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Academic and socio-emotional resilience among disadvantaged students

This chapter examines resilience among socio-economically disadvantaged students. It focuses on two kinds of student resilience: academic and socio-emotional. In the first part of the chapter, academic resilience is examined using international, national and “core-skills” perspectives. Student-, school- and system-level characteristics associated with academic resilience are considered. The second part of the chapter examines the incidence of social and emotional resilience across countries, and the relationship between academic and socio-emotional resilience.

Notes regarding Cyprus

Note by Turkey: The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognized by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

A 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.

A note regarding Lithuania

Lithuania was not an OECD member at the time of preparation of this publication. Accordingly, Lithuania is shown as a partner country and is not included in the OECD average.

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.



What the data tell us

- Some 11% of socio-economically disadvantaged students across OECD countries are “nationally resilient”, meaning that they score in the top quarter of science performance in their own countries. National resilience is more prevalent in countries and economies with greater equity in student achievement. Algeria, Hong Kong (China), Iceland, Kosovo, Macao (China) and Montenegro have the largest shares of nationally resilient students; but top-performing countries and economies, like Singapore and Beijing-Shanghai-Jiangsu-Guangdong (China), have some of the lowest shares of nationally resilient students.
- On average across OECD countries, 25% of disadvantaged students are “core-skills resilient”, meaning that they score at proficiency Level 3 or above in science, reading and mathematics. This type of academic resilience is more frequently observed in countries with higher average performance. In Hong Kong (China) and Macao (China), more than half of students are core-skills resilient.
- The share of nationally and core-skills resilient students is greater in schools with a better disciplinary climate and among students with a stronger motivation to achieve and who had not skipped classes in the two weeks prior to the PISA test, on average across OECD countries.
- Some 26% of disadvantaged students and 33% of advantaged students are satisfied with their life, feel socially integrated at school and do not suffer from test anxiety, on average across OECD countries. Finland, the Netherlands and Switzerland have the largest shares of socially and emotionally resilient disadvantaged students.
- Nationally resilient students are 78% more likely to be socially and emotionally resilient than disadvantaged students who are not nationally resilient, on average across OECD countries with available data. Core-skills resilient students are 66% more likely to be socially and emotionally resilient than disadvantaged students who are not core-skills resilient.

Student resilience – students’ capacity to overcome barriers and adversities that typically hinder learning processes and outcomes – is a key issue for both equity in education and social mobility. In PISA, resilient students are socio-economically disadvantaged 15-year-olds who beat the odds against them and excel in school. Disadvantaged students who perform well at age 15 tend to continue into higher education and work in skilled jobs later on, as shown in Chapter 5 of this report. Thus, policies and practices that support disadvantaged and resilient students can not only help narrow socio-economic gaps in performance, but also enhance upward social mobility.

While all students face difficulties of one sort or another, socio-economically disadvantaged students tend to be exposed simultaneously to multiple factors that put their learning at risk (OECD, 2016^[11]). Disadvantaged students not only have parents with lower levels of education, working in lower-paid and less-prestigious jobs, they are also more likely to have an immigrant



background, speak at home a language that is different from the one spoken at school, live in rural areas and in single-parent households, had repeated a grade and are enrolled in a vocational track – all of which are associated, in most countries, with lower academic performance. Socio-economically disadvantaged students are also more likely to have poorer socio-emotional outcomes, such as not feeling that they belong at school, and lacking confidence when they face challenging evaluations and tasks (OECD, 2017^[2]).

This chapter is based on two innovations in analysing resilience. First, the chapter considers student resilience not only in terms of academic performance, as in previous PISA reports, but also in terms of social and emotional outcomes. This is consistent with the notion that students' psychological and social well-being is an important education outcome in itself.

Second, the chapter distinguishes between different types of academic resilience to capture the notion that resilience goes beyond international excellence in a single subject. Resilience is considered using a national perspective, by comparing disadvantaged students with the best-performing students in their own countries, and also using a core-skills perspective, by considering the achievement of good levels of performance in three cognitive domains.

Findings in this chapter show that top-performing countries have larger shares of disadvantaged students who perform at Level 3 or above in reading, mathematics and science (meaning that they are “core-skills resilient”); but it is countries with greater equity in education that have more disadvantaged students who perform as well as the top performers in their own countries (meaning they are “nationally resilient”).

The chapter also shows that students' attitudes and behaviours towards school, as well as the schools they attend, make a difference in their chances of being academically resilient. For example, disadvantaged students who do not skip school and who attend schools with a better disciplinary climate are more likely to be resilient. The chapter also shows that disadvantaged students who are socially and emotionally resilient also tend to do better academically – meaning that helping disadvantaged students develop positive attitudes and behaviours towards themselves and their education can also benefit these students' academic development.

ACADEMIC RESILIENCE

Academic resilience, as defined in PISA, is the capacity of socio-economically disadvantaged students to achieve higher levels of performance than would be predicted by their family background. In PISA 2015, on average across OECD countries, the mean science score of disadvantaged students was 452 points, 41 points lower than the mean score of all students, and 88 points lower than the mean score of advantaged students (Table 3.1). Although these are large differences, many disadvantaged students perform better than what these average numbers would lead one to expect. How much better? And who are these resilient students? Where do they study? And how do they manage to overcome the odds against them?

Academic resilience in PISA

In previous PISA reports, academic resilience was usually studied from an international perspective. The level of performance above which socio-economically disadvantaged students



are considered resilient is the top quarter of performance across all countries and economies participating in PISA, after accounting for students' socio-economic status.¹ Defining resilience in this way has the virtue of capturing disadvantaged students' capacity to achieve academic excellence against the most competitive international standards.

But academic resilience among socio-economically disadvantaged students goes beyond international excellence. In this chapter, academic resilience among 15-year-olds is examined using two additional perspectives, as summarised in Figure 3.1. These perspectives capture different types or dimensions of academic resilience.

Figure 3.1 ■ **Types of academic resilience in PISA**

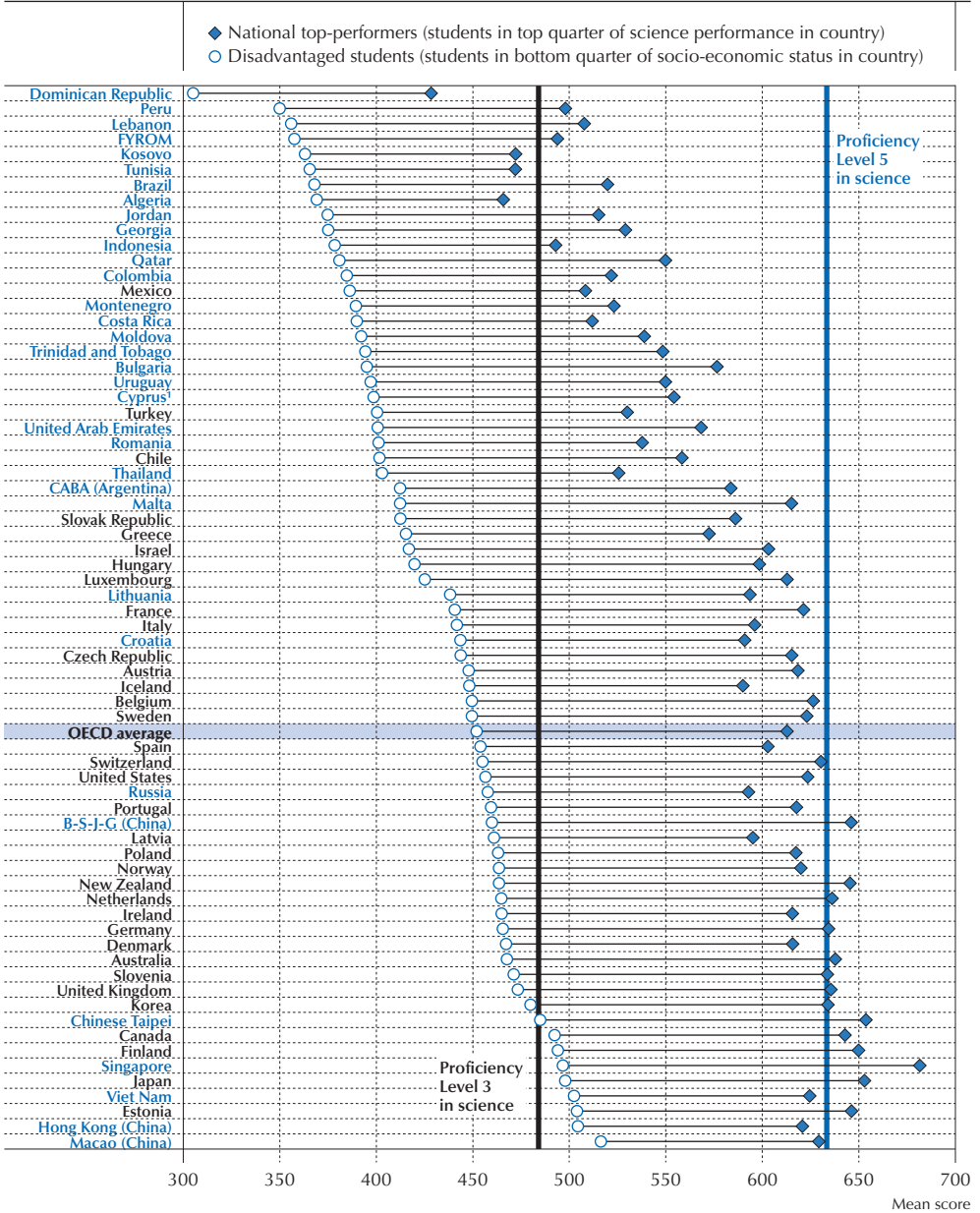
Types of academic resilience	What are these students able to achieve?	How do we measure it?	
International	Academic excellence by international standards	Socio-economically disadvantaged students in their own countries who score...	...in the top quarter of performance in science among all students participating in PISA, after accounting for socio-economic background
National	Academic excellence by national standards		...in the top quarter of performance in science among students in their own country
Core-skills	Core knowledge and skills in key cognitive domains		...at or above Level 3 in PISA in science, reading and mathematics

