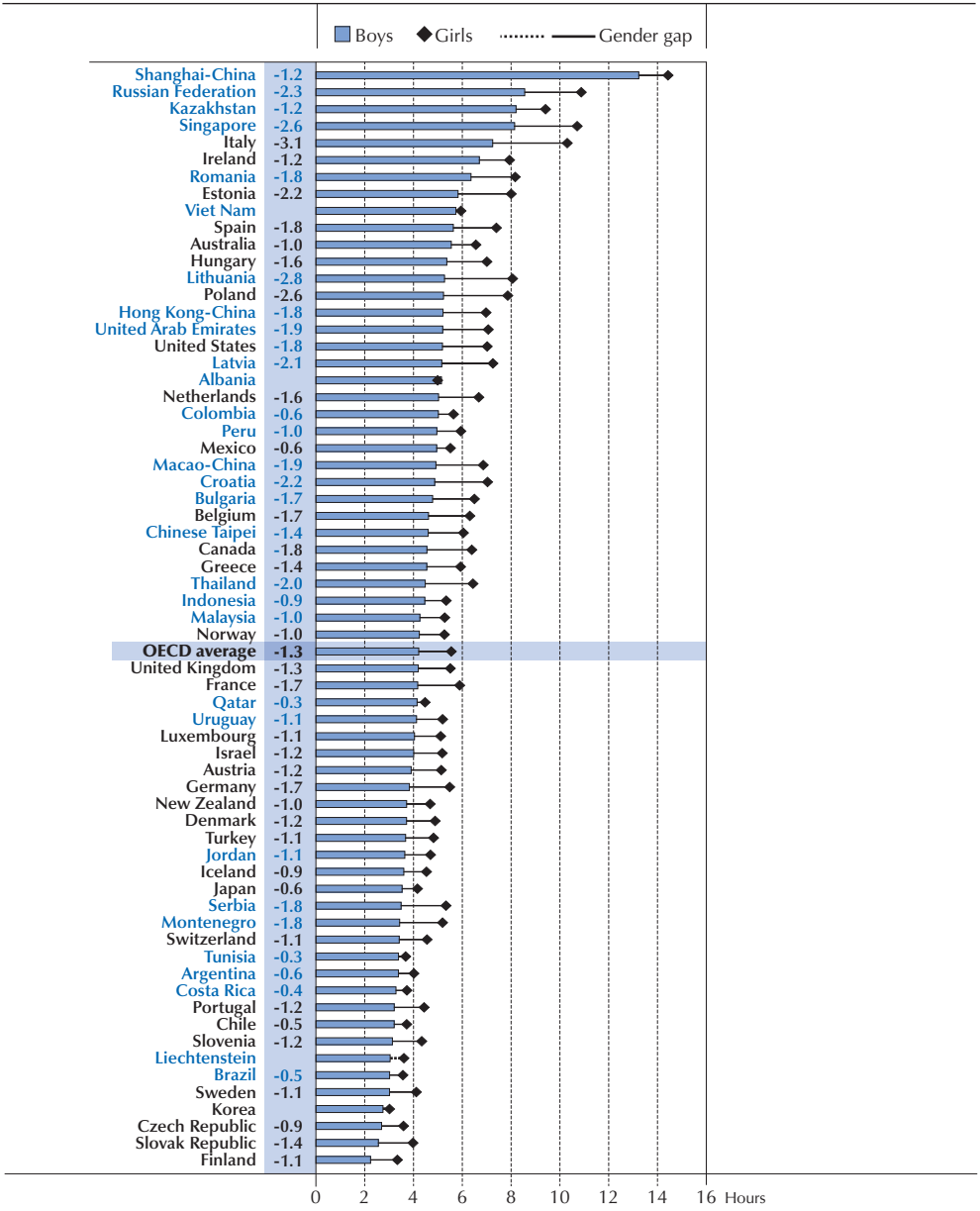
No general patterns emerge in how much time boys and girls spend working with personal tutors, attending after-school classes, studying with parents, and/or repeating and practicing school lessons by working on a computer. According to their reports, boys and girls spend much less time on these activities, on average, than the amount of time they spend doing homework. Korea and Viet Nam are notable exceptions. In these countries, boys and girls spend a considerable amount of time attending after-school classes organised by a commercial company, paid for by parents. In Korea, boys spend 3.8 hours and girls spend 3.4 hours in such classes; in Viet Nam, boys spend as many as 4.6 hours while girls spend 5.1 hours in after-school classes (Table 2.10a).

