

Cognitive Abilities are Not Enough: Social and Emotional Competencies of Czech Students¹

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Summary

- The 2022 international PISA survey for the first time monitored the social-emotional skills of 15-year-olds. These are skills such as patience and perseverance, curiosity, goal-orientation, control of emotions, resistance to stress, cooperation, assertiveness, and altruism. These abilities were not verified by testing but simply by self-assessment. In contrast to functional literacy, Czech students did not perform well in social-emotional skills. This is alarming, as these skills significantly influence success in both education and life.
- The findings raise questions about what may be behind the low level of social-emotional skills of Czech pupils? Is it due to teaching methods in schools? Could it be a reflection of generally low self-confidence in Czech society, mirrored in students' self-assessment of their own social-emotional skills? However, self-confidence is also an important social-emotional skill. Should we respond to these findings, and if so, how? What further sociological, pedagogical, and/or psychometric research is desirable?
- Differences in social-emotional skills between Czech boys and girls are similar to those in other countries: boys show significantly higher levels of stress resilience and emotional control, while girls show higher levels of empathy. With the exception of the tendency to co-operate, pupils with stronger socio-economic family backgrounds show significantly higher levels of social-emotional skills, with the largest differences in curiosity, perseverance, and empathy. Quantitatively gifted pupils show significantly higher levels of curiosity, perseverance, and emotional control than others. Pupils with above average reading literacy show significantly higher perseverance, inquisitiveness, and empathy.

Motto: *“Social-emotional skills are increasingly valued in the modern workforce, even beyond the classroom. Employers are looking for people who can collaborate, communicate effectively, work with information, and adapt to a dynamic work environment. By fostering social and emotional skills, education equips 15-year-olds with tools to manage stress, cope with setbacks, and to build resilience and a positive mindset—all qualities and competencies necessary for success in the future job market.”*

Andreas Schleicher, Insights and Interpretations, PISA 2022²

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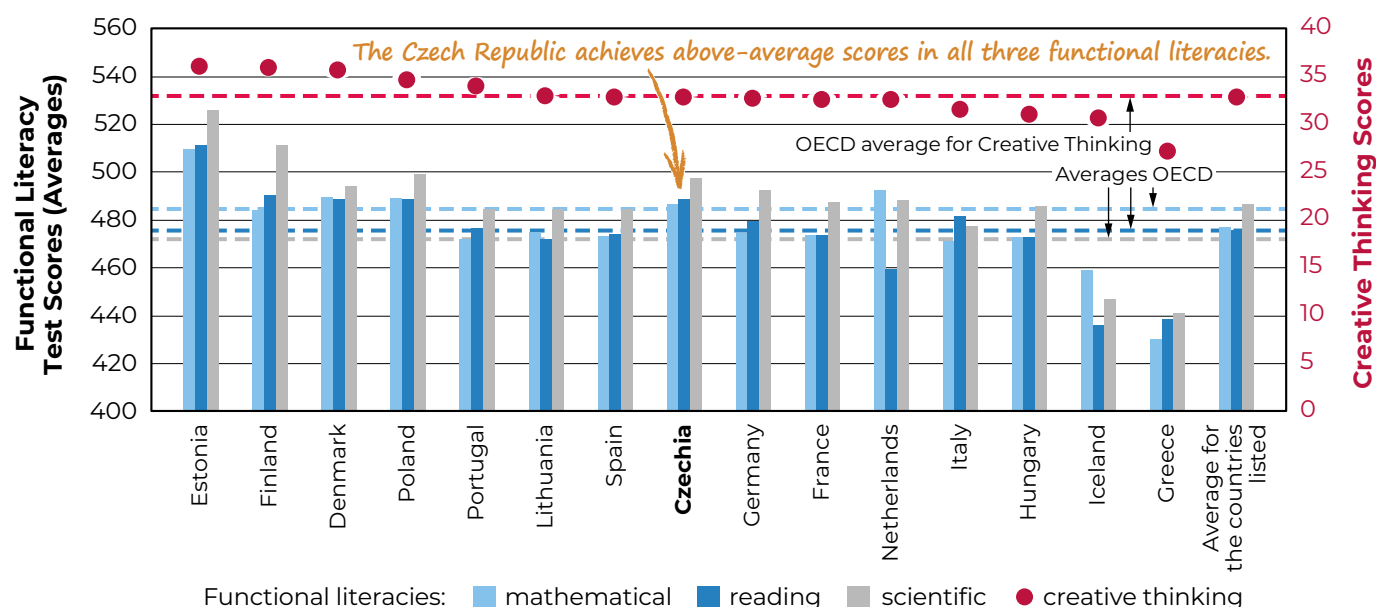
² Insights and Interpretations PISA 2022, Andreas Schleicher, OECD 2023. [🔗](#)

Functional Literacy and Creative Thinking

In the most recent cycle of the PISA international assessment of 15-year-old students in 2022, the Czech Republic achieved slightly above-average results in *reading*, *mathematics*, and *science literacy* among the 37 most economically advanced countries in the world (OECD) – **Figure 1**.³ In the new *creative thinking* domain, the Czech Republic performed at an average level. However, Czech students did not perform well in *social-emotional skills*. The main objective of our descriptive analysis is to draw attention to this fact, highlight its potential consequences, and pose questions for which empirical research should begin seeking answers.

Figure 1: Czech students achieve slightly above-average levels of functional literacy and creative thinking

Functional literacy test scores of 15-year-olds in PISA 2022 (national averages)



Source: OECD, PISA 2022 data, and our own calculations

Social-Emotional Skills

The 2022 PISA survey quantified seven social-emotional skills among students: **perseverance, curiosity, empathy, emotional control, stress resistance, cooperation, and assertiveness**. The assessment was conducted through self-reporting by the students themselves, which is important for interpreting the findings. A more detailed description of the social-emotional skills assessed is provided in **Textbox 1**.