Note: Socio-economically disadvantaged students are students in the bottom quarter of the PISA index of economic, social and cultural status (ESCS) in their own country.

An important dimension of academic resilience that is not captured by international comparisons is students' capacity to achieve excellence by national standards. Disadvantaged students who score in the top quarter of their own country in science are considered to be "nationally resilient". Achieving academic excellence by national standards is a positive outcome and a major indication of student resilience in itself, because in every PISA-participating country and economy, disadvantaged students perform significantly worse than students in the top quarter of performance nationally. As shown in Figure 3.2, in every country and economy participating in PISA 2015, the average difference in science performance between disadvantaged students and top-performing students in the country/economy is more than 100 points (except Algeria, where the difference is 97 points); in 43 countries and economies, the average difference is larger than 150 points.



Figure 3.2 ■ **Socio-economic disadvantage and science performance**
 Mean science score among socio-economically disadvantaged students
 and national top-performers



1. See notes at the beginning of this chapter.

Countries and economies are ranked in ascending order of the mean science score of disadvantaged students.

Source: OECD, PISA 2015 Database, Table 3.1.

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Performing among the top quarter of students in one's own country is not only very difficult for disadvantaged students, it is also an accomplishment that can have a significant positive impact on future success in education and work. As shown in the longitudinal analyses presented in Chapter 5, 15-year-old students who perform as well as their best-performing peers in their own countries are more likely to continue into higher education and obtain better-paid and more prestigious jobs. For disadvantaged students, this means upwards educational and social mobility.

The measure of national resilience is, however, blind to international differences in student performance. For this reason, in countries with higher average performance the threshold or cut-off score for a student to be considered nationally resilient is higher than in countries with lower average performance. In low-performing countries, national resilience can be the first objective for a student to achieve before aiming at international resilience.

The third important perspective on academic resilience considered in this chapter is called “core-skills”. The notion of “core-skills resilience” describes the extent to which disadvantaged students achieve certain levels of proficiency in not only one but all three core cognitive domains that PISA assesses. These are the skills students need to participate fully in society (Agasisti et al., 2018^[3]). Socio-economically disadvantaged students who score at Level 3 or above in reading, mathematics and science are considered to be core-skills resilient.

Students at proficiency Level 3 in reading begin to demonstrate the ability to construct the meaning of a text and form a detailed understanding from multiple independent pieces of information. They can work with proportional relationships and engage in basic interpretation and reasoning when solving mathematics problems; and they can handle unfamiliar topics in science. This set of skills goes beyond “baseline” levels of proficiency (Level 2). Level 3 is also, on average across OECD countries, the median proficiency of students in each PISA cognitive domain. Thus core-skills resilient students are in the top 50% of students participating in PISA.

Note that the core-skills perspective is an “absolute” measure of student resilience, whereas the national perspective is a “relative” measure. The threshold used in the core-skills definition is absolute in the sense that disadvantaged students need to perform at a certain given threshold that is the same for all students. The cut-off point to reach proficiency Level 3 in each subject (484 points in the science assessment, 480 points in the reading assessment and 482 points in the mathematics assessment) does not vary across countries. This provides an identical international standard against which all participating students are evaluated. The national definition uses a relative threshold because the performance level is assessed with reference to the student's own country, and not to the entire pool of students participating in PISA. As a result, nationally resilient students earn higher scores, on average, in high-performing countries than in low-performing countries.

Combining these three perspectives means understanding academic resilience as a dynamic capacity that students can develop and strengthen over time as they progress through their education and, at each point on the way, can consolidate and expand their knowledge and skills. Not even the most gifted students start their education having the advanced skills typically observed among PISA's top-performing students, such as being able to use scientific knowledge as evidence to develop arguments and make life decisions, understand fully and in detail complex texts on unfamiliar topics, or use advanced mathematical thinking and reasoning.



Instead, students' learning is a process that builds upon previous layers of proficiency, acquired over time, as a result of the education completed in earlier grades.

In all three perspectives on academic resilience considered in this chapter, as in the index of social and emotional resilience examined below, socio-economic disadvantage is defined from a national perspective: disadvantaged students are defined as those in the bottom quarter of the PISA index of economic, social and cultural status (hereafter, ESCS) in the student's own country. In theory, socio-economic disadvantage could also be defined from an international perspective, for example by considering as disadvantaged the students in the bottom quarter of ESCS among all PISA-participating countries. This was not the approach taken in this chapter because a national perspective on socio-economic disadvantage may be more informative for targeted policies aiming to achieve equity within one country or economy than an international or absolute perspective.

Two technical reasons also explain this choice. First, the aim of the analysis is to provide relevant information on student resilience in as many PISA-participating countries and economies as possible. However, wealthier OECD and partner countries have relatively few students in the bottom quarter of international ESCS, thus the analysis would have little relevance for them (Table 3.13).² Second, because of the small sample size in many OECD and partner countries, the statistical power of the estimations in these countries would be diminished. This is not to say that analyses of student resilience using an international definition of socio-economic disadvantage would not be important or possible in countries with larger numbers of students who are considered to be disadvantaged from an international perspective. On the contrary, it is an issue on which future analyses of PISA data might want to focus.

Academic resilience across countries

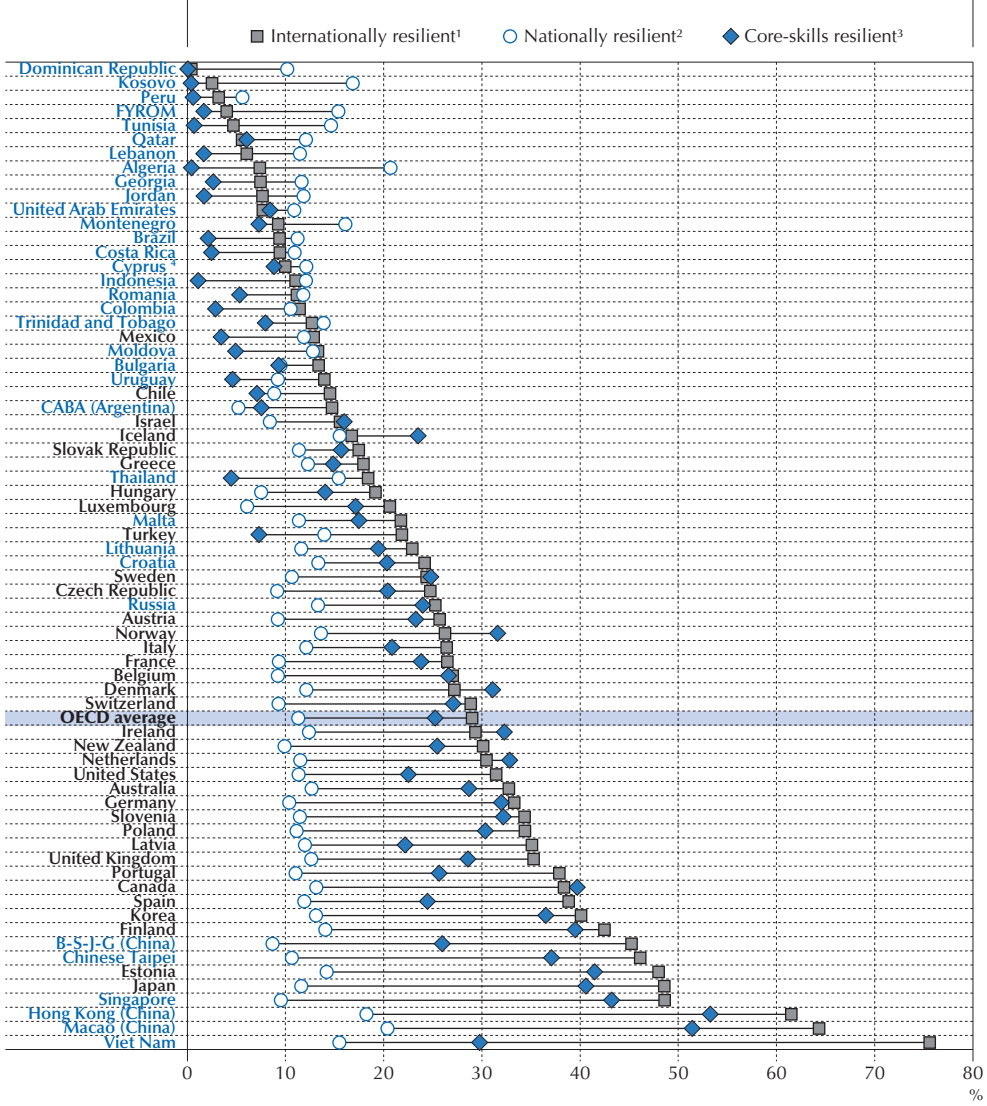
Socio-economically disadvantaged students can be resilient in one, two or all three of the ways academic resilience is considered in this chapter, or not at all. On average across OECD countries in 2015, 10% of disadvantaged students are simultaneously internationally, core-skills and nationally resilient, 13% are resilient in two ways, and 9% in only one way. However, about two in three (68%) disadvantaged students are not academically resilient in any of the three ways considered here, on average across OECD countries (Table 3.2).

