Beyond Academic Learning

FIRST RESULTS FROM THE SURVEY OF SOCIAL AND EMOTIONAL SKILLS

OECD

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EDITORIAL

Beyond academic learning

Globalisation and digitalisation have connected people, cities, countries and continents in ways that vastly increase our individual and collective potential. But the same forces have also made the world more volatile, more complex, more uncertain and more ambiguous. In this world, education is no longer just about teaching students something but about helping them develop a reliable compass and the tools to navigate with confidence through this world.

Success in education today builds not just cognitive but character fortitude. It is about curiosity – opening minds; it is about compassion – opening hearts; and it is about courage – mobilising our cognitive, social and emotional resources to take action. These qualities, or social and emotional skills as our report calls them, are also weapons against the greatest threats of our time: ignorance – the closed mind; hate – the closed heart; and fear – the enemy of agency.

To navigate, indeed, thrive, in this turbulent new world requires careful balance between often competing demands. When innovation clashes with continuity; equity with freedom; autonomy with community; efficiency with the democratic process, what is the right answer? And is there one single right answer when differences seem irreconciliable?

Let's look at it another way. Perhaps it is not the answer that is important so much as how we think about the question. We need to think in more integrated and creative ways. We need to recognise interconnections, be able to handle tensions and dilemmas, feel at ease with ambiguity, persist even in difficult times. We need an optimistic outlook that there are answers to our differences. These are the qualities – the skills – that help us live and work together resiliently and productively. And school is where we can learn and sharpen these skills.

Tomorrow's schools need to help students think for themselves and join others, with empathy, in work and citizenship. These are the places where students can learn how to motivate and organise their own learning, where teachers stimulate their curiosity and build on and channel their creativity, sociability and energy. School is where students can learn to fit in with their classmates and their teachers, readying them for the world that awaits them outside school walls. Where students learn what their qualities are and what they can do with them when the time comes to seek jobs or more education. Our classrooms are where students learn an indispensable lesson that goes beyond academic knowledge: that rich or poor they can all have an effect on what happens in the world, maybe even change it.

Social and emotional skills are the bedrock of students' well-being and academic achievement. Yet the question arises of whether we can make them visible, comparable, and therefore amenable to deliberate policy action in a similar way that traditional tests do with academic knowledge and skills. Over the last decade, the OECD has been exploring various ways to do this, using both direct assessment methods as well as self-reports. The OECD's Survey on Social and Emotional Skills is the most comprehensive international effort to date to collect reports from students, parents and teachers on the social and emotional skills of learners at age 10 and 15. The survey also collected information on students' social background, including their family, school and community environment, in order to contextualise the findings. This report presents first results from this survey. It sheds light on how social and emotional skills differ by gender, social background and age; and how they matter for student outcomes such as academic performance and well-being.

The interconnected development of cognitive, social and emotional skills starts during early infancy and continues throughout one's lifespan. However, unlike academic learning, the development of social and emotional skills in students does not follow a steady upward trend. A striking, but not unexpected, result from the survey is that all 15-year-old students, irrespective of their gender and social background, reported lower social and emotional skills on average than their 10-year-old counterparts. Parent and educator ratings confirmed the dip in social and emotional skills as students grow older. Also, students' creativity and curiosity were found to be lower among 15-year-olds than 10-year-olds. While developmental factors may play a role here, this might also partly derive from the fact that education systems often expect students to be compliant with the potential consequence of driving out curiosity and creativity as students grow older and stay longer in the education system.

It is noteworthy that age-related differences in creative self-concept are much more pronounced among girls than boys (in contrast, this is not true of intellectual curiosity, i.e. the emotional disposition towards learning). By age 15, girls, on average, report significantly lower creativity than boys. Yet, parents' and teachers' ratings were similar across genders in both age groups. It is possible that boys are over-confident about their creative skills whereas girls, on average, have more realistic evaluations. But if adolescents associate creative talent ("having a good imagination", "finding solutions that others don't see") with men more than women, this will be reflected in gendered career choices where fewer girls will opt for educational tracks and, later, jobs where they expect creative talent to be required. Parents and teachers can help both boys and girls develop a realistic assessment of their strengths and counteract potentially intimidating stereotypes by highlighting role models for both genders and helping students see creativity as a learnable skill rather than a fixed trait.

Another important finding is that students' social and emotional skills differ by social background and gender. Girls reported higher levels of skills related to task performance like responsibility and achievement motivation. They also reported higher levels of skills that are important in an interconnected world, like empathy, co-operation, and tolerance. In contrast, boys exhibited higher emotional regulation skills like stress resistance, optimism and emotional control as well as important social skills like assertiveness and energy. Students from advantaged backgrounds reported higher social and emotional skills than their disadvantaged peers in every skill that was measured and in all cities participating in the survey. Potentially, parents from more advantaged backgrounds make greater investments in their children's social and emotional skills. But it also seems likely that students with less advantaged backgrounds have more challenges to overcome and fewer opportunities and less support to develop these skills. Of course, these findings are at an aggregate level; individual trajectories might well be different.

More surprising is that the vast majority of differences in social and emotional skills are observed within schools. This might be partly because students use their immediate learning environment as a reference point when assessing their competencies. This is relevant from an intervention and child development perspective because students typically use their immediate learning environment to develop their skills through scaffolding. A possible explanation is that the development of social and emotional skills is not systematically incorporated into the school curriculum to the extent that the development of cognitive skills such as reading and mathematics is. In other words, factors that can foster or hamper the development of these skills may rely to a greater extent on particular teachers or optional activities than on a common framework across schools.

The survey also shows that students who think of themselves as highly creative tend to also report high levels of intellectual curiosity and persistence, two skills that are likely to play an important role in creative achievements, big and small. At the same time, students with a strong creative self-concept are a relatively diverse group of students in terms of self-control as well as emotional regulation skills, which have the strongest association with academic achievement and well-being, respectively. This means that while there are certain commonalities among students with a strong creative self-concept, the diversity of their needs and preferences should not be under-estimated. Schools would do well in providing opportunities for students to practice and learn about their creative potential in a variety of formats, such as individual and group activities, and competitive and cooperative formats.

Social and emotional skills are not just important in their own right. The results from the survey show that they are also important predictors of school grades across age cohorts, subjects, and cities. In particular, being intellectually curious and persistent are the social and emotional skills most strongly related to school grades for both 10- and 15-year-olds in reading, mathematics and the arts. These findings emphasise the importance of not only dedication in pursuing predetermined goals, even in the face of difficulties, but also cultivating an intellectual curiosity for a diverse range of topics. External forces like parents' or teachers' expectations can drive persistence. External drivers, however, can disappear or change over time but intellectual curiosity is a powerful intrinsic motivator. Students who are curious about a diverse set of topics and love learning new things are better equipped to face difficulties and are more likely to reach their goals. Students with the same social status, gender, and cognitive abilities who have better social and emotional skills are more likely to obtain better grades. And have higher educational expectations.

The survey did not just measure social and emotional skills but also important well-being outcomes. The results show that students' social and emotional skills are closely related to students' psychological well-being even after accounting for social status and gender. This is particularly the case for stress resistance, optimism and emotional

control. Being optimistic is consistently related to both a higher level of life satisfaction and current psychological well-being across cities. Stress resistance and being optimistic are strongly related to a lower level of test anxiety. Students who assessed themselves as being more stress-resistant, optimistic and in control of their emotions reported higher levels of psychological well-being.

But the survey also shows some troubling findings in this regard. If the demands from school and expectations from parents and educators are the same for boys and girls, advantaged and disadvantaged, why do students from disadvantaged social backgrounds and girls seem to experience more difficulties? The results show that 15-year-olds and, especially, girls reported lower life satisfaction, lower current psychological well-being and higher test anxiety than 10-year-olds. Schools are crucial resources for promoting students' psychological well-being, especially among the most disadvantaged who might otherwise have limited or no support. Schools can help students recognise, understand, and regulate their psychological well-being. Since students spend a lot of time in school, teachers are well placed to identify early behavioural changes and signs of psychological distress. Giving teachers training on students' psychological well-being and how to best support their students is invaluable.

The learning environment and climate at school also matter. Students' perceptions of a competitive school climate and high expectations from parents or teachers are related to a higher level of psychological well-being for 10-year-olds and to a higher level of test anxiety among 10- and 15-year-olds. Some level of test anxiety is normal and can be helpful in staying focused. But too much anxiety can result in emotional and physical distress, and worrying that can impair test performance. Results from PISA have shown that it is not the frequency of tests but rather a perceived lack of teacher support that determines how anxious students feel. Test anxiety can be also related to lack of preparation, previous poor test performances and fear of failure. When competitive learning environments and high expectations by others are not accompanied by adequate social and emotional support or learning strategies to cope with test anxiety, students may feel overwhelmed and ill-prepared to face challenges. In preventing mental ill-health and promoting psychological well-being, schools have typically focused on teaching students effective study habits such as time management and work schemes, effective coping strategies and techniques to relax. More regular and more adaptive testing can build students' feeling of competence and sense of control. Furthermore, teacher support such as adapting lessons to the class' needs and knowledge level, providing individual help for struggling students and showing confidence in students' abilities might help reduce students' test anxiety.

The results from the survey show that students' sense of fitting in at school and student-teacher relations are consistently and positively related to social and emotional skills. Students who feel like they belong at school are more likely to get along well and work well with classmates and friends. In contrast, students who are bullied tend to report lower skills in the domain of emotional regulation as well as trust. These skills are related to lower psychological well-being. It is likely that students who are bullied experience negative emotions and become less trusting of other people. This may also have an impact on academic achievement: trust is positively related to math grades among 15-year-olds in 7 of the 9 cities with available data in this indicator after accounting for social status, gender, scores from the cognitive ability test, and other social and emotional skills. Finally, students who get along well with their teachers report greater curiosity and achievement motivation. Curiosity and achievement motivation both indicate a love for or determination to learn and do well at school. It is likely that students who get along well with their teachers are more involved, want to do well in school and like learning more than students who do not get along well with their teachers. Results from the survey also suggest that improving social and emotional skills could be a way to help students enjoy better social relations in school and vice versa.

Some of the skills measured by the survey, such as curiosity, emotional control, and co-operation have an implicit positive impact on a wide range of outcomes and contexts both at the individual and societal level. In other cases, some skills such as being more outgoing and sociable may depend more specifically on the student's goals. For example, in the job market, extraversion might be more relevant for entrepreneurial and management roles where social interaction is crucial. Introversion might suit technical and professional jobs better where attention to detail is required. If someone were introverted but wanted to go into sales, learning how to be more comfortable in social interactions would be useful. Conversely, someone who was extroverted but interested in developing machine-learning algorithms, for example, might benefit from working on strategies to help them stay focused and more thoughtful about socialising. Like musicians in an orchestra, students can reach their maximum socio-emotional potential when they find their role in the concert, and train until they become proficient.

All this underlines why it is important for education systems to strive for a holistic development of their students. This is more than the development of academic skills. It recognises the importance of social and emotional skills, students' well-being and social relations in the school environment. When students feel they are treated in a fair way, when the school and its staff help students develop a sense of belonging, when they provide for a disciplined, structured and cooperative environment, when the environment is supportive and less punitive, their social and emotional skills develop better. They are less prone to destructive behaviour with its attendant societal consequences and primed to fulfil their potential. In a world that is shifting, evolving and polarising as quickly as ours, schools need to send our children out with a fully packed tool box – not just of cognitive skills, but social and emotional ones too.

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FOREWORD

The past year has been an unprecedented time for education and the world. All of us are living history, and our children and youth will be defined in part by their experiences during the COVID-19 pandemic. The lockdowns in response to COVID-19 interrupted conventional schooling, with nationwide school closures in most OECD and partner countries. While the educational community has made concerted efforts to maintain learning continuity during this period, children and students have had to rely more on their own resources to continue learning remotely through the Internet, television or radio. In other words, the shift to full-time online learning in the wake of the coronavirus pandemic has led to digitalisation playing an important role to keep students across cities and continents connected in ways that vastly increase their individual and collective potential.

While global education systems are constantly adapting to the new challenges posed by the pandemic, it is also important to recognise that with their classrooms, peer relationships, and support systems upended by the school closures, many students might be facing the emotional stress of adapting to their new learning environments. As such, while ensuring that the cognitive skills of student populations are not adversely affected, in the current context of the pandemic, development of social and emotional skills is equally, if not more, important.

Social and emotional skills have been found to be good predictors of educational, labour and social outcomes. They also play an important role in the development of cognitive skills. What we call social and emotional skills in this report may be more familiar to you under a different name: character or personality traits. Resilience and optimism are good examples: they make it easier to cope with difficulties such as social immobility or job insecurity, and can bolster our personal and professional prospects. A willingness to cooperate, trust and tolerate others is crucial for people to be able to live and work with others in diverse societies. Our intellectual curiosity primes us for jobs that demand innovative thinking. Creativity and curiosity – again – which are more difficult for machines to replicate, will become essential as automation continues to seep into the workplace. Our capacity to think independently and take responsibility for our actions (and thoughts) buttresses us against misinformation and disinformation. Also, motivation and self-confidence can have strong influence on cognitive development and educational attainment.

With this context in mind, it is not difficult to see how developing social and emotional skills is expected to be especially decisive for taking advantage of the recent shift to remote online learning as a result of the pandemic. For instance, emotional regulation and autonomy are indisputably important drivers of students' educational attainment during normal times, but they are likely to be even more important in the current context, because of the unique challenges posed by online learning which requires students to rely on intrinsic motivation and self-directed learning. Missing time in the classroom – following lessons, socialising with classmates, and interacting with teachers and other staff members – will have an impact not just on the academic preparation of current students, but also on their psychological well-being and on their readiness to participate in their communities when the crisis will be over. Thus, until schools reopen, curricula and online social interactions between teachers and students and among students themselves must include empathetic strategies to create a student-centered, supportive climate so as to ensure positive learning experiences for and improved well-being among students. Developing strong social and emotional skills is fundamental if pupils are to remain focused and motivated in difficult learning environments and could therefore be key to addressing the main difficulties that students may encounter again in the near future, if a second wave of school closures were to materialise before the health crisis has been fully addressed. If the COVID-19 crisis has taught us anything, it is that to stay ahead and thrive, people need not just cognitive skills but social and emotional ones too. Only together can they equip us for an uncertain and demanding world, and help us achieve prosperous and healthy lives.

Whether called skills, qualities, or personality traits, what is important is that they are not fixed for life. They can be boosted or modified. Biological and environmental factors, important life events, and individual effort are all factors that influence social and emotional skills throughout our lives. Transitions from childhood to adolescence are particularly sensitive to these changes, which is why educators and families increasingly support young people's development. During this period, young people are physically growing, exploring the world more autonomously, and expanding their worldview. They are also developing a greater understanding of the increased demands and

expectations adulthood places on them. The same expectations that motivate some students to obtain high grades and reach their potential may frustrate others who lack a support network or strategies to cope with adversity. Despite their potential to succeed, they may feel overwhelmed and ill-prepared to face challenges. We have seen COVID-19 stress-testing everything from the economy to the education system, but we cannot perpetually shield children from challenging situations: there will always be things in life that escape our control. Rather, we should use these challenging situations as an opportunity to learn and change as we rebuild. In response to the pandemic, a rethink of the school system is necessary, one that promotes and supports young people to develop the emotional, social, and civic skills that will build individual and community resilience, during and after the pandemic. In other words, all students should have access to a good, well-rounded education that helps them strengthen not just their cognitive but social and emotional skills too.

The OECD's Directorate for Education and Skills recognises the importance of social and emotional skills and is broadening the metrics beyond traditional academic domains. OECD surveys, such as the Programme for International Student Assessment (PISA), the Programme for the International Assessment of Adult Competencies (PIAAC) and the International Early Learning and Child Well-Being Study (IELS) now cover a growing range of social and emotional skills. The OECD is continuing to build on this work with a comprehensive international assessment of the social and emotional skills of learners at age 10 and 15 through the Survey on Social and Emotional Skills (SSES).

SSES is one of the first international efforts to create a repository of information on students' social and emotional skills to help education leaders and practitioners better support them. This report documents robust and reliable information on students' social and emotional skills, and how these skills relate to individual, family, and school characteristics. It explores broader policy and socio-economic contexts related to these skills. In shedding light on the role social and emotional skills play in shaping people's behaviour and lifestyles to better leverage their cognitive capabilities and, in a mutually sustaining relationship, better achieve personal and professional outcomes, SSES reinforces the evidence base for countries to focus more on social and emotional skills as a pathway to developing well-rounded citizens in their education policy agendas. Together with other OECD surveys in the Directorate for Education and Skills, SSES points to the holistic, lifelong development of cognitive, and social and emotional skills as the best foundation for fulfilled and productive lives.

EXECUTIVE SUMMARY

People, and more specifically, children, need a balanced set of cognitive, social and emotional skills to prosper in today's demanding, changing and unpredictable world. Policy makers and education practitioners are seeking ways to complement the focus on academic learning such as mathematics, reading, and scientific literacy with attention to social and emotional skill development. Social and emotional skills are a subset of an individual's abilities, attributes and characteristics important for individual success and social functioning. Together, they comprise a comprehensive set of skills essential for students to be able to succeed at school and fully participate in society as active citizens. The benefits of developing children's social and emotional skills go beyond cognitive development and academic outcomes; they are also important drivers of mental health and labour market prospects. Social and emotional skills are an important developmental outcome in their own right. The ability of citizens to adapt, be resourceful, respect and work well with others, and to take personal and collective responsibility is increasingly becoming the hallmark of a well-functioning society. Skills such as co-operation, empathy, and tolerance are key for citizens and nations to achieve sustainable development goals and to effectively participate and contribute towards building democratic institutions. To that end, OECD's Survey on Social and Emotional Skills (SSES) is one of the first international efforts to collect data from students, parents and teachers on the social and emotional skills of learners at age 10 and 15. This report presents first results from this survey. It describes students' social and emotional skills and how they relate to individual, family, and school characteristics. It also examines broader policy and socio-economic contexts related to these skills, and sheds light on ways to help education leaders and practitioners monitor and foster students' social and emotional skills.

BEYOND ACADEMIC LEARNING

The socio-demographic distribution of social and emotional skills

This chapter examines differences in social and emotional skills between students, based on characteristics such as age, gender, socio-economic status and migration background. Main findings:

- Young people's social and emotional skills dip as they enter adolescence. 15-year-olds, regardless of their gender or socio-economic background, reported lower skills than 10-year-olds with the differences being particularly pronounced in cases of skills such as optimism, trust, energy and sociability– this decline is larger for girls than for boys in most skills.
- On average, boys reported higher emotional regulation, sociableness, and energy levels while girls reported higher levels of responsibility, empathy and co-operation with others.
- On average, socio-economically advantaged students reported higher social and emotional skills than their socio-economically disadvantaged peers in all cities participating in the survey.

Academic success, and education and career aspirations

This chapter examines how different social and emotional skills relate to students' school achievement, focusing on their school grades in reading, mathematics and the arts as well as educational and occupational expectations. Main findings:

- Students' social and emotional skills are strong predictors of school grades across students' background, age cohorts, and cities. Additionally, evidence also suggests that the relationship between social and emotional skills and school performance is nuanced- some skills are essentially uncorrelated with school performance but other skills, most notably persistence and curiosity, are strongly related to higher school performance for both 10- and 15-year-olds. There are also cases of skills such as stress resistance, creativity and sociability, which are related to lower school performance.
- Socio-economic status was the most significant correlate of students' future educational expectations. Yet, among students of similar socio-economic background, differences in expectations of completing tertiary education were related to differences in social and emotional skills such as intellectual curiosity.
- On average, students who reported aspirations to become health professionals also reported being more curious and co-operative while students who expected to work in the armed forces, the police force or in the security sector reported being more energetic.