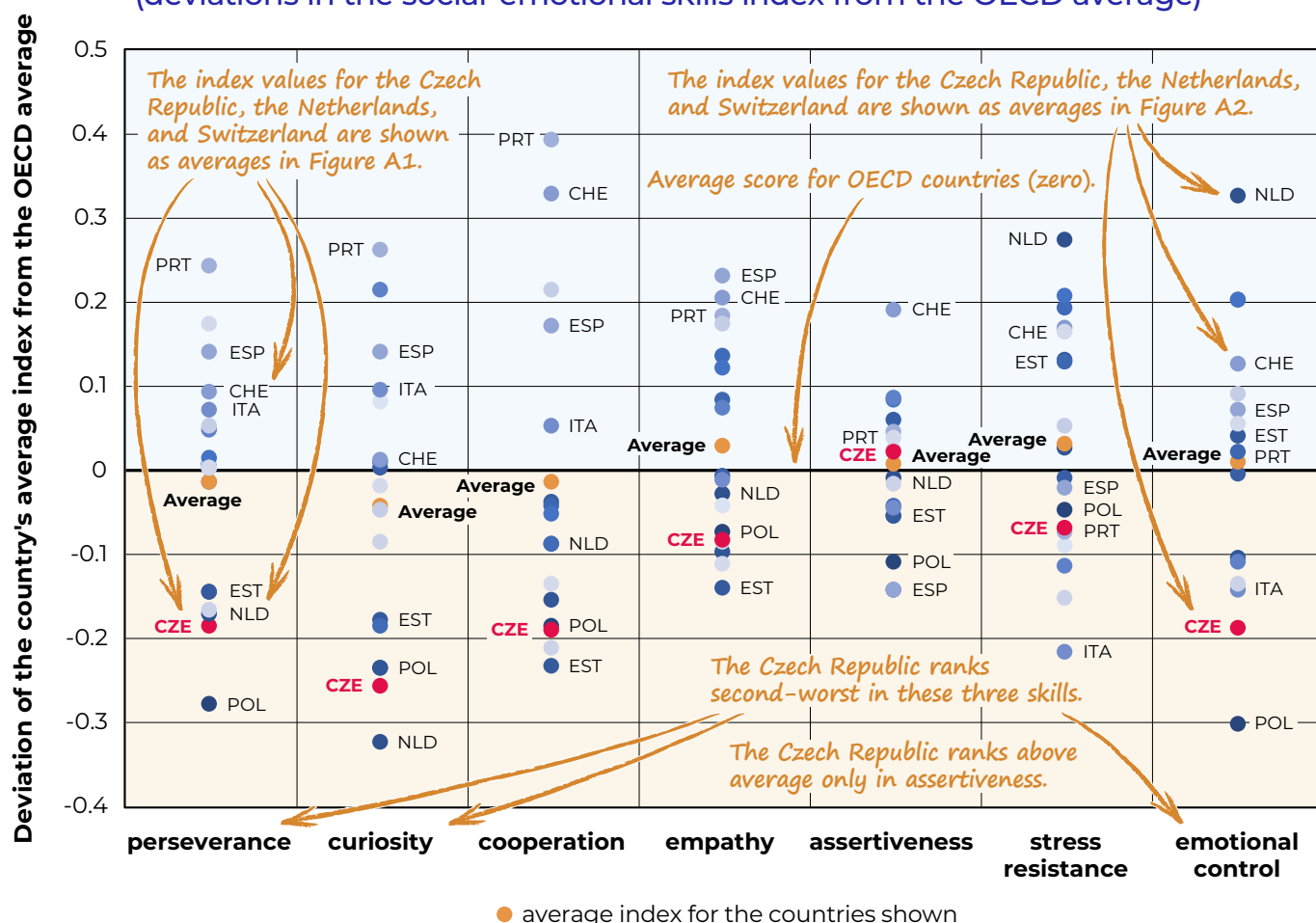
³ All calculations in this study were performed using so-called *plausible values* (multiple probability-based skill scores for each student), which estimate multiple possible skill levels for each student rather than a single score. This method accounts better for measurement uncertainty and allows for more accurate analyses. Detailed information on this methodology can be found in OECD (2024).

In the PISA data, individual social-emotional skills are quantified using continuous indices.⁴ An example of the statistical distribution for the Czech Republic, the Netherlands, and Switzerland is provided in the appendix at the end of the report: **Figure A1** for *perseverance* and **Figure A2** for *emotional control*.

Figure 2 shows the average score in the social-emotional skills index among participating European countries. Among the 18 countries surveyed, the Czech Republic ranks second to last in three social-emotional skills (*perseverance*, *curiosity*, and *emotional control*). In terms of *cooperation*, it ranks third from the bottom. It performs better only in the case of *stress resistance*, ranking 6th from the bottom, and *assertiveness*⁵, ranking 11th from the bottom. When measured by the sum of the countries' rankings in

Figure 2: Czech students perceive most of their social-emotional skills as low

(deviations in the social-emotional skills index from the OECD average)



Source: OECD, PISA 2022 data, and our own calculations

⁴ Based on students' responses to a set of questions for each of the seven social-emotional competencies, the OECD constructed a separate index. The index was developed using *item response theory*, specifically the *generalized partial credit model* (GPCM). The indices were subsequently transformed so that they would have a mean of 0 and a standard deviation of 1 across OECD countries. More on the construction of the indices can be found in the Technical Report on PISA 2022 here [PISA 2022 Technical Report](#). We calculate the average score for each socio-emotional skill index for individual countries as a weighted average of the responses from all students in that country, using the student weights specified in the PISA survey. We calculate the average for all OECD countries (i.e., with a value of 0) as an unweighted average within the PISA survey.

⁵ *Assertiveness* is defined as the ability and willingness to stand up for oneself in a community.