Figure 3.3 shows the percentage of disadvantaged students, across the countries and economies that participated in PISA 2015, who show each of the three types of academic resilience.

The type of academic resilience that varies the most between countries and economies is international resilience. On average across OECD countries, 29% of disadvantaged students are internationally resilient. Top-performing countries and economies, such as Beijing-Shanghai-Jiangsu-Guangdong (China) (hereafter "B-S-J-G [China]"), Estonia, Finland, Hong Kong (China), Japan, Korea, Macao (China), Singapore, Chinese Taipei and Viet Nam have the largest proportions (about 40% or more, and as much as 76% in Viet Nam) of internationally resilient students. By contrast, the Dominican Republic, the Former Yugoslav Republic of Macedonia (hereafter "FYROM"), Kosovo, Peru and Tunisia have the smallest proportions (less than 5%) of disadvantaged students who are internationally resilient.



Figure 3.3 ■ International, national and core-skills resilient students in PISA 2015
Percentage of socio-economically disadvantaged students who are academically resilient



1. Internationally resilient students are disadvantaged students who score in the top quarter of performance in science among all students participating in PISA, after accounting for socio-economic status.
2. Nationally resilient students are disadvantaged students who score in the top quarter of performance in science among students in their own country.
3. Core-skills resilient students are disadvantaged students who score at or above Level 3 in PISA in science, reading and mathematics.
4. See notes at the beginning of this chapter.

Countries and economies are ranked in ascending order of the percentage of students who are internationally resilient.
Source: OECD, PISA 2015 Database, Tables 3.3, 3.5 and 3.7.

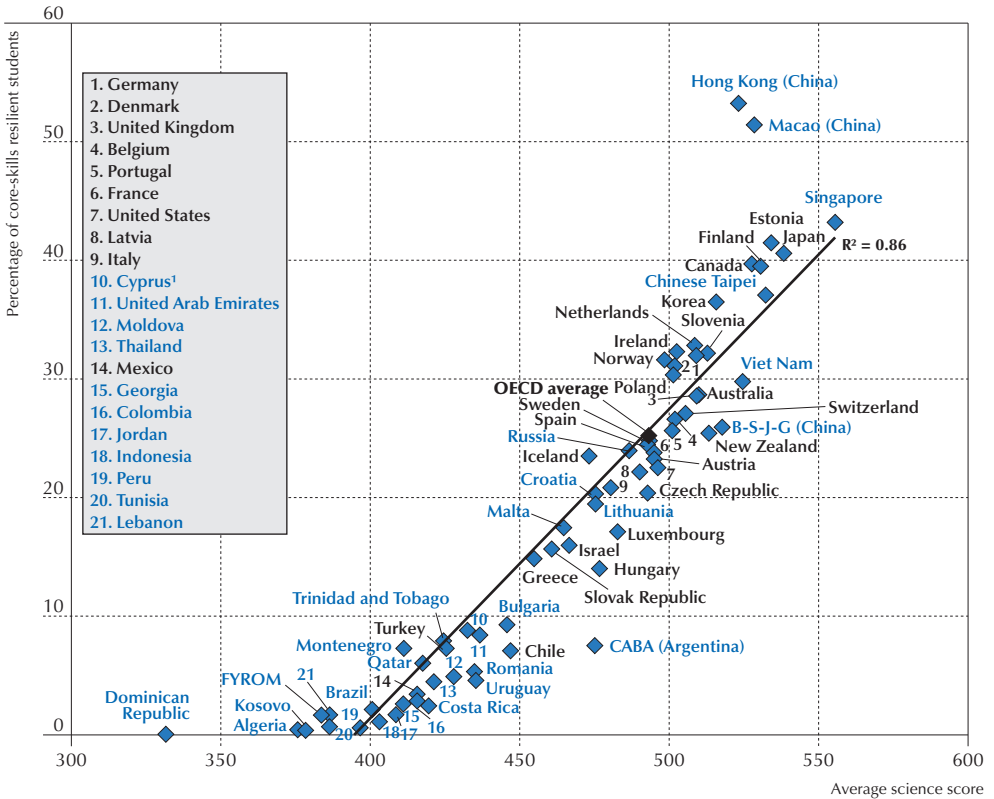
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The distribution of core-skills resilience closely resembles that of international resilience (the country-level correlation coefficient between the two is 0.9). On average across OECD countries, 25% of disadvantaged students reach at least Level 3 in science, reading and mathematics. Canada, Estonia, Finland, Hong Kong (China), Japan, Macao (China) and Singapore, all of them top-performing education systems in PISA, have the largest shares of core-skills resilient students (about 40% or more, and as much as 53% in Hong Kong [China]). Algeria, the Dominican Republic, FYROM, Indonesia, Jordan, Kosovo, Lebanon, Peru and Tunisia have the smallest proportion of students (less than 2%) who reach Level 3 in all core subjects.

Core-skills resilient students, and also internationally resilient students, are found more frequently in better-performing education systems. As shown in Figure 3.4, the share of core-skills resilient students is strongly related to the education system's average science performance ($R^2 = 0.86$). The share of internationally resilient students is also related to the level of performance in science ($R^2 = 0.76$).

Figure 3.4 ■ Science performance and core-skills resilience



1. See notes at the beginning of this chapter.

Notes: The R^2 value indicates the proportion of the variance in core-skills resilience that is accounted for by differences in average science scores between education systems. It is a measure of the strength of the relationship between core-skills resilience and average performance at the country level.

Core-skills resilient students are disadvantaged students who score at or above Level 3 in PISA in science, reading and mathematics.

Source: OECD, PISA 2015 Database, Tables 3.1 and 3.5.

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The incidence of national resilience varies much less across countries than the other two kinds of academic resilience. Between 10% and 20% of disadvantaged students in nearly all countries and economies that participated in PISA 2015 are nationally resilient. On average across OECD countries, only 11% of disadvantaged students perform as well as the best-performing students in their own country. In Algeria and Macao (China), some 20% of disadvantaged students are nationally resilient; in FYROM, Hong Kong (China), Iceland, Kosovo, Montenegro, Thailand and Viet Nam, more than 15% are. The countries and economies with the smallest shares of nationally resilient students are, in ascending order of magnitude, Ciudad Autónoma de Buenos Aires (Argentina) (hereafter “CABA [Argentina]”) (5%), Peru, Luxembourg, Hungary, Israel, B-S-J-G (China) and Chile (9%).

What is interesting about national resilience is that, unlike core-skills and international resilience, national resilience is not more frequently observed in top-performing countries than in developing or low-performing countries. The share of nationally resilient students is unrelated to average science performance ($R^2 = 0.01$). This is to say that, on average, top-performing countries are not better than low-performing countries in helping their socio-economically disadvantaged students perform as well as their top-performing students.

For example, disadvantaged students in Canada, Japan and Singapore earn higher scores than disadvantaged students in Kosovo, Thailand and Tunisia; but the efforts by the former top-performing countries have not resulted in better outcomes than in the latter low-performing countries in terms of their disadvantaged students performing as well as their top-performing students.