Students' psychological well-being

This chapter looks at the different aspects of student psychological well-being and examines how the skills included in the Survey on Social and Emotional Skills are associated with them. Main findings:

- Students' social and emotional skills are strongly related to students' psychological well-being after accounting for socio-economic status and gender.
- Life satisfaction and current psychological well-being dip while test anxiety increases from childhood to adolescence, especially for girls. These results are consistent across cities.
- Socio-economically advantaged students generally reported a higher level of life satisfaction and current psychological well-being compared to socio-economically disadvantaged students.
- Students' perceptions of being in a competitive school climate and parents' and teachers' high expectations of them are associated with a higher level of current psychological well-being for 10-year-olds and a higher level of test anxiety for 10- and 15-year-olds.

Students' creativity and curiosity

This chapter analyses how students' creativity and curiosity relate to other social and emotional skills, students' background, their behaviours and outcomes. Main findings:

- Levels of creativity and curiosity were significantly lower among 15-year-olds compared to 10-year-olds, suggesting a decline in creativity as children enter adolescence. Parent and educator ratings confirmed the dip in social and emotional skills as students grow older. However, parents' and teachers' ratings were similar across genders in both age groups.
- 15-year-old students who consider themselves as highly creative also tended to describe themselves as eager to learn new things and persistent.
- Students who participated in after-school art activities reported higher levels of creativity, particularly among 15-year-olds.
- How 15-year-olds portrayed their social and emotional strengths was strongly associated with their career expectations. Students who described themselves as being more creative were more likely to expect to work in creative occupations (e.g. as actors, journalists, advertisement professionals).

Bullying and social interactions in school

This chapter examines students' social relations in school (students' sense of belonging at school, their exposure to bullying and their relationship with teachers) and their association with student demographics, and social and emotional skills. Main findings:

- One in every five students who was 10 years old, reported that other students made fun of them once a week or more. Boys, in particular, reported greater exposure to bullying than girls. Despite this, boys generally reported feeling a greater sense of belonging to school than girls – especially 15-year-old girls.
- Students from more socio-economic advantaged backgrounds indicated a stronger sense of fitting in well at school and better relations with their teachers than those from less socio-economically advantaged backgrounds.
- Fitting in at school is most strongly related to greater co-operation, optimism and sociability. However, students who reported more exposure to bullying reported lower stress resistance, optimism and emotional control.
- The way students view their relationships with their teachers is most strongly influenced by their curiosity, achievement motivation and optimism.

In conclusion, OECD's Survey on Social and Emotional Skills sheds light on the incremental value of individual social and emotional skills in relation to a broad set of life outcomes. It highlights that the strengths of social and emotional skills are likely to come, in part, from their capacity to shape people's behaviour and lifestyles and to better leverage their cognitive capabilities. Thus, this report marks OECD's long-standing commitment to support countries in their efforts of re-orienting their education policy agendas to focus more on social and emotional skills and by extension, developing well-rounded citizens.

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The development of this report, prepared by the Education and Skills Directorate (EDU) of the OECD, was guided by Andreas Schleicher and Dirk Van Damme and managed by Marta Encinas-Martin. The report was authored by Marta Encinas-Martin, Eva Feron, Francesco Avvisati, Marco Paccagnella, Javier Suárez-Alvarez and Michelle Cherian, with statistical support from François Keslair and Vanessa Denis and further analytical support and guidance from William Thorn. Special thanks to those who also contributed to this report with their comments, suggestions and their support: Cassandra Davis, François Keslair, Mario Piacentini, Rachel Renbarger, Rafael Novella, Sophie Vayssettes, Beatriz Pont, Stéphan Vincent-Lancrin, Noémie LeDonné, Pablo Fraser, Henri Pearson, Sophie Limoges, Satya Dixit, Sabrina Leonarduzzi, Ryan Burgess and Eileen O'Malley.

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READER'S GUIDE

What is SSES?

The Survey on Social and Emotional Skills (SSES) is an international survey that assesses the conditions and practices that foster or hinder the development of social and emotional skills for 10- and 15-year-old students.

Which social and emotional skills are covered in SSES?

The social and emotional skills included in this survey can be organised in the broad domains of the Big Five personality traits: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Each of these domains can be further specified in terms of skills or facets that represent more specific aspects of individuals' capabilities. In SSES, each domain of the Big Five is represented by three skills leading to a total of 15 skills. In addition to these skills, two additional skills; self-efficacy and achievement motivation, are included.

Who participated in SSES?

Ten cities participated in the study: Bogotá (Colombia), Daegu (Korea), Helsinki (Finland), Houston (United States), Istanbul (Turkey), Manizales (Colombia), Moscow (the Russian Federation - hereafter "Russia"), Ottawa (Canada), Sintra (Portugal) and Suzhou (People's Republic of China - hereafter "China"). All cities are located in OECD countries, except Moscow and Suzhou, which are located in partner countries.

SSES covered children enrolled in school in two age cohorts; the younger children were between 10 years and three (completed) months and 11 years and two (completed) months, and the older children were between 15 years and three (completed) months and 16 years and two (completed) months, at the beginning of the testing period. The report refers to these two cohorts as 10-year-olds and 15-year-olds.

Parents, teachers and principals also participated in SSES. Parents and teachers provided an assessment of children's social and emotional skills as well as contextual information about children's learning and home environment. Principals provided contextual information on children's school environment.

What does this report contain?

The results from SSES are presented in 11 reports: an international report and 10 city reports. The international report focusses on international comparisons while the city reports provide more contextualised information along with some of the key results for each of the participants.

A guide to interpreting findings in the report

Data underlying the report

The items that make up the social and emotional skill scales are statements about the student's emotions, attitudes and behaviours on which they are asked to report their agreement, using five response options ranging from 'strongly disagree' to 'strongly agree'. The responses to the items belonging to the same skill are summarised with a score on a psychometric scale. To facilitate comparisons between the skill scales, these scales are standardized. The reference value is fixed at 500 and represents the value assigned to respondents who select the mid-point on all items or who select balanced answers, for example, agree three times, disagree three times. The standard deviation is set to 100 across cities for the younger cohort. Higher values indicate higher perceived skills. Both cohorts are measured on the same scale. The scale scores also take into account the respondent's acquiescence, i.e. his or her general tendency to agree or disagree with any statement irrespective of its content and whether it is a positive or negative statement.
The data referred to in this report is presented in Annex B and, is further explored in greater detail, including additional tables, on the SSES website (www.oecd.org/education/ceri/social-emotional-skills-study/).

International averages

Where averages across jurisdictions are provided, these averages correspond to the arithmetic mean of all participating cities, except for Sintra (Portugal). Data for Sintra (Portugal) did not meet the technical standards.

Focusing on statistically significant differences

This report discusses only statistically significant findings. These are denoted in darker colours in figures and in bold font in tables.

Rounding figures

Because of rounding, some figures in the tables may not add up exactly to the totals. Totals, differences and averages are always calculated on the basis of exact numbers and are rounded only after calculation.
All standard errors in this publication have been rounded to one or two decimal places. If the value 0.0 or 0.00 is shown, it does not imply that the standard error is zero, but that it is smaller than 0.05 or 0.005, respectively.

Abbreviations used in this report

Coef	Coefficient
Dif.	Difference
ESCS	Index of economic, social and cultural status
N	Number of observations
S.D	Standard deviation
S.E	Standard error
SSES	Survey on Social and Emotional Skills
% S. D.	Percentage of standard deviation

Additional technical information

Readers interested in additional technical details are directed towards the short technical note at the end of this volume (Annex A) and the SSES Technical Report (OECD, 2021[1]).

This report uses the OECD StatLinks service, which means that all tables and figures are assigned a URL leading to an Excel workbook containing the underlying data. These URLs are stable and will remain unchanged over time. In addition, readers of the e-books will be able to click directly on these links, and the workbook will open in a separate window if their Internet browser is open and running.

The database of the Survey on Social and Emotional Skills houses the raw data and scales presented in this report. The database allows users to break down data in more ways than is possible in this publication in order to conduct their own analyses of students' social and emotional skills in participating cities. The database can be accessed from the project's website (http://www.oecd.org/education/ceri/social-emotional-skills-study/).

References

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WHY SOCIAL AND EMOTIONAL SKILLS MATTER

What are social and emotional skills?

Social and emotional skills are a subset of an individual's abilities, attributes and characteristics that are important for individual success and social functioning. They encompass behavioural dispositions, internal states, approaches to tasks, and management and control of behaviour and feelings. Beliefs about the self and the world that characterise an individual's relationships to others are also components of social and emotional skills. Social and emotional skills play an important role in the development of children and adolescents and, combined with academic achievement and cognitive skills, represent a holistic set of skills essential for success at school and later life. But social and emotional skills are more than simply enablers of cognitive and academic growth; they are an important developmental outcome in their own right.

The terminology used to name and describe these skills varies widely, yet all terms refer to the same conceptual space [1]. The survey's assessment framework defines social and emotional skills as "individual capacities that can be manifested in consistent patterns of thoughts, feelings and behaviours" (Kankaraš and Suarez-Alvarez, 2019[1]). The term "skills" has been widely accepted, building on contemporary knowledge of the development of these skills (Specht et al., 2014[2]).

The social and emotional skills included in this study can be organised in the broad domains of the Big Five personality traits: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. The Big Five is one of the most well-established frameworks in the field of personality psychology. It is widely accepted and has a strong empirical foundation – see (John, Naumann and Soto, 2008[3]) for a historical overview. Each of these domains can be further specified in terms of skills or facets that represent more specific aspects of individuals' capabilities. For example, the domain of Agreeableness (which is referred to as Collaboration in the study) encompasses empathy, trust and co-operation and that of Openness (referred to as Open-mindedness in the study) includes skills such as tolerance, creativity and curiosity. Two additional skills (self-efficacy and achievement motivation) are included as part of the Survey on Social and Emotional Skills (SSES) and are created from items used to evaluate other skills in the assessment. Box A.1 below provides a brief overview of the Big Five taxonomy and the skills used in SSES. It is important to note that while the social emotional skills discussed in this report can indeed be organised in the Big Five framework, the study results (as described in the following chapters) report at the skill level.

Box A.1.
Interpretation of SSES findings

The Big Five provides a general taxonomy or organising framework for the classification of personality traits. It has its origin in analyses of the natural-language terms people use to describe themselves and others rather than any particular theoretical perspective on human personality and its components (John, Naumann and Soto, 2008, p. 3[3]). The basic intuition behind this so-called "lexical approach" is the idea that the "individual differences that are most salient and socially relevant in people's lives will eventually become encoded into their language" and that "the analysis of the personality vocabulary represented in a natural language should thus yield a finite set of attributes that the people in the language community have generally found to be the most important" (John, Angleitner and Ostendorg, 1988[4]).

As its name suggests, the Big Five taxonomy classifies traits into five broad groupings, commonly labelled as: Agreeableness, Conscientiousness, Extraversion, Neuroticism and Openness. These broad domains are further differentiated into components or facets consisting of subgroups of the traits classified as belonging to a particular domain. Different approaches lead to the development of different, though related, facet structures (see John, Naumann and Soto, 2008[3], Table 4.3) differentiated both by the number and content of the facets identified.

The different domains and facets represent post-hoc groupings of (related) ordinary language descriptors rather than constructs defined a priori in terms of a particular theoretical or conceptual framework. The terms used to refer to the skills measured in SSES (e.g. creativity, stress resistance) are best thought of, therefore, as convenient labels for groupings of descriptors of related attitudes, preferences, behaviours, etc. Due to the time-constraints in large-scale assessments, and the needed consistency of the skill scales, the skills do not cover all potential conceptualisations of the skills; rather, a specific conceptualisation was chosen for each skill. Therefore, it is important that readers refer to the items used to measure the different skills to understand the characteristics encompassed by each individual skill included in the study. As an example, the items concerning "trust" in SSES concern the extent to which the subject trusts others (interpersonal trust).

The conceptual status of the Big Five dimensions is an object of continued debate, particularly regarding the mechanisms underlying the traits and their role as determinants of life outcomes. Researchers subscribe to a diversity of perspectives on the conceptual status of the Big Five. These range from purely descriptive concepts to biologically-based phenomena (John, Naumann and Soto, 2008[3]).

The five domains in SSES are:

- Open-mindedness (Openness): Open-mindedness, which refers to individuals' will to consider other perspectives or to try out new experiences, is predictive of educational attainment, which has life-long positive benefits and seems to equip individuals better to deal with life changes.

- Task performance (Conscientiousness): Those who are conscientious, self-disciplined and persistent can stay on task, and tend to be high achievers, especially when it comes to education and work outcomes.

- Engaging with others (Extraversion): Those who engage with others or are extraverted are usually energetic, positive and assertive. Engaging with others is critical for emotional regulation, collaboration, open-mindedness, and leadership, and tends to lead to better employment outcomes. Extroverts also build social support networks more quickly, which is beneficial for mental health outcomes.

- Collaboration (Agreeableness): People who are open to collaboration can be sympathetic to others and express altruism. Agreeableness or collaboration translates into better quality relationships, more pro-social behaviours and fewer behavioural issues.

- Emotional regulation (Neuroticism): This encompasses skills that enable individuals to deal with negative emotional experiences and stressors. Being able to regulate one's emotions is essential for multiple life outcomes, and seems to be an especially important predictor of enhanced mental and physical health.

Source: Assessment framework (Kankaraš and Suarez-Alvarez, 2019[1])

Social and emotional skills matter

In some countries the development of a variety of social and emotional skills has always been an educational objective alongside cognitive growth; for others, the purpose of education has predominantly been the development of academic abilities. But scientific research on social and emotional skills showing their long-term impact on various life outcomes, and the advocacy movement for social and emotional learning have moved social and emotional skills to the top of the education policy agenda of many countries. Countries are now eagerly looking for evidence and best practices on social and emotional skills.

Social and emotional skills are related to important student outcomes

Many factors beyond students' core knowledge and cognitive skills are important contributors to both short and long-term success and well-being. For example, psychologists found that personality influences the quality of one's thinking (Barratt, 1995[5]) and that grit (persistence) and self-control influence how much a child learns in school (Duckworth et al., 2007[6]; Duckworth, Quinn and Tsukayama, 2012[7]). Longitudinal studies showed that childhood self control, emotional stability, persistence, and motivation have long term effects on health and labour market outcomes in adulthood (Borghans et al., 2008[8]; Chetty et al., 2011[9]; Moffitt et al., 2011[10]). Some studies even found that these sorts of attitudes and behaviours are stronger predictors of long-term outcomes like college attendance, earnings, home ownership and retirement savings than test scores.

In other words, the impact of boosting social and emotional skills to improve social outcomes is considerable and is generally complementary to boosting cognitive skills. It is also documented that enhancing specific social and emotional skills improves students' ability to improve their cognitive skills. Social and emotional skills are also fundamentally dependent on cognitive skills such as perception, memory, and reasoning. Thus, cognitive, and social and emotional skills are tightly and dynamically interconnected in such a way that a person's higher skills in one domain may be able to better influence the development of skills in other domains. It is the interplay between personal interests and other personality characteristics, on the one side, and innate cognitive abilities on the other, that influence individuals' development of the knowledge and skills that they acquire over their lifetime (Cattell, 1973[11]; Ackerman, 1996[12]). Understanding the nexus between cognitive and social emotional skills is important for policy makers, educators, parents and teachers alike (Chernyshenko, Kankaraš and Drasgow, 2018[13]). But the benefits of developing children's social-emotional skills is not just limited to enhancing cognitive development and academic outcomes. It is also associated with improving mental health and other important life outcomes (OECD, 2015[14]). The often inconspicuous yet significant impact of social and emotional skills is explained by their role in shaping individuals' behaviours and lifestyles, which, in turn, shape their socio-economic outcomes.

Academic performance

The existing empirical literature suggests that social and emotional skills are strongly related to school performance (OECD, 2015[14]). Much research on the relations between social and emotional skills, and school performance has been done on the level of the Big Five domains. An important conclusion that has been drawn from this expansive literature is that the domain of Conscientiousness and skills within the domain of Conscientiousness, such as responsibility, persistence and self-control, are positively related to students' school performance. Students who are more conscientious tend to perform better in school. In addition, Conscientiousness is found in some cases to be a better predictor of individual long-term outcomes than long-established measures of cognitive skills. Other Big Five domains that are positively related to students' school performance are Open-mindedness and, to a lesser extent, Agreeableness.

A domain that is often negatively related to students' school performance is Neuroticism (or lack of emotional regulation). Students who find it difficult to regulate their emotions; that is, those who are less stress-resistant and less optimistic, tend to have lower school performance when compared to their peers. Relations between Extraversion and students' school performance are less clear. However, studies have found certain parts of Extraversion, such as being more social, to relate negatively to school performance (Almlund et al., 2011[15]; Kautz et al., 2014[16]; Poropat, 2009[17]). Some examples of studies that show the relations between social and emotional skills, and academic performance are described in Box A.2.

Box A.2.
Some studies on the relations between social and emotional skills, and academic performance

Heckman, Stixrud, & Urzua (2006[18]) analysed data from the 1979 United States National Longitudinal Survey of Youth, which included measures of social and emotional skills, specifically, indicators of self-esteem and loss of control. They found that an increase in the measure of social and emotional skills – from the 25th to the 75th percentile of its distribution was associated with a nearly 25 percentage point increase in the probability of being a four-year college graduate at age 30 (importantly, this analysis held cognitive skills constant). Almlund et. al (2011[15]) also highlighted three studies that used nationally representative samples to investigate the relationships between the Big Five dimensions and years of schooling. Although each study had somewhat different control variables, conscientiousness and openness to experience emerged as significant and positive predictors of years of schooling.

In a longitudinal study of 197 Swedish high-school students, Rosander and Backstrom (2014[19]) found that conscientiousness scores correlated with academic grades as much as three years later and that this relationship did not diminish after controlling for cognitive ability scores.

Poropat (2009[17]) conducted a meta-analysis of studies that reported correlations between self-rated Big Five scores, intelligence scores, and course grades. The number of studies was very large and ranged between 47 (for intelligence) to 138 (for conscientiousness). Importantly, conscientiousness predicted course grades nearly as well as cognitive ability and this association did not diminish when cognitive ability was controlled for. This suggests that social and emotional skills are an important predictor of students' outcomes in their own right and not just as an enabler of cognitive abilities.

The GED programme

The General Educational Development (GED) programme was established to allow high-school dropouts in the United States to obtain a high-school diploma by passing the GED test, an extensive academic performance test designed to assess whether test takers have comparable skills and knowledge to regular high-school graduates. A relatively large proportion of young people in the United States (around 12% in 2011) obtained the equivalent of a high-school diploma through this programme. It was found that GED graduates – students who did not finish high school and then passed the GED test to obtain a high-school diploma – were fundamentally different from regular high-school graduates. GED graduates have very similar levels of cognitive skills to regular graduates but poorer social and emotional skills. The most important finding, however, was that GED graduates' relatively poor social and emotional skills had a strong detrimental effect on a number of important academic, work and life outcomes. In particular, GED graduates had much lower graduation rates from college, shorter spells of employment, lower hourly wages, higher divorce rates, worse health, a higher propensity for smoking, drinking, violent and criminal behaviour, and a greater chance of being imprisoned in comparison with regular high-school graduates (Heckman and Kautz, 2012[20]). This shows that cognitive skills cannot compensate for a lack of social and emotional skills: both are needed for people to prosper in life.