Table 2.10b suggests that doing homework or other study set by teachers is associated with better performance in mathematics, reading and science. On average across OECD countries, for each hour per week students spend doing homework, they score 4.5 points higher in reading and mathematics and 4.3 points higher in science. Because boys spend less time than girls doing homework, their performance suffers. For example, when considering boys and girls who spend the same amount of time doing homework, the gender gap in mathematics is wider, the gender gap in reading is narrower, and the gender gap in science favours boys (Figure 2.13 and Table 2.10b).

Among OECD countries, in Belgium, France, Italy, the Netherlands and the United States, where homework is strongly associated with performance and where the gender gap in time spent doing homework is large, gender differences in time spent doing homework have a strong impact on gender differences in performance. As shown in Table 2.10c, except for a small number of countries, the association between homework and student performance is similar regardless of the level of student achievement. That means that gender-specific patterns of working on homework have a negligible effect on gender gaps among low achievers and top performers.

■ Figure 2.12 ■

Time spent by boys and girls doing homework assigned by their teachers

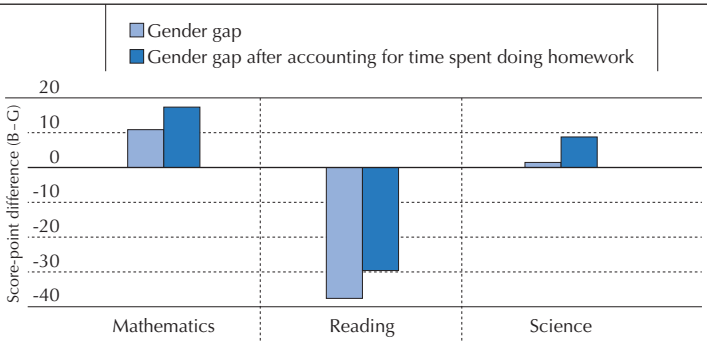


Note: The size of the gender gap (in hours and when statistically significant) is shown next to the country/economy name and is indicated by a solid line (boys–girls).
Countries and economies are ranked in descending order of the number of hours, on average, boys reported doing homework assigned by their teachers.
Source: OECD, PISA 2012 Database, Table 2.10a.

■ Figure 2.13 ■

Gender gap in performance related to time spent doing homework

Performance difference between boys and girls (boys–girls), OECD countries



Note: All gender differences are statistically significant.
Source: OECD, PISA 2012 Database, Table 2.10b.

ATTITUDES TOWARDS SCHOOL AND LEARNING

Fifteen-year-olds are in the middle of adolescence – a time when children start to claim their independence from their parents and when social acceptance by one's peers can have a powerful influence on behaviour (Baumeister and Leary, 1995; Rubin, et al., 1998). Other students can encourage and support their classmates in their drive to achieve; they can also undermine students' motivation (Ladd et al., 2012).

Around this time, too, gender differences in attitudes towards school and learning become evident. These seem to be strongly related to how girls and boys have absorbed society's notions of "masculine" and "feminine" behaviour and pursuits as they were growing up. For example, several research studies suggest that, for many boys, it is not acceptable to be seen to be interested in school work. Boys adopt a concept of masculinity that includes a disregard for authority, academic work and formal achievement. For these boys, academic achievement is not "cool" (Salisbury et al., 1999). Although an individual boy may understand how important it is to study and achieve at school, he will choose to do neither for fear of being excluded from the society of his male classmates (Van Houtte, 2004). Indeed, some have suggested that boys' motivation at school dissipates from the age of eight onwards, and that by the age of 10 or 11, 40% of boys belong to one of three groups: the "disaffected", the "disappointed" and the "disappeared". Members of the latter group either drop out of the education system or are thrown out (Salisbury et al., 1999). Meanwhile, studies show that girls seem to "allow" their female peers to work hard at school, as long as they are also perceived as "cool" outside of school (Van Houtte, 2004). Other studies suggest that girls get greater intrinsic satisfaction from doing well at school than boys do (DiPrete and Buchmann, 2013).