National resilience is instead explained by a different factor: the level of equity in student achievement, as measured by the strength of the socio-economic gradient (see Box 2.1). Figure 3.5 shows that about 75% of the variation in national resilience between countries and economies can be accounted for by cross-national differences in equity in science performance. Equity accounts for less than 1% of differences across countries in core-skills resilience and in international resilience. In other words, in countries that find ways to make student performance less dependent on students’ socio-economic status, and more on students’ own efforts and talents, there are more disadvantaged students who perform as well as their highest-achieving peers in their own country.

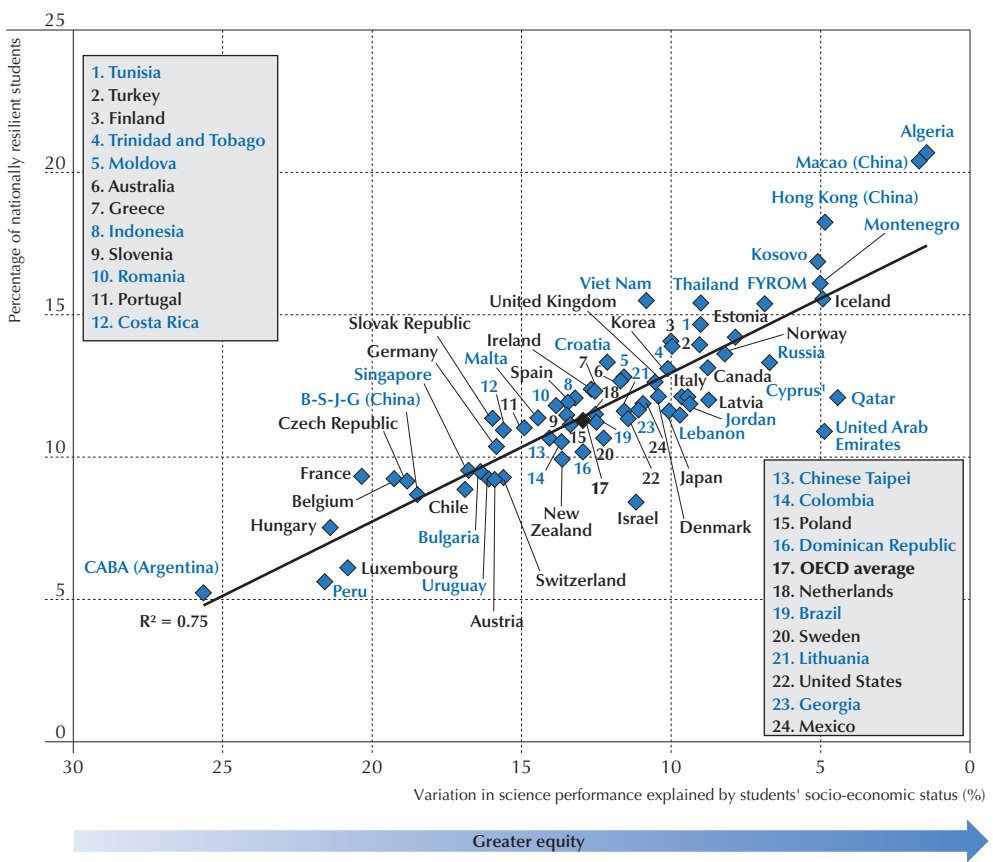
These findings underscore the importance of using different perspectives when thinking of policies to promote student resilience. Focusing exclusively on international resilience arguably overestimates the amount of academic resilience in some countries, while it underestimates it in some others. The reason why top-performing countries and economies have much larger shares of core-skills resilient students than low-performing countries is also implicit in Figure 3.2. Socio-economically disadvantaged students perform at higher levels in some countries than in others. However, it would be misleading to simply interpret this finding as meaning that the capacity of disadvantaged students to overcome the barriers and adversities of their background is greater in top-performing than in low-performing countries. In fact, disadvantaged students in top-performing countries are not more likely to perform among the high achievers in their own country (meaning, to be nationally resilient) than are disadvantaged students in low-performing countries.

Policies that focus solely on improving the performance of all students have the potential to improve both advantaged and disadvantaged students’ capacity to acquire core skills and excel



by international standards. But targeted policies that help close the socio-economic gap might be more effective in promoting greater levels of national resilience, and thus potentially greater upward educational and social mobility among disadvantaged students. Thus, both perspectives are important for a nuanced view of the kinds of academic achievements disadvantaged students can accomplish. These perspectives complement, rather than conflict with, each other because many students who achieve excellence by national standards may also be able to achieve excellence in all the core skills by international standards, displaying both international and national resilience at the same time.

Figure 3.5 ■ **Equity in science achievement and national resilience**



1. See notes at the beginning of this chapter.
Note: The R² value indicates the proportion of the variance in national resilience that is accounted for by differences in equity in science performance across education systems. It is a measure of the strength of the relationship between national resilience and equity in performance at the country level.
 Nationally resilient students are disadvantaged students who score in the top quarter of performance in science among students in their own country.
Source: OECD, PISA 2015 Database, Tables 3.1 and 3.3.
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Figure 3.6 groups countries and economies into four categories according to the share of disadvantaged students who are nationally resilient and core-skills resilient. Countries that have large shares of nationally resilient students but low shares of core-skills resilient students, such as Algeria, FYROM, Kosovo, Montenegro and Thailand, are located in the upper-left corner. In these countries, it is important to improve all students' proficiency without widening the gap between disadvantaged and advantaged students. Among countries and economies with a small share of nationally resilient students but a large share of core-skills resilient students, such as Belgium, Germany, Singapore and Chinese Taipei (the opposite quadrant), policies that aim to improve performance among disadvantaged students, while maintaining other students' high scores, would be most suitable. In countries and economies located in the lower-left quadrant, in which both national and core-skills resilience is below the OECD average, improvements in both overall performance and equity are necessary. Countries in this group include CABA (Argentina), Chile, the Czech Republic, Israel, Luxembourg and Peru, among others.

Student and school characteristics related to academic resilience

On average across OECD countries, academically resilient students are more frequently found in schools that have relatively more advantaged socio-economic profiles and better disciplinary climates. These students display positive behaviours and attitudes towards learning, such as not skipping classes and being highly motivated to earn good grades and succeed in school. They have followed education careers that are typical of students in their own country: they started attending pre-primary education at the national modal age, they had not repeated a grade and they are enrolled in academic programmes. These students also tend to be boys without an immigrant background who live in cities.

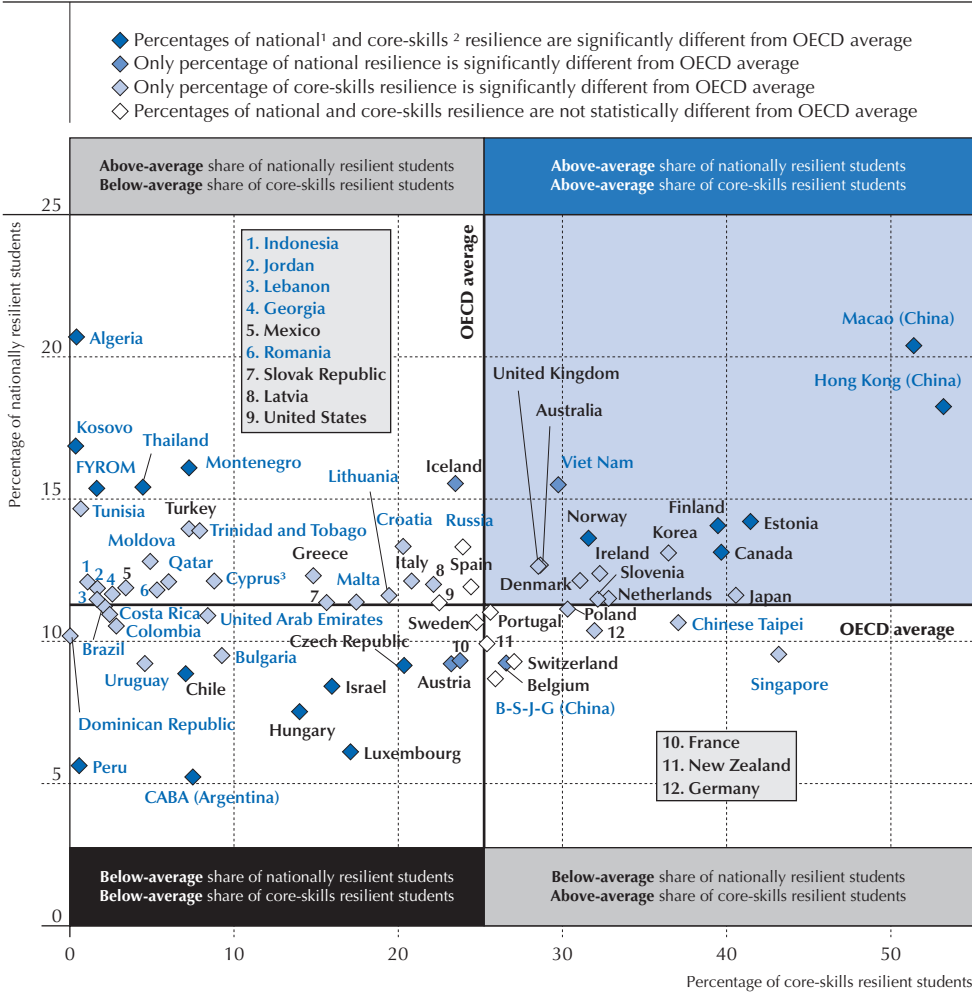
These student and school characteristics are related to both types of academic resilience, but some of them are more important for national resilience and others are more important for core-skills resilience.³

Figure 3.7 shows differences in the share of nationally resilient students by student and school characteristics. The two school-level variables most frequently associated with national resilience are the school socio-economic profile and the disciplinary climate in school. On average across OECD countries, the share of nationally resilient students is 22 percentage points greater among disadvantaged students who attend an advantaged school (29%) than among disadvantaged students who attend a disadvantaged school (7%).