The Perry Preschool Programme

The High/Scope Perry Preschool study has identified both the short- and long-term effects of a high- quality preschool education programme for young children living in poverty. The programme randomly assigned a group of students to participate in the programme while another group of students formed the control group. Evaluations of the programme showed that it did not boost participant adult intelligence. However, it enhanced participants' performance on a number of different dimensions such as highest level of schooling completed, higher scores on achievement tests, more positive attitudes towards school, higher employment and earnings, and fewer arrests. The Perry Preschool Programme showed that emotionally nurturing environments produce more capable learners (Schweinhart et al., 2005[21]).

Labour market/employment

Besides schooling outcomes, there are also employment outcomes to consider. Higher levels of education and grades typically translate into greater chances of employment and higher income. A number of studies have shown that certain social and emotional skills are related to employment outcomes. For example, compound skills such as self-efficacy, mastery, and self-esteem (representing a combination of Emotional regulation, Conscientiousness, and Extraversion) were found to be better predictors of income at age 25 compared to cognitive skills (OECD, 2015[14]). Furthermore, Roberts et al. (2007[22]) looked at different studies and found that the different domains of the Big Five predict a range of labour market outcomes such as employment and income even after accounting for intelligence. They argue that the domains of the Big Five in many cases even predict labour market outcomes better than someone's social background, which is generally considered one of the main predictors of life outcomes. The Big Five indicators are also better predictors of job-related outcomes than intelligence, and this stronger association is not surprising given that the Big Five domains are multidimensional which cover a wider range of skills. Some examples of studies that show the relations between social and emotional skills and employment outcomes are described in Box A.3.

Aspects of job performance (often measured in literature through indicators such task performance, organisational citizenship behaviour, and work behaviour) are also related to social and emotional skills (Rotundo and Sackett, 2002[23]; Sackett and Walmsley, 2014[24]). Of the Big Five factors, Conscientiousness is the most strongly associated with job performance but is about half as predictive as intelligence. Conscientiousness, however, may play a more ubiquitous role than intelligence. The importance of intelligence increases with job complexity (the information-processing requirements of the job) and cognitive skills are more important for professors, scientists, and senior managers than for semi-skilled or unskilled labourers (Schmidt and Hunter, 2004[25]). The importance of Conscientiousness, however, does not vary much with job complexity (Barrick and Mount, 1991[26]), suggesting that it applies to a wider spectrum of jobs.

Box A.3.
Examples of studies on the relations between social and emotional skills, and employment

A number of studies have shown that social and emotional skills can be as important as cognitive skills in determining employment outcomes. In a longitudinal study conducted in the United Kingdom, males who were more extroverted at age 10 had lower levels of unemployment at the ages of 16 to 29 after controlling for cognitive ability (Macmillan, 2013[27]). Indicators of extraversion (being outgoing and sociable) at age 10 were also found to be associated with becoming an entrepreneur by age 34 after controlling for general cognitive ability, locus of control and self-esteem (Schoon and Duckworth, 2012[28]). Evidence from a meta-analysis shows that the specific social and emotional skills that most strongly correlated with entrepreneurial behaviour (business creation, business success) were achievement motivation, generalised self-efficacy, innovativeness, and stress tolerance. They are associated with a proactive personality and a need for autonomy (Rauch and Frese, 2007[29]) and can be detected already in adolescence (Muniz et al., 2014[30]). Evidence from a longitudinal study conducted in Germany also indicated that time spent unemployed was associated with levels of agreeableness as well as openness among the subjects considered and that these associations varied by gender (Boyce et al., 2015[31]). This suggests that different combinations of social and emotional skills are relevant for different types of jobs, tasks or occupations. In educating the youth and preparing them for the future job market, education systems should identify and develop students' skills most needed for job sectors in expansion.

Well-being and health

Social and emotional skills play an important role in predicting health outcomes. In general, skills in the domains of Conscientiousness, Openness to Experience and Agreeableness are positively associated with longevity. In contrast, Neuroticism and Pessimism are associated with increased risk of premature mortality. A meta-analysis of the predictive value of the Big Five domains for mortality found that even when controlling for other related factors, the effects of the Big Five dimensions, and especially of Conscientiousness, on longevity are stronger than those of cognitive skills and socio-economic status (Roberts et al., 2007[22]). Furthermore, a study by Strickhouser, Zell, and Krizan (2017[32]) possibly provides the most up-to-date estimates of the associations of Big Five domains with life outcomes. They combined the results of 36 meta-analyses investigating the relations between social and emotional skills, and health and well-being. They found that Agreeableness, Conscientiousness and Emotional Regulation are strongly and positively related to mental and physical health, and general health behaviour. Extraversion and Openness to Experience also show positive, albeit smaller relations, with physical, mental and general health behaviour.

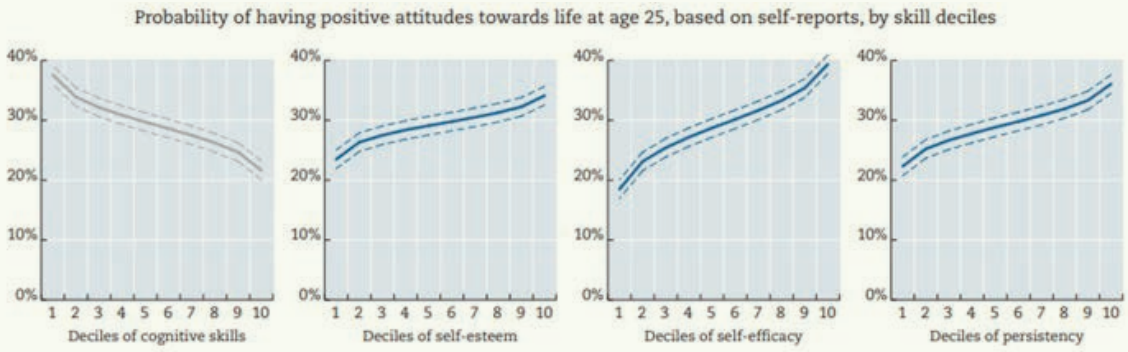
The influence of certain social and emotional skills on health-related behaviours is one of the best examples of mediated or indirect relations between social and emotional skills and important life outcomes. Social and emotional skills influence the likelihood of an individual engaging in unhealthy habits such as smoking, excessive alcohol use, risky sex or unhealthy eating, and the consequent life outcomes associated with these habits. Extraversion, for example, has been found to predict physical activity (Wilson and Dishman, 2015[33]), Agreeableness predicts safer sex and lack of smoking (Hoyle, Fejfar and Miller, 2000[34]; Malouff, Thorsteinsson and Schutte, 2006[35]) and Conscientiousness predicts a range of health behaviours including safe driving, healthy eating, and avoidance of substance use (Bogg and Roberts, 2004[36]).

Box A.4.

A study on the relations between social and emotional skills, and well-being

The OECD's Skills for Social Progress Report (OECD, 2015[14]) found that improving social and emotional skills such as confidence, self-efficacy, self-satisfaction and persistence was strongly and positively associated with subjective measures of well-being (life satisfaction and happiness). The figure below depicts this in detail. Results are based on longitudinal analyses conducted in 2012 by OECD's Education and Social Progress (ESP) project for 11 OECD countries, including Australia, Belgium (Flanders), Canada, Germany, Korea, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States.

Figure A.1.1. **Switzerland**



Note: *Solid lines depict the probability of having positive attitudes towards life at age 25 based on self-reports, and dotted lines, 2.5-97.5% confidence intervals. Cognitive skills are captured by a latent cognitive skill factor estimated using measures of PISA reading, maths and science scores at age 15. Social and emotional skills are captured by a latent self-esteem factor estimated using measures of self-satisfaction, "acknowledgement of own good qualities" and "confidence in doing things well" at age 16; a latent self-efficacy factor estimated using measures of "confidence in one's capacity to solve difficult problems when making efforts", "confidence in handling whatever comes in his/her way" at age 16, and "confidence in dealing efficiently during unexpected events"; and a latent persistence factor estimated using measures of "orientation towards goal achievement", rigorousness and meticulousness at age 16.*

Social cohesion

Social and emotional skills also benefit both individuals and societies in regulating behavioural problems such as aggression, gender violence, criminality and the use of illegal substances. Tackett (2006[37]) found that children who were low in Agreeableness, Conscientiousness, and Emotional stability showed higher rates of anti-social, aggressive, and rule-breaking behaviours.

The OECD's Skills for Progress report (OECD, 2015[14]) looked at the effects of different social and emotional skills on the future life outcomes of middle- and high-school children. For example, the New Zealand Competent Children sample was used to examine the relationship between cognitive and social and emotional skills, and life satisfaction and behavioral problems. The study observed that at age 8, higher Conscientiousness and Extraversion had a much stronger relation to a decrease in students' behavioural problems such as drinking, smoking, substance abuse.

Social and emotional skills are malleable

Social and emotional skills are malleable. They are partly shaped by environments such as families, schools, peers, life events, and individual actions and perceptions. They can also be shaped through learning and tend to change with age (Kautz et al., 2014[16]; Chernyshenko, Kankaraš and Drasgow, 2018[13]). For example, Roberts and DelVecchio (2000[38]) analysed 152 longitudinal studies that tested and re-tested personality traits. Their analysis showed that personality has more malleability from early childhood to the adolescent years and then becomes more stable with age – plateauing at around age 50. Specifically, Agreeableness, Conscientiousness and Openness to experience are found to actually decline from late childhood into early adolescence and then increase rapidly again from late adolescence into early adulthood. Emotional stability also appears to decline in adolescence before recovering later in life (Roberts, Walton and Viechtbauer, 2006[39]).

There are a number of studies that look at the effect of different school-based interventions to enhance students' social and emotional learning (Durlak et al., 2011[40]; Park-Higgerson et al., 2008[41]; Sklad et al., 2012[42]). These programmes usually aim to either increase particular social and emotional skills or influence a specific subset of student outcomes such as positive social behaviours, behavioural problems and academic performance. For example, a meta-analysis by Durlak et al. (2011[43]) shows that social and emotional learning programmes had significant positive effects on targeted social and emotional skills, and attitudes about self, others and school. They increased pro-social behaviour, reduced behavioural problems and improved school performance. This shows that people are not born with a fixed set of social and emotional skills. Instead, there is considerable potential to develop these skills throughout people's lives (Helson et al., 2002[44]; Srivastava et al., 2003[45]).

Studies linking data on teachers and students suggest that teachers have an impact on students' social and emotional skills. Teachers and schools are expected not only to raise student performance, as measured through PISA and other tests, but to provide emotionally supportive environments that contribute to students' social and emotional development (Blazar and Kraft, 2017[46]; Pianta and Hamre, 2009[47]). In recent years, two research approaches have examined this issue using empirical evidence. The first focused on estimating teachers' contribution to student outcomes, often referred to as "teacher effects" or "teacher value-added" (Chetty, Friedman and Rockoff, 2014[48]; Hanushek and Rivkin, 2010[49]). These studies found that, as with test scores, teachers vary considerably in their ability to impact students' social and emotional development in a variety of observed school behaviours (Gershenson, 2016[50]; Jackson, 2018[51]; Jennings and DiPrete, 2010[52]; Koedel, 2008[53]; Kraft, 2019[54]; Ladd and Sorensen, 2017[55]; Ruzek et al., 2015[56]). The second research approach focused on classroom observations as a means of identifying aspects of teaching practices that affect students' cognitive as well as social and emotional outcomes (Blazar et al., 2017[57]; Hafen et al., 2015[58]). Teachers' interactions with students, classroom organisation, and emphasis on critical thinking in specific subjects were found to support students' development in areas beyond their core academic skills (Blazar and Kraft, 2017[46]).

Childhood and adolescence are key periods for the development of social and emotional skills. Both cognitive, and social and emotional skills develop in a dynamic manner throughout a person's lifespan. In what is called "skills beget skills", students with greater early cognitive, and social and emotional skills have a head-start in acquiring and enhancing cognitive, and social and emotional skills later in life. This is because both cognitive, and social and emotional skills are highly malleable in the early years, and during adolescence (Kautz et al., 2014[16]; Cunha and Heckman, 2007[59]; Cunha, Heckman and Schennach, 2010[60]). The differential plasticity of different skills by age has important implications for the design of effective policies (Kautz et al., 2014[16]).

The malleability of social and emotional skills enables them to be modified or developed for the better. Schools can play a particularly important role in providing learning environments where skills can be developed, enhanced and reinforced through practice and daily experiences.

Box A.5.
Participating countries' efforts to promote social and emotional skills in primary classrooms

In the last few years, more countries have started putting emphasis on developing students' social and emotional skills by embedding them into the general curriculum at an early age. These include formal curriculum requirements that state learning goals and outcomes as well as recommendations that teachers can use in a flexible and informal manner to promote social and emotional skills. The following participating cities have implemented formal and informal measures to encourage social and emotional learning in the classroom:

Canada

In 2016, the provincial and territorial ministers of Education put forward six global competencies in a pan-Canadian effort to prepare students for a complex and unpredictable future with rapidly changing political, social, economic, technological, and ecological landscapes. Building on strong foundations of numeracy and literacy, these competencies are: Critical Thinking and Problem Solving; Innovation, Creativity, and Entrepreneurship; Learning to Learn/ Self-Awareness and Self-Direction; Collaboration; Communication; and Global Citizenship and Sustainability. These competencies compromise an overarching set of attitudes, skills, knowledge and values that are interdependent, interdisciplinary, and can be leveraged in a variety of situations both locally and globally. They provide learners with the ability to meet the shifting and ongoing demands of life, work and learning; to be active and responsive in their communities; to understand diverse perspectives; and to act on issues of global significance. This framework is closely aligned with the competencies that have been prioritised through the introduction of new curricula, programmes, and initiatives. It is expected to evolve based on provincial and territorial engagement with these competencies (OECD, 2020[61]).

At the primary level, schools in Ottawa follow the Ontario Elementary Health and Physical Education Curriculum, which targets social and emotional skills that are imperative to students' holistic development. The curriculum enables students to identify obstacles and manage their emotional responses. Students are encouraged to express their feelings and be understanding and compassionate about the feelings of others. The curriculum also focuses on developing effective stress management and coping strategies in order to build students' resilience during difficult situations. This ties in directly with maintaining positive motivation and perseverance, which is key to fostering students' sense of optimism and hope (Ontario Public Service, 2019[62]).

Suzhou, China

In Suzhou, China, primary schools follow the Ministry of Education's basic curriculum focusing on the development of students' knowledge, skills, emotional attitude and values. The objective of this curriculum is to enable students to solve problems practically and communicate efficiently through the development of accountability and innovative mindsets. Social and emotional skills are embedded in primary education through existing subjects such as morality and rule of law, Chinese, science and English. These courses aim to develop diverse skills including curiosity, co-operation, tolerance, sociability and persistence. Students in grades 1 to 2 follow courses on morality and life while those in grades 1 to 6 study morality and society. The target social and emotional skills of these subjects include achievement motivation, assertiveness, co-operation, curiosity, creativity, emotional control, empathy, optimism, persistence, responsibility, self-control, self-efficacy, sociability, stress resistance, tolerance and trust.

Bogotá, Colombia

Bogotá's government has initiated the Emotions for Life curriculum in primary and secondary schools, which encourages dialogue on the importance of education for building peace in schools, cities and countries. It promotes ideas of open-mindedness and engagement with others. This programme also promotes social and emotional skills such as co-operation, emotional control, empathy, self-control, sociability, stress resistance, tolerance and trust.

South Korea

Based on the Korean concept of "Hongik Ingan", or the drive to broadly benefit humanity, Korea sets out its student profile, "An Educated Person". It aims to enable every citizen to lead a life worthy of human dignity, contribute to the development of a democratic state and support the realisation of an ideal of shared human prosperity by ensuring the cultivation of character and the development of the abilities for independent life and necessary qualities as a democratic citizen under the humanitarian ideal. Based on the ideal and aims of education, the vision of an educated person in this curriculum is specified as follows: 1) a self-directed person who builds a self-identity and explores a career and life on the basis of holistic growth; 2) a creative person who discovers something novel by means of diverse ideas and challenges based upon basic abilities; 3) a cultivated person who appreciates and promotes the culture of humankind on the basis of cultural literacy and understanding of diverse values; and 4) a person who lives in harmony with others, fulfilling the ethics of caring and sharing as a democratic citizen with a sense of community and connection to the world.

Portugal

The Students' Profile by the End of Compulsory Schooling is structured in principles, vision, values and competence areas that all students should develop by the end of 12 years of education. The values outlined in the profile's conceptual framework mirror a humanistic philosophy, which fosters inclusion and values diversity, and views each student as a unique human being. By mobilising values and skills that allow them to act upon the life and history of individuals and societies to make free and informed decisions about natural, social and ethical issues, and to carry out an active, conscious and responsible civic participation, the students of this global generation are helping to build a humanistic scientific and artistic culture.

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Footnotes

[1] For a discussion see (Duckworth and Yeager, 2015[63]).

WHAT IS THE OECD SURVEY ON SOCIAL AND EMOTIONAL SKILLS?

Origin and purpose

This report is the first international effort to develop a comprehensive survey around students' social and emotional skills and, thus, an important milestone in the long-term development of work on social and emotional skills at the OECD. Conceptual work on the social outcomes of learning since 2010, followed by analytical work on existing longitudinal databases in the "Education and Social Progress" project between 2012 and 2016 constitute the groundwork for the Survey on Social and Emotional Skills (SSES).

Despite the growing policy interest in social and emotional skills, character and life skills, large-scale international studies are still scarce. OECD studies such as the Programme for International Student Assessment (PISA) and the Survey of Adult Skills (PIAAC) primarily focus on academic skills such as reading, mathematics, science or problem-solving and have only recently included limited aspects of social and emotional skills in their assessments. For example, PISA has broadened its scope by assessing a limited set of social and emotional skills such as collaborative problem-solving, global competence, self-efficacy (belief in one's ability to successfully complete the task at hand), and growth mindset (belief that someone's ability and intelligence can develop over time).

SSES collected information on the social and emotional skills of school children of 10 and 15 years of age. In addition, the survey also collected information on students' socio-demographic, family, school and community environment to contextualise the results. Information on students' social and emotional skills was collected from students themselves, parents and teachers. Background information on the students' family and school environment was collected from students, parents, teachers, and principals.

The survey is designed to improve understanding of students' social and emotional skills. More specifically, the goals are to know more about how these skills differ based on gender, socio-economic status and age; how these skills matter for student outcomes such as academic performance and well-being; and other factors in students' environment these skills are related to. The findings of this report can also help parents and educators better understand the differences in social and emotional skills observed among children and adolescents, and take them into account in performing their respective roles. Policy makers and education practitioners can now use SSES instruments as a measurement tool to monitor students' social and emotional skills.

Which social and emotional skills are measured?

Drawing on the literature, the skills measured in the survey (Figure B.1.1) have been selected to provide a comprehensive coverage of social and emotional skills that are believed to be relevant for children's and adolescents' success and well-being. The study's assessment framework describes the criteria used to select the skills, in particular, in terms of their:

- Association with educational attainment, labour market outcomes, health and well-being;
- Susceptibility to interventions and policy measures, especially during the school years;
- Suitability for cross-cultural and age comparability.