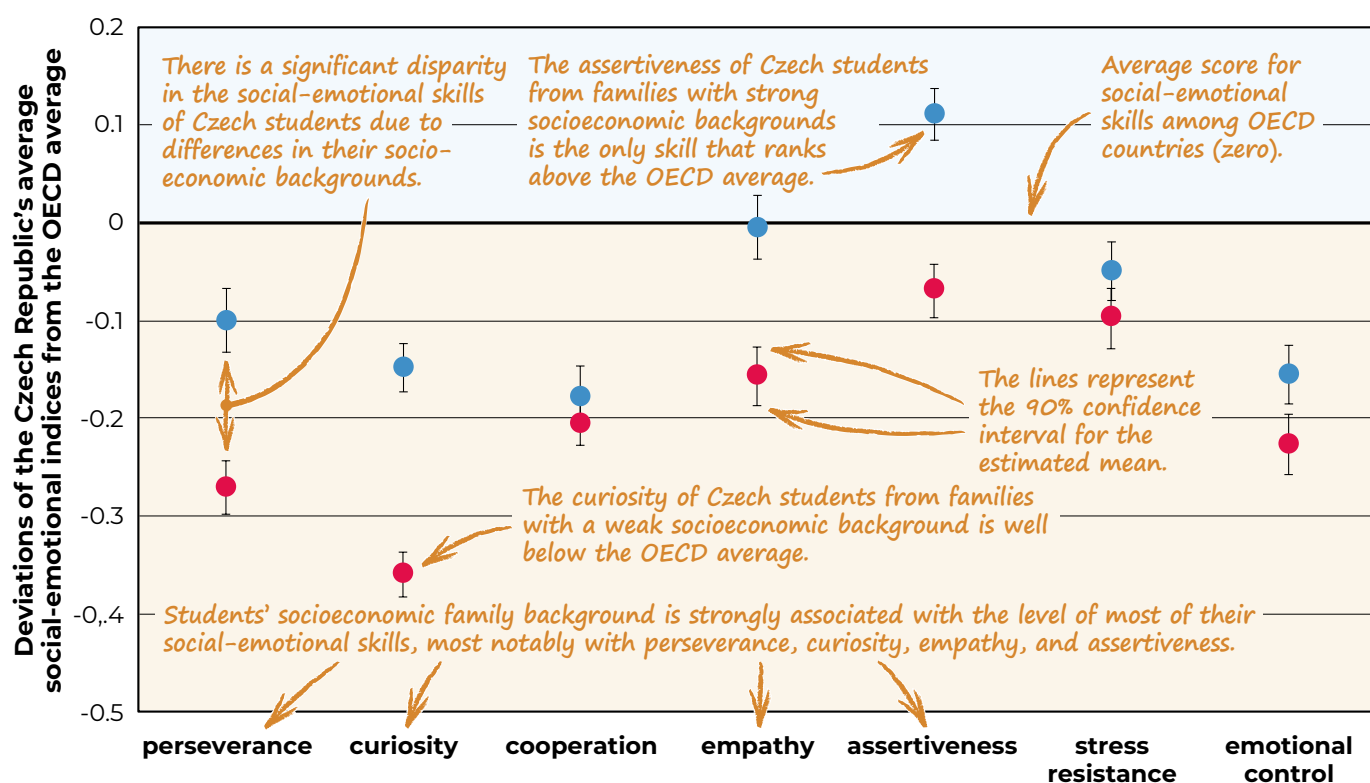
individual social-emotional skills, students from Poland, the Czech Republic, and the United Kingdom perform worst, while those from Switzerland, Portugal, and Denmark perform best. The Netherlands, Spain, and Italy show the greatest variation in rankings across different skills. The Czech Republic's position is improved only by its ranking in *assertiveness*.

To further compare the differences in social-emotional skill index scores, it is useful to keep in mind, as a benchmark, that the gap between the averages of the best and worst-performing countries is roughly 0.5 points. The average of the Czech Republic's index scores is roughly 0.2 points below the OECD average.

Socio-Economic Family Background

Students from families with stronger socioeconomic backgrounds demonstrate higher levels of all social-emotional skills except cooperation skills; the greatest differences are observed in curiosity, *perseverance*, and empathy (Figure 3). Referring to the recommended benchmarks for score differences mentioned above, the difference attributable to socioeconomic family background in the case of perseverance (nearly 0.2 points) is comparable to the difference between the Czech average and the OECD average.

Figure 3: Differences in the social-emotional skills of Czech students are strongly linked to the socioeconomic status of their families
(the deviation of the average social-emotional index in the CR from the OECD average)



Student's socioeconomic family background:* ● low socioeconomic status ● high socioeconomic status

Source: OECD, PISA 2022 data, and our own calculations

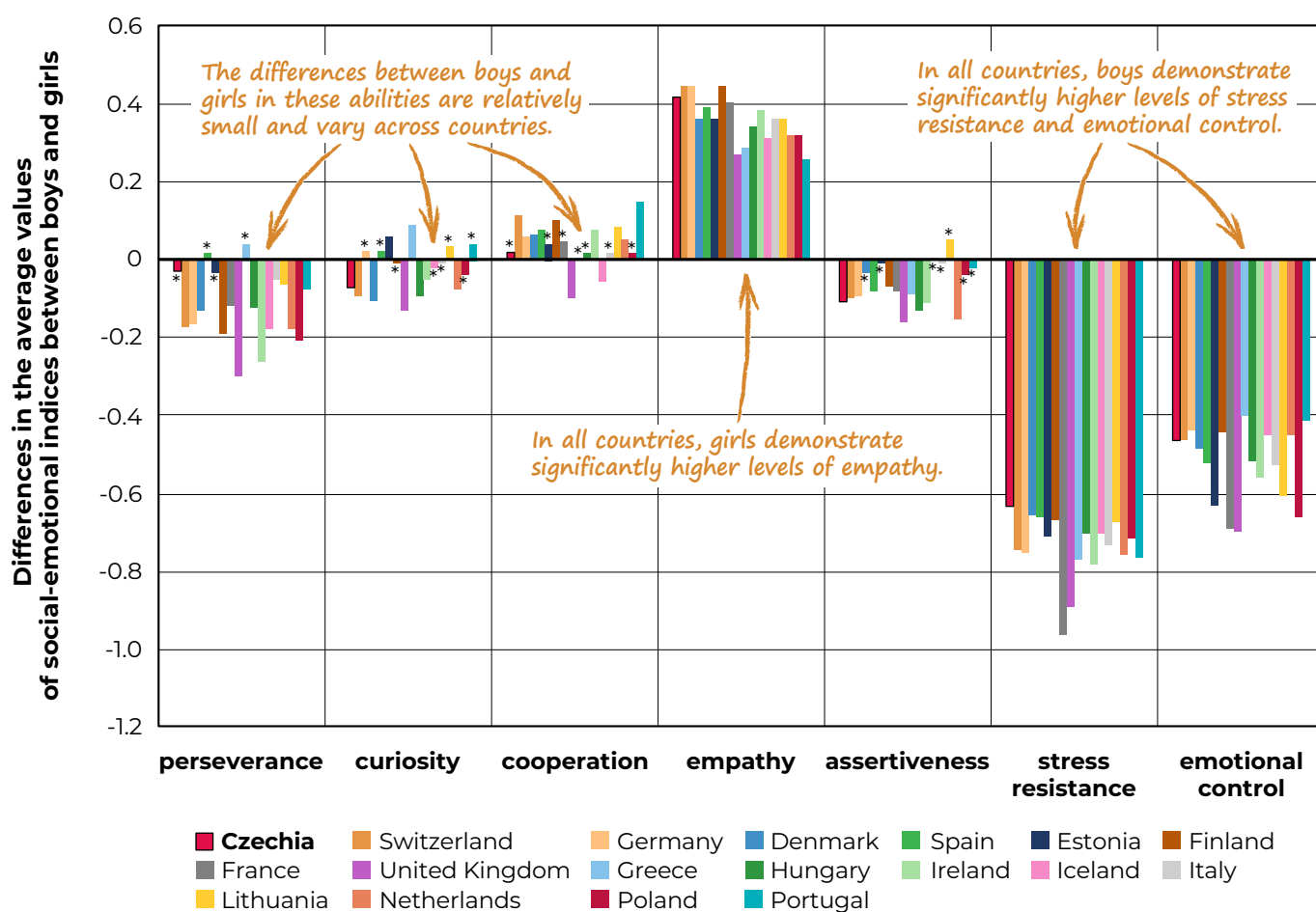
Note: The lines represent the 90% confidence interval for determining the statistical significance of differences in means.