There are several reasons why attending an advantaged school makes such a considerable difference in the performance of disadvantaged students. Advantaged schools tend to concentrate not only a larger proportion of students with more educated and wealthier parents, who tend to be more involved in school and put more pressure on schools to improve their academic achievement, they also have better human and material resources (e.g. qualified teachers, instructional equipment, such as computers or science laboratories) and climates more conducive to learning (OECD, 2013^[4]; OECD, 2018^[5]). Some of these dimensions may be not accurately measured by PISA, and others are much more difficult to measure (such as the pedagogical methods used, the quality of the teaching team, etc.). A closer examination of how a school's socio-economic profile is related to equity is provided in Chapter 4.



Figure 3.6 ■ National resilience and core-skills resilience



1. Nationally resilient students are disadvantaged students who score in the top quarter of performance in science among students in their own country.
 2. Core-skills resilient students are disadvantaged students who score at or above Level 3 in PISA in science, reading and mathematics.
 3. See notes at the beginning of this chapter.

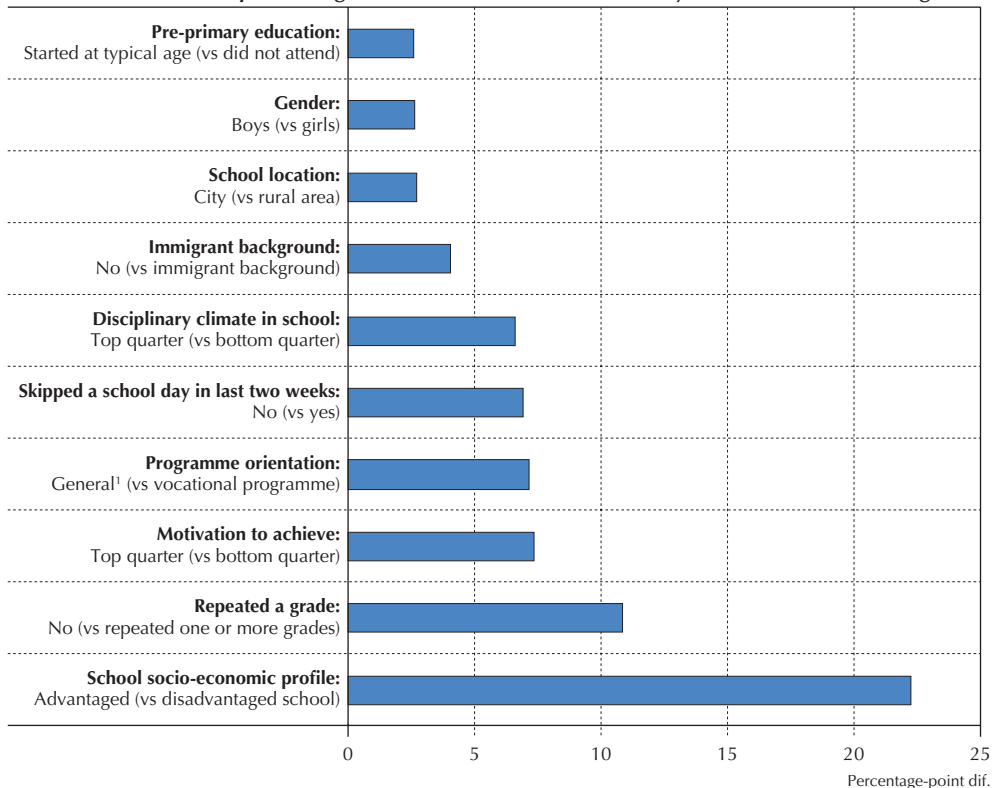
Source: OECD, PISA 2015 Database, Tables 3.3 and 3.5.
 StatLink <https://doi.org/10.1787/888933830519>

Nationally resilient students report more positive attitudes towards learning and school than their disadvantaged peers who are not nationally resilient. Students’ motivation to achieve the best they can in school and in their lives in general is one of the attitudes that make a difference. An index of achievement motivation was created for the first time in PISA 2015. This index is based on students’ agreement or disagreement with the following statements: “I want top <grades>



in most or all of my courses”; “I want to be able to select from among the best opportunities available when I graduate”; “I want to be the best, whatever I do”; “I see myself as an ambitious person”; and “I want to be one of the best students in my class”.

Figure 3.7 ■ **National resilience and student characteristics**
Difference in the percentage of students who are nationally resilient, OECD average



1. General programme orientation includes modular programmes.

Notes: All percentage-point differences are statistically significant.

Nationally resilient students are disadvantaged students who score in the top quarter of performance in science among students in their own country.

Source: OECD, PISA 2015 Database, Tables 3.3 and 3.4.

StatLink  <https://doi.org/10.1787/888933830538>

On average across OECD countries, the share of nationally resilient students is 7 percentage points larger among disadvantaged students who are in the top quarter of the index of achievement motivation in their country, compared to their disadvantaged peers in the bottom quarter of achievement motivation (16% of highly motivated students are nationally resilient students and 9% are among students who reported low motivation to achieve). In Lithuania and the Slovak Republic, the difference in the shares of nationally resilient students between disadvantaged students who are more motivated and those who are less motivated to achieve is larger than 15 percentage points (Table 3.3).



Disadvantaged students are also more likely to be nationally resilient if they had started attending pre-primary education at the typical (modal) age in their own country. Nationally resilient students had also less frequently repeated a grade, and are more often enrolled in a general academic programme.

As attendance at pre-primary school has increased among recent cohorts of students, performance differences associated with pre-primary education are less about whether or not students had attended and more about when they had started and how long they had stayed (Balladares, Forthcoming^[6]).⁴ On average across OECD countries, 12% of disadvantaged students who had started pre-primary education at their country's typical age are nationally resilient, compared to 10% of disadvantaged students who had not attended pre-primary education (the difference of 3 percentage points is statistically significant). In Greece, Qatar, the Slovak Republic and Sweden, the difference in shares of nationally resilient students, between students who had attended pre-primary school at the modal age and those who had not attended at all, is about 9 percentage points or larger (Table 3.3).

Figure 3.8 shows differences in core-skills resilience by student and school characteristics.

Whereas motivation is particularly important for nationally resilient students, being truant is associated with large differences in core-skills resilience. On average across OECD countries, the share of core-skills resilient students is 13 percentage points greater among disadvantaged students who had not skipped a day of school in the two weeks prior to the PISA test than among those who had skipped a day. The difference in favour of students who had not skipped a day of school in the two weeks prior to the PISA test is more than 20 percentage points in Japan, Macao (China), the Netherlands and Slovenia, and more than 30 percentage points in Korea, Hong Kong (China) and Chinese Taipei (Table 3.5).

Disciplinary climate at school is also positively associated with core-skills resilience. In PISA 2015, the index of disciplinary climate in science classes was derived from students' responses to how often the following things happen in their school science lessons: "Students don't listen to what the teacher says"; "There is noise and disorder"; "The teacher has to wait a long time for students to quiet down"; "Students cannot work well"; and "Students don't start working for a long time after the lesson begins". On average across OECD countries, the share of core-skills resilient students is 12 percentage points larger among disadvantaged students who attend schools with a better disciplinary climate (the difference between the top and bottom quarters of the disciplinary climate index).

