

School Privatization and Socio-Economic Segregation: An International Comparison of Effects on Student Global Competence Using PISA 2018

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Abstract

School systems worldwide struggle with socio-economic segregation, often worsened by private schooling, which affects student learning and inequality. By dividing students along socioeconomic lines, both private schools and segregation can affect the development of essential skills for the twenty-first century. This study examines the link between private schooling, social segregation, and student global competence across 69 countries using PISA 2018 data. Multilevel models are used to estimate levels of social segregation and the association with private schooling and variations in student global competence between schools. While private school students tend to have higher global competence, countries with greater private enrolment exhibit lower average global competence, higher segregation, and wider global competence gaps between schools. Social segregation, driven by private schooling, is a key factor to explain global competence inequalities within countries.

Résumé

Partout dans le monde, les systèmes scolaires manifestent une ségrégation socioéconomique qu'aggrave souvent l'enseignement privé, lequel a un impact sur l'apprentissage des étudiants et les inégalités entre ceux-ci. En effet, en creusant l'écart socioéconomique entre les étudiants, les écoles privées et la ségrégation peuvent toutes les deux enfreindre au développement d'habiletés essentielles au 21^{ème} siècle. Cette étude utilise les données de PISA 2018 afin d'examiner les rapports entre l'enseigne-

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ment privé, la ségrégation sociale, et les compétences globales d'étudiants dans 69 pays. Elle utilise un modèle multiniveaux pour estimer l'ampleur de la ségrégation sociale et son rapport à l'enseignement privé et aux variations dans les compétences globales parmi les étudiants d'une école à l'autre. Bien que les étudiants d'écoles privées tendent à montrer une compétence globale plus élevée, les pays ayant davantage d'étudiants dans le privé manifestent une compétence globale moyenne plus basse, une ségrégation plus élevée, et des écarts de compétence globale plus larges entre les écoles. La ségrégation sociale, aggravée par l'enseignement privé, est un facteur clé pour expliquer les inégalités en compétence globale entre pays.

Keywords / Mots clés : global competence, segregation, inequality, privatization, multilevel modelling / compétence globale, ségrégation, inégalité, privatisation, modélisation multiniveaux

Introduction

School segregation is a persistent issue affecting many countries, families, and communities around the world. While a few countries have been successful at reducing the levels of separation of students along socio-economic lines across schools, some exhibit increasing levels of school segregation over time. In most cases, however, school segregation remains stubbornly high (Gutiérrez, Jerrim, & Torres, 2019), with dire consequences for individuals, schools, and societies.

Countries around the world find it challenging to design and implement effective policies to tackle or reduce segregation in their school systems. This is in part because the causes of school segregation are complex and multidimensional, involving historical, social, cultural, economic, and institutional factors at different levels that combine in complex ways to produce segregation (Perry, Rowe, & Lubienski, 2022). Elements such as the extent of private provision of education and policies of school choice can contribute to segregation in some contexts but not in others, depending on their specific features and other influencing factors such as residential segregation, the organization and structure of schooling, academic selection, program offering and tracking, and the characteristics of school funding. The impact of these elements on school segregation within a school system depends on their specific characteristics and interactions. A consequence of this complexity is that the effectiveness of policies to reduce segregation also depends on the configuration of the different factors explaining school segregation in particular contexts, so that effective policies in one context may not work at all or even produce opposite results in other systems (Bonal & Bellei, 2023).

One of the most debated possible contributors of school segregation is the extent to which private institutions participate in the provision of schooling in a system, and the specific features it adopts. Research has shown that by sorting students according to their socio-economic background, private provision of schooling can contribute to school segregation (Boterman, Musterd, Pacchi, & Ranci, 2019; Bonal & Bellei, 2023; Lubienski, Perry, Kim, & Canbolat, 2022), although this is not true in every context or to the same degree.

Around the world, many families choose to send their children to private schools. According to the Organisation for Economic Co-operation and Development (OECD) (2024), around one in five 15-year-olds in OECD countries attended a private school in 2021, with countries such as Australia, Belgium, Chile, Korea, and the United Kingdom having more than 40 percent of secondary students enrolled in private schools. Families may prefer private schools over public alternatives due to the belief that they offer higher quality education and better future opportunities (see, for instance, David, West, & Ribbens, 1994; West, Noden, Edge, David, & Davies, 1998). While abundant research has pointed to the social, cultural, and economic factors underpinning school choice (see, for instance, Van Zanten, 2015), choosing a private school is also a family investment aimed at maximizing student opportunities by ensuring children learn the wide range of skills needed to thrive and in the twenty-first century.

While private schools may (or not) deliver these opportunities to students and families, they may do so at a cost for societies. From a system perspective, it is not clear whether large proportions of students enrolled in private schools always results in social benefits. For instance, by contributing to school social segregation, the privatization of educational provision has the potential to undermine the even distribution of skills and opportunities to all students, increasing educational inequality and preventing social mobility (Bonal & Bellei, 2018). Importantly, by separating students along social lines, privatization and school segregation can affect the development of attitudes and dispositions that are necessary to build cohesive societies (Molina, 2021; Mikulyuk & Braddock, 2018). The reduced social diversity in schools resulting from segregation can perpetuate stereotypes and prejudices, and diminish mutual understanding, respect, and collaboration (Hughes, Campbell, Lolliot, Hewstone, & Gallagher, 2013; Mickelson & Nkomo, 2012). From this perspective, school segregation can have detrimental effects on the formation of skills, attitudes, and dispositions needed for the twenty-first century and to promote social cohesion (Molina, 2021; Molina, 2023; Molina & Manzi, 2024).

This last element is particularly important as today's increasingly diverse, interconnected, digitalized and globalized world requires schools and school systems to develop a different and broader set of skills and competencies than in the past (OECD, 2018). Young people are required not only to be competent in the cognitive skills that have been the traditional core of schooling, but also to possess a number of skills needed to participate, appreciate, and contribute to a more interconnected, multicultural, and diverse world. Developing these skills is important for individuals but also for the collective wellbeing (OECD, 2018).

In PISA 2018, the OECD acknowledged the important role schools play in helping young people develop the skills needed to thrive in the twenty-first century. Using the Global Competence Framework (OECD, 2018), it asked 15-year-olds about their understandings and views on issues such as their capacity to critically examine current issues of local, global and intercultural significance, appreciation of multiple cultural perspectives, and preparedness to interact in diversity and respect cultural differences, among others. Students in up to 69 OECD member and partner countries provided answers to these issues, allowing for unprecedented in-

ternational comparisons on how well school systems are preparing globally competent young adults, and the extent to which they do it for all students. How well systems are prepared to develop the skills needed for the twenty-first century in all students is a growing global concern (Rumberger & Lamb, 2024).

Using system-wide information collected by PISA 2018, this article investigates the relationship between private schooling, school socio-economic segregation, and student global competencies in various international contexts. The authors test the hypothesis that social segregation, underpinned by school privatization, can hinder students' abilities to develop global competency, leaving students less equipped to cope in a globalized and increasingly multicultural and interconnected world. While an international comparative analysis in the strict sense is not provided, this article offers a comparative panorama of school privatization, socio-economic segregation, and how they relate to global competencies in a wide variety of international contexts.

Global competence and the PISA framework

The concept of global competence refers to a person's ability to engage, understand, and act effectively on global issues combining knowledge, skills, attitudes, and values to critically assess and navigate intercultural situations. In a fast changing and increasingly diverse and interconnected world, how students develop cultural awareness, can collaborate in contexts of diversity, and sustain respectful interactions with others have become key elements not only to succeed in school, further study, work, and life more broadly, but to live together in peace and harmony (Mansilla & Wilson, 2020). Research has found a positive correlation between global competence skills and student engagement in learning, student performance in math, reading, and science (OECD, 2020), and the acquisition of foreign language proficiency (Guo, Yang, Xiao, & Xie, 2024). According to Mansilla, Jackson, and Jacobs (2011), the changing demands of work due to the emergence of a new globalized labour landscape, unprecedented global migration, and environmental instability are among the most important forces behind the increasing need to prepare globally competent young people.

The skills embedded in the concept of global competence overlap substantially with the skills that are part of other conceptual frameworks that recognize the need for schools to teach a broader set of capabilities beyond numeracy, literacy, science, arts, and civics, for students to succeed in school and beyond (Farrington, Roderick, Allensworth, Nagaoka, Keyes, et al., 2012; National Research Council, 2012; OECD, 2015). Emotional and intrapersonal skills such as self-efficacy, self-confidence, and critical thinking, and social and interpersonal skills such as perspective taking and attitudes toward others, are usually part of the array of capabilities considered under concepts like global citizenship, intercultural competence, twenty-first century skills, non-cognitive skills, soft skills, or social and emotional skills. Although each of these concepts has its own conceptual framework, construct, and empirical evidence, they all share the idea that to succeed in today's fast changing, increasingly complex and interconnected world, students need to master a new set of capabilities that have not been part of the traditional school curriculum and that require significant educational reform (Lamb, Maire, & Doecke, 2017).

Given the importance of global competence and non-cognitive skills to the life of students and social welfare, school systems around the world are starting to recognize the need to incorporate these skills as part of their school performance frameworks (Lamb & Rumberger, 2024). For many young people, school is the place where they spend most of their time learning and forming their awareness and views about political issues, democracy, and their role in shaping communities and the larger world (Torney-Purta, 2002; Flanagan & Levine, 2010), and evidence shows that schools can affect the development of these skills (McCormick, Cappella, O'Connor, & McClowry, 2015). Through the curriculum, the role of teachers, and the various activities they offer, schools provide opportunities for students to have a stance on the global events that impact the world, their local communities, and their personal lives. By facilitating experiences that promote appreciation for diverse cultures, languages, and backgrounds, schools can reduce intergroup prejudice and promote positive orientations toward diversity (Pettigrew & Tropp, 2006, 2008; Janmaat & Mons, 2011).

However, just as with skills that have been traditionally part of the school curriculum, such as literacy and numeracy, not all schools are equally prepared to develop non-cognitive skills, and significant gaps exist between groups of students. In one of the few international comparative studies on student social and emotional skills, Lamb and Rumberger (2024) highlight that disparities in social and emotional competencies mirror the inequalities seen in cognitive abilities, and that these non-cognitive skills are similarly affected by socio-economic and demographic factors. The implications are that as global competence becomes increasingly relevant for life, and schools remain unequally prepared to develop these skills, new forms of educational inequality emerge with profound implications for individuals and societies.