* Based on below- and above-average values of the index of the student's family's socioeconomic background.

Boys and Girls

The differences in social-emotional skills between Czech boys and girls are similar to those in other countries (Figure 4). Boys demonstrate significantly higher levels of stress resistance and *emotional control*. Girls, on the other hand, demonstrate higher levels of *empathy*.

Figure 4: The differences in the social-emotional skills of 15-year-old boys and girls in the CR are similar to those in other countries



Source: OECD, PISA 2022 data, and our own calculations

Note: The graph shows differences in the average scores on social-emotional skills indices between boys and girls in European countries.

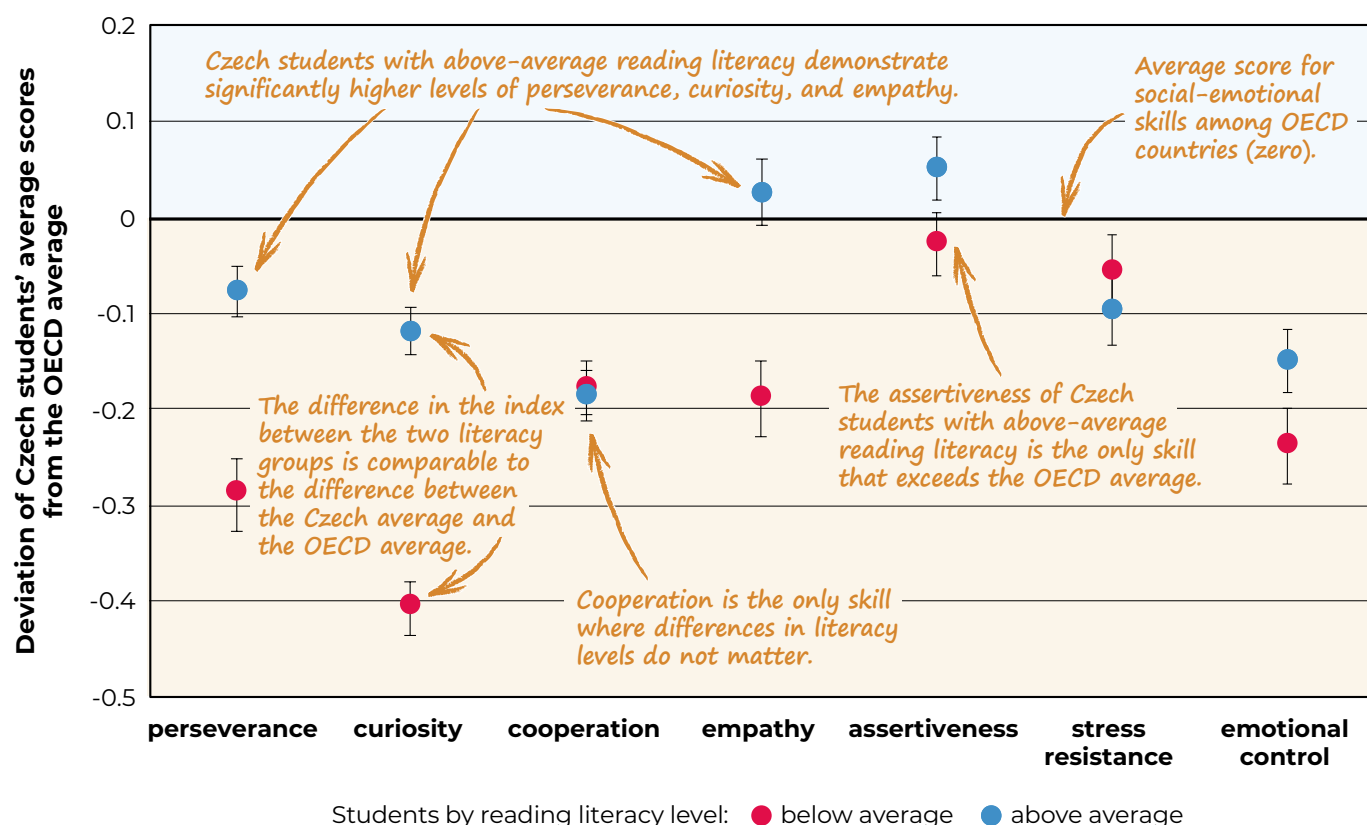
Negative values indicate a lower average score for girls.

*The difference is not statistically significant

Social-Emotional Skills and Functional Literacy

As noted, and as explained in more detail in **Textbox 2**, social-emotional skills represent different personality traits than do cognitive skills (functional literacy in reading, mathematics, and science). The relationships between literacies and social-emotional skills are complex and cannot be identified based on PISA data. We can, however, show differences in the average indices of social-emotional skills among students with above- and below-average reading literacy levels⁶ (**Figure 5a**). Czech students with above-average reading literacy demonstrate significantly higher levels of *perseverance*, *curiosity*, and *empathy*. In the case of *cooperation* skills, there are no literacy differences among students.

Figure 5a: Reading literacy plays a significant role in certain social-emotional skills among Czech students
(deviations of Czech students' average scores from the OECD average)



Source: OECD, PISA 2022 data, and our own calculations

Note: The lines represent the 90% confidence interval for determining the statistical significance of differences in means.

The graph compares the average scores on social-emotional skills indices for Czech students (non-cognitive skills) with above- and below-average levels of reading literacy (cognitive skill).