Figure B.1.1. Description of the skills included in the Survey on Social and Emotional Skills

DOMAINS	SKILLS	DESCRIPTION	BEHAVIOURAL EXAMPLES
OPEN-MINDEDNESS (Openness to experience)	CURIOSITY	Interested in ideas and love of learning, understanding and intellectual exploration; an inquisitive mindset.	Likes to read books, to travel to new destinations. Opposite: Dislikes change, is not interested in exploring new products.
	TOLERANCE	Is open to different points of view, values diversity, is appreciative of foreign people and cultures.	Has friends from different backgrounds. Opposite: Dislikes foreigners or people from different backgrounds.
	CREATIVITY	Generates novel ways to do or think about things through exploring, learning from failure, insight and vision.	Has original insights, creates valued artworks Opposite: Acts conventionally; not interested in arts.
TASK PERFORMANCE (Conscientiousness)	RESPONSIBILITY	Able to honour commitments, and be punctual and reliable.	Arrives on time for appointments, gets chores done right away. Opposite: Doesn't follow through on agreements/ promises.
	SELF-CONTROL	Able to avoid distractions and sudden impulses and focus attention on the current task in order to achieve personal goals.	Postpones fun activities until important tasks are completed, does not rush into things. Opposite: Is prone to say things before thinking them through. Binge drinking.
	PERSISTENCE	Able to persevere in tasks and activities until they get done.	Finishes homework projects or work once started. Opposite: Gives up easily when confronted with obstacles/distractions.
ENGAGING WITH OTHERS (Extraversion)	SOCIABILITY	Able to approach others, both friends and strangers, initiating and maintaining social connections.	Skilled at teamwork, good at public speaking. Opposite: Can struggle in working with a larger team, avoids public speaking.
	ASSERTIVENESS	Able to confidently voice opinions, needs, and feelings, and exert social influence.	Takes charge in a class or team. Opposite: Waits for others to lead the way; keeps quiet when disagrees with others.
	ENERGY	Approaches daily life with energy, excitement and spontaneity.	Is always busy; works long hours. Opposite: Gets tired easily without physical cause.
COLLABORATION (agreeableness)	EMPATHY	Understands and cares about others, and their well-being. Values and invests in close relationships.	Consoles a friend who is upset, sympathises with the homeless. Opposite: Tends to misinterpret, ignore or disregard other person's feelings.
	TRUST	Assumes that others generally have good intentions and forgives those who have done wrong.	Lends things to people, avoids being harsh or judgmental. Opposite: Is secretive and suspicious in relations with people.
	CO-OPERATION	Lives in harmony with others and values interconnectedness among all people.	Finds it easy to get along with people, respects decisions made by a group. Opposite: Is prone to arguments or conflicts with others; does not tend to compromise.
EMOTIONAL REGULATION (emotional stability)	STRESS RESISTANCE	Effectiveness in modulating anxiety and able to calmly solve problems (is relaxed, handles stress well).	Is relaxed most of the time, performs well in high-pressure situations. Opposite: Most of the time worries about things, difficulties sleeping.
	OPTIMISM	Positive and optimistic expectations for self and life in general.	Generally in a good mood. Opposite: Often feels sad, tends to feel insecure or unworthy.
	EMOTIONAL CONTROL	Effective strategies for regulating temper, anger and irritation in the face of frustrations.	Controls emotions in situations of conflict. Opposite: Gets upset easily; is moody.
ADDITIONAL INDICES	ACHIEVEMENT MOTIVATION	Sets high standards for oneself and works hard to meet them.	Enjoys reaching a high level of mastery in some activity. Opposite: Lack of interest in reaching mastery in any activity, including professional competencies.
	SELF-EFFICACY	The strength of individuals' beliefs in their ability to execute tasks and achieve goals	Remains calm when facing unexpected events. Opposite: Avoids challenging situations.

Source: *Assessment Framework of the Survey on Social and Emotional Skills (2019[1])*

Assessment of social and emotional skills

How are the skills measured?

To measure students' feelings, preferences, behaviours and thoughts, self-assessment and assessments by others have been used. SSES respondents (students, parents and teachers) complete a questionnaire in which they indicate the extent of their agreement or disagreement with statements regarding their own (or the student's) beliefs, preferences, usual behaviours, attitudes, etc.

SSES' collection of information from multiple sources and across multiple contexts that are most important for school-age students improves the representation and understanding of students' behaviours. Additionally, students' indirect assessments from parents and teachers allow interpretations from students' self-reports to be validated. They also mitigate the influence of measurement error such as social desirability, response-style bias (e.g. acquiescence) and unrealistic self-assessments. Next to the use of self- and other-assessments, future rounds of the study will also explore the possibility of task-based approaches.

Box B.1.
Additional technical information on the social and emotional skills

Interpretation of the scales

The scales on which the social and emotional skills are measured feature two meaningful poles. Individuals placed at one end of the scale have more of the attributes and qualities that define the pole to which they are closest and less of the attributes defining the pole from which they are farthest. Taking the example of 'sociability', respondents located towards different ends of the scale report a different balance of characteristics. Respondents towards the sociable (extraversion) pole, report themselves (or are reported by others) as displaying characteristics such as outgoingness, confidence in social interactions, and a preference for being with others. Respondents at the opposite end of the spectrum (introversion) more often report feelings of diffidence, and a preference for being alone. While the reporting scales have a linear numerical format running from low to high, the direction of the scale is arbitrary as either of the poles could represent the low or high end of the scale. The reporting scales for the measures of social and emotional skills show differences between individuals in the degree to which they manifest certain characteristics or attributes rather than others. The interest is in how the students usually behave, what they think, feel and believe, and not in how well they do something or how much they know.

Some caution is needed in interpreting the social and emotional skills as well as the contextual factors. The contextual factors as well as the social and emotional skills discussed in this report are measured by evaluations students make of their own life and experiences. These self-assessed measures are susceptible to potential biases: social desirability bias, reference-group bias and response-style bias. As both the contextual factors and the social and emotional skills are susceptible to these biases, the problem associated with it can be compounded when these measures are related to each other. This can lead to distortions in the true correlation between contextual factors and social and emotional skills as empirical findings may reflect differences in reporting rather than in the underlying relations. Further information on how to interpret SSES findings and how the survey was designed to account for these biases is provided in Box B.1 (Chapter 1), and in Annex A.

The relations between contextual factors and social and emotional skills described in this report should be interpreted as correlational and not as causal evidence as the causal relationship is indeterminate. For example, greater well-being might be caused by higher levels of optimism but students with higher levels of optimism might also be more optimistic in their evaluation of their quality of life in the first place.

Standardisation of the social and emotional skill scales

The items that make up the social and emotional skill scales are statements about the student's emotions, attitudes and behaviours on which they are asked to report their agreement, using five response options ranging from 'strongly disagree' to 'strongly agree'. The responses to the items belonging to the same skill are summarised with a score on a psychometric scale. To facilitate comparisons between the skill scales, these scales are standardized. The reference value is fixed at 500 and represents the value assigned to respondents who select the mid-point on all items or who select balanced answers, for example, agree three times, disagree three times. The standard deviation is set to 100 across cities for the younger cohort. Higher values indicate higher perceived skills. Both cohorts are measured on the same scale. The scale scores also take into account the respondent's acquiescence, i.e. his or her general tendency to agree or disagree with any statement irrespective of its content and whether it is a positive or negative statement.

Analyses of Measurement Invariance

The results of the analyses of measurement invariance for the social and emotional skill scales show a strong (scalar) level of invariance across gender and age cohorts. However, only a weaker (metric) form of invariance was reached for comparisons across cities. It is possible to compare gender and cohort differences in scale scores across cities as well as to compare correlations between grades, skills and other variables across cities (OECD, 2021[2]).

Methodology for analysing the relationships between social and emotional skills and student outcomes

In order to identify which of the social and emotional skills are more strongly related to student outcomes, the analyses rely on a machine-learning algorithm (LASSO), which discards from the model the variables that lack predicting power (for further information see Annex A3). In this way, a more parsimonious model (containing fewer variables) can be estimated in a second step. The two indices, self-efficacy and achievement motivation, were excluded from the analyses, as they are created from items used in other scales.

The LASSO model selection process was done separately for each city and each cohort of students in order to be able to assess whether different cities had differing relationships between social and emotional skills and a student outcome, and whether this association varies according to students' age. Control variables are excluded from the selection process so that they are always part of the final model. These variables are gender, socio-economic status and the score on the cognitive assessment (for school performance only). School fixed effects are also included. School fixed effects take into account any difference (observed or unobserved) between students who attend the same school. By including school fixed effects, the model effectively compares grades of students attending the same school.

Sampling

Data are collected from 3000 students in each of the two cohorts (ages 10 and 15). Sampling was a two-stage process: first, schools within a city are randomly selected, followed by randomly selecting students within those schools. The survey uses a stratified random sampling of schools with the selection probability being proportional to school size. This is standard practice for rigorous sampling and is the approach used in peer OECD school-based studies such as PISA and TALIS. This sampling design aims to be a reliable representation of the entire target population outlined above.

Note: For more information on the technical aspects of the survey see the SSES Technical Report.
Source: SSES Technical Report (OECD, 2021[2]).

Contextual information

Apart from assessing students' social and emotional skills, the study examines a wide scope of contextual factors such as the socio-demographic background of students, family environment, school environment, peer environment and wider community environment.

Collecting contextual information is critical to understanding more about students' social and emotional skills, and what factors potentially influence them. Students learn in many different settings, including in their families, schools and communities. Each context plays an important role throughout childhood and adolescence.

Information on the background characteristics of students and their parents, as well as on family, school and community learning contexts, was collected through four contextual questionnaires/instruments developed for:

- Students
- Parents
- Teachers
- School principals

The questionnaires focused on aspects that are most relevant for students' social and emotional skills, especially those characteristics that are likely to be responsive to changes in policy and teaching methods.

Figure B.1.2 Examples of data collected via background questionnaires

Children

- Socio-demographic background
- Daily activities
- Relations with parents
- Relations with peers
- Personal well-being
- School life
- Perceptions of social and emotional skills

Parents

- Family background
- Home environment
- Parents' skills and well-being
- Parent-child relations
- Parenting styles
- Parents' attitudes and opinions
- Perceptions of social and emotional skills

Teachers

- Teachers' background
- Teaching pedagogical practices
- School climate
- Role of social and emotional skills in teachers' education and work practices
- Perceptions of social and emotional skills

Principals

- School structure and organisation
- Student body and teachers
- School resources
- School climate
- Role of social and emotional skills in school programmes
- Principal's attitudes and opinions

Student questionnaire

Recognising that the manner in which students perceive their social environment is essential in determining their experience and development, SSES administers a contextual questionnaire to students in order to gather information on important aspects of their home, school and peer environment that may be associated with differences in social and emotional skills. The questionnaire collects information on key socio-demographic indicators. Questions include date of birth, grade, gender, immigration background and language spoken at home. Students also provided information on their parents' socio-economic status. The questionnaire also asks questions concerning students' life satisfaction and personal well-being; students' own educational and career aspirations; their perceived mental health; perceived social support from peers, family and teachers; and perceived external pressure to overachieve. In addition, information is collected concerning students' relationships with their parents and peers; their sense of belonging at school; test anxiety; perception of school safety; views on their schools' disciplinary environment; how they view their relationship with their teachers; how engaged they are at school; and what their attitudes are towards school work. Finally, the student questionnaire includes a short cognitive ability measure.

Parent questionnaire

The parent questionnaire gathers information on the family's culture and background, parenting behaviours, children's activities, parents' social and emotional skills and parents' perceptions of these skills. It collects information on living situation and family structure; immigration status; parents' occupation and employment status; household possessions; and cultural capital. It also gathers relevant information about the students from the parents' perspective such as the students' educational trajectory (e.g. if they attended an Early Childhood and Care (ECEC) programme), their general health and habits, and peer networks. Finally, it also captures information on the parents' relationship with their children and their growth mindset on the malleability of cognitive, and social and emotional skills.

Teacher questionnaire

The survey gathers information about several aspects of the school environment such as safety, teaching and learning, interpersonal relationships and the institutional environment. It includes basic demographic information such as teachers' gender, age, employment status and years of experience. This information provides context when social and emotional skills are connected with educational outcomes and teaching practices. The questionnaire also collects information on teachers' educational background and the extent to which their training included social and emotional development. Additionally, it focuses on whether teachers implement pedagogies that encourage social and emotional skills development. It also tries to capture what schools do in order to promote students' social and emotional skills development. Questions cover whether the school includes the development of these skills in the formal curriculum and whether students' social and emotional skills are evaluated internally or externally. Finally, SSES evaluates teachers' growth mindset on the malleability of cognitive, and social and emotional skills.

Principal questionnaire

The survey asks school principals (or their administrative assistants) to provide general information about the school, its curriculum, extra-curricular activities, student body composition, general level of parental involvement, and the level of conflict or delinquency in the school. The questionnaire provides relevant contextual information regarding the school's student and teacher demographics. Although not easy to change, school demographics can contribute to explaining student outcomes. School demographics include information such as location, enrolment, percentage of students with immigrant or special needs background, type of school (public or private), funding sources, etc.

Implementation

Mode of survey administration

All student instruments (students' self-reports and contextual questionnaires) were administered online using a digital device. Teachers' assessment reports as well as teacher and principal contextual questionnaires were also administered online. However, parents' reports and parent contextual questionnaires were administered in both online and paper-and-pencil format.

Sampling and study respondents

SSES assessed students in two age cohorts – 10 and 15 – that attend educational institutions located within the administrative borders of participating cities and countries. Data were collected from 3 000 students in each of the two cohorts. Ten-year-old students were considered the youngest who could reliably answer questions about their behaviours, thoughts, and feelings. While 15-year-olds are at a different period in their lives, they are also at a point where "nearly all" members of their cohorts are still in formal schooling. Also, they are the same age as adolescents assessed in PISA, providing an opportunity for cross-study comparability. Defining the target population by age instead of by grade provides an opportunity to compare results across countries and economies.

For each sampled student, parents or legal guardians were asked to participate in the survey by filling out a contextual questionnaire and reporting on their children's social and emotional skills.

For each sampled student, the teacher that knows the student best or with whom the student has spent the most time was selected. These teachers were asked to fill out the teacher contextual questionnaire as well as to report on the social and emotional skills for each of the assigned students.

For each sampled school, school principals were asked to fill out the contextual questionnaire for school principals.

Participating cities

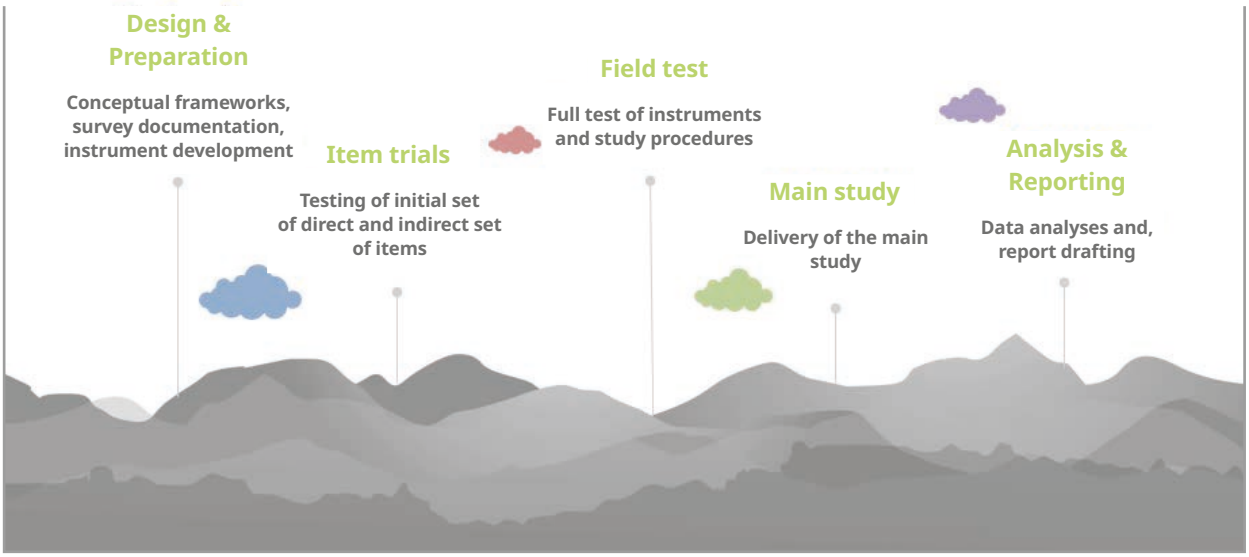
The following 10 cities from 9 countries participated in the first round of the survey:

- Bogotá, Colombia
- Daegu, South Korea
- Helsinki, Finland
- Houston, Texas, United States
- Istanbul, Turkey
- Manizales, Colombia
- Moscow, Russian Federation
- Ottawa, Ontario, Canada
- Sintra, Portugal
- Suzhou, People's Republic of China

Study timeline

Initial preparations for the survey started at the end of 2016 with instrument development survey preparation work as well as the piloting of the instruments being conducted throughout 2017 and 2018. The study was administered in October and November 2019.

Figure B.1.3. Study timeline



How is this report structured?

Apart from this present chapter, which provides an overview of the survey and what it assesses, the following chapters develop the survey's findings in more detail.

- **Chapter 1: The socio-demographic distribution of social and emotional skills** presents an overview of the distribution of social and emotional skills among students in the different cities that participated in the study. In particular, the chapter examines differences in social and emotional skills across students' socio-demographic characteristics such as age, gender and socio-economic status.
- **Chapter 2: Academic success, and education and career aspirations** examines how different social and emotional skills relate to students' school achievement, focusing on their school grades in reading, mathematics and the arts, as well as to their educational and occupational expectations
- **Chapter 3: Students' psychological well-being** describes student psychological well-being in the different cities that participated in the study and analyses how social and emotional skills are associated with different aspects of student psychological well-being.
- **Chapter 4: Students' creativity and curiosity** analyses how students' creativity and curiosity relate to other social and emotional skills, students' background, their behaviours and outcomes. It also summarises and interprets these relationships.
- **Chapter 5: Bullying and social interactions in school** examines three measures of social relations in school: students' sense of belonging at school, their exposure to bullying and their relationship with teachers. These measures are discussed and related to student demographics, and social and emotional skills.
- Annexes A and B allow readers to explore findings that could not be included in the main text in more detail. It is available through OECD iLibrary and the Survey on Social and Emotional Skills' website http://www.oecd.org/education/ceri/social-emotional-skills-study/.

Where can you find the results?

The results are available on the survey's website http://www.oecd.org/education/ceri/social-emotional-skills-study/. Here, you will find links to the public use dataset and the technical report. In addition, this publication is available at OECD iLibrary along with all other OECD publications.