While most of the students who were assessed in PISA 2012 acknowledge the value of education (93% of students reported that they believe that trying hard at school is important; only 12%

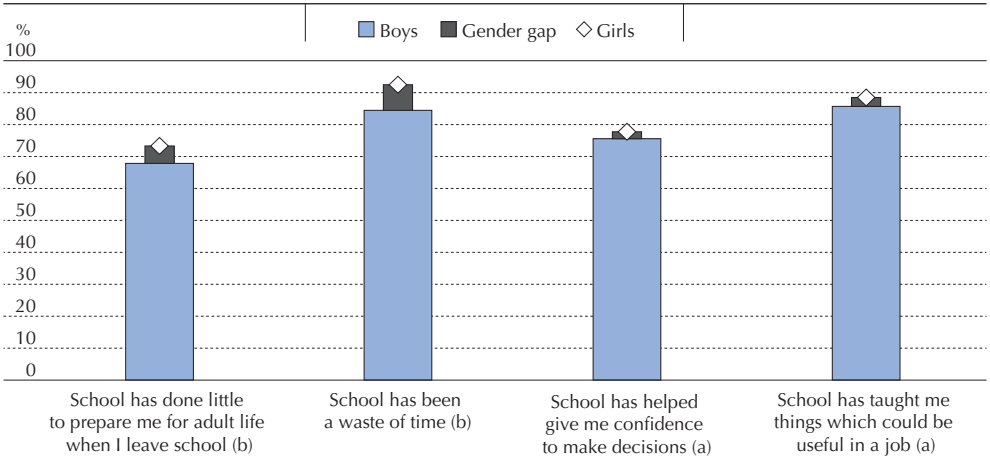
believe that school has been a waste of time), many students are not engaged with school; and boys are more likely than girls to belong to this latter group. When students are disengaged with school, they act out their disengagement with bad behaviour: they arrive late for school or skip classes or days of school. In doing so, they miss out on learning opportunities, fall behind in class and earn low marks – all of which then feed back into their discouragement and disaffection, completing a vicious circle.

Across most countries and economies that participated in PISA 2012, boys were more likely than girls to express negative attitudes towards school and learning (Figure 2.14). For example, across OECD countries, boys were 8 percentage points more likely than girls to report that school is a waste of time, and were 5 percentage points more likely to agree or strongly agree that school has done little to prepare them for adult life when they leave school. They were also 5 percentage points less likely than girls to agree or strongly agree that trying hard at school is important, and 3 percentage points less likely to report that they enjoy receiving good marks (Table 2.15).

■ Figure 2.14 ■

How boys and girls feel about school

OECD average percentage of students who reported that they "agree" or "strongly agree" (a) or that they "disagree" or "strongly disagree" (b) with the statements:



Note: All gender differences are statistically significant.
Source: OECD, PISA 2012 Database, Table 2.15.

Boys also appear to be more likely than girls to arrive late for school (Table 2.11a) and skip classes or days of school (Table 2.12), although between 2003 and 2012 the proportion of both boys and girls who arrived late for school shrank (Table 2.11b).

In 36 countries and economies, girls were less likely than boys to have reported that they had arrived late for school in the two weeks before the PISA test. Although the difference in the proportion of boys and girls who reported that they had arrived late is small – 3 percentage points,

on average across OECD countries – it is larger than ten percentage points in Lithuania and Thailand (Table 2.11a). On average across OECD countries, boys and girls were less likely in 2012 than in 2003 to report that they had arrived late. Still, the improvement was greater among girls than among boys (Table 2.11b).