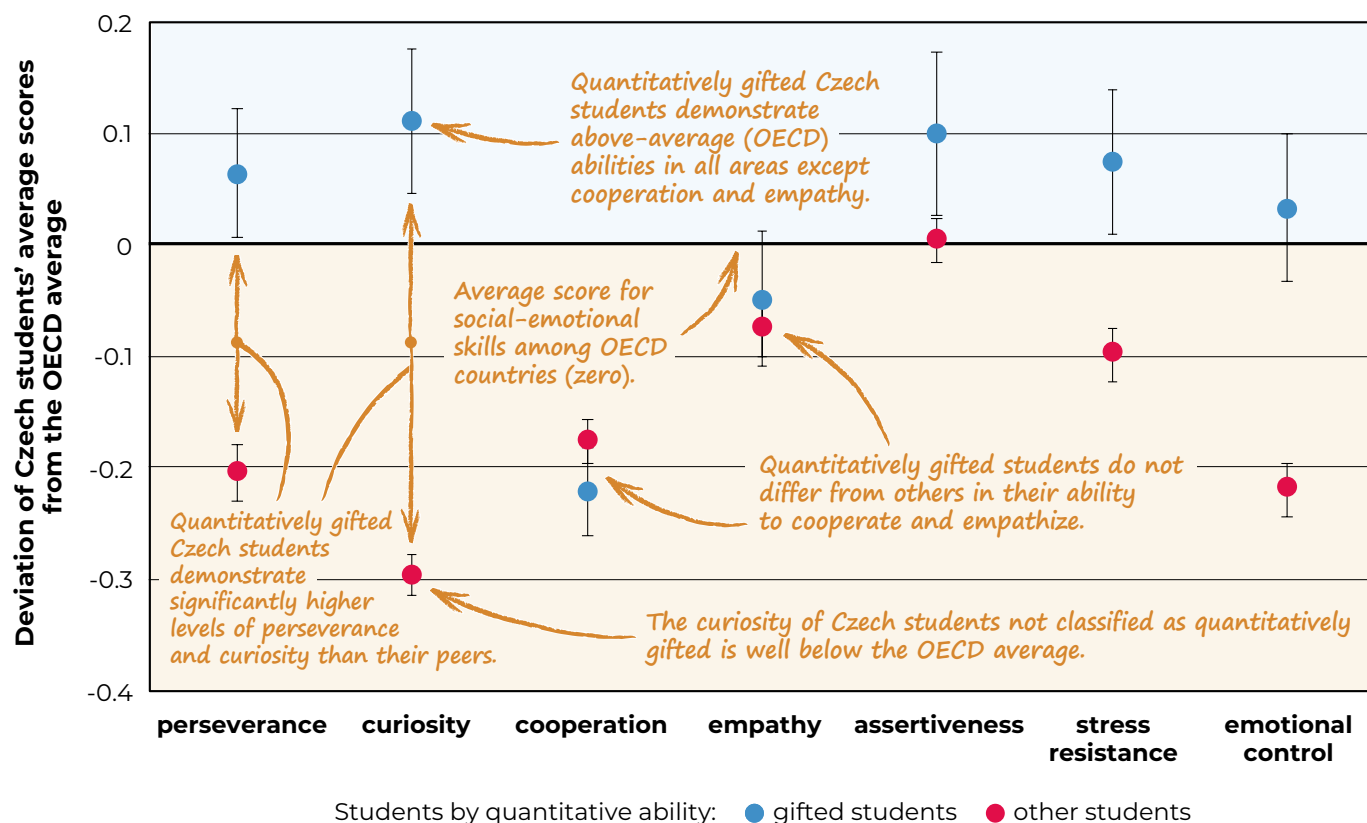
⁶ The results for mathematical and science literacy are similar, so we have not included them here.

Social-Emotional Skills and Quantitative Giftedness

Giftedness is a specific and much-discussed phenomenon. An extensive body of scholarly literature addresses various definitions of giftedness, ways to identify gifted students, and methods to measure giftedness. IDEA (2025a) [offers](#) a literature review on this topic that is aligned with an economic perspective. The follow-up empirical study IDEA (2025b) [uses](#) PISA data, estimates students' quantitative giftedness based on test scores in mathematical literacy. It identifies students as quantitatively gifted if they achieved the highest test scores of 5 or 6⁷. We apply the same procedure here.

Figure 5b shows that quantitatively gifted students exhibit significantly higher levels of curiosity than other students. They also demonstrate higher levels of *perseverance* and *emotional control*. We observe minimal differences between quantitatively gifted students and others in terms of *cooperation*, *empathy*, and *assertiveness*.

Figure 5b: The social-emotional skills of mathematically gifted Czech students are significantly higher than those of other Czech students
(deviations of the average scores of Czech students from the OECD average)



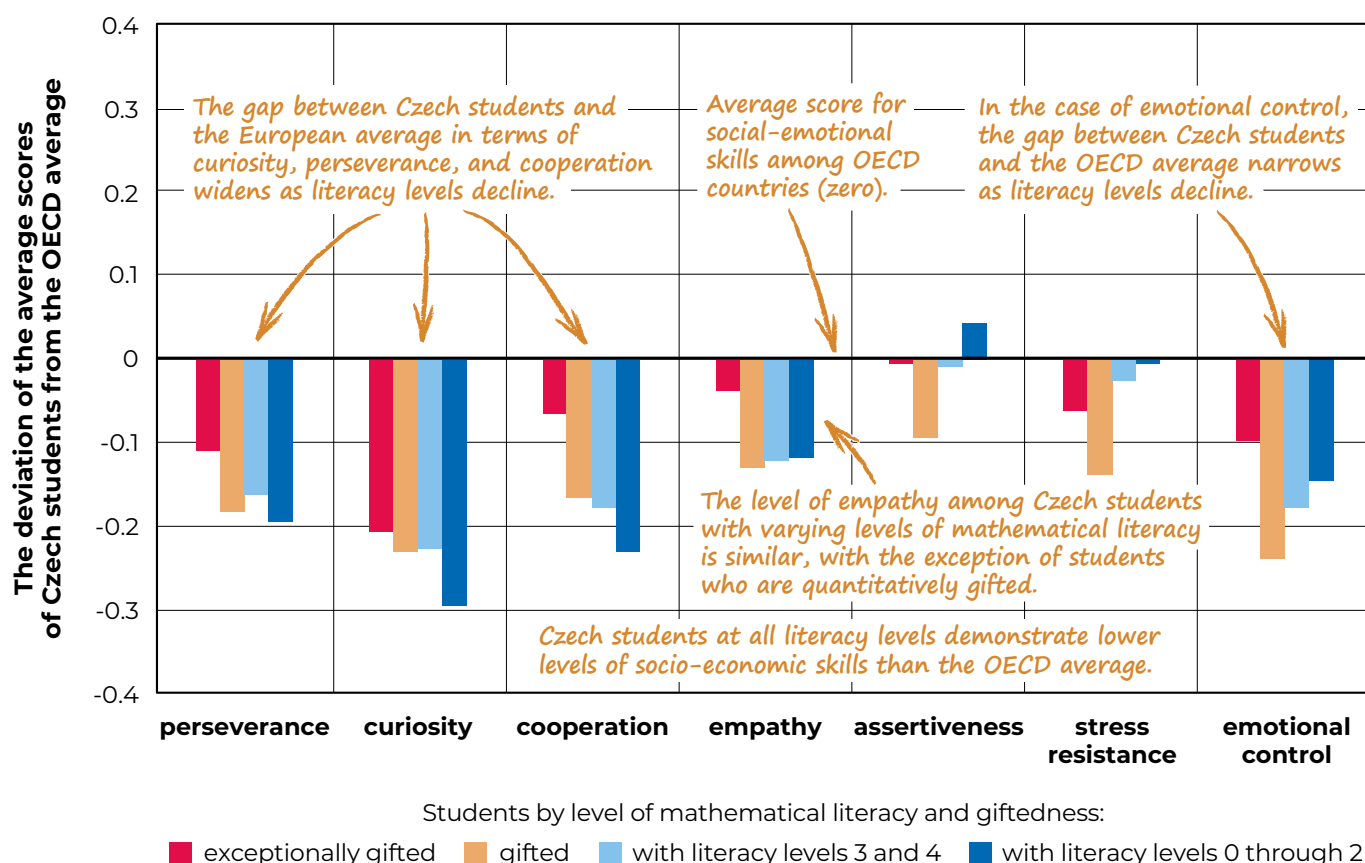
Source: OECD, PISA 2022 data, and our own calculations