Inspired by the work by Harvard Project Zero, the Global Competence Framework developed by the OECD (2018) seeks to understand how well-prepared young people are to thrive in a rapidly changing world and how well school systems are developing these skills and capabilities. To this end, PISA 2018 administered a cognitive test and a questionnaire to explore young people's "capacity to examine local, global and intercultural issues, to understand and appreciate the perspectives and world views of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for collective well-being and sustainable development" (OECD, 2018, p.7). This definition of global competence includes four interdependent and overlapping dimensions measuring student knowledge, cognitive skills, social skills, and attitudes: 1) the capacity to examine issues and situations of local, global, and cultural significance; 2) the capacity to understand and appreciate different perspectives and world views; 3) the ability to establish positive interactions with people of different national, ethnic, religious, social, or cultural backgrounds or gender; and 4) the capacity and disposition to take constructive action toward sustainable development and collective wellbeing.

The Global Competence Framework developed by the OECD presents limitations that have been subject of debate, including its cultural bias, Western-centric perspective, and some challenges associated to its implementation (see, for instance, Engel, Rutkowski, & Thompson, 2019; Robertson, 2021; Chandir & Gorur, 2021).

It provides, however, a unique opportunity to explore inequalities in the development of these skills at a system level from an international comparative perspective. Acknowledging the framework's limitations, we consider global competencies to be an important part of the educational outcomes expected from many school systems around the world. We expect, then, to find differences in the extent to which school systems and schools within each system prepare young people on the skills and abilities associated with global competence.

Private schools, segregation, and student global competence

Not all schools are equally prepared to develop globally competent young people. The OECD (2020) shows that on average and across all countries, students in private schools show higher global competence skills than students in public schools. Proponents of private schooling argue that this is not surprising because private schools are better prepared than public schools to foster the kinds of skills and attitudes that are part of the global competence framework. They contend that privatization can enhance school productivity, offer greater choice through diverse curricula, programs, and teaching methods, and provide students from underperforming public schools with the opportunity to attend higher-quality private institutions (Chubb & Moe, 1990).

Indeed, private schools have the reputation of being high-performing schools and more effective at improving student achievement than public schools (for example, David et al., 1994). Regularly, students in private schools in many OECD countries achieve better results in PISA than students in public schools (OECD, 2024). They often have smaller class sizes and offer a more personalized education tailored to each student's learning needs. Private schools usually have access to more funding and provide specialized programs, advanced courses, and extracurricular activities that expand the breath of learning. Commonly, private schools attract more qualified and experienced teachers, have better facilities, technology, and libraries, enjoy greater autonomy, and face less constraints than public schools (OECD, 2024).

Additionally, in many countries private schools select students and families based on religious affiliation, prior academic achievement, or capacity to pay fees. Student selection is a powerful mechanism to ensure students in private schools interact with peers from similar academic and social backgrounds (Rowe & Lubiensky, 2017), creating safe and exclusive social environments for advantaged families (for example, West et al., 1998) where strong social networks are built to support students during and beyond school.

However, despite all these advantages enjoyed by private schools, a large body of research shows that it is not clear whether student learning outcomes are higher in private schools than in public schools once the social composition of the student population is considered. The OECD (2020) found that in the case of global competence, the positive difference in favour of students in private schools is considerably reduced, non-existent, and in some cases reverted, once students' and schools' socio-economic characteristics are accounted for. This indicates that the differences in global attitudes and dispositions between students in private and public schools are largely the result of socio-economic disparities by school sector. In other words,

it is not clear whether private schools are better prepared than public school to develop students' global competence, or if their positive outcomes are just due to the social composition of their student populations and differential access to resources.

Conversely, abundant research connects private schooling, educational marketization, and policies of choice with school segregation (Bonal & Bellei, 2023; Lubienski et al., 2022). Research has shown for some time now that independent and private schools are more frequently attended by children from families that can afford the high tuitions and fees and who often have more information and are better equipped at making decisions regarding the education of their children (Levin, 1998; OECD, 2012). By sorting students based on their socio-economic background, private schools usually cluster advantaged families and can contribute to the concentration of disadvantaged families in public schools.

The relationship between private education and social segregation is by no means simple, and the way segregation results from school privatization depends on the many interconnected contextual, psycho-social, and structural features of each educational system (Perry et al., 2022). It also depends on the increasingly diversified models of private education, which do not only include the traditional private or independent school, but also include privately run state-funded schools (such as charter schools in the United States, private subsidized schools in Chile, and independent and Catholic schools in Australia), schools owned and managed by big corporations and chains, virtual schools that operate entirely or partially online, and low-fee schools targeting disadvantaged families (Srivastava, 2016). It also depends on the autonomy and restrictions private schools have on key issues such as student selection, program offering, tracking, and student expulsion, among others (Bonal & Bellei, 2023). As such, private education contributes to social segregation in some settings and not in others, depending on the specific features it adopts and how it combines with other key contextual influencers of school segregation.

In the United States, evidence suggests that private and charter schools have contributed to the isolation of students by socio-economic background, race, and learning needs (Frankenberg & Siegel-Hawley, 2011; Lubienski & Lubienski, 2014). As explained by Gorard (2015, 2017) the growth of Academies and Free Schools is among the malleable factors leading to socio-economic segregation, or, in the best scenario, not helping reduce segregation in England. Evidence suggests that this is also the case for independent schools in Sweden (Holmlund, Häggblom, Lindahl, Martinson, Sjögren, et al., 2014), Germany (Nikolai & Koinzer, 2017), and Australia (Perry, Yoon, Sciffer, & Lubienski, 2024; Sciffer, Perry, & McConney, 2023). In Chile, where close to 60 percent of students attend private schools and levels of social segregation are among the highest in the world (Gutiérrez et al., 2019), private schools and policies of choice and school competition have led to an increase of social segregation in schools, particularly in the capital city of Santiago (Hsieh & Urquiola, 2007; Valenzuela, Bellei, & de los Ríos, 2014; Molina, 2021).

Research on the social consequences of school segregation is rare (Mikulyuk & Braddock, 2018). Over the years, however, an increasing amount of research indicates that school segregation affects social outcomes directly and indirectly through various mechanisms. The direct mechanisms relate to the unequal opportunities and outcomes

that result from school segregation. When education intensifies social and economic inequalities, it erodes the structural conditions for social cohesion, such as levels of income disparities, poverty, inclusion, social mobility, employment opportunities, and economic security, among others (Green, Preston, & Janmaat, 2006). An indirect mechanism is the effect school segregation has on the development of student skills and dispositions that are important for societies, such as trust in others, confidence in institutions, sense of belonging, political competence, sense of democracy, and respect of different cultures, backgrounds, and perspectives (Janmaat, 2022; Molina, 2021; Molina & Lamb, 2022; Mickelson, 2018). It is uncertain, at this point, if the consequences of school segregation extend to skills linked to global competence.

The next section presents the methods used to study how student skills and attitudes related to global competence are explained by levels of social segregation and private provision of schooling in a variety of international contexts using data from PISA 2018.

Methods

Sample

The data were extracted from the PISA 2018 international database. A total of 612,004 students participated in PISA 2018, representing about 32 million 15-year-old students from 79 countries and economies. Global competence was a special theme in 2018, with students completing a test and a set of items in the background questionnaire. Not all countries participated in the Global Competence data collection, and those who did could select the competencies to measure. Each global competency (described below) was analyzed separately, which implies that there are different sample sizes for this study, ranging between 416,193 students from 55 countries and 532,727 students from 69 countries (see Table 1 in the Supplementary Material).

Measures

The analysis focuses on students' perceptions of their global competencies gathered by the student questionnaire as the outcome variables for this study, and as such, use the scales that PISA 2018 developed using Item Response Theory and reported as scales with a mean of zero and a standard deviation of one across OECD countries (OECD, 2021). The Global Competence Framework identifies the following nine scales (OECD, 2020):

Self-Efficacy in Explaining Global Issues, encompassing six questions measuring students' confidence in their ability to explain or discuss issues related to climate change, migration, and working conditions (see the Supplementary Material for detailed information on each one of the scales of Global Competence).

Awareness of Global Issues comprises student awareness regarding global issues such as international conflicts and climate change and global warming.

Attitudes Toward Immigrants measures students' level of agreement with statements about immigrant rights and opportunities.

Interest in Other Cultures measures students' willingness and curiosity to engage with and learn from other cultures, beliefs, and worldviews.

Perspective Taking captures the extent to which students understand that their views and perspectives are shaped by their own experiences and cultural backgrounds, and how well students understand and legitimize other perspectives.

Cognitive Flexibility/Adaptability uses six statements to measure students' ability to adapt their thinking and behaviours depending on the environment and context.

Respect for Other Cultures uses student responses to statements measuring their level of respect of values, opinions, and expressions from people who have different cultural affiliations.

Intercultural Communicative Awareness measures students' ability to recognize the difficulties around communicating with people whose native language is different to their own, and the ability to communicate clearly in these situations.

Global Mindedness measures students' sense of agency regarding global issues, or the extent to which students see themselves as part of the world, feel a sense of responsibility to its members, and are willing to take action.

The explanatory variables include the index of economic, social, and cultural status (ESCS) at the student level and school level (average student ESCS), and school sector. The ESCS is a composite scale developed by PISA consisting of three major components of family socio-economic status, namely, highest parental occupation, parental education (in years), and household possessions. School sector comprises private independent, private government-dependent, and public schools, as defined by PISA. Private enrolment is defined in this study as enrolment in private independent or private government-dependent schools, consistent with the authors' definition of school privatization, which involves transferring public education services to private entities, or to the expansion of privately run schools in a system through varied mechanisms, such as charter schools, voucher programs, or for-profit school models, with or without contribution of public funds.

This study also uses a basic and an additional set of controls. The basic controls include student gender, student educational orientation, immigration status, school's academic selectivity, class size, and the percentage of students from an immigrant background at the school. These set of controls were collected in most of the countries that also collected global competence information.