Trends between 2003 and 2012 show better punctuality among girls than boys in Denmark, Korea and Turkey, where the gender gap in punctuality widened by around five percentage points or more, in favour of girls. In Korea in 2003, girls were more likely than boys to have arrived late for school in the two weeks prior to the PISA test; by 2012, girls and boys were similarly punctual. In Turkey, boys and girls in 2003 reported at a similar rate that they had arrived late for school; but by 2012, boys were eight percentage points more likely than girls to have reported that they had arrived late for school (Table 2.11b).

Students who reported that they had arrived late for school at least once in the two weeks prior to the PISA test scored lower than students who reported that they had not arrived late for school during that period. Across OECD countries, the difference in performance that is associated with arriving late for school among students of the same gender is 19 points in mathematics and reading and 20 points in science (Table 2.11a). Performance differences associated with a lack of punctuality are particularly large among low achievers. On average across OECD countries, the gap in scores that is associated with arriving late for school is wider among the lowest-achieving students than it is among the highest-achieving students (OECD, 2013a). Since boys tend to be more likely than girls to be low performers (see Chapter 1) and are also more likely to arrive late for school, their performance is more likely to suffer because arriving late for school means that these students miss out on learning opportunities.

GENDER DIFFERENCES IN SELF-REGULATION

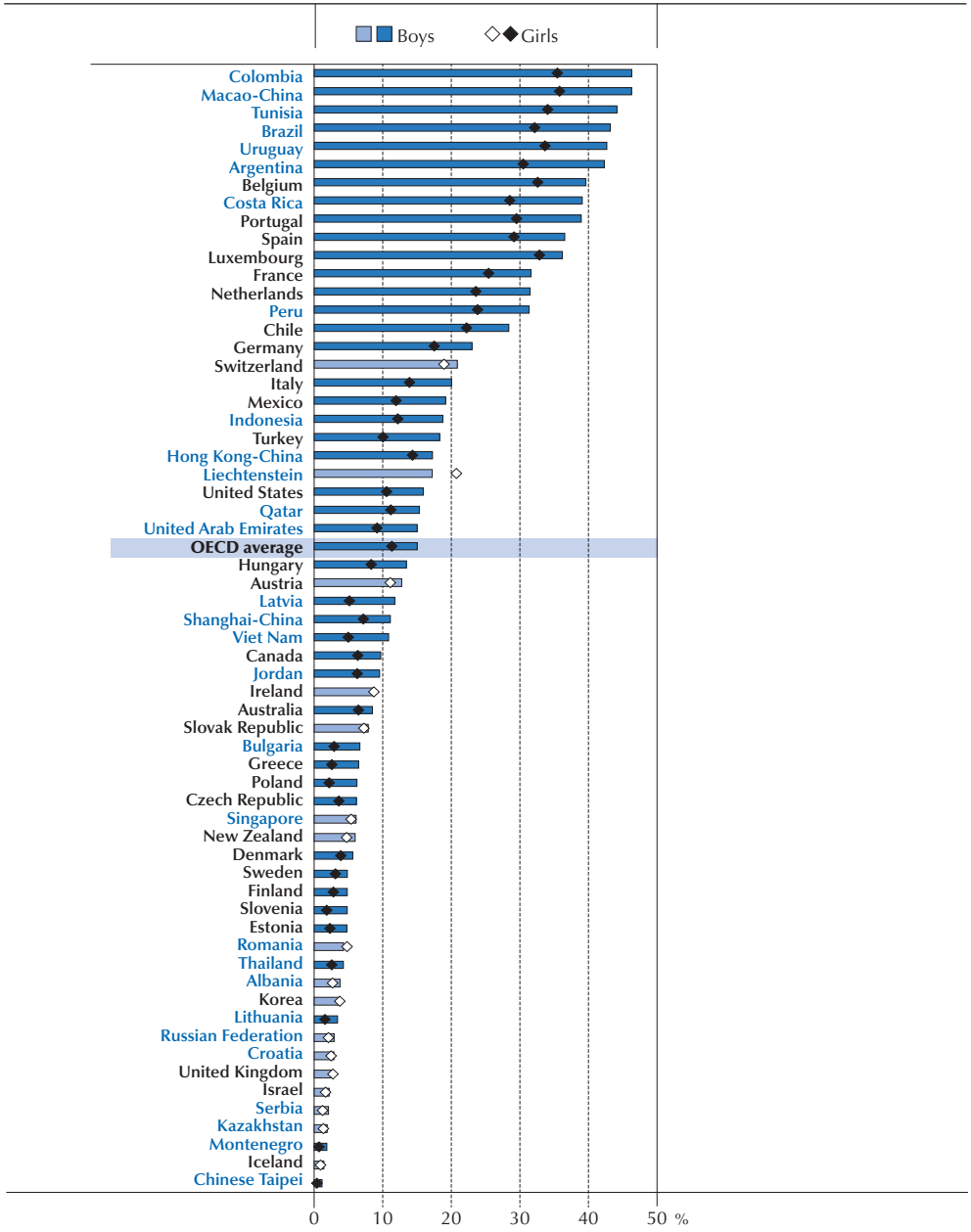
Study after study suggests that the best-performing students are "good" students. A good student is one who is disciplined, follows rules, acts appropriately and respectfully towards teachers and fellow students, recognises authority, can sit for long periods of time, and follows instructions. In general, individuals who have high levels of self-regulation – the ability to control, direct, and plan one's thinking, emotions and behaviours (Schunk and Zimmerman, 1997) – are better students than those who have low levels of self-regulation.