Note: The lines represent the 90% confidence interval for determining the statistical significance of differences in means. The graph compares the average values on social-emotional skill indices of quantitatively gifted and other students.

⁷ According to the PISA definition, students at Math Literacy Level 5 (gifted) are able to work with models of complex situations, systematically solve problems, and apply advanced strategies. The group of gifted students also includes the exceptionally gifted at proficiency level 6, who are capable of solving abstract and complex problems, combining different strategies, and critically evaluating their results (OECD, 2023).

Figure 5c presents an international comparison of Czech students. For each ability and group of students, categorized by mathematical literacy, the figure shows the difference between the average social-emotional index of Czech students and the average of similarly defined students from all European countries included in the analysis⁸. In addition to quantitatively *gifted* students, we also distinguish between *exceptionally* quantitatively gifted students and students with *medium-high* (levels 3 and 4) and *low* (levels 0–2) levels of mathematical literacy.

Figure 5c: On average, Czech students at all levels of mathematical literacy demonstrate social-emotional skills that fall below the OECD average
(deviations of the average social-emotional skills indices of Czech students from the OECD averages)



Source: OECD, PISA 2022 data, and our own calculations

Note: The graph compares the deviations of the average values of the indices of social-emotional abilities of Czech students from the averages of OECD countries within different levels of mathematical literacy.

⁸ In the PISA 2022 survey, the difficulty of mathematics tasks is divided into eight levels of mathematical literacy: the simplest tasks correspond to Level 1c, while Levels 1b, 1a, 2, 3, 4, 5, and 6 represent progressively more challenging tasks. Students who reach Level 1c are likely to be able to solve problems at this level but will not be successful on problems at higher levels. In mathematics, each proficiency level corresponds to approximately 62 points on the score scale. According to the PISA definition, at proficiency level 6 (exceptionally gifted), students can solve abstract and complex problems, combine different strategies, and critically evaluate their results; at levels 3–4, they can solve concrete mathematical problems and interpret graphs and tables, but need a clearer structure for the tasks; at levels 0–2, they master only basic mathematics and solve simple problems with explicitly stated information. Level 2 is considered the basic level that students need to fully participate in society. At this level, they begin to demonstrate the ability and initiative to use mathematics in simple real-life situations.

It appears that, with one exception (the *assertiveness* of students with moderate literacy skills), the average index of social-emotional skills among Czech students is below the average for OECD countries. The largest negative gaps between Czech students and the OECD average are observed in *curiosity* and *perseverance*, while they are smaller in *cooperation*, and smallest in *assertiveness* and *stress resistance*. It is noteworthy that the gap between Czech students and the average in *curiosity*, *perseverance*, and *cooperation* increases as mathematical literacy levels decrease. This indicates a higher prevalence of low levels of these three social-emotional skills among Czech students with lower mathematical literacy. In the case of *emotional control*, however, the opposite is true: the gap between Czech students and the OECD average in this skill narrows as mathematical literacy levels decrease. We do not observe this type of association in the data for *assertiveness* and *stress resistance*.

We Don't Know

Numerous international studies show that social-emotional skills are a key determinant of success in further education and in life. **Textbox 2** provides further details, including references to the literature. This raises an important question: what is behind the low level of social-emotional skills among Czech 15-year-old students?

Some causes may lie in the education system—that is, in the nature of education, its content, and its goals. However, causes may also arise from outside the education system, in the social environment surrounding students. A third interpretation suggests that Czech students generally have low self-confidence, which was reflected in the PISA survey results when they self-assessed their social-emotional skills.⁹ In that case, the poor results of Czech students may not necessarily pose a significant problem. However, self-confidence is also part of social-emotional skills, and it plays a significant role in further studies and life. This interpretation does not free us from the question: where does the very low level of self-confidence among Czech students come from? There are, however, many more questions related to the phenomenon of social-emotional skills (hereinafter SE skills) in the Czech Republic:

• Extracurricular Environment

- How are SE skills related to family background?
- How do parents contribute to—or fail to contribute to—the development of SE skills?
- How are SE skills linked to students' cognitive outcomes?
- How do lower SE skills affect other areas (mental health, relationships, career)?
- How do extracurricular activities (clubs, sports, arts) shape SE skills?
- How can parents and the community help develop SE skills (e.g., community schools or various clubs)?

• The School Environment and the Education System

- How does the school environment, student assessment, and curriculum support or hinder the development of SE skills?
- Can elements that undermine SE skills be identified in the classroom (e.g., unintentional reinforcement of stereotypes)? Do teachers consciously or unconsciously lower the SE skills of certain students? How can we identify and reduce stereotypical expectations that may lower students' SE skills?
- What role do support staff (assistants, psychologists) play in shaping SE skills?

⁹ Unfortunately, the 2022 PISA survey does not include a set of questions on students' general self-confidence. However, it does include questions regarding students' self-confidence in their math and reading skills. The data show that Czech students indeed exhibit a very low level of confidence in their math and reading skills, even when their actual (tested) skill levels are taken into account. In this regard, students in Poland and Estonia—countries that, along with the Czech Republic, also report low levels of social-emotional skills—are the most likely to underestimate themselves.