The additional controls were collected in a subset of countries. These include whether students have contact with people from other countries in their family, at school, in their neighbourhood, or in their circle of friends; the student's perception of a discriminating school climate; students' report on the number of learning opportunities related to global and intercultural issues at school; school principals' views on teachers' multicultural and egalitarian beliefs; and the number of curricular global competence opportunities that the principal reports are available to students.

Additional information about the sample, countries included, and variables used in each stage of the analysis can be found in the supplementary materials.

Analysis

The analysis consists of two broad phases: a between-country phase and a within-country phase. For the between-country phase, the authors estimate and analyze the relationship between country-level indicators of socio-economic segregation and enrolment in private independent and private-government dependent schools, and their link with the country average score in each global competence scale and level of variation between schools. Socio-economic segregation is measured as the percentage of each country's ESCS variance that can be attributed to variation between schools. This is estimated using a two-level variance-component model with students nested within schools and ESCS as the dependent variable. Private enrolment corresponds to the percentage of students who attend private independent and private government-dependent schools (as defined above) in each country. Alternative variable specifications for private enrolment (only private-independent enrolment and only private-government-dependent enrolment) are examined in the Supplementary Material.

Descriptive analysis and hypothesis testing are used to examine bivariate relationships between these variables, to explore whether countries with larger private enrolment or countries with higher socio-economic segregation tend to have lower average global competence. This study also tests if countries with larger private enrolment tend to be more socially segregated, and if these in turn have larger global competency differences between school sectors. This means that the between-country analysis not only focuses on the schools' ability to educate on global competence, but also on the systems' distributional results.

The within-country phase aims to estimate the extent to which private enrolment and social segregation explain global competency differences between schools in each participating country. Specifically, the authors estimate five models for each global competency scale and country. All models are multilevel models with students nested within schools. The first model is a variance component model, the second model includes school sector, the third model adds student ESCS and school ESCS, the fourth model adds the basic set of control variables, and the fifth model includes the additional controls. This modelling strategy allows us to understand how much of the between-school variance in each global competency can be attributed to differences based on school sector (private enrolment), socio-economic status (social segregation), or other student and school characteristics, by calculating the percentage change in the between-school variance as additional variables are included, relative to the between-school variance in the variance component model. Since not all countries collected the variables included in the four models, some countries are only included up to certain stages of the analysis, as reported in the Supplementary Material.

Trimmed nonresponse adjusted student weights and their school sum, available in the PISA 2018 data files, were included in all estimated models in the within-country analysis phase and in the estimation of country-level variables for the between-country analysis phase. These weights account for the sampling design of PISA (OECD, 2009).

Findings

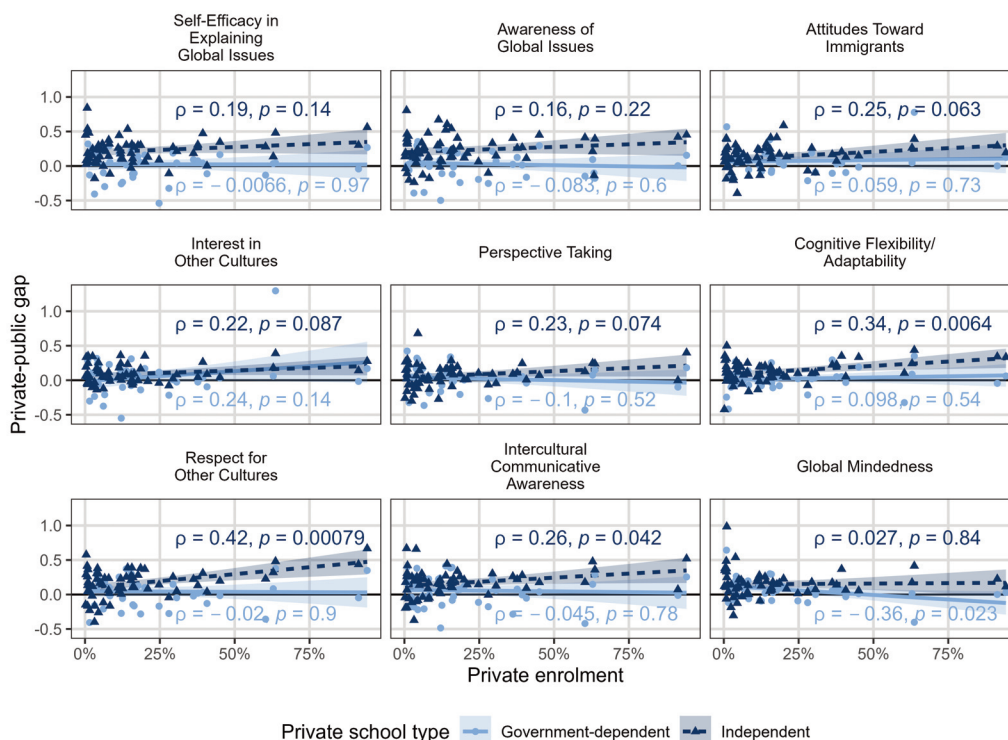
Between countries

Global competence and private enrolment

First, this article examines if there is a gap in global competence between private independent and private government-dependent schools, and whether this is linked with countries' overall enrolment in the private sector (with private-independent or private government-dependent). This allows us to understand whether there is evidence of individual advantages on enrolling in the private school sector, and whether this is linked with privatization trends.

In most countries and across global competencies, students attending private independent schools tend to have higher average global competence scores than their peers attending public schools, which implies a positive private independent-public gap in global competencies (see Figure 1). *Perspective taking* and *respect for other cultures* are the competencies with the highest proportion of countries where public school students outperform private independent students, on average, but this only occurs in 13 percent of participant countries with private independent and public schools. The gaps in global competencies between private government-dependent and public schools are positive in 32.4 percent (for *attitudes toward immigrants*) to 45.2 percent (for *awareness of global issues*) of the participant countries.

Figure 1. Gaps in average global competencies between private independent and private government-dependent schools, and public schools, by overall private enrolment in participant countries and economies



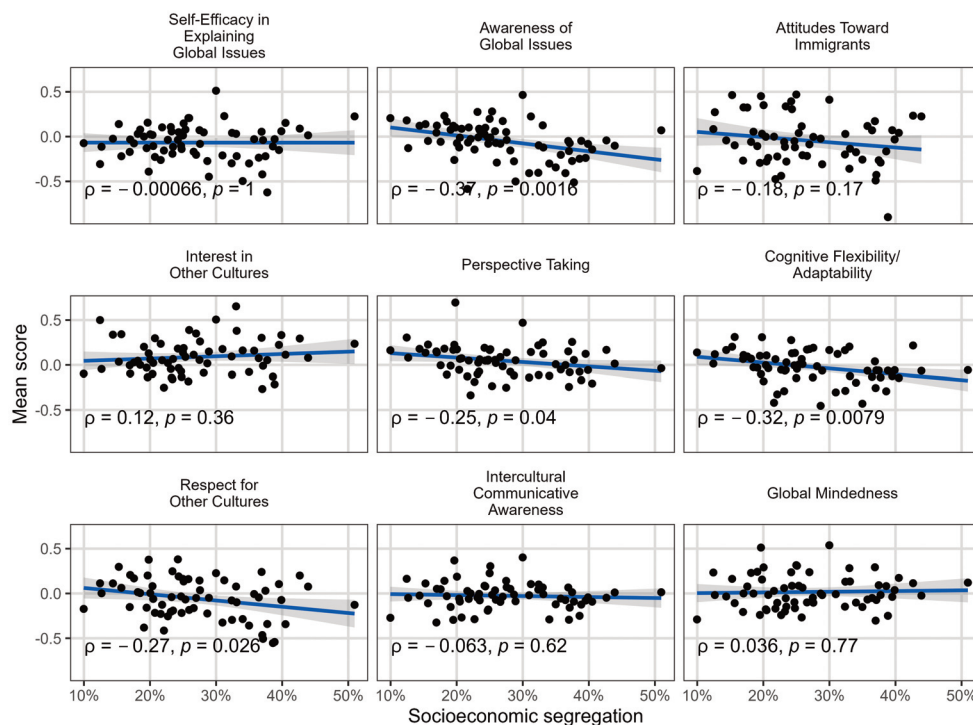
Note: Each country and school sector are represented by a point. Circles represent the gap between private government-dependent and public schools. Triangles represent the gap between private-independent and public schools. Private enrolment includes enrolment in private independent and private government-dependent schools. Additional graphs for enrolment in each school sector are available in the supplementary material.

Despite the positive private independent-public gap in global competencies in most countries, it is not clear that a larger share of students enrolled in private schools (either private independent or government-dependent) contributes to a higher level of student global competencies. As shown in the Supplementary Material, countries with a higher share of student enrolment in private independent schools tend to have higher average scores in *interest in other cultures* ($p = 0.39$, p -value = 0.001, $df = 62$) and *attitudes toward immigrants* ($p = 0.22$, p -value = 0.095, $df = 58$) but not in other global competencies. What is more, countries with a higher share of student enrolment in private government-dependent schools tend to have lower average scores in *cognitive flexibility/adaptability* ($p = -0.32$, p -value = 0.007, $df = 64$) and *interest in other cultures* ($p = -0.27$, p -value = 0.028, $df = 62$). The authors did not find evidence of a relationship between private-government-dependent enrolment and other global competencies.

Global competence and socio-economic segregation

This section presents the findings of the potential link between privatization and social segregation, and the association between social segregation and both average global competence and between-school variations in global competence. The last analysis allows us to explore a potential association between school socio-economic segregation and inequalities in global competence.