Grade repetition and marks

Whether because of socialisation or innate differences, boys are more likely than girls, on average, to be disruptive, test boundaries and be physically active – in other words, to have less self-regulation (Matthews et al., 2009). From a young age, boys are less likely to raise their hand in class to ask to speak, they are worse at waiting their turn to speak or engage in an activity, they are less likely to listen and pay attention before starting a project and, as a result, they have a harder time following teachers' instructions. As boys and girls mature, gender differences grow even wider as boys start withdrawing in class and becoming disengaged. As teenagers, boys tend to be less self-disciplined than girls: they are less likely than girls to be able to delay gratification, plan ahead, set goals, and persist in the face of frustrations and setbacks (Duckworth and Seligman, 2006; Kenney-Benson et al., 2006).

■ Figure 2.15 ■

Grade repetition, by gender

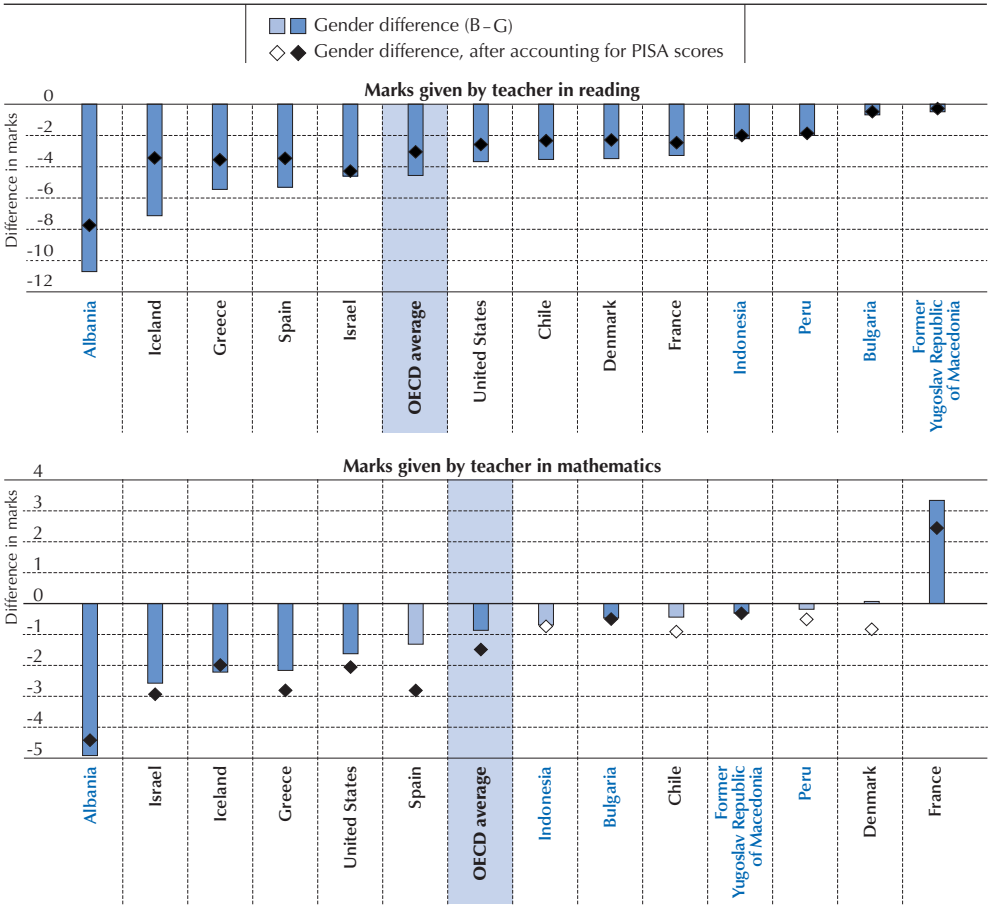


Note: Gender differences that are statistically significant are marked in a darker tone.
Countries and economies are ranked in descending order of the percentage of boys who repeated a grade at least once.
Source: OECD, PISA 2012 Database, Table 2.13b.

Many teachers reward organisational skills, good behaviour and compliance with their instructions by giving higher marks to students who demonstrate these qualities. As Figures 2.15 and 2.16 suggest, teachers and school personnel may sanction boys' comparative lack of self-regulation by giving them lower marks and requiring them to repeat grades. When comparing students who perform equally well in reading, mathematics and science, boys were more likely than girls to have repeated at least one grade before the age of 15 and to report that they had received lower marks in both language-of-instruction classes and mathematics (Table 2.13a). But it is unclear how "punishing" boys with lower grades or requiring them to repeat grades for misbehaviour will help them; in fact, these sanctions may further alienate them from school.