- Which teaching and interactive approaches effectively strengthen SE skills?
 - How can we systematically monitor the development of SE skills at the student and school levels?
 - How does the development of SE skills differ across various types of schools (multi-year high schools, vocational schools, etc.)?
 - How does the selective Czech system influence formation of SE skills and its distribution among students?
 - How do SE skills affect key transitions (e.g., from elementary to middle school, from middle school to high school)?
 - How do the Framework Educational Programs (FEP) address the need to develop SE skills?
 - Is it possible to assess and measure SE skills without placing undue pressure on students, and if so, how?
 - How effectively do teacher professional development programs strengthen teachers' ability to develop students' SE skills?
 - What barriers (time constraints, financial constraints, lack of support) prevent teachers from developing students' SE skills?
 - How do SE skills manifest during crises (e.g., pandemics, economic uncertainty, migration), and how can the education system better adapt to this?
 - What role does the digital environment (online learning, social media) play in shaping SE skills?
- **Global Context**
 - How do SE skills affect economic competitiveness and citizenship?
 - How can we establish a longitudinal study in the Czech Republic to track SE skills, including labor market outcomes, mental health, and social participation?

Naturally, the questions raised above cannot be answered based on PISA data alone. Other types of data and different research approaches are needed. In international databases of scientific journals over the past decade, we find very little empirical research on the phenomenon of social-emotional skills among Czech youth.¹⁰ None has sought to answer the questions above. Our preliminary findings based on the latest 2022 PISA cycle thus represent a call for significant intensification of Czech empirical research in this area.

¹⁰ Balcar (2021), Borgia et al. (2021), Kurková (2020), Smith et al. (2021), Víchervková et al. (2023), Simonová et al. (2019), Korbel & Paulus (2018), Balcar & Hedija (2019).

TEXTBOX 1: Social-Emotional Skills in the PISA Survey

In 2022, the international PISA survey began to focus on students' social-emotional skills. These are skills that can also be identified within the five main dimensions of the well-known model of human personality, known as the Big 5. Each skill is measured based on students' responses to a battery of 10 questions, in which students select from options on a 5-point scale ranging from "strongly disagree" to "strongly agree." Students' abilities are thus measured based on their own self-assessment. Based on their responses, an index was created for each social-emotional characteristic within the PISA methodology.¹¹

Assertiveness: Students rated statements about various behaviors indicative of their own assertiveness. The questionnaire asked whether they enjoy leading others, taking on a leadership role in a group, or taking the initiative when collaborating with classmates. Students also assessed the degree to which they are able to influence others and to persuade them to do what they want.

Cooperation: This index is based on the extent to which students agree with statements about various behaviors indicative of cooperation. Students indicated whether they enjoy helping or cooperating with others or, conversely, prefer to avoid working with others. They also indicated whether they often argue, tend to be selfish, or, conversely, do not mind compromising.

Curiosity: Students responded to statements about behaviors indicative of curiosity, such as whether they enjoy learning, like to ask questions, or, conversely, find learning new things uninteresting and boring.

Emotional control: Here, students assessed whether they tend to be moody, get annoyed easily, get angry quickly, or overreact to minor issues, or, conversely, know how to manage their emotions and control them well.

Empathy: In response to statements related to empathy, students assessed whether they care about others, can put themselves in others' shoes, view situations from their perspective, or sense what others are thinking. They were also asked whether they are interested in the feelings, needs, and achievements of others.

Perseverance: Here, students assessed whether they give up quickly—for example, when they make a mistake or a task is too long or difficult—or, conversely, whether they persistently work on difficult tasks until they are completed.

Stress resistance: In statements focused on reactions in stressful situations, students assessed whether they are able to work under pressure, manage stress, and remain calm, or, conversely, whether they easily become nervous or panicky.

11 For technical details, see the PISA 2022 Technical Report [10](#). The relevant sets of questions can also be found in the Czech version of the 2022 PISA student questionnaire, starting around page 40 [11](#).

TEXTBOX 2: Cognitive Skills and Social-Emotional Competencies

Students' **cognitive skills** are associated with their intellectual ability to solve abstract problems. These skills are measured using standardized tests of functional literacy, typically in reading, science, and mathematics. Cognitive skills are considered a crucial prerequisite for personal success later in life in modern society. On an internationally comparable scale, such assessments have been conducted systematically since the early 1990s as part of the PISA (15-year-olds), TIMSS (4th and 8th graders), and PIRLS (4th graders) projects. The education systems of many developed countries place great emphasis on standardized testing of cognitive skills, such as PISA functional literacy tests. The results are used not only as feedback for students, teachers, and parents, but also for evaluating teachers, schools, countries, and education systems. However, these tests generally overlook students' social-emotional skills, which are not only important for success in further education but are also increasingly valued in the labor market.

Social-emotional skills: In recent decades, there has been a growing recognition of the importance of skills other than cognitive. These include personality-based skills that measures of abstract intellectual abilities do not capture—or, if they do, only indirectly. Personality-based skills are referred to in various ways in the professional literature of different scientific disciplines and by different authors: personality traits, non-cognitive skills, emotional intelligence, social-emotional skills, and, in lay terms, often as soft skills. In this paper, we use the term “social-emotional skills,” as does the PISA methodology. Given the difficulty of defining this phenomenon, various terms in the professional literature differ, but the fundamental essence is similar. An example is the well-known and widely used five-factor model of personality known as the Big 5. It defines five main dimensions of human personality: **openness to experience** (also curiosity and creativity), **conscientiousness** (self-organization and reliability), **extraversion** (also sociability and energy), **agreeableness** (compassion and cooperation), and **neuroticism** (emotional instability and anxiety).

Research by James Heckman and others shows that social-emotional (non-cognitive) skills, such as self-control and perseverance, significantly correlate with better cognitive outcomes among students. In addition to their direct impact on academic performance, these skills also facilitate more effective learning and task management throughout the educational process (Heckman & Kautz, 2012).¹² A long line of empirical research demonstrates that an individual's success in later life, including economic success, is significantly determined not only by cognitive skills but also by social-emotional abilities, starting from a very early age. A range of non-cognitive skills influences academic success and acquisition of cognitive skills through schooling, as well as the level of education attained.

It is also very important to note that while early care and intervention programs often have only a limited impact on later cognitive performance in school and in life, they significantly strengthen non-cognitive (social-emotional) skills. This explains the large differences in student's future success in the labor market and in other areas of life, as the development of self-control, perseverance, and the ability to cooperate are often key to long-term outcomes in adulthood (Heckman, Pinto & Savelyev, 2013; Heckman, Stixrud & Urzua, 2006; Heckman & Kautz, 2012; Lindquist & Vestman, 2011). The relative importance of social skills is documented, for example, by Weinberger (2014), and their importance for securing high-paying jobs is documented by Deming (2017).