Figure 2. Mean global competency scores and socio-economic segregation in OECD and non-OECD participant countries and economies

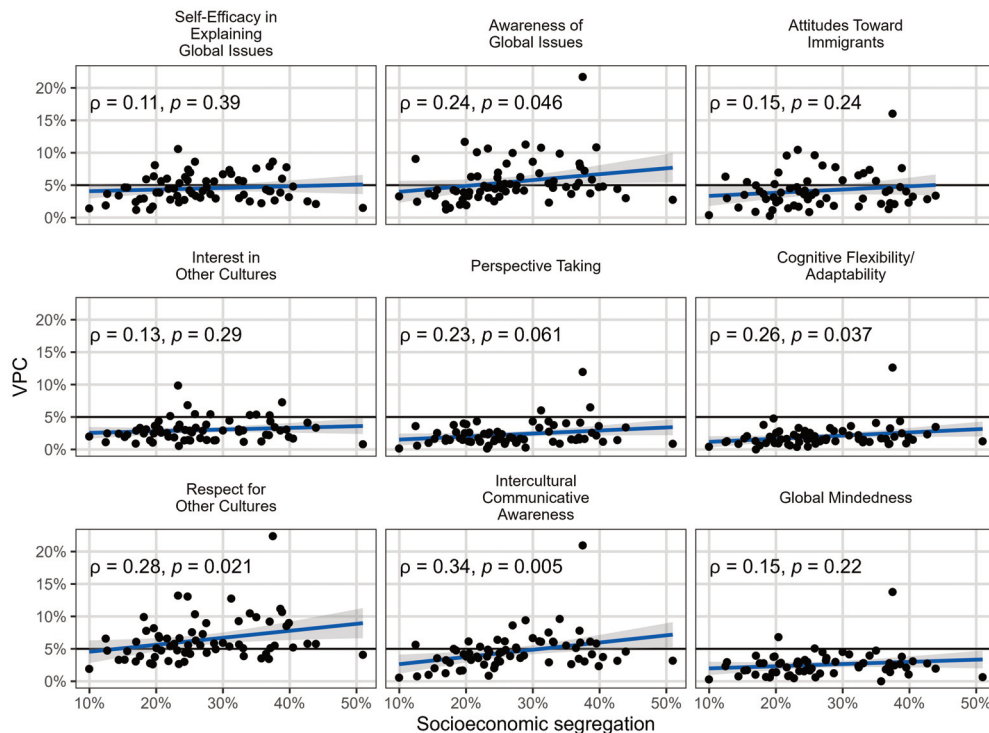


This analysis also confirms that countries with a higher share of private independent enrolment tend to be more socio-economically segregated between schools, although the linear relationship is weak ($p = 0.36$, p -value = 0.001, $df = 74$), but there is no statistically significant correlation with private government-dependent enrolment ($p = 0.07$, p -value = 0.508, $df = 74$). In turn, results in Figure 2 provide some evidence of the negative association between social segregation and student global compe-

tencies at a country level, as students in countries with higher socio-economic segregation tend to have lower average scores in *awareness of global issues* ($p = -0.37$, p -value = 0.002, $df=67$), *perspective taking* ($p = -0.25$, p -value = 0.04, $df = 65$), *cognitive flexibility/adaptability* ($= -0.32$, p -value = 0.008, $df = 65$), and *respect for people from other cultures* ($p = 0.27$, p -value = 0.026, $df = 64$). Importantly, social segregation does not seem to be positively related to any global competence.

A higher level of socio-economic segregation is also associated with a larger between-school variation in global competency scores in those competencies for which socio-economic segregation is linked to lower average scores. This implies that there is a negative association between social segregation and countries' capacities to develop some global competencies in all students. Figure 3 shows that countries with higher socio-economic segregation tend to have larger variations between schools in *awareness of global issues* ($p = 0.24$, p -value = 0.046, $df = 67$), *cognitive flexibility/adaptability* ($p = 0.26$, p -value = 0.037, $df = 65$), *respect for people from other cultures* ($p = 0.28$, p -value = 0.021, $df = 64$), and *intercultural communicative awareness* ($p = 0.34$, p -value = 0.005, $df = 64$).

Figure 3. Variance partition coefficient (VPC) for each global competency and socio-economic segregation in OECD and non-OECD participant countries and economies

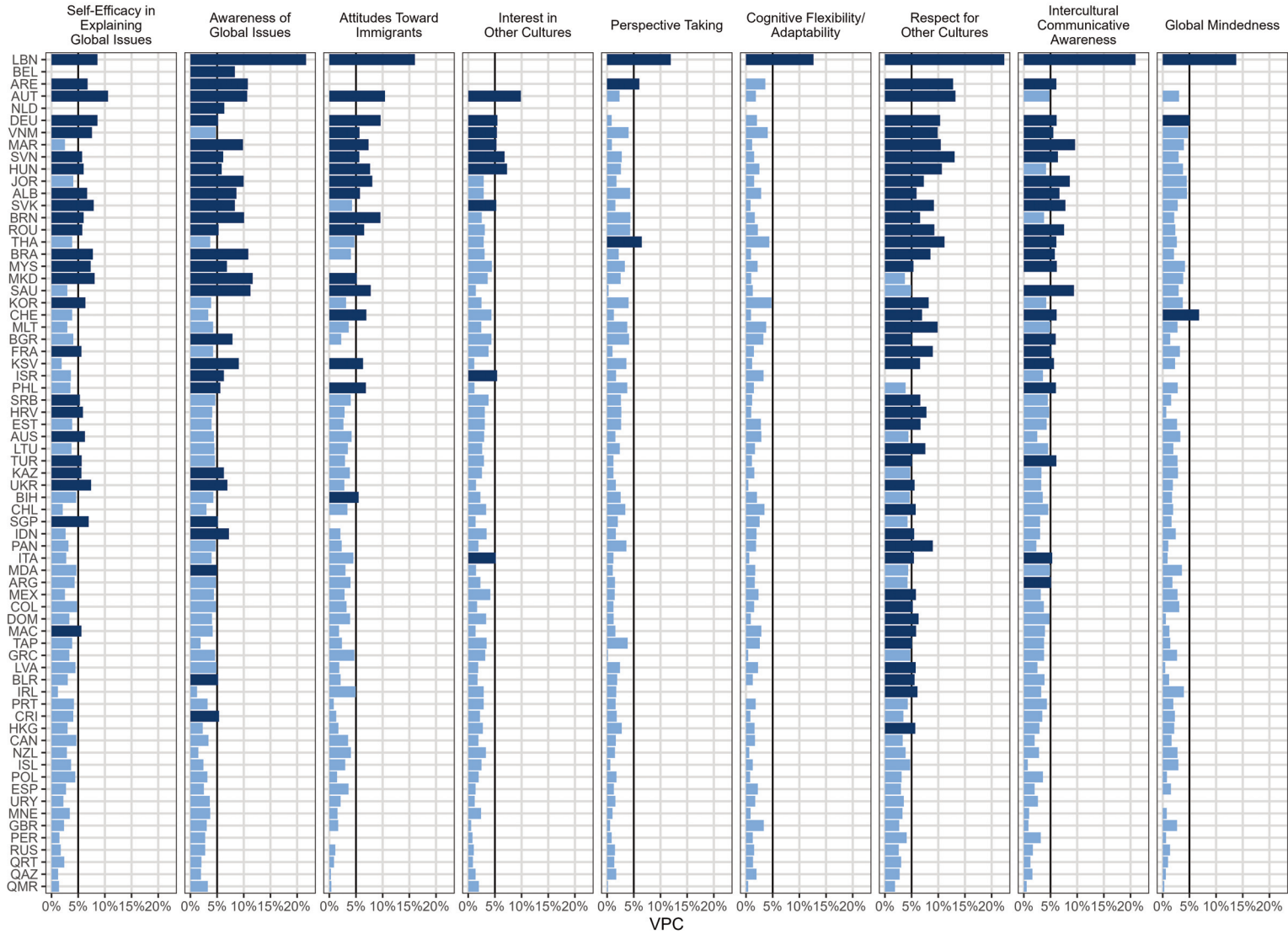


Within countries

Between-school variation in global competence

Between-school variation in global competence can be understood as the extent to which student global competencies differ between schools, and as a measure of inequality in the development of these skills across schools in each country. A value of zero in the variation of global competence between schools means that all the variance is found within schools, and that global competencies are the same in every school in that country. A value of one means that student scores in global competence are entirely different based on the school they attend, representing a highly unequal system for the development of these skills.

Figure 4. Variance partition coefficient (VPC) for each global competency and country



Note: Countries with a VPC above 5 percent are shown in dark blue.

The extent to which the variation in each of the global competencies occurs within and between schools differs widely across countries and domains (see Figure 4), ranging from zero in the case of *global mindedness* in Uruguay to 22 percent in the case of *respect for other cultures* in Lebanon. Between-school variation is particularly important (over 5%, dark blue in Figure 4) for *respect for people from other cultures* (62% of participant countries), *awareness of global issues* (42% of participant countries), *self-efficacy regarding global issues* (36% of participant countries), and *awareness of multicultural communication* (33% of participant countries). Conversely, there are no important differences between schools (below 5%, light blue in Figure 4) in *cognitive flexibility/adaptability*, *perspective taking*, and *global mindedness* in all countries, except Lebanon, the United Arab Emirates, and Thailand, and therefore these last global competencies are excluded from the subsequent analysis.

Explaining between-school variation in global competence

Between-school variation in global competence is not random. This section looks at the extent to which school sector, and student and school socio-economic background are linked to differences in global competence between schools, and how important they are relative to other factors.

Table 1 shows that overall, among countries where the between-school variation in global competencies is relatively important, school sector explains a relatively low percentage of the between-school variation in student levels of global competencies. On average, between 3.2 percent and 11.3 percent of the between-school variation in the different global competencies can be attributed to differences in school sector. School sector is particularly unimportant for explaining differences between schools in student levels of *interest in other cultures* and *attitudes toward immigrants*.