■ Figure 2.16 ■

Students' marks



Note: Gender differences that are statistically significant are marked in a darker tone.
Countries and economies are ranked in ascending order of the difference between boys and girls in the mark they reported having received from their teacher, before accounting for PISA scores.
Source: OECD, PISA 2000 Database, Table 2.13a.

An analysis of students' marks in reading and mathematics reveals that while teachers generally reward girls with higher marks in both mathematics and language-of-instruction courses, after accounting for their PISA performance in these subjects, girls' performance advantage is wider in language-of-instruction than in mathematics. This suggests both that girls may enjoy better marks in all subjects because of their better classroom discipline and better self-regulation, but also that teachers hold stereotypical ideas about boys' and girls' academic strengths and weaknesses. Girls receive much higher-than-expected marks in language-of-instruction courses because teachers see girls as being particularly good in such subjects. Teachers may perceive boys as being particularly good in mathematics; but because boys have less ability to self-regulate, their behaviour in class may undermine their academic performance, making this hypothesis difficult to test.

Investing effort

Findings from psychological experiments conducted in laboratory settings suggest that, among boys and girls of similar academic ability, girls tend to be more reluctant to compete than boys, while boys are more responsive to extrinsic motivation than girls. Within countries, girls tend to report higher levels of motivation to do their best in a test (DeMars et al., 2013), although it appears that gender differences in motivation related to test-taking may vary across countries (Eklöf et al., 2014), and the relationship between reported motivation and performance may be stronger among boys (Eklöf, 2007; Eklöf et al., 2014; Eklöf and Nyroos, 2013; Karmos and Karmos, 1984).