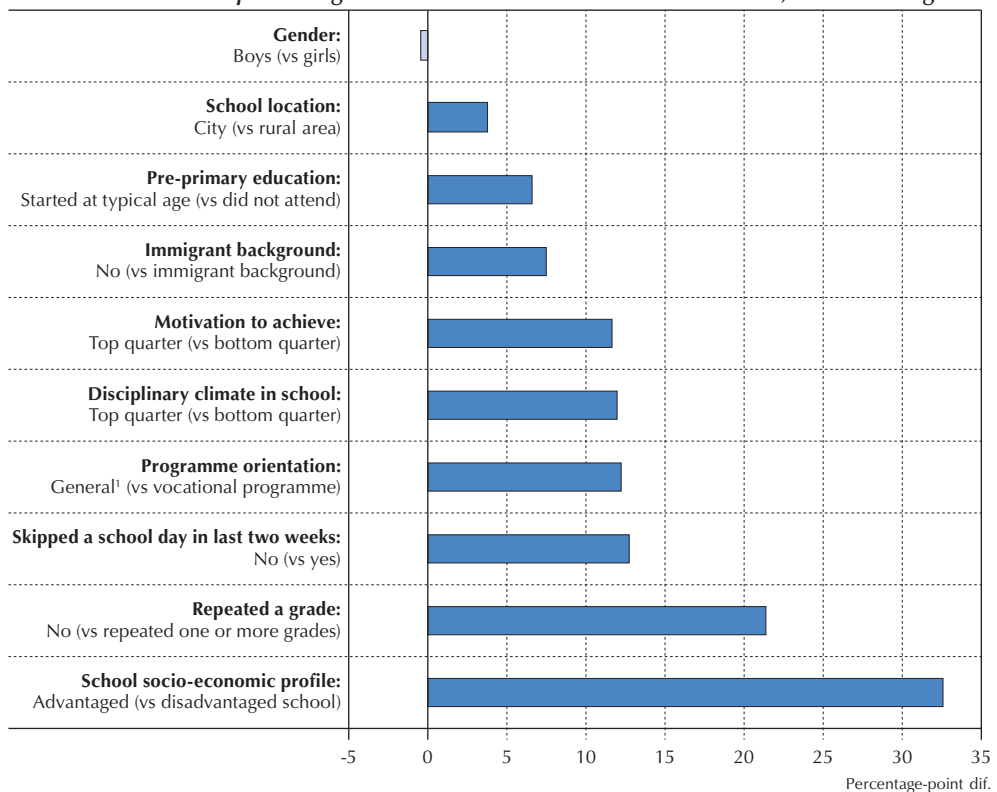
Both truancy and disciplinary climate are related to learning time: students who skip classes lose hours of instruction, as do students in schools with a disruptive climate, where teachers need to use part of their instruction time to quiet classroom noise and disorder. Students' exposure to instruction and opportunities to learn decreases as a result. Core-skills resilience might be more sensitive to differences in the use of time because it requires developing good levels of proficiency in not just one but three different cognitive domains – a wider range of content and subjects than included in national or international resilience, each of which focuses on a single subject.

Unlike national resilience, core-skills resilience is not related to a student's gender. On average across OECD countries, the difference in core-skills resilience between boys and girls is not



statistically significant. In the case of national resilience, shown in Figure 3.7, boys are more likely to be top-performers in science than girls. This is because performance differences related to gender are domain-specific. On average across OECD countries, boys perform better than girls in science and mathematics, but girls outperform boys in reading. If national resilience had been estimated using reading as the performance domain (instead of science), the gender difference in national resilience would have been the opposite: girls are more likely than boys to be top performers in reading. Thus, because the core-skills perspective considers not only one cognitive domain (as the national and international approaches do), but the three core domains assessed in PISA (science, reading and mathematics), the differences in science performance in favour of boys that are captured by national-resilience metrics are balanced out by the differences in reading performance in favour of girls.

Figure 3.8 ■ **Core-skills resilience and student characteristics**
Difference in the percentage of students who are core-skills resilient, OECD average




1. General programme orientation includes modular programmes.

Notes: Statistically significant differences are shown in a darker tone.

Core-skills resilient students are disadvantaged students who score at or above Level 3 in PISA in science, reading and mathematics.

Source: OECD, PISA 2015 Database, Tables 3.5 and 3.6.

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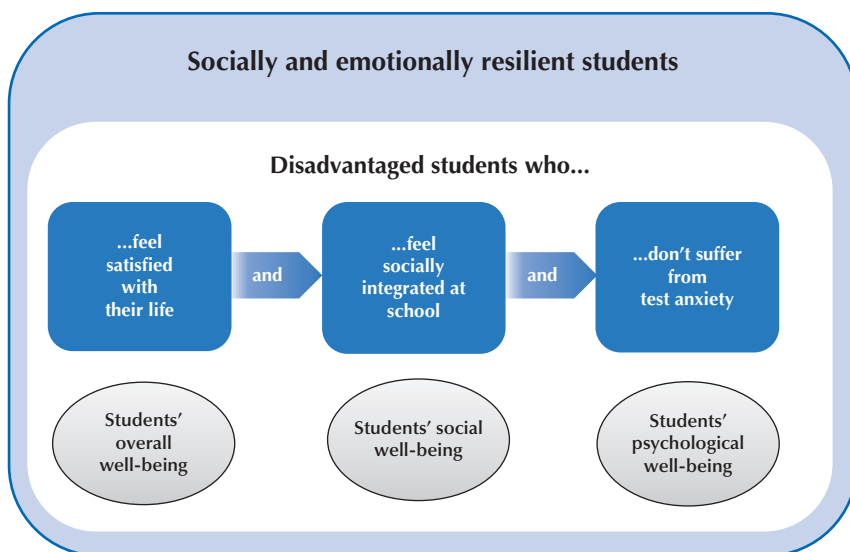


SOCIAL AND EMOTIONAL RESILIENCE

How is academic resilience related to students' social and emotional well-being? Do academically resilient students pay a price in social isolation or emotional distress for their academic success? Or does social and emotional well-being help disadvantaged students perform better in school? Results in this section suggest that social and emotional resilience tend to be positively related to academic resilience. Thus the two kinds of resilience can be considered mutually reinforcing dimensions of a successful school experience.

The new PISA index of social and emotional resilience captures, in a single measure, various key dimensions of students' well-being (Figure 3.9).⁵ Disadvantaged students are considered to be socially and emotionally resilient if they are satisfied with their life, feel socially integrated at school and do not suffer from test anxiety. Only 48 countries and economies have data corresponding to three items of the PISA 2015 student questionnaire considered in the index of social and emotional resilience.

Figure 3.9 ■ **Index of social and emotional resilience in PISA**



Note: Socio-economically disadvantaged students are students in the bottom quarter of the PISA index of economic, social and cultural status (ESCS).

The first component of social and emotional resilience considered in the index is life satisfaction, a measure of students' overall well-being. In PISA 2015, students were asked: "Overall, how satisfied are you with your life as a whole these days?" Students were requested to assign a number on a scale from zero to ten, with zero meaning "not at all satisfied" and ten meaning "completely satisfied". Students who rated their life with values from 7 to 10 were considered satisfied with their lives. A majority of disadvantaged students reported feeling



satisfied with their lives. On average across OECD countries, 66% of disadvantaged students rated their life satisfaction at 7 or higher (Figure 3.10), while 73% of advantaged students did so (Table 3.9b). The largest proportions (80% or more) of disadvantaged students who so reported are observed in Costa Rica, the Dominican Republic, Mexico and the Netherlands; the smallest proportions (50% or less) are observed in Hong Kong (China), Korea, Chinese Taipei and Turkey.