References

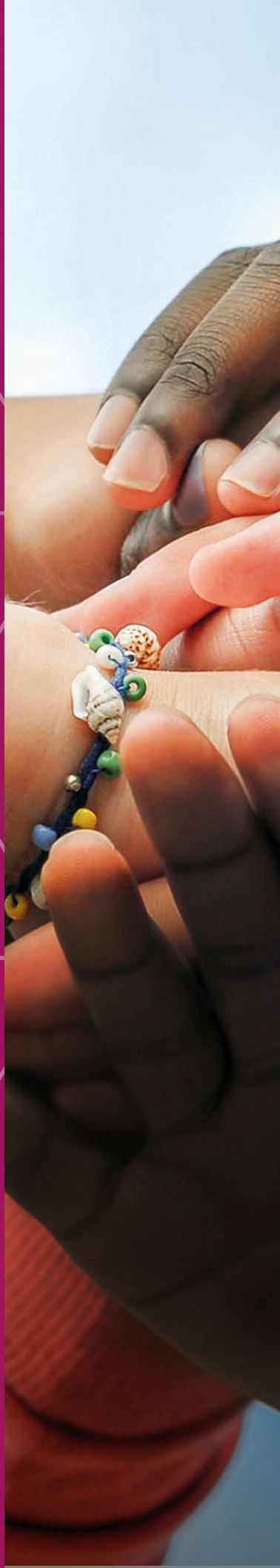
Kankaraš, M. and J. Suarez-Alvarez (2019), Assessment framework of the OECD Study on Social and Emotional Skills, https://doi.org/10.1787/5007adef-en [1]

OECD (2021), OECD Survey on Social and Emotional Skills: Technical Report, OECD Publishing, Paris, https://www.oecd.org/education/ceri/social-emotional-skills-study/sses-technical-report.pdf [2]

01

THE SOCIO-DEMOGRAPHIC DISTRIBUTION OF SOCIAL AND EMOTIONAL SKILLS

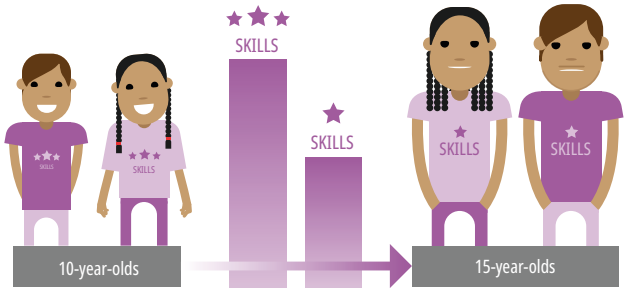
This chapter presents an overview of the socio-demographic distribution of social and emotional skills among the students of cities participating in the Survey on Social and Emotional Skills. The chapter examines differences in social and emotional skills between students, based on characteristics such as age, gender, socio-economic status and migration background. It also sheds light on the extent to which school factors are related to social and emotional skills.



WHAT THE DATA TELL US

Age, gender, socio-economic status and migration background matter when it comes to students' social and emotional skills.

Young people's social and emotional skills drop as they enter adolescence.



Fifteen-year-olds, regardless of their gender or socio-economic background, reported lower skills than 10-year-olds – this decline is larger for girls than for boys in most skills.

Girls reported greater responsibility, empathy and co-operation with others than boys.

Boys reported more emotional regulation, sociableness, and higher energy levels than girls.

On average, socio-economically advantaged students

reported higher social and emotional skills than their socio-economically disadvantaged peers in all cities participating in the survey.

How do social and emotional skills differ by students' characteristics?

Equity in education is a central aspect of the Survey on Social and Emotional Skills (SSES) and a major concern of countries worldwide. SSES starts from the premise that there are no differences in the capacity to learn across groups defined by race, ethnicity, or gender. The United Nations Sustainable Development Goals (SDGs) Target 4.7 advocate "ensuring that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development". In this context, social and emotional skills such as co-operation, empathy, and tolerance are key for citizens and societies to achieve these goals and secure the basis for functioning democracies. However, the current landscape suggests that there is still a long way before achieving these goals. This chapter provides a better understanding of how social and emotional skills differ across age and gender, socio-economic status and migration background. In other words, the chapter seeks to identify the groups that may be at particular psychosocial risk so as to inform policy and design measures aimed at equitable and sustainable skill distribution.

Age

SSES builds on the contemporary knowledge of social and emotional skills as characteristics and abilities that are malleable and change with biological and psychological maturation, environmental influences, individual effort and important life events (Specht et al., 2014[1]; Kankaraš and Suarez-Alvarez, 2019[2]; OECD, 2015[3]; Roberts, Walton and Viechtbauer, 2006[4]). Transitions from childhood to adolescence are particularly sensitive to these changes, creating momentum for families and educators to influence and support student development. This section examines the relationship between students' age, and social and emotional skills by comparing data collected from two cohorts of students in 2019, of 10 and 15 years of age (see Box 1.1).

SSES data indicates that 15-year-olds in all participating cities exhibited lower social and emotional skills than 10-year-olds (Figure 1.1). The differences are particularly pronounced when it comes to optimism, trust, energy and sociability but are smaller for empathy. Tolerance and assertiveness are the only two skills that are reportedly higher among 15-year-olds than 10-year-olds.

The similarity in age gaps across cities for many but not all of the social and emotional skills is remarkable (Figure 1.2). Fifteen-year-old students reported lower skills than 10-year-old students on most of the skills in almost all cities. For example, younger students reported higher levels of responsibility, persistence and self-control in almost all cities. However, the small average differences for empathy, tolerance, and assertiveness observed in Figure 1.1 mask significant heterogeneity across cities. For these three skills, there are substantial differences between the younger and older students across cities. For example, 15-year-old students reported being considerably more tolerant and assertive than 10-year-old students in most cities but considerably less tolerant and assertive in Daegu (Korea) and Suzhou (China). In the case of empathy, the small average overall difference in favour of younger students is mostly driven by a large age gap in Suzhou (China) where younger students reported higher levels of empathy than older students. In most other cities the age gap is reversed as older students reported being more empathetic than younger students.

SSES findings indicating a fall in social and emotional skill levels from 10 to 15 years of age align with longitudinal data that shows that the transition into adolescence can be characterised by temporary dips and swings in social and emotional skills (Soto, 2016[5]; McCrae et al., 2002[6]). During these critical transition years into adulthood when children undergo considerable biological, psychological and social change, it is not uncommon to observe large and negative changes in reported social and emotional skills (Soto et al., 2011[7]). Specifically, agreeableness, conscientiousness and openness to experience are found to decline from late childhood into early adolescence, and then increase rapidly from late adolescence into early adulthood. Emotional stability also appears to decline in adolescence before recovering later in life (Roberts, Walton and Viechtbauer, 2006[4]). By providing an international large-scale assessment perspective, SSES results confirm the existing hypotheses in literature and provide insight into the generalisability of such results.

Box 1.1.
Interpretation of SSES findings

The SSES assessment, like all assessments, is susceptible to several possible measurement errors. Despite the extensive investments SSES makes in monitoring the process of translation, standardising the administration of the assessment, selecting questions and analysing the quality of the data, full comparability across jurisdictions and subpopulations cannot always be guaranteed. While self-reported questionnaires are a preferred method for measuring psychological traits, they can be affected by the respondents' interpretation of the questionnaire item:

- Due to the psychological nature of the constructs, students implicitly compare themselves to a local norm (e.g. students in their same class or school) and, as a result, between-school differences tend to disappear. This is relevant from an intervention and child development perspective because students typically use their immediate learning environment as a reference point to assess their competencies and develop their skills through scaffolding (e.g. zone of proximal development). But, at the same time, it may pose as a methodological limitation (known as reference-group bias) for school comparisons or measuring change over time and evaluating programmes (Duckworth and Yeager, 2015[8]; Grützmacher, Vieluf and Hartig, 2021[9]). To evaluate the effect of social and emotional learning programmes through school comparisons or pre-post comparisons, performance tasks may be needed. Although SSES was designed to mitigate such issues (e.g. through anchoring vignettes), part of this effect may still remain (see full description in Annex A1).

- SSES examines the relationship between students' age and social and emotional skills by comparing data collected from two cohorts of students in 2019, of 10 and 15 years of age. In the absence of longitudinal data, it cannot be ascertained the extent to which differences observed between age groups represent age or cohort effects. As there were no specific reasons to assume cohort effects and the findings were consistent across the participating cities, the former is assumed. Under this assumption, both cohorts of students that took part in the SSES survey are identical in all respects apart from their age. When available, SSES provides evidence from longitudinal studies to support its findings.

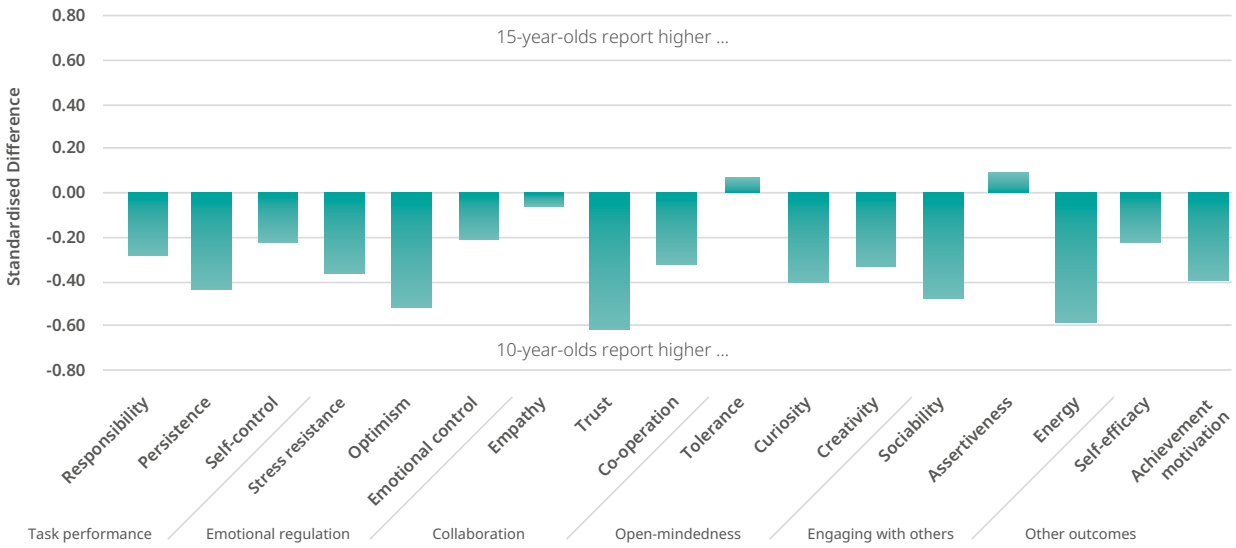
- Age cohort differences could be partly explained by children's inflated self-views or the higher uncertainty of the younger cohort measures, which typically have greater measurement error (Soto et al., 2011[7]). SSES is not a high-stakes assessment for students and, therefore, not particularly prone to social desirability bias (the tendency to respond in a manner that is more acceptable in one's own social and cultural context). Yet, how children understand a question may well evolve with age, particularly for young respondents; similarly, adolescents may be less prone than younger children to response-style biases such as social desirability or acquiescence (tendency to agree with a statement regardless of the content).

- These methodological limitations are improved in SSES using several strategies. First, by assessing and removing response-style bias (i.e. acquiescence) while preserving the substantive content of self-report in both cohorts (see full description in Annex A1). Second, by triangulating self-reports with teacher- and parent-reported measures (see Chapter 4). Therefore, if differences across age cohort after removing acquiescence bias can be confirmed by triangulating self-reports with teacher- and parent-reported measures, the differences may not simply reflect changes in response-style bias or student's self-image associated with adolescence. In doing so, it is assumed that teachers' and parents' possible response biases and their level of information about the child's behaviours, thoughts and feelings targeted by the questionnaire do not vary with the child's age in ways that would confound the comparison (Kankaraš, Feron and Renbarger, 2019[10]).

These biases can operate differently in different cultural contexts, thus limiting the comparability of responses across jurisdictions (Van de Vijver et al., 2019[11]; Lee, 2020[12]). In order to minimise the risk of misleading interpretations, a number of reliability and invariance analyses of the SSES indices used in this report have been carried out (see Annexes A1 and A2 for more details), providing readers with an indication of how reliable comparisons across jurisdictions are.

Figure 1.1. Age differences in social and emotional skills

Differences (15-year-olds – 10-year-olds) in social and emotional skills (international average)



Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average. The figure reports standardised differences, whereby the raw scale points have been divided by the (city-specific) standard deviation. All differences are significant in at least five cities.*

Source: *OECD, SSES 2019 Database, Table A1.3.*

StatLink https://doi.org/10.1787/888934273373

Gender

SSES data show that the average 15-year-old student typically exhibited lower social and emotional skills than his/her younger counterpart. This finding is consistent across all participating cities in SSES. Yet, do boys and girls also mirror that trend? Do girls and boys of the same age exhibit similar social and emotional skills?

SSES data highlight stark gender differences among students of the same age. Boys typically reported higher levels of skills in the domain of emotional regulation such as stress resistance, optimism and emotional control as well as higher skills in the domain of engaging with others such as sociability, assertiveness and energy. Gender differences in these skills are larger for older students than for younger students. Girls in both age cohorts, on the other hand, typically reported higher responsibility, empathy, co-operation, tolerance and achievement motivation. Younger girls also reported higher self-control, self-efficacy, and slightly higher persistence and curiosity. Although the gender difference for persistence is small, younger girls typically reported higher skills in the domain of task performance (Figure 1.3).

Figure 1.2. Age differences in social and emotional skills in different cities

Differences (15-year-olds – 10-year-olds) in social and emotional skills, by city

Note: *Data for Sintra (Portugal) did not reach student response rate standards. The figure reports standardised differences, whereby the raw scale points have been divided by the (city-specific) standard deviation. Significant differences are coloured, non-significant differences are outlined.*

Source: *OECD, SSES 2019 Database, Table A1.3.*

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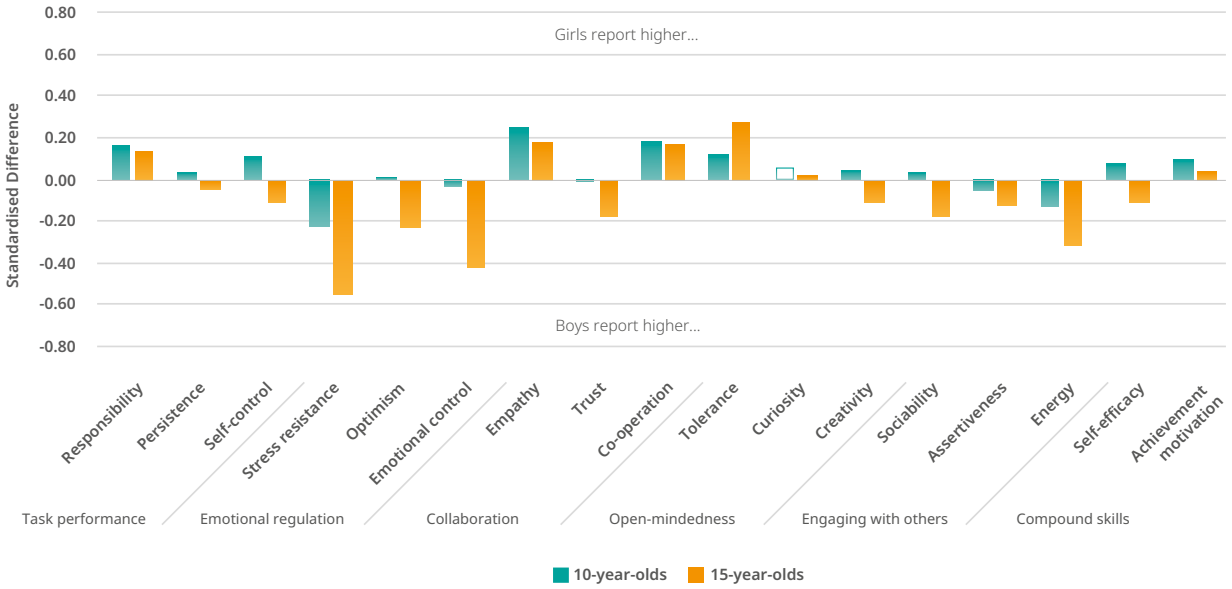
Figure 1.3. Gender differences in social and emotional skills

Standardised gender differences (e.g. 15-year-old girls – 15-year-old boys) (international average)



Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average. The figure reports standardised differences, whereby the raw scale points have been divided by the (city-specific) standard deviation. Coloured bars represent significant differences in at least five cities, bars that are only outlined represent significant differences in less than five cities.*

Source: *OECD, SSES 2019 Database, Tables A1.4 and A1.5.*

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Similar to the age gaps, the consistency across cities in the gender gaps stands out (Figure 1.4 and Figure 1.5). Within each age cohort, only relatively small differences exist across cities. For example, among 15-year-olds, boys reported higher stress resistance, optimism and emotional control in all cities while girls reported higher responsibility in almost all cities. There appear to be some differences in the size of the gender gaps across skills. This was already visible in Figure 1.3. For example, among older students, larger differences appear between boys' and girls' stress resistance compared to their optimism.

Figure 1.5 indicates that among younger students, the gender differences in Daegu (Korea) and Suzhou (China) compared to other cities are small. However, the gender gaps for older students in these two cities are far more prominent. This is especially the case for curiosity and creativity among older students. Among 15-year-olds, boys in Daegu (Korea) and Suzhou (China) are more creative and more curious about learning than girls as compared to the boys in other cities.

So far, the results on gender differences have presented the differences in social and emotional skills between girls and boys in the same age cohort; for example, the difference between 15-year-old girls and boys. The following results present differences in social and emotional skills across age cohorts for the same gender: for example, the difference between 15-year-old girls and 10-year-old girls. With the assumption that the two age cohorts in SSES are similar in all respects except for their age, we investigated how boys' and girls' assessment of their social and emotional skills changes over time and how this contributes to the gender gap.

SSES data show that 15-year-olds, regardless of whether they were boys or girls, exhibited lower social and emotional skills on average than 10-year-olds. Most of the gender differences in favour of girls already exist at age 10 whereas gender differences in favour of boys tend to arise or grow between ages 10 and 15 (Figure 1.3). For example, in the domain of emotional regulation (stress resistance, optimism, emotional control) and in the domain of engaging with others (sociability, energy, assertiveness), boys indicated higher skills at age 15 as compared to age 10 where gender differences in these skills were either quite small or absent altogether. On the contrary, the gender differences where girls indicated higher skills at age 15 were often already present at age 10. Responsibility, empathy, co-operation, tolerance and achievement motivation are skills that already exhibit gender differences at age 10 and these differences remain at age 15.

This finding goes hand-in-hand with the fact that the decline in skills as students age is larger for girls than for boys for most skills (Figure 1.6). There is an exception for tolerance and assertiveness as students reported being more tolerant and assertive as they grew older. In a few instances, gender gaps can be in favour of girls at age 10 and can change in favour of boys at age 15. This is the case for persistence, self-control and self-efficacy as 10-year-old girls reported higher persistence, self-control and self-efficacy whereas 15-year-old girls reported lower persistence, self-control and self-efficacy compared to boys.

Previous research has traditionally studied gender differences at the domain level, and the results are broadly consistent with those found in SSES. For example, longitudinal data from students aged 12 to 18 showed that neuroticism (low emotional regulation) increased in girls (McCrae et al., 2002[6]). Additionally, gender differences at the skill level may not always mirror the differences at the domain level. For example, in the openness (open-mindedness) domain, where gender differences are not always evident, the gender differences show up more clearly at the skill level (Weisberg, DeYoung and Hirsh, 2011[13]). These findings in existing literature highlight the importance of analysing social and emotional learning at the skill level.