When students participating in PISA 2012 finished the test, they were asked how much effort they thought they had put into it, and to hypothesise how much effort they would have put into the test if their performance had counted towards their school marks. The question appeared on the last page of their assessment booklet.

■ Figure 2.17 ■

The PISA effort thermometer

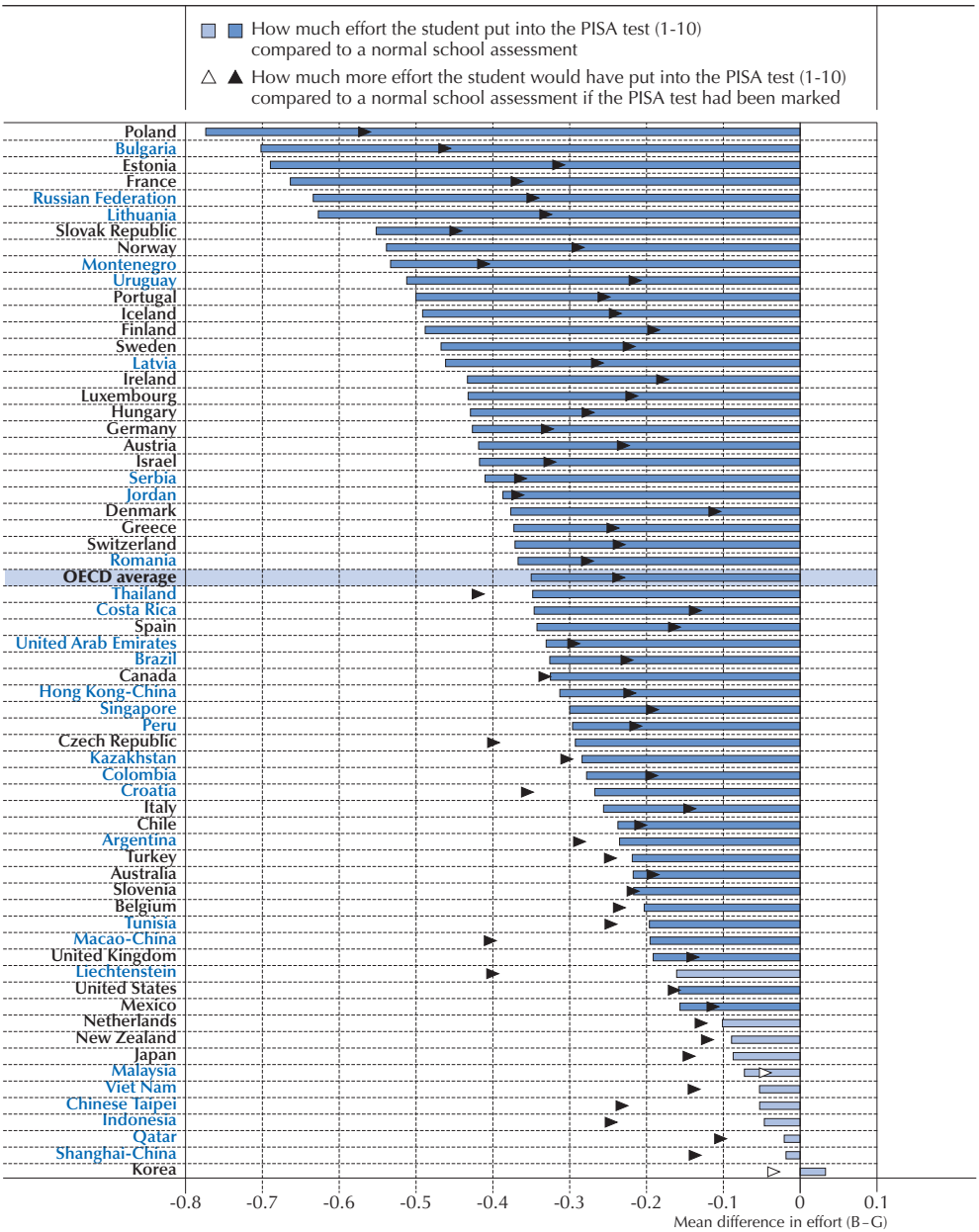
How much effort did you invest ?