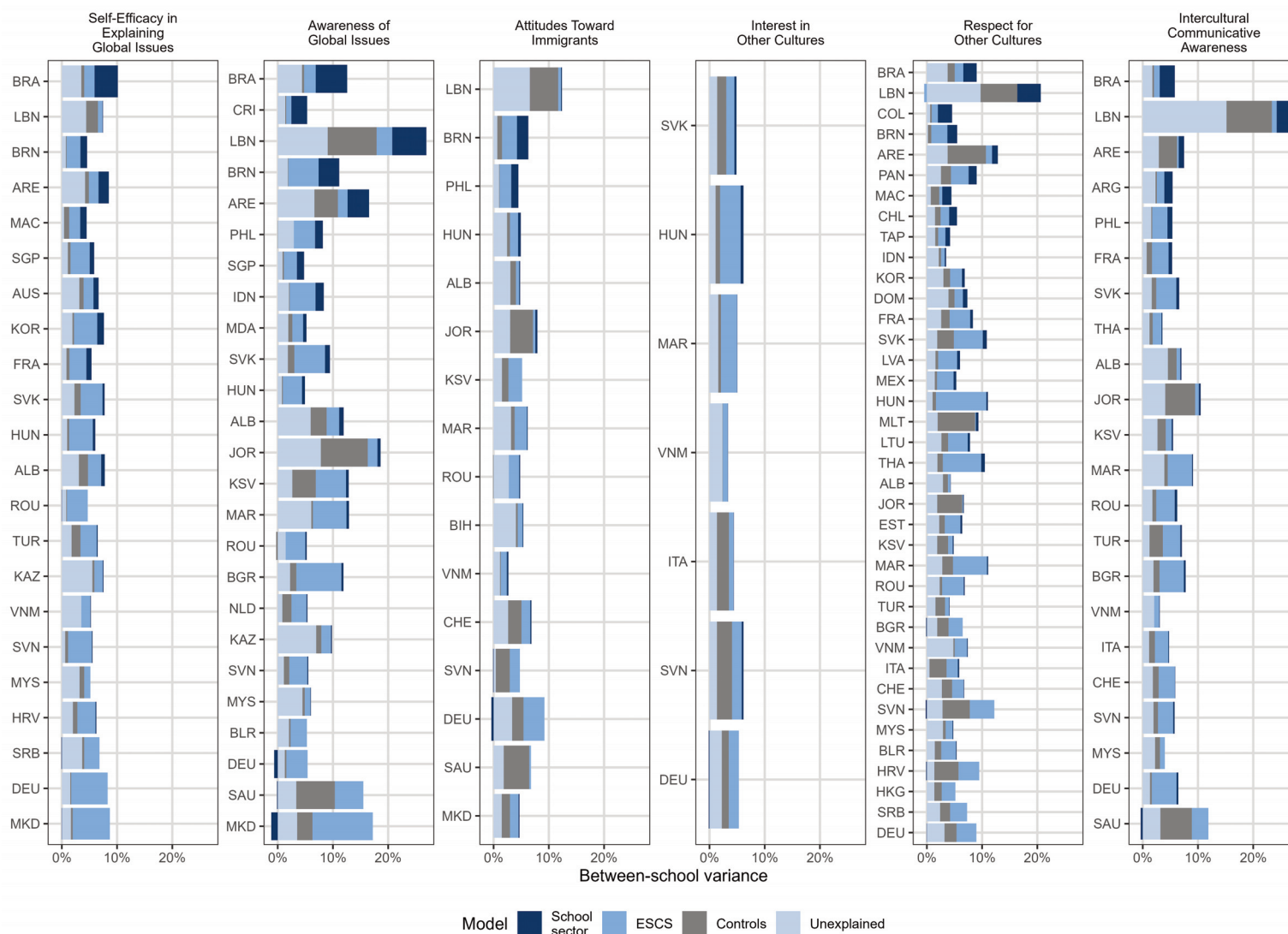
Table 1. Average additional percentage of between-school variance explained by sequentially including private enrolment, ESCS, and basic controls for each global competency

Competency	School sector	ESCS	Basic controls	Total variance explained	Number of countries
Self-Efficacy in Explaining Global Issues	9.3	46.9	10.0	66.2	22
Awareness of Global Issues	11.3	42.7	13.9	68.0	25
Attitudes Toward Immigrants	6.1	29.4	24.5	60.0	16
Interest in Other Cultures	3.2	36.9	25.0	65.1	7
Respect for Other Cultures	9.0	34.5	24.5	68.0	38
Intercultural Communicative Awareness	8.0	36.3	19.6	63.9	22

Note: Averages are calculated for countries with a VPC above 5 percent and data for basic controls, as shown in Figure 5.

Figure 5 shows that there is considerable variation in the relevance of private schooling for global competencies across countries. For example, in Costa Rica, 53.7 percent of the between-school variation in *awareness of global issues* can be attributed to differences in school sector. In Australia, on the other hand, where 14.5 percent of participating students attended a private independent school and 23.2 percent at-

Figure 5. Percentage of the between-school variance in global competencies explained by school sector, ESCS, and the set of basic controls in each country



Note: Bars show the cumulative percentage of the between-school variance explained after adding school sector, ESCS, and basic controls to the models. Changing the order in which variables are included may change the results. Only countries/global competencies with a VPC above 5 percent and data for basic controls are included.

tended a private government-dependent school, school sector explains 13.7 percent of the between-school variance in *self-efficacy explaining global issues*.

The addition of student and school ESCS considerably increases the percentage of explained residual variance in student global competencies between schools (Table 1). On average, these variables linked to social segregation explain four to 12 times more of the total between-school variance in the different global competencies than school sector, even after controlling for school sector effects. Socio-economic status is particularly influential on students' *self-efficacy explaining global issues*, where 46.9 percent of the total between-school variance is explained by student and school ESCS across 22 countries after controlling for school sector, which only explains 9.3 percent of the between-school variance. Socio-economic status is also quite influential on students' *awareness of global issues*, *intercultural communicative awareness*, and *interest in other cultures*.

Again, considerable variation exists between countries (see Figure 5). For example, student and school ESCS explain 57.5 percent of the between-school residual variation in *self-efficacy explaining global issues* in France after controlling for school sector, while these variables only explain 3.2 percent of this variation in *intercultural communicative awareness* in Lebanon.

The inclusion of the basic set of controls has a diverse capacity to explain additional residual between-school variance. In most cases, however, a substantial percentage of the between-school variance remains unexplained.

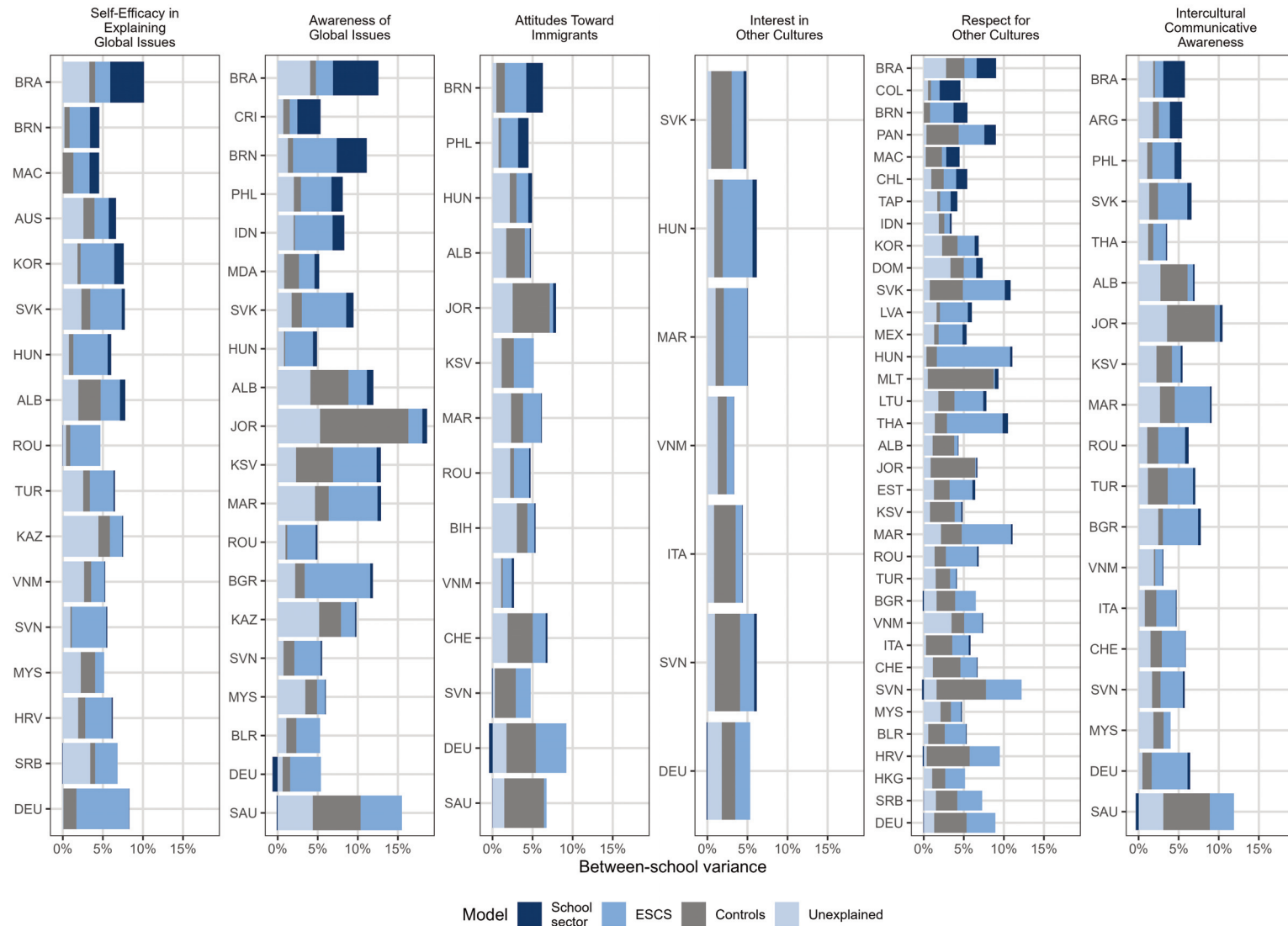
Including additional controls implies limiting the number of countries with available information for analysis (Table 2). For those countries with available information, the additional controls result in a reduction of the unexplained residual between-school variance across global competencies, especially for *respect for other cultures* and *interest in other cultures*, and to a lesser extent for *self-efficacy in explaining global issues* and *awareness of global issues*. Figure 6 shows that this is variable across countries, with a large percentage of the residual between-school variance in global competence in Albania (from 35.9% for *self-efficacy in explaining global issues* to 62.5% for *respect for other cultures*) or Jordan (from 56.5% for *intercultural communicative*

Table 2. Average additional percentage of between-school variance explained by sequentially including private enrolment, ESCS, and basic and additional controls for each global competency

Competency	School sector	ESCS	Basic + Additional controls	Total variance explained	Number of countries
Self-Efficacy in Explaining Global Issues	8.9	47.3	16.1	72.4	17
Awareness of Global Issues	10.7	43.9	20.6	75.2	20
Attitudes Toward Immigrants	6.7	31.0	32.8	70.4	14
Interest in Other Cultures	3.2	36.9	38.2	78.3	7
Respect for Other Cultures	8.7	36.0	34.7	79.5	35
Intercultural Communicative Awareness	7.4	38.7	24.5	70.6	19

Note: Averages are calculated for countries with a VPC above 5 percent and data for basic and additional controls, as shown in Figure 6.