Figure 1.4. Gender differences in social and emotional skills in different cities, 15-year-olds

Gender differences in social and emotional skills, by city

Note: *Data for Sintra (Portugal) did not reach student response rate standards. The figure reports standardised differences, whereby the raw scale points have been divided by the (city-specific) standard deviation. Significant differences are coloured, non-significant differences are outlined.*

Source: *OECD, SSES 2019 Database, Table A1.4.*

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Figure 1.5. Gender differences in social and emotional skills in different cities, 10-year-olds

Gender differences in social and emotional skills, by city

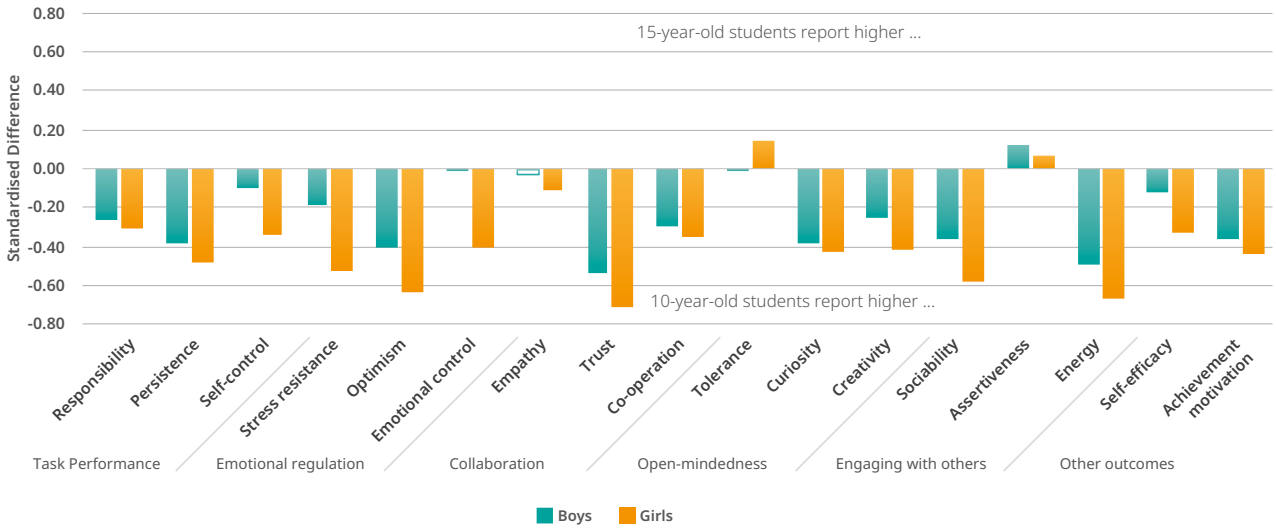
Note: *Data for Sintra (Portugal) did not reach student response rate standards. The figure reports standardised differences, whereby the raw scale points have been divided by the (city-specific) standard deviation. Significant differences are coloured, non-significant differences are outlined.*

Source: *OECD, SSES 2019 Database, Table A1.5.*

StatLink https://doi.org/10.1787/888934273449

Figure 1.6. Differences in social and emotional skills across age cohorts for the same gender

Standardised differences (e.g. 15-year-old girls – 10-year-old girls) (international average)



Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average. The figure reports standardised differences, whereby the raw scale points have been divided by the (city-specific) standard deviation. Coloured bars represent significant differences in at least five cities, bars that are only outlined represent significant differences in less than five cities.*

Source: *OECD, SSES 2019 Database, Tables A1.6 and A1.7.*

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Family background

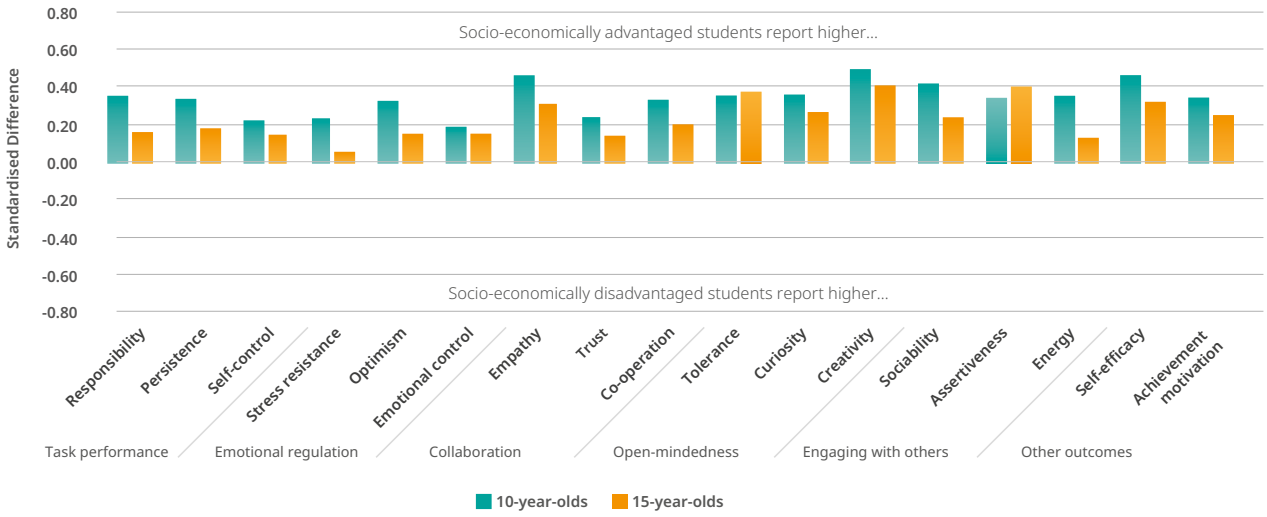
Examining the relationship between students' socio-economic status [1] and social and emotional skills is important for several reasons. First, it enhances our understanding of the sources of differences in social and emotional skills. Second, it may be helpful to understand the importance of the role played by the family background to determine the potential of school interventions in developing students' social and emotional skills.

For both 15-year-old and 10-year-old students, having a high socio-economic status is associated with higher skills for all social and emotional skills measured in the survey (Figure 1.7). The difference in skills between students with a low and high socio-economic status is especially pronounced in skills related to the domain of open-mindedness such as tolerance, curiosity, and creativity as well as empathy, assertiveness and self-efficacy. The differences in skills between students with a low and high socio-economic status are smallest for stress resistance.

Differences in social and emotional skills related to students' socio-economic status are smaller for 15-year-olds than for 10-year-olds. The exceptions are tolerance and assertiveness for which the socio-economic gap present at age 10 appears to grow even slightly larger by age 15. Furthermore, differences in social and emotional skills according to students' socio-economic status are more pronounced than those related to gender, especially among younger students.

Figure 1.7. Socio-economic status differences in social and emotional skills, by age

Standardised differences (socio-economically advantaged – socio-economically disadvantaged) (international average)



Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average. Socio-economically advantaged students are those in the top quarter of the city-specific distribution of the index of socio-economic status. Socio-economically disadvantaged students are in the bottom quarter of the city-specific distribution of the index of socio-economic status. Coloured bars represent significant differences in at least five cities, bars that are only outlined represent significant differences in fewer than five cities.*

Source: *OECD, SSES 2019 Database, Tables A1.8 and A1.9.*

StatLink https://doi.org/10.1787/888934273487

The differences in students' social and emotional skills based on their socio-economic status are relatively similar across cities (Figure 1.8 and Figure 1.9). Istanbul (Turkey) stands out as the city where differences in social and emotional skills related to students' socio-economic status often appear smaller than in other cities, especially among 15-year-old students. Among younger students, differences in social and emotional skills related to students' socio-economic status are more pronounced in Daegu (Korea) and Suzhou (China) than elsewhere although differences in the magnitude of the gaps are small. The only time students with low socio-economic status indicated a higher skill compared to students with high socio-economic status was for stress resistance in Helsinki (Finland) and co-operation in Istanbul (Turkey) among 15-year-old students. In the other few cases where the gap is in favour of students of low socio-economic status, the differences were not statistically significant (Table A1.8 and Table A1.9).

Figure 1.8. Socio-economic status differences in social and emotional skills in different cities, 15-year-olds

Standardised differences (socio-economically advantaged – socio-economically disadvantaged)

Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average. Socio-economically advantaged students are those in the top quarter of the city-specific distribution of the index of socio-economic status. Socio-economically disadvantaged students are in the bottom quarter of the city-specific distribution of the index of socio-economic status. Coloured bars represent significant differences in at least five cities, bars that are only outlined represent significant differences in fewer than five cities.*

Source: *OECD, SSES 2019 Database, Table A1.8.*

StatLink https://doi.org/10.1787/888934273506

Figure 1.9. Socio-economic status differences in social and emotional skills in different cities, 10-year-olds

Standardised differences (socio-economically advantaged – socio-economically disadvantaged)

Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average. Socio-economically advantaged students are those in the top quarter of the city-specific distribution of the index of socio-economic status. Socio-economically disadvantaged students are in the bottom quarter of the city-specific distribution of the index of socio-economic status. Coloured bars represent significant differences in at least five cities, bars that are only outlined represent significant differences in fewer than five cities.*

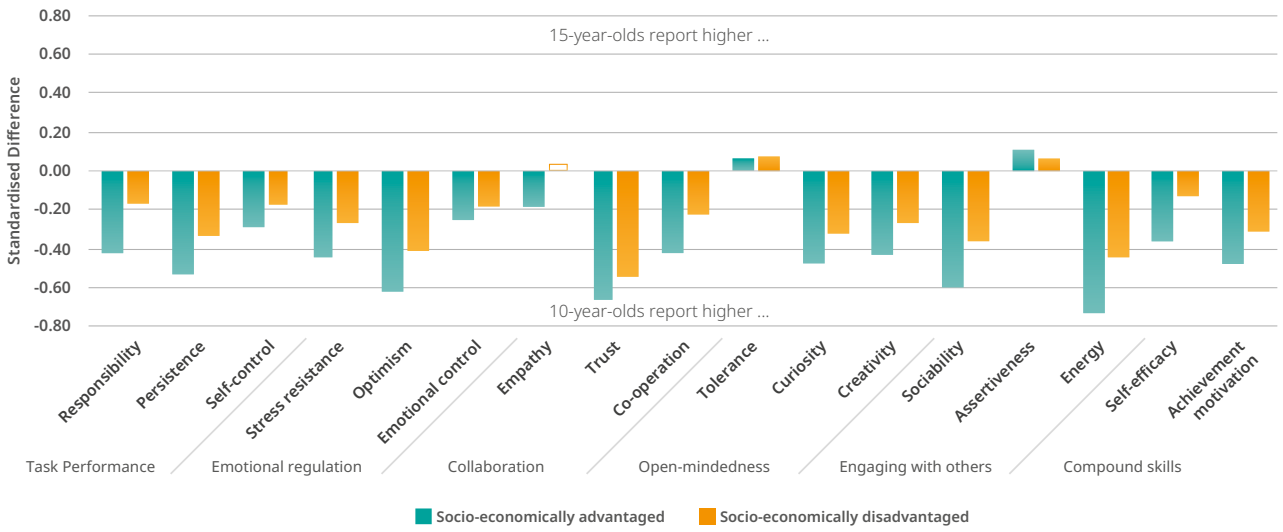
Source: *OECD, SSES 2019 Database, Table A1.9.*

StatLink https://doi.org/10.1787/888934273525

Similar to gender, differences in social and emotional skills related to students' socio-economic status appear to decrease slightly as students age. Figure 1.7 showed that students with a high socio-economic status tended to report higher social and emotional skills compared to students with a low socio-economic status. Since the decline in students' social and emotional skills from age 10 to age 15 is generally slightly larger for students who have a high socio-economic status (Figure 1.10), the reported difference in social and emotional skills related to students' socio-economic status becomes smaller as students age. For most social and emotional skills, the difference across age cohorts for both students with a high and a low socio-economic status is fairly consistent across cities (Table A1.10 and Table A1.11).

Figure 1.10. Differences in social and emotional skills across age cohorts for the same socio-economic status

Standardised differences (e.g.15-year-olds socio-economically advantaged – 10-year-olds socio-economically advantaged) (international average)



Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average. The figure reports standardised differences, whereby the raw scale points have been divided by the (city-specific) standard deviation. Coloured bars represent significant differences in at least five cities, bars that are only outlined represent significant differences in fewer than five cities.*

Source: *OECD, SSES 2019 Database, Table A1.10 and A1.11.*

StatLink https://doi.org/10.1787/888934273544

Understanding the relationship between students' migrant status [2], and social and emotional skills could potentially be helpful towards fostering inclusiveness in schools and education systems. Interestingly, average differences in social and emotional skills between native-born students and students born abroad (or whose parents are born abroad) are very small (Tables A1.12 and A1.13). At age 15, students with a migration background reported being more tolerant but less empathetic than native-born students. It is worth noting that tolerance is measured by asking students questions such as whether they like hearing or learning from people coming from other countries or cultures so this difference may signal a higher interest from foreign-born students in cultures different from their country of origin. At age 10, native-born students tended to report marginally - yet significantly - higher optimism, empathy, trust, curiosity, creativity, sociability, energy, and self-efficacy compared to foreign-born students.

The picture becomes more nuanced when looking at different cities. The lack of differences in social and emotional skills related to students' migration background in the international average is partly the result of contradictory results at the city level. Across cities, no clear pattern of social and emotional skills based on students' migration background emerges. Yet, 15-year-olds with an immigrant background in Helsinki (Finland), Houston (United States), Ottawa (Canada), and Sintra (Portugal) reported being more tolerant than their native-born counterparts (Table A1.12 and A1.13).

To what extent are school factors related to social and emotional skills?

Even as early as primary education, differences among schools can emerge in the composition of the student body. In many education systems, for instance, this can be driven by residential segregation if rules are in place so that schools enrol children living in a particular catchment area. In secondary education, segregation can arise for other reasons; for instance, because the education system tracks students in different types of schools.

Whatever the underlying reason, it is common to observe large differences in student characteristics and education outcomes when comparing schools within countries. Some schools will typically attract high-performing students, have higher resources, and produce better outcomes in terms of students' performance. Across the OECD countries that participated in PISA 2018, for instance, 29% of the overall variation in reading performance of 15-year-old students and 24% of the overall variation in the index of socio-economic status can be attributed to differences between schools within a country (OECD, 2020[14]). Recent research has also showed that little progress has been made in reducing students' segregation between schools related to socio-economic status (Gutiérrez, Jerrim and Torres, 2020[15]).

Data from SSES show evidence of students' sorting into primary and lower-secondary schools on the basis of their socio-economic background. On average across the cities participating in the survey, about 25% of the overall variation in the index of socio-economic status in both cohorts can be accounted for by between-school differences. When it comes to social and emotional skills, however, the share of overall variance that can be attributed to between-school differences is much smaller, averaging between 1% and 4% (Table A1.14-Table A1.17).

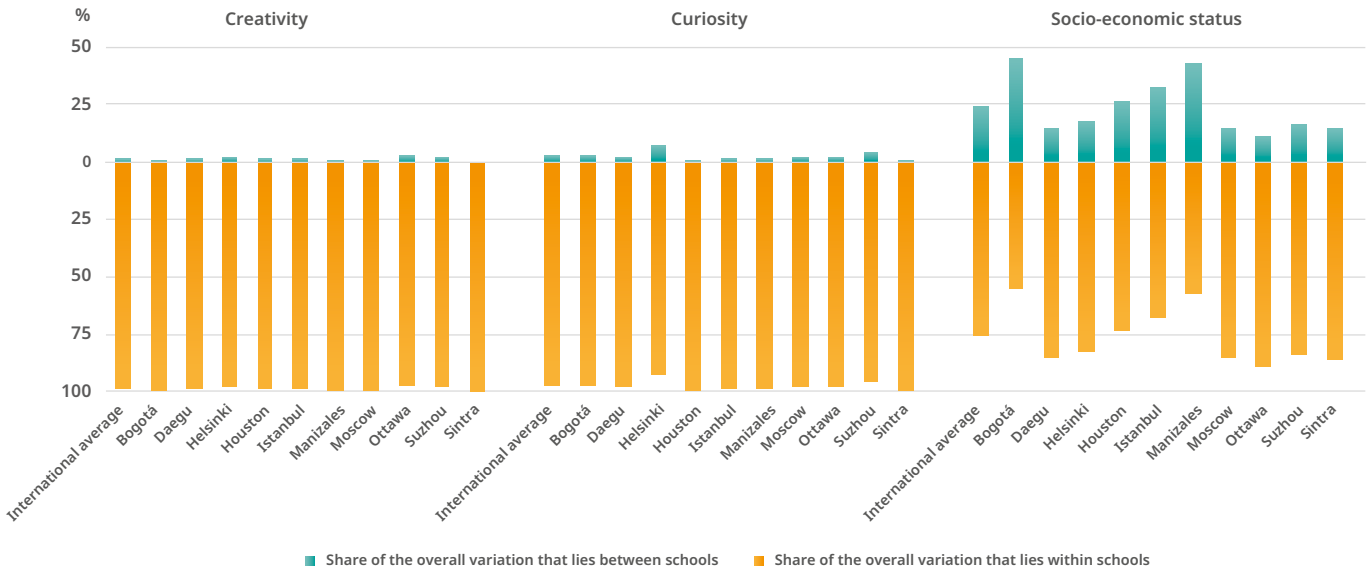
For instance, across all cities, student reports of creativity and curiosity varied greatly among students attending the same school but average ratings of creativity and curiosity showed little, if any, variation between schools (Figure 1.11). At age 15, across all cities, the overall variation in creativity scores between schools was less than 3% and, in many cases, the true proportion might even have been 0. Indeed, the uncertainty associated with the use of samples of students and schools means that the estimated share of between-school variation (also called the intra-class correlation) is often not significantly different from 0. Similarly, most, if not all the variation in students' ratings of their curiosity was observed among students from the same school; the between-school variation was significant and larger than 3% only in Suzhou (China) (5%) and Helsinki (Finland) (7%).

The small between-school variation could mean that there are few differences, in general, between schools from the same city; if all schools look alike in terms of curriculum or student composition, for example, then one would expect little variation between schools in student outcomes. However, in most cities, significant differences were found when looking at the socio-economic composition of students attending the school. Between-school differences in socio-economic status were modest in Daegu (Korea), Ottawa (Canada), Moscow (Russia), Helsinki (Finland) and Suzhou (China), where the overall variation between schools in students' socio-economic status was between 10% and 20%. These differences were large in Istanbul (Turkey), and Manizales and Bogotá (Colombia), with the overall variation between schools in students' socio-economic status being more than 30%, perhaps reflecting residential segregation (Figure 1.11).

In direct assessments of student reading or mathematics skills such as PISA, the level of variation in socio-economic status between schools tends to be similar to the level of variation in student performance (OECD, 2020[14]). This difference between reading or mathematics skills (as reported in PISA), and social and emotional skills suggests that students' ratings of creativity and curiosity (and of other skills) are different in nature from task-based assessments of curricular skills. In fact, PISA data show that while mathematics skills do vary significantly between schools (and consistent associations can therefore be established with school and teacher characteristics), mathematics self-concept (how good students think they are in mathematics) and intrinsic motivation to learn mathematics (which is related to curiosity) show very little variation between schools; in 2012, the overall variation between schools in mathematics self-concept and intrinsic motivation to learn mathematics was only 3% and 5%, respectively, on average across OECD countries (OECD, 2013[16]).

Figure 1.11. Index of between-school variation in creativity, curiosity and socio-economic status

Percentage of variation that lies between schools (intra-class correlation), based on student self-reports (15-year-olds)



Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average.*
Source: *OECD, SSES 2019 Database, Table A1.16.*
StatLink https://doi.org/10.1787/888934273563

What do the findings in this chapter mean for parents, educators and policy makers?