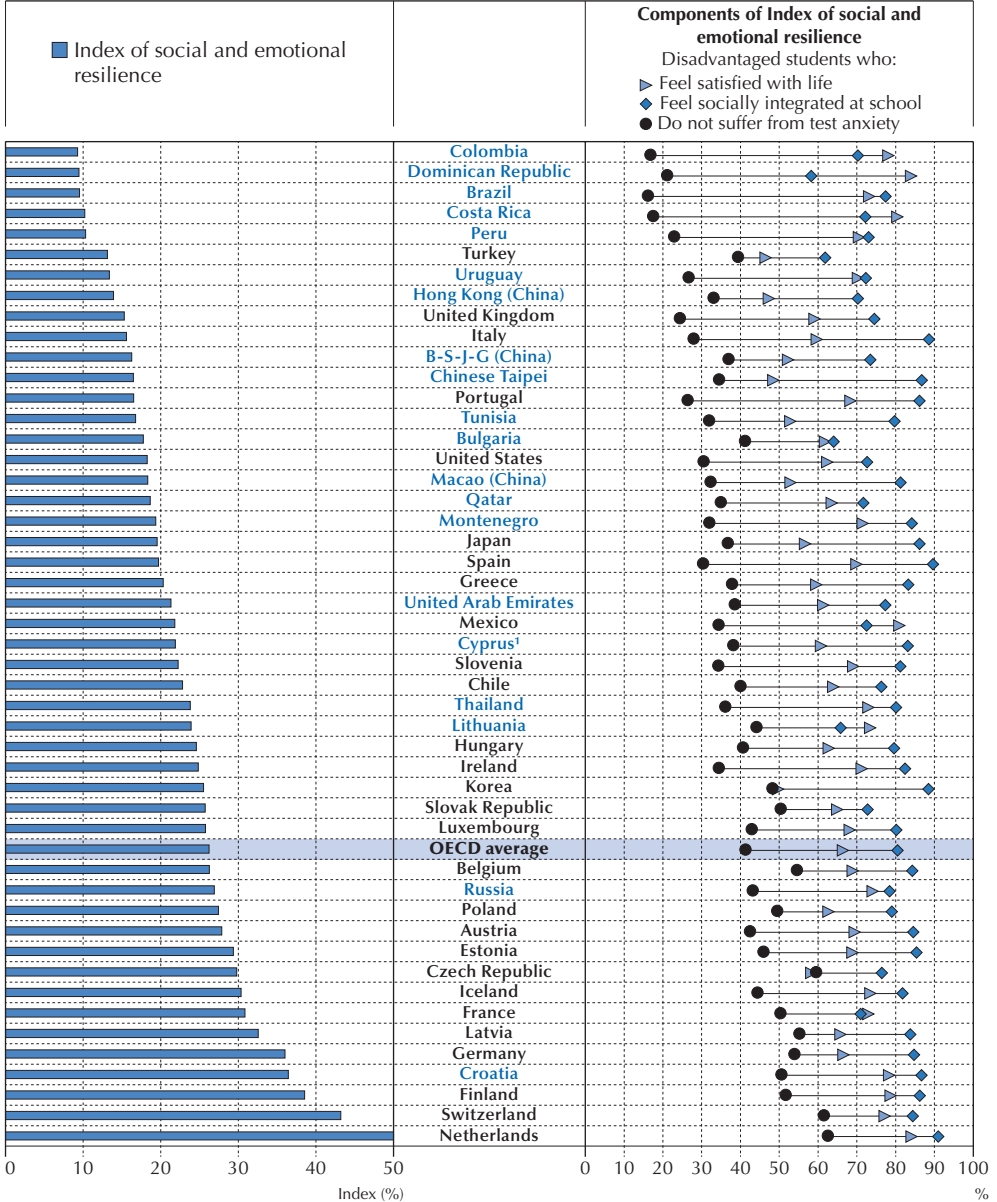
The second component of social and emotional resilience considered in the index is social integration at school, a dimension of students' social well-being. Students were asked whether they agreed or disagreed with the following statement: "I feel like an outsider (or left out of things) at school". Students who disagreed with this statement were considered to feel socially integrated at school, and thus to have met the second condition to be considered socially and emotionally resilient. On average across OECD countries, 80% of disadvantaged students, and 84% of advantaged students, reported feeling that they belong at school. In Albania, Georgia, Indonesia, the Netherlands, Spain and Viet Nam, at least 90% of disadvantaged students so reported, but in Bulgaria, the Dominican Republic, Jordan, Lithuania and Turkey, less than 70% of disadvantaged students so reported.

A lack of test anxiety, another part of students' psychological well-being, is the third component included in the index of social and emotional resilience. Students were asked whether they agreed or disagreed with the following statement: "Even when I am well prepared for a test I feel very anxious". Disadvantaged students who disagreed with the statement were considered not to suffer from test anxiety and thus to have met the third condition to be considered socially and emotionally resilient. On average across OECD countries, 41% of disadvantaged students and 46% of advantaged students reported that they do not suffer from test anxiety. The share of disadvantaged students who reported that they do not suffer from test anxiety is largest (more than 60%) in the Netherlands and Switzerland, and smallest (less than 20%) in Brazil, Colombia and Costa Rica.

Thus, socially and emotionally resilient students are disadvantaged students who feel satisfied with their lives, feel well-integrated at school and do not suffer from test anxiety. On average across OECD countries, 26% of disadvantaged students in PISA 2015 were found to be socially and emotionally resilient, as shown in Figure 3.10. Some 33% of advantaged students feel satisfied with their lives, feel well-integrated at school and do not suffer from test anxiety, on average across OECD countries. In some European countries, including Croatia, the Czech Republic, Finland, France, Germany, Iceland, Latvia, the Netherlands and Switzerland, the share of socially and emotionally resilient students is among some of the largest (30% or more) across all countries; but in other European countries, including Bulgaria, Italy, Montenegro, Portugal and the United Kingdom, the share is comparatively small (less than 20%). In top-performing Asian countries and economies, such as B-S-J-G (China), Hong Kong (China), Japan, Macao (China) and Chinese Taipei, the share is also low (20% or less), but the Latin American countries of Brazil, Colombia, Costa Rica, the Dominican Republic, Peru and Uruguay have the smallest proportions of socially and emotionally resilient students (less than 15%).



Figure 3.10 ■ **Social and emotional resilience, and its components**
 Percentage among socio-economically disadvantaged students



1. See notes at the beginning of this chapter.

Countries and economies are ranked in ascending order of the percentage of students who are socially and emotionally resilient.

Source: OECD, PISA 2015 Database, Table 3.9a.

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Box 3.1 **Are measures of social and emotional well-being internationally comparable?**

A common concern regarding international indicators of social and emotional well-being is that findings can be influenced by culture and response styles, as opposed to reflecting true differences in students' social and emotional well-being (Senik, 2014^[7]; Angelini et al., 2014^[8]). One way to allay this concern is to examine whether the data reveal differences between countries with different cultural heritages. If culture and response styles affect students responses to the items included in the index of social and emotional resilience, clear differences between countries, and particularly between countries with different cultural heritages, would be expected. Such cultural differences would also be expected to be reflected by bias in the same direction for both advantaged and disadvantaged students.

No clear evidence of cultural bias is observed in the case of the life satisfaction and social integration at school; in both of these variables, levels are relatively high in all countries with available data, as opposed to markedly high or low in some groups of countries. In 44 out of 47 countries and economies with available data, half or more of disadvantaged students rated their life satisfaction at level 7 or above (exceptions are Chinese Taipei, Hong Kong [China] and Turkey, in which the share of students satisfied with their lives was 48%, 47% and 46%, respectively) (Figure 3.10). Similarly, in almost all countries and economies, more than two-thirds of disadvantaged students reported feeling socially integrated at school (exceptions are Bulgaria [64% of disadvantaged students so reported], the Dominican Republic [58%] and Turkey [62%]) (Table 3.9a). These patterns are corroborated among advantaged students. On the whole, within the same country, advantaged students are more often satisfied with their life and feel socially integrated at school than disadvantaged students, but the magnitude of the gap varies by country (which would not be the case if only cultural differences are reflected) (Table 3.9b).

In the case of test anxiety, cross-national variation is greater, with less than 20% of students in some countries, and as much as 60% in others, who reported that they do not suffer from anxiety. Latin American and East Asian countries are the two groups in which a cultural bias in responses might be observed. The five countries with the smallest share of students who do not suffer from test anxiety are all in Latin America, but in Mexico and Chile, the share of such students is more similar to the OECD average than to other Latin American countries. Similarly, East Asian countries tend to have smaller shares of students who do not suffer from test anxiety than the OECD average (in all regions of China and in Japan the share is between 32% and 39% among disadvantaged and advantaged students), but in Korea the share is considerably larger (48% of disadvantaged students and 43% of advantaged students). No clear pattern is observed in other cultural regions.

Thus, the data provide mixed evidence, at best, that cross-national differences in students' responses are related to differences in culture and response styles. This means that differences in social and emotional well-being, as measured in PISA, might indeed be due to real, absolute differences in students' social and emotional well-being, which supports the decision to establish a common international threshold when defining social and emotional resilience.



Academic and social and emotional resilience

Are socially and emotionally resilient students also academically resilient? Figure 3.11 shows that in most countries and economies that participated in PISA 2015, disadvantaged students who are nationally resilient or core-skills resilient are, on average, more likely to be socially and emotionally resilient than their disadvantaged peers who are not academically resilient.