Figure 6. Percentage of the between-school variance in global competencies explained by school sector, ESCS, and basic and additional control variables in each country



Note: Bars show the cumulative percentage of the between-school variance explained after adding school sector, ESCS, and basic and additional controls to the models. Changing the order in which variables are included may change the results. Only countries/global competencies with a VPC above 5 percent and data for basic and additional controls are included.

awareness to 82.7% for *respect for other cultures*) being explained by these variables, while relatively little of the between-school variation in global competence can be attributed to control variables in Brazil (from 3.8% for *intercultural communicative awareness* to 25.2% for *respect for other cultures*) or Morocco (from 13.2% for *awareness of global issues* to 24% for *attitudes toward immigrants*). Additional results reported in the Supplementary Material show that the results in Table 1 and 2 are relatively robust to the definition of school sector (i.e., whether the private school sector is understood to only comprise private-independent schools, or if private independent and private government-dependent schools are grouped in a single category), although there are differences for individual countries depending on the importance of each sector.

Discussion and conclusion

Our study aimed to explore the links between school social segregation, private enrolment, and student global competence in a variety of international contexts using PISA 2018 data. We carried out the analysis in two phases, looking at differences between countries and within countries.

In most countries, private independent school students score, on average, significantly higher than public school students in all global competencies considered. Although students in private government-dependent schools tend to have higher scores in global competencies than public school students, this is less consistent across global competencies and countries. However, the between-country analysis revealed that having a larger share of students enrolled in private (either private-independent or private government-dependent) schools does not translate into higher average levels of student global competencies, and instead is associated with higher levels of social segregation. The analysis also shows that countries with higher socio-economic segregation tend to have lower average student global competencies, particularly in *awareness of global issues*, *perspective taking*, *cognitive flexibility/adaptability*, and *respect for people from other cultures*, confirming previous findings about the negative consequences of social segregation on the development of a wide range of student skills. Furthermore, countries with higher social segregation between schools tend to have higher differences in student global competencies, contributing to inequality in the development of these skills. These relationships might be shaped by other characteristics, such as the countries' income, urbanization, expenditure, and broader policies. Although outside of the scope of this article, future research may incorporate a multivariate analysis approach for these between-country relationships.

Results from the within-country analysis show that, in most countries where student global competencies differ considerably between schools, socio-economic status is much more important than school sector to explain such differences. The OECD (2020) argues that it is not clear whether private schools are more effective than public schools at developing these skills once controlling for student socio-economic background. Conversely, the evidence in this study from a variety of contexts suggests that any type of private schooling, through its links to social segregation, negatively affects how well school systems are preparing globally competent young adults, and the extent to which they do so for all students.

While families and students may benefit from attending private schools, especially private independent schools, these findings suggest that large shares of students enrolled in any type of private schools come at a cost for societies. As global competence and other soft skills, sometimes referred to as non-cognitive skills or social and emotional skills, become more important for individuals to succeed in the twenty-first century, and for societies to remain cohesive, school privatization and its contribution to social segregation stand against the capacity of educational systems to develop these skills in all students. As the world becomes increasingly complex and demands students to be able to appreciate other world views, hold effective interactions with people from different cultures, and act toward the collective wellbeing, a new achievement gap is developed and promoted by school privatization and social segregation.

Recognizing the diversity of educational privatization approaches that exist in OECD countries and the many other relevant educational features that combine to influence school segregation, these findings suggest that policies addressing the nature of private provision of education and the ways it contributes to school social segregation are fundamental for systems to prepare all young people with the skills and abilities needed to become globally competent and for the collective wellbeing.

Finally, the focus of this article has been on describing observable patterns across countries. Although some countries present interesting case studies that warrant further study on their own, such analysis is beyond the scope of this article. This focus also implies that, when selecting variables to include for analysis, priority has been given to selecting relevant variables that are available to the largest possible number of countries.

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Sample information

Table 1. Sample sizes for different global competencies and stages of analysis

Competency	Level	PISA sample	Private enrolment	Basic controls	All controls
Self-efficacy in explaining global issues	Students	519,487	513,910	478,457	428,390
	Countries	67	66	63	57
Awareness of global issues	Students	532,727	518,675	483,222	428,390
	Countries	69	67	64	57
Attitudes toward immigrants	Students	468,406	462,829	427,376	416,193
	Countries	61	60	57	55
Interest in other cultures	Students	494,596	489,019	453,566	428,390
	Countries	65	64	61	57
Perspective taking	Students	519,487	513,910	478,457	428,390
	Countries	67	66	63	57
Cognitive flexibility/ adaptability	Students	519,487	513,910	478,457	428,390
	Countries	67	66	63	57
Respect for other cultures	Students	512,864	507,287	471,834	428,390
	Countries	66	65	62	57
Intercultural communication awareness	Students	513,918	508,341	472,888	428,390
	Countries	66	65	62	57
Global mindedness	Students	493,587	488,010	452,557	428,390
	Countries	65	64	61	57

Table 2. Descriptive statistics for country-level variables of interest

Variable	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
Socioeconomic segregation	8.57	19.98	25.22	26.24	32.56	50.96
Private independent enrolment	0.00	0.83	5.52	8.11	12.20	60.20
Private government-dependent enrolment	0.00	0.00	0.98	8.69	8.42	88.08
Variance partition coefficients						
Self-efficacy in explaining global issues	1.18	2.95	4.10	4.50	5.84	10.58
Awareness of global issues	1.25	3.65	4.66	5.52	6.36	21.69
Attitudes toward immigrants	0.28	2.24	3.58	4.16	5.48	16.02
Interest in other cultures	0.54	1.85	2.89	2.99	3.44	9.85
Perspective taking	0.14	1.26	1.73	2.32	2.73	11.94
Cognitive flexibility/ adaptability	0.00	1.13	1.63	2.00	2.41	12.62
Respect for other cultures	1.90	4.24	5.56	6.39	7.72	22.37
Intercultural communicative awareness	0.55	3.08	4.17	4.55	5.77	20.95
Global mindedness	0.00	1.41	2.36	2.56	3.05	13.77

Table 3. Countries excluded at each stage of the analysis

Country code	Self-efficacy in explaining global issues	Awareness of global issues	Attitudes toward immigrants	Interest in other cultures	Perspective taking	Cognitive flexibility/adaptability	Respect for other cultures	Intercultural communicative awareness	Global mindedness
ALB	Included	Included	Included	VPC <5%	VPC <5%	VPC <5%	Included	Included	VPC <5%
ARE	Missing additional controls	Missing additional controls	Not measured	Not measured	Missing additional controls	VPC <5%	Missing additional controls	Missing additional controls	Not measured
ARG	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%
AUS	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
AUT	Missing basic controls	Missing basic controls	Missing basic controls	Missing basic controls	VPC <5%	VPC <5%	Missing basic controls	VPC <5%	VPC <5%
BEL	Not measured	Missing school sector	Not measured	Not measured	Not measured	Not measured	Not measured	Not measured	Not measured
BGR	VPC <5%	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	Included	VPC <5%
BIH	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
BLR	VPC <5%	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
BRA	Included	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	Included	VPC <5%
BRN	Included	Included	Included	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
CAN	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
CHE	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%	VPC <5%	Included	Included	Included
CHL	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
COL	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
CRI	VPC <5%	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
DEU	Included	Included	Included	Included	VPC <5%	VPC <5%	Included	Included	Included
DOM	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
ESP	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
EST	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
FRA	Missing additional controls	VPC <5%	Not measured	VPC <5%	VPC <5%	VPC <5%	Missing additional controls	Missing additional controls	VPC <5%
GBR	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
GRC	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
HKG	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%

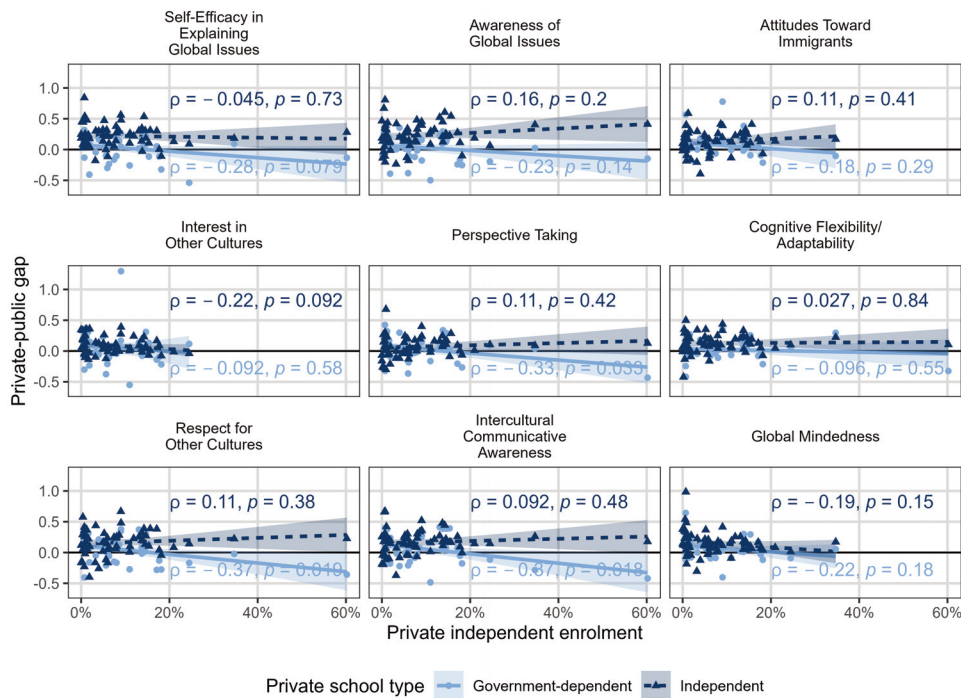
Table 3. (continued)