The interconnected development of cognitive abilities, and social and emotional skills starts during early infancy and continues throughout one's lifespan. However, the development of social and emotional skills in students does not follow a steady upward trend. Transitions from childhood to adolescence are accompanied by temporary dips and swings in social and emotional skills. An expected yet still striking result is that all 15-year-old students, irrespective of their gender and socio-economic background, reported lower social and emotional skills on average than their 10-year-old counterparts. Parent and educator ratings confirmed the dip in social and emotional skills as students grow older (Chapter 4). During these critical years in which children undergo considerable biological, psychological and social changes, and transition into adulthood, it is not uncommon to observe large and negative changes in reported social and emotional skills (Soto et al., 2011[7]). SSES findings are generally aligned with longitudinal data that show that agreeableness, conscientiousness and openness to experience often decline from late childhood into early adolescence, and then increase rapidly from late adolescence into early adulthood (Roberts, Walton and Viechtbauer, 2006[4]). Emotional stability also appears to decline in adolescence before recovering later in life.

SSES findings raise the question of the extent to which parents, schools and education systems are prepared to support these transitions. Why is the decline for most of these skills as students age more pronounced for girls than boys? Why do some skills like tolerance and assertiveness improve while others like optimism, trust, and energy decline? On the one hand, some teachers and schools may simply be more effective at supporting the development of these skills and not perpetuating gender stereotypes in the classroom. Tolerance and assertiveness are the only two skills that are reportedly higher among 15-year-olds than 10-year-olds. This might be partly related to a higher awareness of the importance of including class instruction on citizenship and citizens' rights (Schulz et al., 2018[17]). Exposure to diversity might also play a role. Fifteen-year-olds with an immigrant background in Helsinki (Finland), Houston (United States), Ottawa (Canada), and Sintra (Portugal) reported being more tolerant than their native-born counterparts. On the other hand, extended time in school and being exposed to more rigid learning environments may inhibit student's abilities to build and practice self-regulation skills such as emotional control and persistence, jeopardising relationships between students and teachers (Bailey et al., 2019[18]; Duckworth, Quinn and Tsukayama, 2012[19]).

Another important finding of SSES is that students' social and emotional skills differ by socio-economic background and gender. SSES data shows that girls reported higher levels of skills related to task performance like responsibility and achievement motivation. They also reported higher levels of skills that are important in an interconnected world, like empathy, co-operation, and tolerance. In contrast, boys exhibited higher emotional regulation skills like stress resistance, optimism and emotional control as well as important social skills like assertiveness and energy. Socio-economically advantaged students reported higher social and emotional skills than their socio-economically disadvantaged peers in every skill and in all cities participating in the survey.

It is possible that the socio-economic differences are due to parents with higher socio-economic status imparting the importance of social and emotional skills to their children for achieving success in life. Potentially, parents with a higher socio-economic status could also make greater investments in their children's social and emotional skills. But also, students with a less favourable life might have had more challenges to overcome and fewer opportunities and less support to develop these skills. Dimensions of a child's environment such as parenting style, quantity and quality of the time parents spend with their children, and family structure differ based on socio-economic status. These dimensions are potential channels through which parents' socio-economic status can affect a child's social and emotional skills (Deckers et al., 2015[20]). Yet, it might also be the case that the effect of socio-economic status on students' social and emotional skills is mediated by what students learn in the school community. It might be the case that students with higher socio-economic status have better opportunities to develop social and emotional skills through extracurricular activities than their less advantaged peers (see Chapter 4 for further information about how students' participation in sport and art activities are related to creativity and curiosity).

It is important to keep in mind that these findings are at the aggregate level. Therefore, individual trajectories might be different from those represented in these examples. Yet, the relationships between social and emotional skills and age, gender and socio-economic status are remarkably similar across cities. There is also little difference in students' social and emotional skills across different schools. The vast majority of differences are observed within the school and, probably within the same classroom. This might be partly because students use their close learning environment as a reference point to assess their competencies. For example, students in high-performing schools typically have lower academic self-concept compared to those with similar abilities who attend regular schools, which means that being a big fish in a small pond is good for one's academic self-concept (Trautwein et al., 2009[21]). This is relevant from an intervention and child development perspective because students typically use their immediate learning environment to develop their skills through scaffolding (also known as zone of proximal development). But this might be also related to schools not having a systematic approach to developing students' social and emotional skills.

One possible explanation is that classroom practices influence students' social and emotional skills but that they vary significantly among teachers within a school and even among teachers of different subjects within the same class. Results from the OECD Teaching and Learning International Study (TALIS) confirm that teachers' instructional practices (such as group work) and pedagogical beliefs show small between-school variations and mostly within-school variations (OECD, 2014[22]). Within each school, the students' average social and emotional skills seem very similar to those observed on average in the overall student population. A possible explanation for this finding is that the development of social and emotional skills is not systematically incorporated into the school curriculum to the extent that the development of cognitive skills such as reading and mathematics is. Therefore, the development of students' social and emotional skills is more random and might average out across schools.

In other words, factors that can foster or hamper the development of these skills may rely to a greater extent on particular teachers or optional activities than on a common framework across schools. This could also reflect why students from advantaged socio-economic backgrounds are better equipped. Their families often have more options to send their children to extracurricular activities. They may also more readily support school activities that have a pedagogy with a social and emotional skills component. The development of social and emotional skills should not, however, rely on economic resources or luck. All students should have the right to access quality education where the development of these skills is possible.

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Footnotes

[1] Students' socio-economic status is measured by an index that combines information about parents' education, occupation and home possessions. Students are classified as socio-economically advantaged if they are among the 25% socio-economically most advantaged students in their city, and socio-economically disadvantaged if they are among the 25% least advantaged.

[2] The index of migration background is created from information on the country of birth of the student and their parents. The index has two categories, one for native students (students who are born in the country of assessment and students who had at least one parent born in the country of assessment) and one for non-native students (students who are born abroad and/or parents who are born abroad).

02

ACADEMIC SUCCESS, AND EDUCATION AND CAREER ASPIRATIONS

This chapter examines how different social and emotional skills relate to students' school achievement, focusing on their school grades in reading, mathematics and the arts as well as educational and occupational expectations.

WHAT THE DATA TELL US

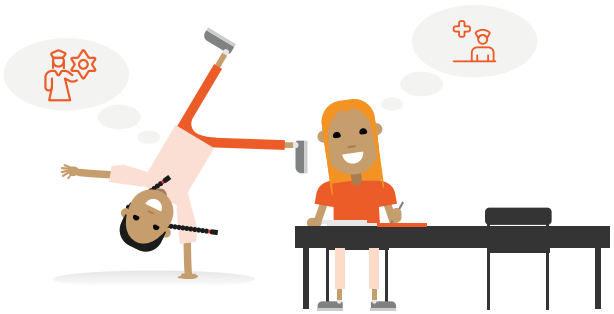
Students' social and emotional skills are strong predictors for how they perform in school.

Intellectual curiosity and persistence are strongly related to better school performance.

Among students with similar socio-economic backgrounds, differences in post-secondary education expectations

are related to social and emotional skills such as intellectual curiosity.

Social and emotional skills are linked to students' career aspirations.



Students who aspired to become health professionals, for instance, are more curious and co-operative. Students interested in working in the armed forces, the police or security are more energetic.

Older students' career expectations are more aligned to the job market than their younger counterparts.

15-year-olds

10-year-olds

How are students' social and emotional skills related to school grades?

Students' school achievement is one of the main drivers of success in life. It is associated with not only later educational attainment but important life outcomes like employment, earnings, health and well-being. However, having the same grades in school does not always lead to the same life outcomes. One potential reason as to why some students are more likely to succeed than others is that they also develop social and emotional skills that help them respond more ably to the demands of an increasingly volatile and uncertain 21st-century. Previous research shows that these skills have independent and incremental effects on academic outcomes, even after controlling for traditional predictors of those outcomes (Noftle and Robins, 2007[1]; Chamorro-Premuzic and Furnham, 2008[2]; Suárez-Álvarez, Fernández-Alonso and Muñiz, 2014[3]). Each of the social and emotional skills included in SSES is relevant in its own right but also for a wide range of outcomes (Kankaraš and Suarez-Alvarez, 2019[4]). This chapter provides a better understanding of the relationship between students' social and emotional skills and their school grades as well as their educational aspirations. It sheds light on the most suitable levers to enhance academic outcomes. This chapter examines which social and emotional skills are the most strongly associated with cognitive performance. In doing so, it responds to common education sector constraints where time and resources are often limited and curriculum overload is discouraged (OECD, 2020[5]).

SSES collected information on school grades in three subjects: reading, mathematics and the arts along with the results of a short cognitive ability test[1] administered to participating students. These grades were transformed on a scale from 1 to 50. As expected, grades in the different subjects are positively correlated. On average across cities and across age cohorts, the correlation between reading and math grades is 0.56, the correlation between reading and arts is 0.44, and the correlation between math and the arts is 0.39. This means that students who have high grades in reading are more likely to have high grades in math (as both grades share approximately one-third of variance). However, they are still distinctive enough that a given student can perform well in reading but not in math and vice versa. The cognitive ability test was also positively correlated with school grades (0.28 with reading, 0.34 with math, and 0.19 with arts). School grades[2] have certain advantages compared to standardised assessments. They are based on high-stakes evaluations and students know their own performance. They are also regularly used to determine academic success, and, as a result, are likely to affect economic and social outcomes in adulthood. However, unlike standardised assessments, grades are based on evaluations that are conducted differently by different teachers across schools and curricula. As such, caution should be exercised when comparing grades across schools, cities or age cohorts.

SSES data show that student's social and emotional skills are significant predictors of school grades across age cohorts and subjects (Figure 2.1 and Figure 2.2). In particular, being intellectually curious and persistent are the social and emotional skills most strongly related to school grades for both 10- and 15-year-olds in all three subjects. To a lesser extent, yet still significant, being more assertive and responsible are also positively related to better school grades. These findings emphasise the importance of dedication in pursuing predetermined goals even in the face of difficulties. But cultivating an intellectual curiosity for a diverse range of topics is also important, as is an eagerness to explore and learn new things. Persistence can be driven by external forces like parents' or teachers' expectations (see Chapter 3). External drivers can disappear or change over time but intellectual curiosity is a powerful intrinsic motivator.

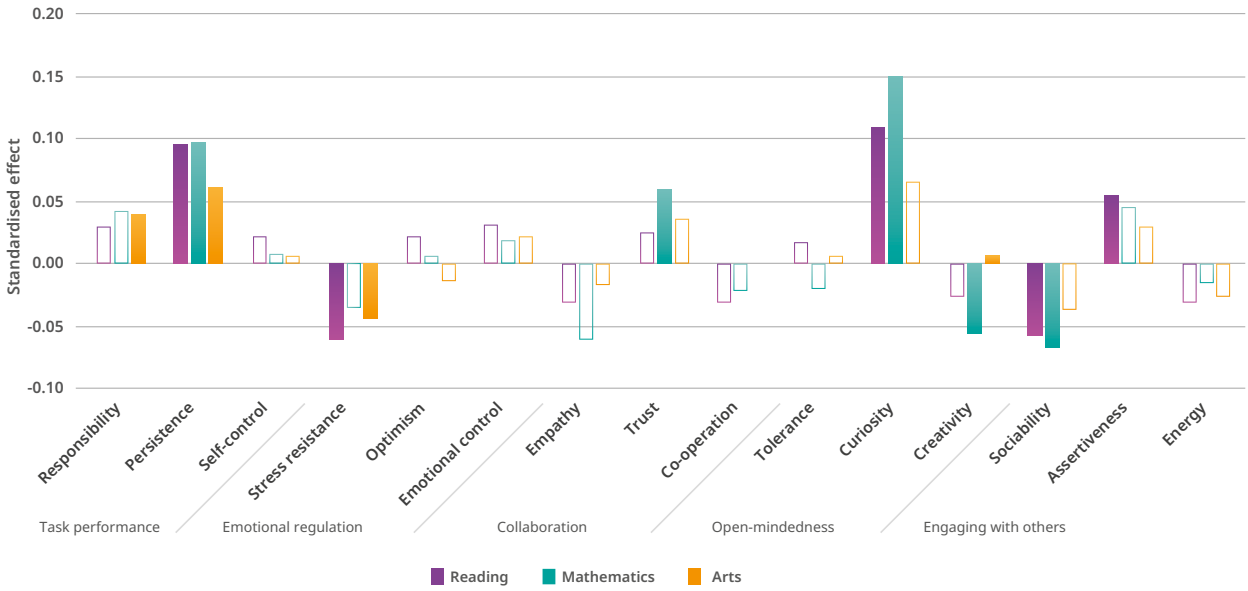
Fifteen-year-olds who reported being more stress-resistant and sociable have, on average, lower reading grades (and for those more sociable, lower math grades too). This does not mean that calmness in the face of adversity (a benefit of being stress-resistant) and seeking support from peers (a benefit of being sociable) is harmful to school grades. Rather, older students who typically have more autonomy than younger students may struggle in managing their social interactions, which could be detrimental to their schoolwork. Schoolwork towards the end of compulsory education can be more demanding but academic achievement in high school is made even more challenging by students' peer relationships which are often more complex and may involve students from more diverse backgrounds compared to primary education. This may require students to re-evaluate priorities and establish new social relationships. In fact, among the younger cohort, which is typically more supervised by parents and teachers, stress resistance and sociability are not related to school grades. In other words, younger students may have a less demanding school environment and are surrounded by adults that help them contain and channel their energy and desire to interact socially in ways that do not harm their school performance.

Fifteen-year-olds who reported being more creative have, on average, lower math grades. This is not observed, however, in reading or the arts for the younger cohort. These findings might partly derive from the fact that education systems often expect compliance from students with the potential consequence of driving out creative and divergent thinking as students grow older and stay longer in the education system (see Chapter 1 and Chapter 4 for a further discussion).

Although student's social and emotional skills differ by socio-economic background and gender (see Chapter 1), SSES data show that social and emotional skills are associated with school grades even after accounting for gender, socio-economic status, and scores in the cognitive ability test (Figure 2.1 and Figure 2.2). These results imply that students with the same socio-economic status (and gender) who have better social and emotional skills are more likely to obtain better grades. Therefore, despite socio-economic status and gender, students' social and emotional skills play a decisive role in school performance (Table A2.1-Table A2.6).

Figure 2.1. Average relationship between social and emotional skills and school performance of 15-year-old students

Coefficients of (standardised) grades in reading, mathematics and arts on (standardised) scores on social and emotional skills scales (international average)



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in international averages. The regressions are site-specific and control for gender, socio-economic status, and scores in the cognitive ability test, with the exception of Houston (United States), where the cognitive ability test was not administered. Ottawa (Canada) is excluded from the analysis on school grades as students' grades were not available. Coloured bars represent significant differences in at least five cities, bars that are only outlined represent significant differences in fewer than five cities.*

Source: *OECD, SSES 2019 database, Tables A2.1, A2.3 and A2.5.*

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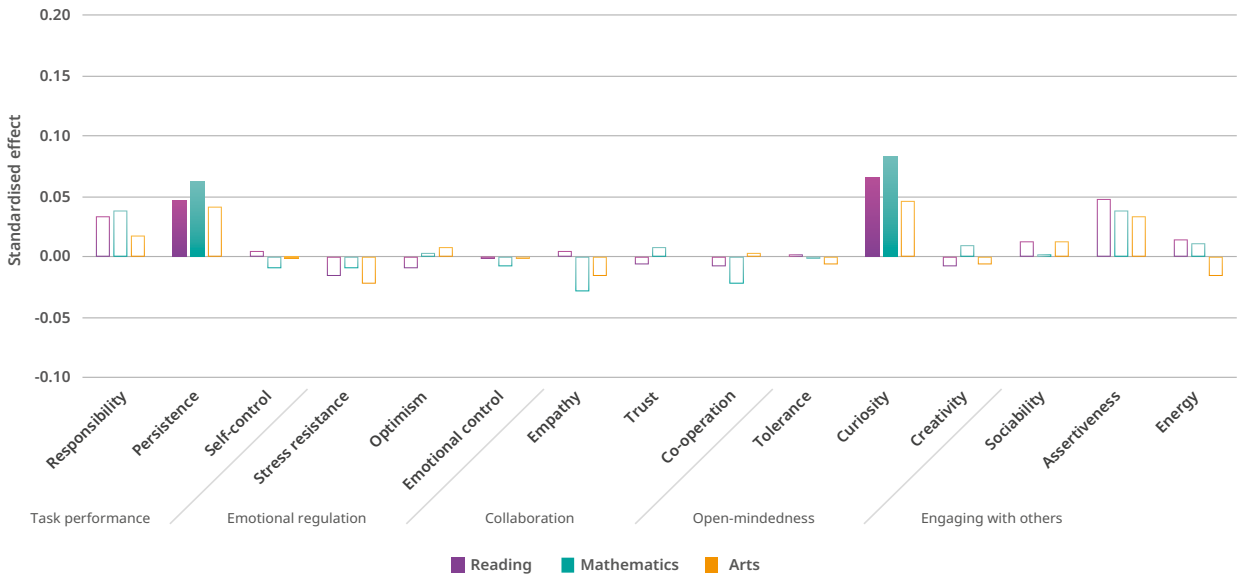
Figure 2.2. Average relationship between social and emotional skills and school performance of 10-year-old students

Coefficients of (standardised) grades in reading, mathematics and arts on (standardised) scores on social and emotional skills scales (international average)



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in international averages. The regressions are site-specific and control for gender, socio-economic status, and scores in the cognitive ability test, with the exception of Houston (United States), where the cognitive ability test was not administered. Ottawa (Canada) is excluded from the analysis on school grades as students' grades were not available. Coloured bars represent significant differences in at least five cities, bars that are only outlined represent significant differences in fewer than five cities.*

Source: *OECD, SSES 2019 database, Tables A2.2, A2.4 and A2.6.*

StatLink https://doi.org/10.1787/888934273601

Strong performers

An alternative way to show the relationship between social and emotional skills, and school performance is to look at a more comprehensive measure of school achievement: how well a student does in all subject areas. "Strong" performers can be defined as students whose grades were at the top of the distribution in more than one subject. SSES data show that social and emotional skills for "strong" performing students defined in this way correlate more closely with performance in reading and math than arts. "Strong" performing students are, therefore, those who score in the top quarter of the school-specific distribution of both math and reading grades.

The results among strong performers are aligned with those at the average level shown in the previous section (Figure 2.1 and Figure 2.2). Curiosity emerges as the skill most strongly related to school performance: a one-standard deviation increase in curiosity is associated with an increase of almost 6 and almost 3 percentage points in the probability of being a "strong" student (i.e. almost one-quarter of the unconditional probability) for 15-year-olds and 10-year-olds, respectively. This is not negligible, noting that the unconditional probability of being a "strong" student (i.e. the average share of "strong" students across the various cities) is 22%. Responsibility, persistence, and assertiveness are also found to be strongly related to better school performance on this measure (Table A2.22 and Table A2.23).