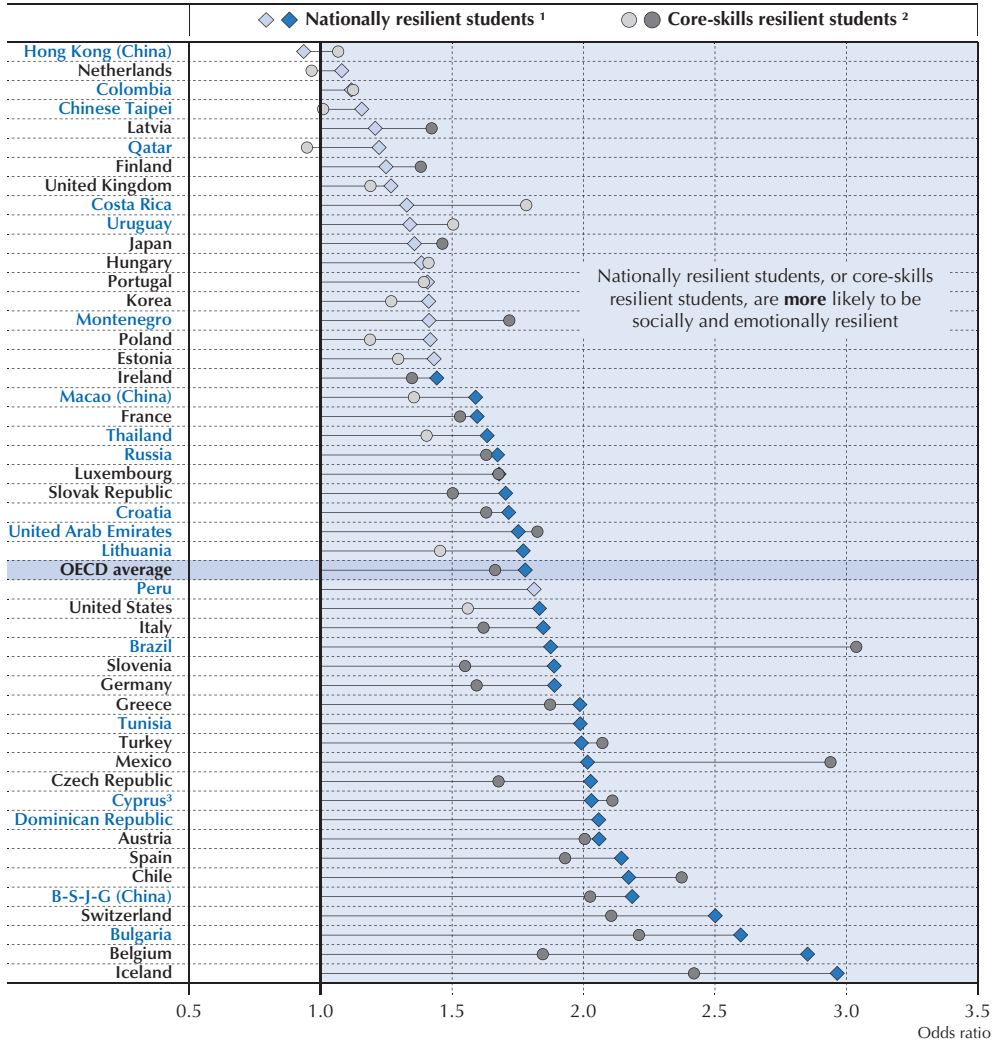
On average across OECD countries with available data, nationally resilient students are 78% more likely to be socially and emotionally resilient than disadvantaged students who are not nationally resilient. This positive relationship between national resilience, and social and emotional resilience is significant in 30 countries, particularly Belgium and Iceland, where nationally resilient students are around three times more likely than disadvantaged students who are not nationally resilient to also be socially and emotionally resilient.

Similarly, core-skills resilient students are 66% more likely than disadvantaged students who are not core-skills resilient to be socially and emotionally resilient, on average across OECD countries with available data. This positive relationship between core-skills resilience on the one hand and social and emotional resilience on the other is significant in 28 countries, particularly Brazil and Mexico, where core-skills resilient students are almost three times more likely to be socially and emotionally resilient.

The results of the analysis described in this section illustrate how important it is, particularly for disadvantaged students, to promote balance in the development of academic, and social and emotional outcomes at school.



Figure 3.11 ■ **Academic resilience, and the likelihood of social and emotional resilience**
Increased likelihood of being socially and emotionally resilient among nationally and core-skills resilient students



1. Nationally resilient students are disadvantaged students who score in the top quarter of performance in science among students in their own country.
2. Core-skills resilient students are disadvantaged students who score at or above Level 3 in PISA in science, reading and mathematics.
3. See notes at the beginning of this chapter.

Notes: Statistically significant odds ratio are shown in a darker tone. The Dominican Republic, Peru and Tunisia have too few core-skills resilient in the sample to provide reliable estimates. Countries and economies are ranked in ascending order of the likelihood of nationally resilient students being socially and emotionally resilient, compared with disadvantaged students who are not nationally resilient.

Source: OECD, PISA 2015 Database, Table 3.12.

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Notes

1. A student is classified as internationally resilient if she or he is in the bottom quarter of the PISA index of economic, social and cultural status (ESCS) in the country/economy of assessment and scores in the top quarter of performance among students from all countries/economies, after accounting for socio-economic status. The procedure for identifying resilient students is as follows. In a first step, a measure of performance adjusted for differences in ESCS across countries is computed through a linear regression of performance on ESCS and a squared transformation of ESCS. This linear regression is not conducted separately by country, but instead by using the pooled sample (meaning that it includes all students participating in PISA) and senate weights (to ensure an equal contribution by each of the countries/economies in the analysis). The results of the regression model are used to predict an expected score for each student, based on her or his ESCS value. Residual scores are the difference between the observed science score (the plausible values) and the expected score. International top performers are defined as those students who are in the top quarter of this adjusted measure (residual scores) among students in all PISA-participating countries and economies. In a second step, the disadvantaged students in each country/economy are defined as those students whose ESCS is in the bottom quarter among students in their country/economy. Resilient students are those students who are socio-economically disadvantaged (their socio-economic status is low relative to other students in their own country) and are international top performers (their performance is high compared to that of all other students in PISA, after accounting for differences in socio-economic status across countries). Therefore, one characteristic of resilient students is that they achieve better performance in PISA than predicted by their socio-economic status.

2. On average across OECD countries, students in the bottom quarter of the PISA index of economic, social and cultural status (ESCS) among all PISA-participating students (“internationally disadvantaged”) have a mean ESCS value of -2.02, and students in the bottom quarter of ESCS in their own countries have a mean ESCS value of -1.2 (Table 3.13). This shows that, in OECD countries, students classified as nationally disadvantaged are considerably less disadvantaged, on average, than the smaller group of OECD students who are disadvantaged by international standards.

3. In the following, the focus is mainly on national and core-skills resilience, which are the new concepts of academic resilience (while international resilience has been already studied in previous analyses of PISA 2015 data; see, for instance, OECD, 2016^[9]). As suggested in Table 3.2, the distributions of international and core-skills resilience are similar, as they both use an international reference for defining resilience.

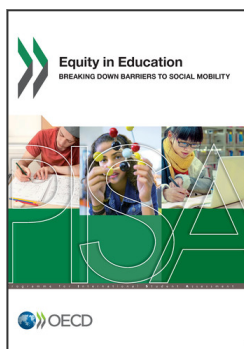
4. The typical age is the most common age at entry into pre-primary education, as reported by students. Balladares (forthcoming^[6]) introduced the typical age approach to analyse pre-primary education using PISA data.

5. The index of social and emotional resilience is a simple index that takes the value of one if a student meets four conditions and takes the value of zero otherwise. A student is classified as “socially and emotionally resilient” if she or he meets the following four criteria: (i) the student is in the bottom of the PISA index of economic, social and cultural status (ESCS) in the country/economy of assessment; (ii) the student rated her or his life satisfaction with a value of from 7 to 10, on a scale from zero to ten, with zero meaning “not at all satisfied” and ten meaning “completely satisfied”; (iii) the student disagreed with the following statement: “I feel like an outsider (or left out of things) at school”; and (iv) the student disagreed with the following statement: “Even when I am well prepared for a test I feel very anxious”.



References

- Agasisti, T. et al. (2018), "Academic resilience: What schools and countries do to help disadvantaged students succeed in PISA", *OECD Education Working Papers*, No. 167, OECD Publishing, Paris, <http://dx.doi.org/10.1787/e22490ac-en>. [3]
- Angelini, V. et al. (2014), "Do Danes and Italians Rate Life Satisfaction in the Same Way? Using Vignettes to Correct for Individual-Specific Scale Biases", *Oxford Bulletin of Economics and Statistics*, Vol. 76/5, pp. 643-666, <http://dx.doi.org/10.1111/obes.12039>. [8]
- Balladares, J. (forthcoming), "Attendance matters: Analysis of Early Childhood education and PISA 2015 outcomes in children from low and high socio-economic backgrounds", UCL, Institute of Education. [6]
- OECD (2018), *Effective Teacher Policies: Insights from PISA*, PISA, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264301603-en>. [5]
- OECD (2017), *PISA 2015 Results (Volume III): Students' Well-Being*, PISA, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264273856-en>. [2]
- OECD (2016), *Low-Performing Students: Why They Fall Behind and How To Help Them Succeed*, PISA, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264250246-en>. [1]
- OECD (2013), *PISA 2012 Results: What Makes Schools Successful (Volume IV): Resources, Policies and Practices*, PISA, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264201156-en>. [4]
- Senik, C. (2014), "The French unhappiness puzzle: The cultural dimension of happiness", *Journal of Economic Behavior & Organization*, Vol. 106, pp. 379-401, <http://dx.doi.org/10.1016/j.jebo.2014.05.010>. [7]



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