Country code	Self-efficacy in explaining global issues	Awareness of global issues	Attitudes toward immigrants	Interest in other cultures	Perspective taking	Cognitive flexibility/adaptability	Respect for other cultures	Intercultural communicative awareness	Global mindedness
HRV	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
HUN	Included	Included	Included	Included	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
IDN	VPC <5%	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
IRL	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Missing school sector	VPC <5%	VPC <5%
ISL	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
ISR	VPC <5%	Missing school sector	Not measured	Missing school sector	VPC <5%	VPC <5%	Not measured	VPC <5%	Not measured
ITA	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%	Included	Included	VPC <5%
JOR	VPC <5%	Included	Included	VPC <5%	VPC <5%	VPC <5%	Included	Included	VPC <5%
KAZ	Included	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
KOR	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
KSV	VPC <5%	Included	Included	VPC <5%	VPC <5%	VPC <5%	Included	Included	VPC <5%
LBN	Missing additional controls	Missing additional controls	Missing additional controls	Not measured	Missing additional controls	Missing additional controls	Missing additional controls	Missing additional controls	Missing additional controls
LTU	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
LVA	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
MAC	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
MAR	VPC <5%	Included	Included	Included	VPC <5%	VPC <5%	Included	Included	VPC <5%
MDA	VPC <5%	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
MEX	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
MKD	Missing additional controls	Missing additional controls	Missing additional controls	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Not measured	VPC <5%
MLT	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
MNE	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
MYS	Included	Included	Not measured	VPC <5%	VPC <5%	VPC <5%	Included	Included	VPC <5%

Table 3. (continued)

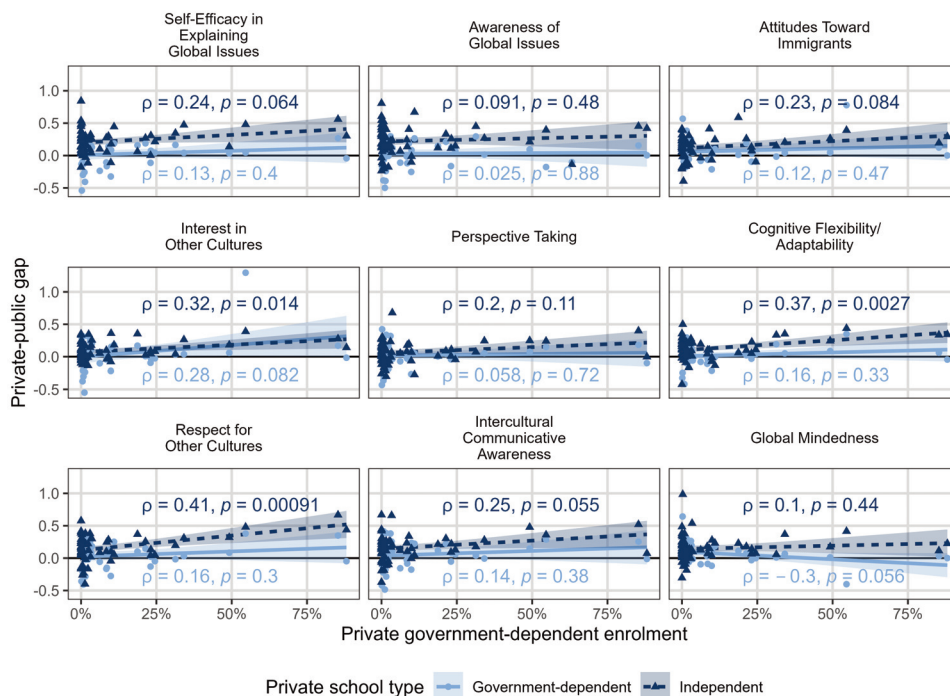
Country code	Self-efficacy in explaining global issues	Awareness of global issues	Attitudes toward immigrants	Interest in other cultures	Perspective taking	Cognitive flexibility/adaptability	Respect for other cultures	Intercultural communicative awareness	Global mindedness
NLD	Not measured	Missing additional controls	Not measured	Not measured	Not measured	Not measured	Not measured	Not measured	Not measured
NZL	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
PAN	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
PER	VPC <5%	VPC <5%	Not measured	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
PHL	VPC <5%	Included	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%
POL	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
PRT	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
QAZ	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
QMR	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
QRT	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
ROU	Included	Included	Included	VPC <5%	VPC <5%	VPC <5%	Included	Included	VPC <5%
RUS	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
SAU	VPC <5%	Included	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%
SGP	Missing additional controls	Missing additional controls	Not measured	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
SRB	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
SVK	Included	Included	VPC <5%	Included	VPC <5%	VPC <5%	Included	Included	VPC <5%
SVN	Included	Included	Included	Included	VPC <5%	VPC <5%	Included	Included	VPC <5%
TAP	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	VPC <5%
THA	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	VPC <5%	Included	Included	VPC <5%
TUR	Included	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Included	Included	VPC <5%
UKR	Missing basic controls	Missing basic controls	VPC <5%	VPC <5%	VPC <5%	VPC <5%	Missing basic controls	VPC <5%	VPC <5%
URY	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%	VPC <5%
VNM	Included	VPC <5%	Included	Included	VPC <5%	VPC <5%	Included	Included	VPC <5%

Figure 1. Gaps in average global competencies between private independent and private government-dependent schools, and public schools by enrolment in private independent schools in participant countries and economies



Note: Each country and school sector are represented by a point. Circles represent the gap between private government-dependent and public schools. Triangles represent gap between private-independent and public schools.

Figure 2. Gaps in average global competencies between private independent and private government-dependent schools, and public schools by enrolment in private government-dependent schools in participant countries and economies



Note: Each country and school sector are represented by a point. Circles represent the gap between private government-dependent and public schools. Triangles represent gap between private-independent and public schools.

Table 4. Correlations between average global competencies and key country-level variables

Competency	Private enrolment	Private government-dependent enrolment	Private independent enrolment	Socio-economic segregation
Self-efficacy in explaining global issues	0.042 (64)	-0.048 (64)	0.181 (64)	-0.001 (65)
Awareness of global issues	-0.119 (65)	-0.118 (65)	-0.028 (65)	-0.373*** (67)
Attitudes toward immigrants	0.253* (58)	0.199 (58)	0.217* (58)	-0.18 (59)
Interest in other cultures	-0.128 (62)	-0.275** (62)	0.389*** (62)	0.116 (63)
Perspective taking	-0.1 (64)	-0.158 (64)	0.081 (64)	-0.251** (65)
Cognitive flexibility/adaptability	-0.311** (64)	-0.325*** (64)	-0.061 (64)	-0.322*** (65)
Respect for other cultures	0.077 (63)	-0.007 (63)	0.179 (63)	-0.275** (64)
Intercultural communicative awareness	0.297** (63)	0.198 (63)	0.267** (63)	-0.063 (64)
Global mindedness	0.254** (62)	0.112 (62)	0.431*** (62)	0.036 (63)

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; degrees of freedom in parenthesis

Table 5. Average additional percentage of between-school variance explained by sequentially including private-independent school enrolment, ESCS and basic controls for each global competency

Competency	School sector	ESCS	Basic controls	Total variance explained	Number of countries
Self-efficacy in explaining global issues	8.1	47.6	10.2	65.9	22
Awareness of global issues	9.6	42.3	13.8	65.7	26
Attitudes toward immigrants	5.8	29.5	24.4	59.6	16
Interest in other cultures	-0.3	34.6	20.4	54.8	8
Respect for other cultures	7.1	35.4	24.7	67.3	38
Intercultural communicative awareness	6.0	37.6	19.8	63.4	22

Note: Averages are calculated for countries with a VPC above 5% and data for basic controls.

Table 6. Average additional percentage of between-school variance explained by sequentially including private-independent school enrolment, ESCS, and basic and additional controls for each global competency

Competency	School sector	ESCS	Basic + additional controls	Total variance explained	Number of countries
Self-Efficacy in Explaining Global Issues	7.4	48.4	16.5	72.3	17
Awareness of Global Issues	9.3	45.0	20.7	75.1	20
Attitudes Toward Immigrants	6.3	31.0	32.6	70.0	14
Interest in Other Cultures	-0.3	39.3	38.5	77.4	7
Respect for Other Cultures	6.8	37.1	34.9	78.7	35
Intercultural Communicative Awareness	5.2	40.1	24.5	69.9	19

Note: Averages are calculated for countries with a VPC above 5% and data for basic and additional controls.

Table 7. Average additional percentage of between-school variance explained by sequentially including private-government-dependent school enrolment, ESCS and basic controls for each global competency

Competency	School sector	ESCS	Basic controls	Total variance explained	Number of countries
Self-efficacy in explaining global issues	0.24	55.07	10.10	65.41	22
Awareness of global issues	1.33	49.51	14.01	64.85	26
Attitudes toward immigrants	-0.59	34.80	24.32	58.54	16
Interest in other cultures	2.10	31.54	20.36	54.00	8
Respect for other cultures	1.93	39.73	25.00	66.67	38
Intercultural communicative awareness	1.88	40.66	20.15	62.69	22

Note: Averages are calculated for countries with a VPC above 5% and data for basic controls.