The differences between cognitive and non-cognitive skills also have implications for education. For example, research shows that teachers differ not only in their ability to improve cognitive outcomes (test scores), but also in how well they help to develop students' non-cognitive (social-emotional) skills. This means that some teachers are better at fostering self-control, perseverance, and cooperation, which, in the long term, lead to better educational and life outcomes for students, even though the effects may not be immediately apparent on short-term tests (Jackson, 2018; Chetty, Friedman & Rockoff, 2014).

¹² Recommended reading includes, e.g., Heckman, J. J. & Kautz, T. (2012). Hard Evidence on Soft Skills. *Labour Economics*, 19(4), 451–464.

Appendix Charts

Figure A1 shows very similar distribution for the Czech Republic and the Netherlands in perseverance, with very similar averages, while Switzerland's distribution shifts significantly toward higher values, with a notably higher average well above 0 (the normalized average for European countries). In **Figure A2** of the *emotional control* index, the Czech distribution shifts significantly to the left compared to both countries, with a significantly lower average index value. Further, the Dutch profile shows a significantly more even distribution of index values among the middle group of students. The Czech Republic has the highest proportion of students with a low index and, conversely, the lowest proportion of students with a high index.

Figure A1: Statistical distribution of the index of students' perceived social-emotional skills: perseverance

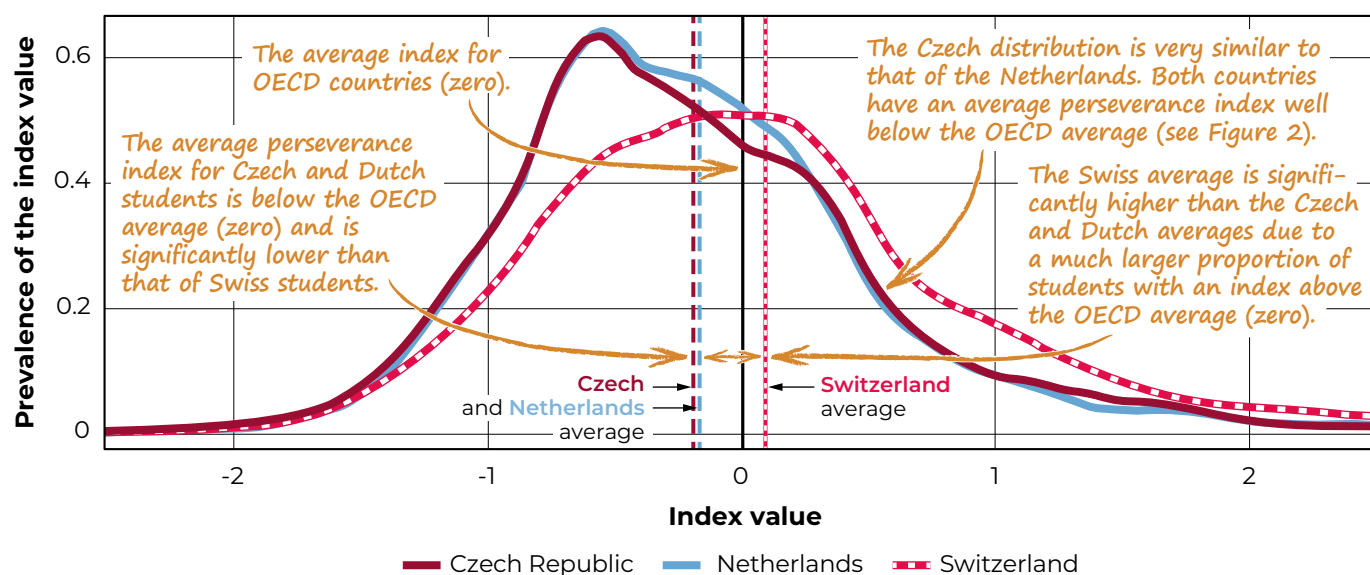
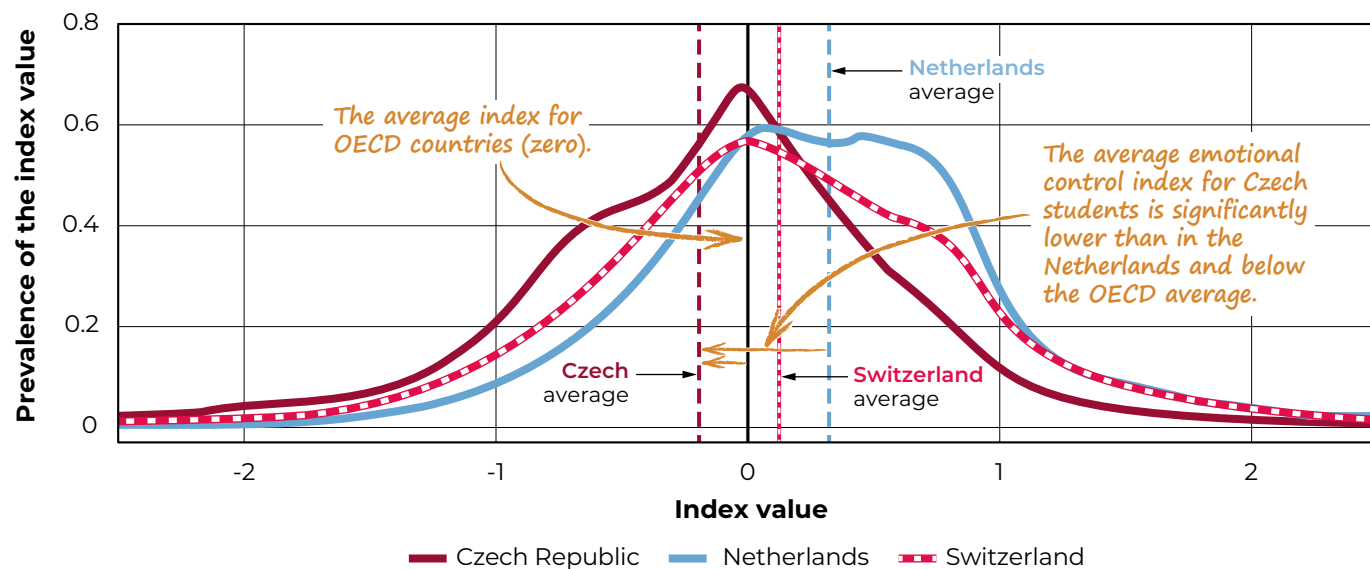


Figure A2: Statistical distribution of the index of students' perceived social-emotional skills: emotional control



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Cognitive Abilities are Not Enough: Social and Emotional Competencies of Czech Students

Policy Brief IDEA

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