Please try to imagine an actual situation (at school or in some other context) that is highly important to you personally, so that you would try your very best and put in as much effort as you could to do well.

In this situation you would mark the highest value on the "effort thermometer" as shown below	Compared to the situation you have just imagined, how much effort did you put into doing this PISA test?	How much effort would you have invested if your marks from the test were going to be counted in your school marks?
☐ 10 ☒ 9 ☐ 8 ☐ 7 ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1	☐ 10 ☐ 9 ☐ 8 ☐ 7 ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1	☐ 10 ☐ 9 ☐ 8 ☐ 7 ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1

■ Figure 2.18 ■

Gender differences in effort



Note: Gender differences that are statistically significant are marked in a darker tone.
Countries and economies are ranked in ascending order of the gender difference in how much effort students put into the PISA test compared to a normal school assessment.
Source: OECD, PISA 2012 Database, Table 2.14.

According to students' reports, girls invest greater effort than boys, on average, both in the low-stakes testing situation that PISA represents, and in the hypothetical scenario in which the PISA test had direct consequences for them because it counted in their school marks. But the gender gap is relatively narrow within each of the two scenarios (Figure 2.18 and Table 2.14). On a scale ranging from 1 to 10, where 1 represents minimum effort and 10 maximum effort, girls reported an effort of 7.67 in the low-stakes PISA test while boys reported an effort of 7.32, on average across OECD countries. Girls reported an effort of 9.36 in the hypothetical high-stakes PISA test while boys reported an effort of 9.13, on average. When performance in the PISA test had an impact on school marks, the gender gap in favour of girls shrank by 0.11 point on the scale, on average. In Denmark, Estonia, Finland, France, Iceland, Ireland, Lithuania, Norway, the Russian Federation and Uruguay, the gender gap in effort invested between the low-stakes assessment and the hypothetical high-stakes scenario is larger than 0.25 point on the scale. In all these countries, the large difference between boys and girls appears to be primarily due to the fact that boys reported investing far less effort in the test in the absence of external rewards.

The ability to regulate one's own thinking and emotions is a product of both innate characteristics and home and school environments. While many of these skills have been acquired by the early teens (Bronson, 2000), the capacity to regulate behaviour to achieve long-term goals takes longer to develop, and only emerges at the end of adolescence (Demetriou, 2000).

Young boys not only tend to be less self-regulating than girls, they also tend to respond more strongly to their environment: when they are in disruptive, chaotic and disorganised settings, their capacity for self-regulation suffers (Wachs et al., 2004); when they are in classrooms with teachers who are well-organised and able to establish a good disciplinary climate, the improvement in their learning is greater than that of girls (Ponitz, et al., 2009). Boys appear to be particularly sensitive to environmental factors, while girls are comparatively less affected by a lack of discipline, disorganisation and chaos in the classroom.

Because technological innovations make it so much easier for people to act on their impulses, individuals who are highly self-regulating may be at a greater advantage, particularly in settings that demand that individuals control their thinking, emotions and behaviour, such as school. Moreover, as the flow of information has increased dramatically over the past decades, individuals who are organised and can understand, summarise and filter large amounts of written material may be at an advantage. In most societies, these individuals are usually female, though why that is so remains a mystery.

Note regarding Israel

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Note regarding the Russian Federation in the Survey of Adult Skills

Readers should note that the sample for the Russian Federation does not include the population of the Moscow municipal area. The data published, therefore, do not represent the entire resident population aged 16-65 in Russia but rather the population of Russia excluding the population residing in the Moscow municipal area.

More detailed information regarding the data from the Russian Federation as well as that of other countries that participated in the Survey of Adult Skills can be found in the *Technical Report of the Survey of Adult Skills* (OECD, 2013).

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