Table 8. Average additional percentage of between-school variance explained by sequentially including private-independent school enrolment, ESCS, and basic and additional controls for each global competency

Competency	School sector	ESCS	Basic + Additional controls	Total variance explained	Number of countries
Self-efficacy in explaining global issues	0.89	54.36	16.44	71.69	17
Awareness of global issues	1.68	51.49	20.69	73.86	20
Attitudes toward immigrants	-0.46	36.65	32.60	68.79	14
Interest in other cultures	2.40	35.72	37.75	75.86	7
Respect for other cultures	1.56	41.41	35.52	78.49	35
Intercultural communicative awareness	1.73	42.64	24.96	69.32	19

Measurement information

Table 9. Items and questions for global competencies in PISA 2018

Scale and item	Question
Self-efficacy regarding explaining global issues (GCSELFEFF) How easy do you think it would be for you to perform the following tasks on your own? 1 I couldn't do this 2 I would struggle to do this on my own 3 I could do this with a bit of effort 4 I could do this easily	1. Explain how carbon-dioxide emissions affect global climate change 2. Establish a connection between prices of textiles and working conditions in the countries of production 3. Discuss the different reasons why people become refugees 4. Explain why some countries suffer more from global climate change than others 5. Explain how economic crises in single countries affect the global economy 6. Discuss the consequences of economic development on the environment

Table 9 (continued)

Scale and item	Question
<p>Awareness of global issues (GCAWARE)</p> <p>How informed are you about the following topics?</p> <p>1 I have never heard of this</p> <p>2 I have heard about this but I would not be able to explain what it is really about</p> <p>3 I know something about this and could explain the general issue</p> <p>4 I am familiar with this and I would be able to explain this well</p>	<p>1. Climate change and global warming</p> <p>2. Global health (e.g. epidemics)</p> <p>3. Migration (movement of people)</p> <p>4. International conflicts</p> <p>5. Hunger or malnutrition in different parts of the world</p> <p>6. Causes of poverty</p> <p>7. Equality between men and women in different parts of the world</p>
<p>Attitudes towards immigrants (ATTIMM)</p> <p>People are increasingly moving from one country to another. How much do you agree with the following statements about immigrants?</p> <p>1 Strongly disagree</p> <p>2 Disagree</p> <p>3 Agree</p> <p>4 Strongly agree</p>	<p>1. Immigrant children should have the same opportunities for education that other children in the country have.</p> <p>2. Immigrants who live in a country for several years should have the opportunity to vote in elections.</p> <p>3. Immigrants should have the opportunity to continue their own customs and lifestyle.</p> <p>4. Immigrants should have all the same rights that everyone else in the country has.</p>
<p>Interest in learning about other cultures (INTCULT)</p> <p>How well does each of the following statements below describe you?</p> <p>1 Very much like me</p> <p>2 Mostly like me</p> <p>3 Somewhat like me</p> <p>4 Not much like me</p> <p>5 Not at all like me</p>	<p>1. I want to learn how people live in different countries.</p> <p>2. I want to learn more about the religions of the world.</p> <p>3. I am interested in how people from various cultures see the world.</p> <p>4. I am interested in finding out about the traditions of other cultures.</p>
<p>Perspective taking (PERSPECT)</p> <p>How well does each of the following statements below describe you?</p> <p>1 Very much like me</p> <p>2 Mostly like me</p> <p>3 Somewhat like me</p> <p>4 Not much like me</p> <p>5 Not at all like me</p>	<p>1. I try to look at everybody's side of a disagreement before I make a decision.</p> <p>2. I believe that there are two sides to every question and try to look at them both.</p> <p>3. I sometimes try to understand my friends better by imagining how things look from their perspective.</p> <p>4. Before criticizing somebody, I try to imagine how I would feel if I were in their place.</p>
<p>Cognitive flexibility-adaptability (COGFLEX)</p> <p>How well does each of the following statements below describe you?</p> <p>1 Very much like me</p> <p>2 Mostly like me</p> <p>3 Somewhat like me</p> <p>4 Not much like me</p> <p>5 Not at all like me</p>	<p>1. I can deal with unusual situations.</p> <p>2. I can change my behaviour to meet the needs of new situations.</p> <p>3. I can adapt to different situations even when under stress or pressure.</p> <p>4. When encountering difficult situations with other people, I can think of a way to resolve the situation.</p> <p>5. I am capable of overcoming my difficulties in interacting with people from other cultures.</p>

Table 9 (continued)

Scale and item	Question
<p>Respect for people from other cultures (RESPECT)</p> <p>How well does each of the following statements below describe you?</p> <p>1 Very much like me 2 Mostly like me 3 Somewhat like me 4 Not much like me 5 Not at all like me</p>	<p>1. I respect people from other cultures as equal human beings</p> <p>2. I treat all people with respect regardless of their cultural background</p> <p>3. I give space to people from other cultures to express themselves</p> <p>4. I respect the values of people from different cultures</p>
<p>Intercultural communicative awareness (AWACOM)</p> <p>Imagine you are talking in your native language to people whose native language is different from yours. To what extent do you agree with the following statements?</p> <p>1 Strongly disagree 2 Disagree 3 Agree 4 Strongly agree</p>	<p>1. I carefully observe their reactions.</p> <p>2. I frequently check that we are understanding each other correctly.</p> <p>3. I listen carefully to what they say.</p> <p>4. I choose my words carefully.</p> <p>5. I give concrete examples to explain my ideas.</p> <p>6. I explain things very carefully.</p> <p>7. If there is a problem with communication, I find ways around it (e.g. by using gestures, re-explaining, writing etc.).</p>
<p>Global-mindedness (GLOBMIND)</p> <p>To what extent do you agree with the following statements?</p> <p>1 Strongly disagree 2 Disagree 3 Agree 4 Strongly agree</p>	<p>1. I think of myself as a citizen of the world.</p> <p>2. When I see the poor conditions that some people in the world live under, I feel a responsibility to do something about it.</p> <p>3. I think my behaviour can impact people in other countries.</p> <p>4. It is right to boycott companies that are known to provide poor workplace conditions for their employees.</p> <p>5. I can do something about the problems of the world.</p> <p>6. Looking after the global environment is important to me.</p>

Source: PISA 2018 Technical report and PISA 2018 Codebook OECD (2021).

Table 10. School type and basic controls included in the model

PISA 2018 variable	Description	Values	
SCHLTYPE	School Ownership		
	PISA 2018 classified schools based on questions SC013 (about management), SC016 (about funding sources) in the school questionnaire.	1	Private Independent: A school that is funded mainly through student fees or other private contributions
		2	Private Government-dependent: A privately managed school that receives more than half of its funding from the government
		3	Public: Publicly managed and funded school
ST004D01T	Student (Standardized) Gender		
		1	Female
		2	Male
ISCEDO	ISCED orientation		
		1	General
		2	Pre-Vocational
		3	Vocational
		4	Modular
SC012Q01TA	Student admission to school: Student's record of academic performance (including placement tests)		
		1	Never
		2	Sometimes
		3	Always
CLSIZE	Class Size		
		13	15 students or fewer
		18	16-20 students
		23	21-25 students
		28	26-30 students
		33	31-35 students
		38	36-40 students
		43	41-45 students
		48	46-50 students
		53	More than 50 students
IMMIG	Index Immigration status		
		1	Native
		2	Second-Generation
		3	First-Generation
Derived by authors	School proportion of immigrant students	0-1	Sample-derived proportion of non-native students in each school

Source: PISA 2018 Codebook OECD(2021).

Table 11. Additional controls included in the model

PISA 2018 variable	Description	Values	
ST220 Q01HA	Do you have contact with people from other countries? In your family	1	Yes
		2	No
ST220 Q02HA	Do you have contact with people from other countries? At school	1	Yes
		2	No
ST220 Q03HA	Do you have contact with people from other countries? In your neighbourhood	1	Yes
		2	No
ST220 Q04HA	Do you have contact with people from other countries? In your circle of friends	1	Yes
		2	No
DISCRIM	Discriminating school climate (WLE)	Mean of zero and standard deviation of one for OECD countries	
	<p>Questions used by PISA 2018 to construct the scale: Thinking about teachers in your school: to how many of them do the following statements apply? They have misconceptions about the history of some cultural groups. They say negative things about people of some cultural groups. They blame people of some cultural groups for problems faced by <country of test>. They have lower academic expectations for students of some cultural groups.</p>	1	To none or almost none of them
		2	To some of them
		3	To most of them
		4	To all or almost all of them
SCMCEG	<p>School principal's view on teachers' multicultural and egalitarian beliefs (WLE)</p> <p>Questions used by PISA 2018 to construct the scale: To what extent do the following statements reflect an opinion shared by your teaching staff? It is important for students to learn that people from other cultures can have different values. Respecting other cultures is something that students should learn as early as possible. In the classroom, it is important that students of different origins recognise the similarities that exist between them. When there are conflicts between students of different origins, they should be encouraged to resolve the argument by finding common ground.</p>	Mean of zero and standard deviation of one for OECD countries	
		1	Shared among none or almost none of them
		2	Shared among some of them
		3	Shared among many of them
4	Shared among all or almost all of them		

Table 11 (continued)

PISA 2018 variable	Description	Values	
Derived by authors	Global competence activities	0–10	Count of reported activities by each student based on variables below
ST221 Q01HA	At school: I learn about the interconnectedness of countries economies.		
ST221 Q02HA	At school: I learn how to solve conflicts with other people in our classrooms.		
ST221 Q03HA	At school: I learn about different cultures.		
ST221 Q04HA	At school: We read newspapers, look for news on the Internet or watch the news together during classes.		
ST221 Q05HA	At school: I am often invited by my teachers to give my personal opinion about international news.		
ST221 Q06HA	At school: I participate in events celebrating cultural diversity throughout the school year.		
ST221 Q07HA	At school: I participate in classroom discussions about world events as part of the regular instruction.		
ST221 Q08HA	At school: I analyse global issues together with my classmates in small groups during class.		
ST221 Q09HA	At school: I learn how people from different cultures can have different perspectives on some issues.		
ST221 Q11HA	At school: I learn how to communicate with people from different backgrounds.		
Derived by authors	Global competence curricular elements	0–6	Count of reported curricular elements in the school questionnaire based on variables below
SC167 Q01HA	Curriculum for the following in <national modal grade for 15-year-olds>: Communicating with people from different cultures		
SC167 Q02HA	Curriculum for the following in <national modal grade for 15-year-olds>: Knowledge of different cultures		
SC167 Q03HA	Curriculum for the following in <national modal grade for 15-year-olds>: Openness to intercultural experiences		
SC167 Q04HA	Curriculum for the following in <national modal grade for 15-year-olds>: Respect for cultural diversity		
SC167 Q05HA	Curriculum for the following in <national modal grade for 15-year-olds>: Foreign languages		
SC167 Q06HA	Curriculum for the following in <national modal grade for 15-year-olds>: Critical thinking skills		