Differences by cities, age cohort, and subject

Figure 2.3, Figure 2.4, and Figure 2.5 show the relationship between social and emotional skills and school grades by cities, age cohort, and subject. The relationships are relatively consistent across groups. For instance, the association of curiosity with reading and math grades among 15-year-olds is significant in the vast majority of cities with available data (6 of the 9 cities for reading, and 8 of the 9 cities for math) after accounting for socio-economic status, gender,

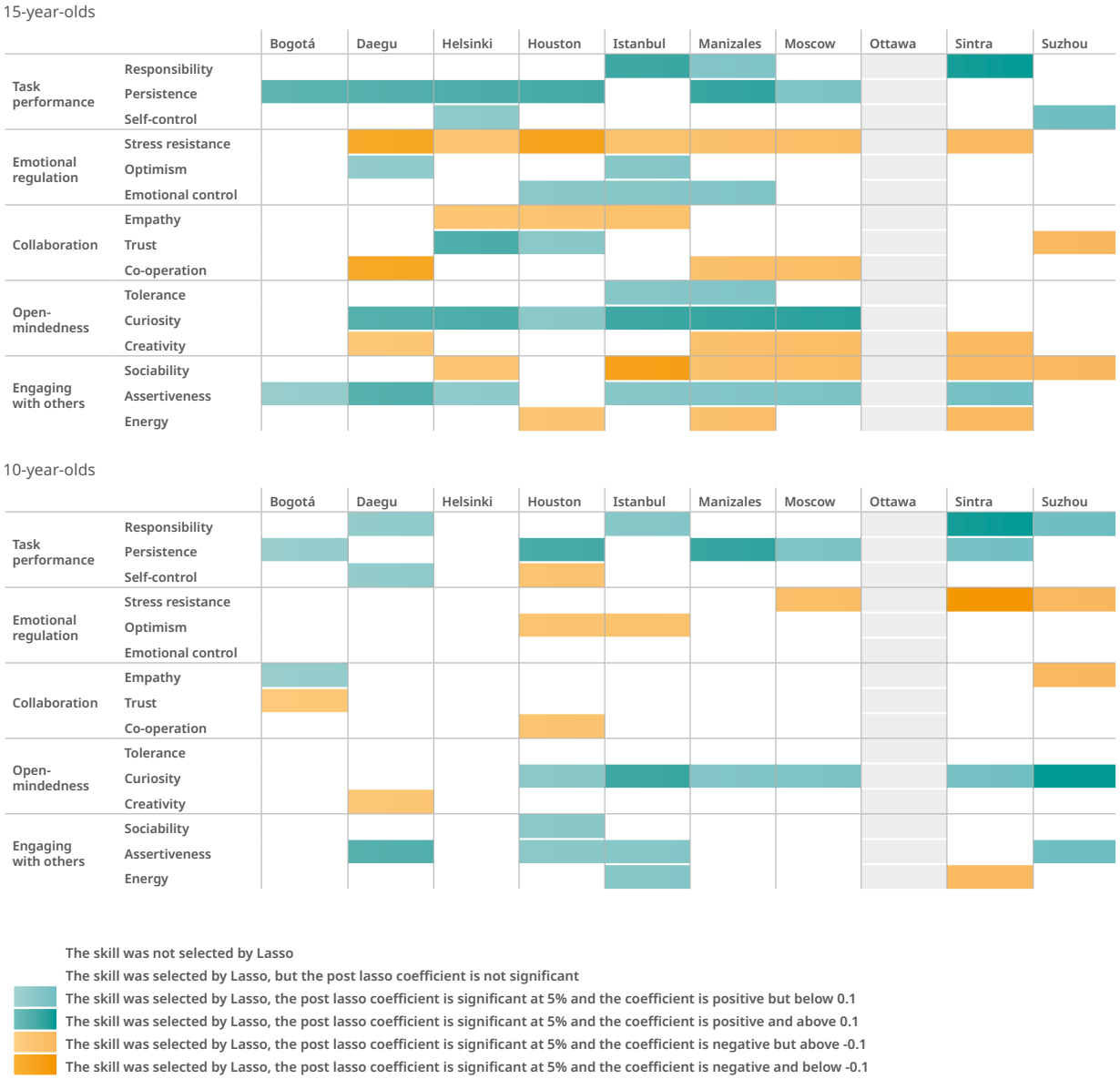
the scores from the cognitive ability test, and other social and emotional skills. Persistence also shows consistent results across cities. The association of persistence with reading and math grades among 15-year-olds is significant in about 70% of cities with available data (6 of the 9 cities for reading, and 7 of the 9 cities for math). Although these relationships are also observed in the younger cohort, the strongest correlations were observed for reading and math grades among 15-year-olds. The weakest correlations were observed for the arts, despite being significant in some cities. For example, in Helsinki (Finland), students who reported being more persistent and more creative had better grades in the arts.

Another interesting finding is that trust is positively related to math grades among 15-year-olds in 7 of the 9 cities after accounting for socio-economic status, gender, the scores from the cognitive ability test, and other social and emotional skills. Students who reported being more trusting are those who feel confident about their relationships with, among others, their peers. Math is connected to an acceptance of making mistakes. Students who receive discouraging or unforgiving responses from friends, teachers, and family when they make mistakes may feel more vulnerable about making mistakes in front of others (and learning from them). This would decrease trust and give rise to insecurity about one's abilities, in this case, in math. It is therefore important to ensure that family and school environments are both reassuring and accepting of mistakes as part of the learning process. This would help students develop trust, which appears conducive to improved math performance.

Besides the average results observed across cities, there are also interesting differences city by city. For example, a large number of skills are related to reading grades among 15-year-olds in Manizales (Colombia) -11/15 skills-, Istanbul (Turkey) -9/15 skills-, Helsinki (Finland) -8/15 skills-, Houston (United States) -7/15 skills-, Daegu (Korea) -7/15 skills- and Moscow (Russia) - 7/15 skills -. In contrast, fewer skills are related to reading grades among 15-year-olds in Sintra (Portugal) -6/15 skills-, Suzhou (China) -3/15 skills-, and Bogotá (Colombia) - 2/15-. These findings might reflect differences in how teachers assign school grades but also in curricula and teaching practices. Box 2.1 provides some examples of how countries are incorporating social and emotional skills in their education systems.

Figure 2.3. Skills most strongly associated with students' reading performance

Darker colours present stronger relations between skills and students' reading performance



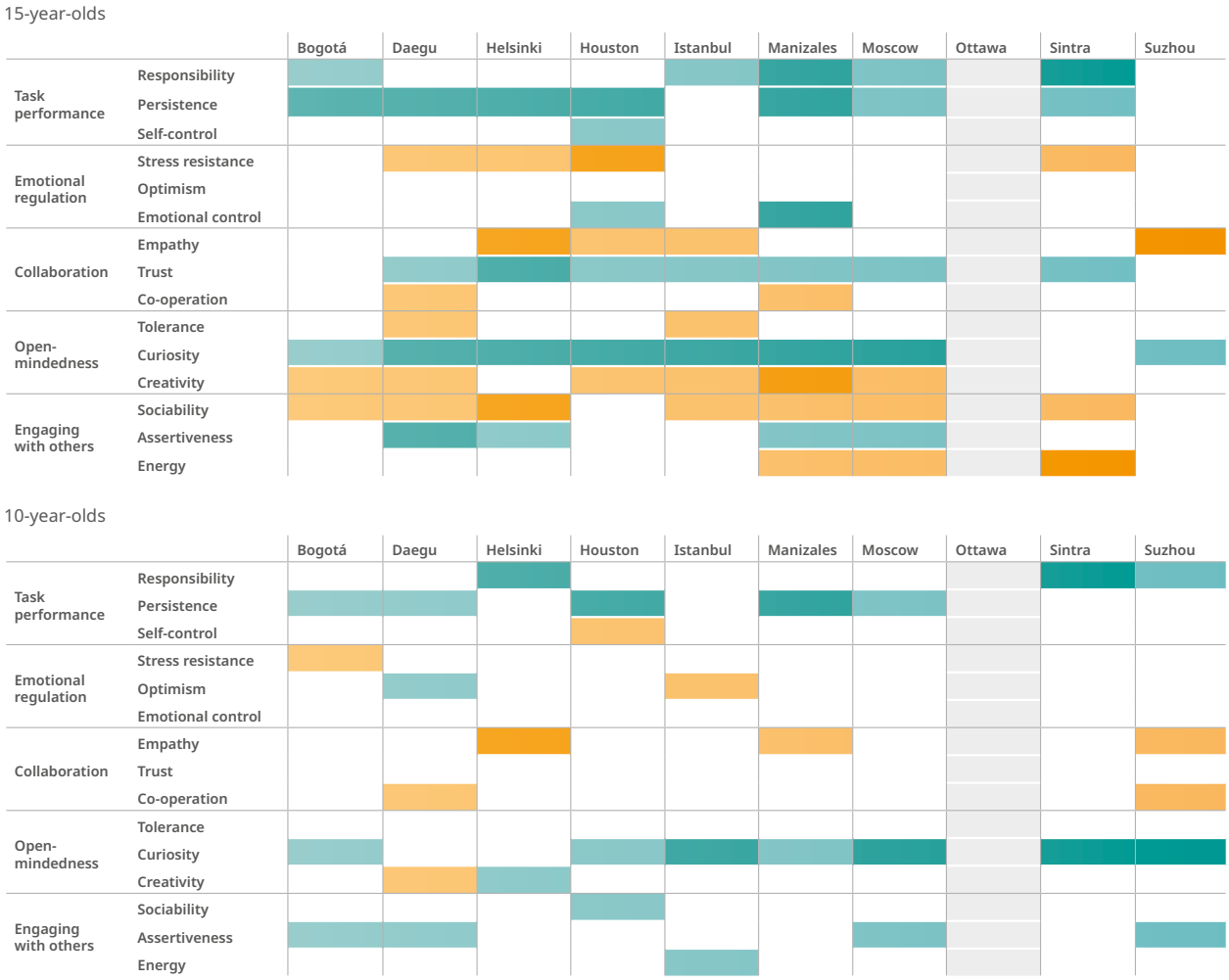
Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to coefficients from a regression of (standardised) grades in reading on (standardised) scores on social and emotional skills scales. The regression controls for gender, socio-economic status, and scores in the cognitive ability test. Ottawa (Canada) is excluded from the analysis on school grades as students' grades were not available. The model for Houston (United States) does not control for cognitive skills, as that part of the assessment was not administered in Houston.*

Source: *OECD, SSES 2019 dataset, Tables A2.1 and A2.2.*

StatLink https://doi.org/10.1787/888934273620

Figure 2.4. Skills most strongly associated with students' mathematics performance

Darker colours present stronger relations between skills and students' mathematics performance



Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to coefficients from a regression of (standardised) grades in mathematics on (standardised) scores on social and emotional skills scales. The regression controls for gender, socio-economic status, and scores in the cognitive ability test. Ottawa (Canada) is excluded from the analysis on school grades as students' grades were not available. The model for Houston (United States) does not control for cognitive skills, as that part of the assessment was not administered in Houston.*

Source: *OECD, SSES 2019 dataset, Tables A2.3 and A2.4.*

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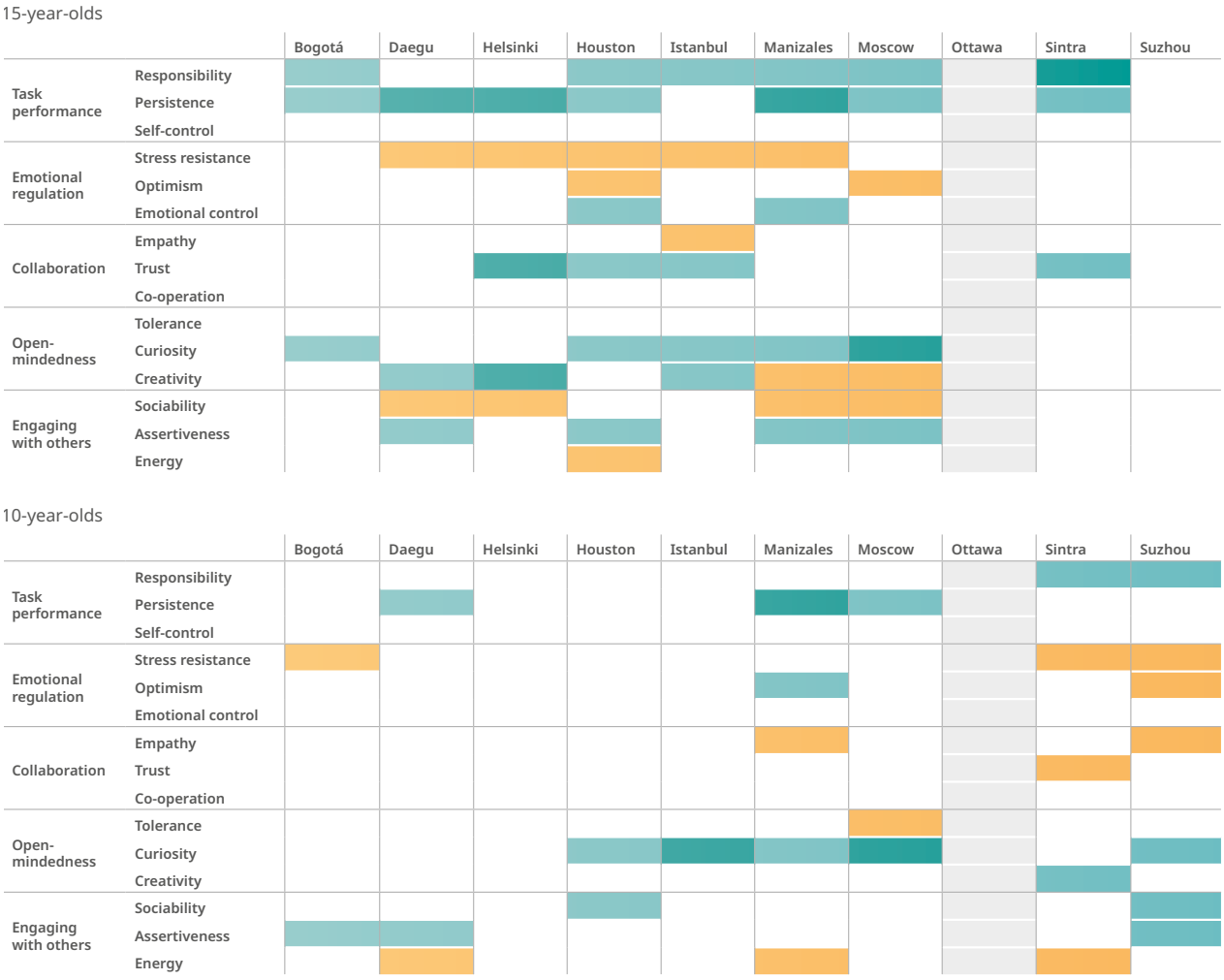
Figure 2.5. Skills most strongly associated with students' arts performance

Darker colours present stronger relations between skills and students' arts performance



Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to coefficients from a regression of (standardised) grades in arts on (standardised) scores on social and emotional skills scales. The regression controls for gender, socio-economic status, and scores in the cognitive ability test. Ottawa (Canada) is excluded from the analysis on school grades as students' grades were not available. The model for Houston (United States) does not control for cognitive skills, as that part of the assessment was not administered in Houston.*

Source: *OECD, SSES 2019 dataset, Tables A2.5 and A2.6.*

StatLink https://doi.org/10.1787/888934273658

Box 2.1.
Enhancing social and emotional skills in school

Governments are increasingly directing their policies toward enhancing the development of social and emotional skills and they are becoming part of the curriculum and teaching practices in an increasing number of countries (OECD, 2020[6]). Over the last years, significant steps have been made towards conceptualising, assessing, and intervening during social and emotional skills development (Abrahams et al., 2019[7]). Yet, a recent meta-analysis shows, for example, that higher quality research studies (i.e., randomised experiments) characteristically report smaller effect sizes of social and emotional learning programmes than quasi-experiments and smaller studies (Smithers et al., 2018[8]). Ultimately, fostering social and emotional learning relies heavily on combining policy, research, and practice. Bridging these gaps is essential to help policy makers make informed decisions, support teachers in daily practice, and enable children and adolescents to reach their potential (Suarez-Alvarez et al., 2020[9]). SSES provides unique and comprehensive data to understand the interplay between social and emotional skills, and education outcomes. Examples of how different levels of governance within the SSES network[3] are incorporating social and emotional skills in their education systems include:

Active Urban School, Manizales, Colombia

Active Urban School is an innovative education programme led by a public-private and academic partnership in Manizales, Colombia. Its innovative model was developed as a way to address high drop-out rates and low scores on national tests among students from urban public schools in Manizales. Different research studies had linked students' disengagement with traditional schooling practices. The model uses a whole-school approach to help students develop 21st-century competencies, based on the principle that children and adolescents need a balanced set of cognitive, and social and emotional skills to succeed in modern life.

Student Intervention Teams in Houston, Texas, United States

The Houston Independent School District (HISD) has established Student Intervention Teams, responsible for assisting schools in developing students' self-awareness and management skills. It is aimed at helping students achieve academic and personal success, maintain positive relationships and apply effective decision-making skills in personal, school and community contexts. In order to achieve this, schools are encouraged to implement the following types of interventions: primary interventions, aimed at reducing new cases of problematic behavior among students; secondary interventions, aimed at reducing current cases of problematic behavior among students; and tertiary interventions, aimed at reducing complicated, severe and persisting cases of problematic behavior among students.

Character Education Promotion Act, Korea

In 2015, Korea introduced a national policy to promote students' social and emotional skills. The Character Education Promotion Act encourages students to adopt social and emotional skills such as honesty, responsibility, respect, consideration and co-operation. These social and emotional skills are associated with other work-oriented skills that are useful in students' daily lives, such as: self-management; knowledgeable information processing; creative thinking; aesthetic sensibility; communication in their daily lives. State and local authorities are responsible for formulating and promoting long-term policies to realise the objectives of this Act, focusing on the character development of students and establishing healthy community environments (Government of Korea, 2015[10]).

How are students' social and emotional skills related to educational and occupational expectations?

Adolescence is a period when young people start to prepare for adult life. Teenagers have to make important decisions relevant to their future lives such as the fields of study or types of education they want to pursue as well as the kinds of jobs or careers they envision themselves in. But young people sometimes have a distorted perception of their cognitive, social and emotional strengths, which is influenced by their immediate environment more than by objective information; and they may lack sufficient knowledge about the breadth of educational opportunities and careers open to them. PISA has shown, for example, that education aspirations differ significantly by socio-economic background and gender even among students who are similarly proficient at school. They do so in ways that reflect gender stereotypes or tend to mirror parental choices (OECD, 2020[11]).

Education systems can play a crucial role in channelling skills and talent into the labour market, and helping young people develop a fair assessment of themselves and of their future educational opportunities. In doing so, they can ensure that students' skills, interests and aptitudes find a suitable match in the economy (Musset and Kurekova, 2018[12]). Major theories of career choice, commonly used by career guidance professionals, identify an important role for young people's self-concept (what they think they are good at, and what kind of person they want to be) in the vocational choices made (Brown, 2002[13]). As a result, assessments of social and emotional skills are commonly used in career guidance along with assessments of aptitude, and the role of career guidance professionals extends beyond providing people with objective information about the opportunities available in the education system to help them develop a realistic self-concept.

This section explores how students' social and emotional skills relate to their aspirations for further education and then how they relate to students' job expectations.

Educational expectations

In SSES, the proportion of 15-year-olds who reported that they expect to complete a tertiary degree ranged from 65% in Ottawa (Canada) to 91% in Suzhou (China) (this indicator is not available for Helsinki – Finland -) (Table A2.7). Across all cities with available data, the proportion of students who held high expectations for further education was related to how they portrayed their own social and emotional skills.

SSES data show that students with a disadvantaged socio-economic background held less ambitious expectations for further education than students with a more advantaged background in all cities. Socio-economic status was by far the most significant correlate of students' future educational expectations. Among students of similar socio-economic background, however, differences in educational expectations were often related to differences in social and emotional skills. In particular, in all cities, the main difference between students who held high expectations for further education and students who did not was their level of intellectual curiosity. Higher levels of assertiveness and tolerance were also associated with expectations of completing higher education in most cities. At the same time, creativity was negatively related to educational expectations in a few cities after accounting for other skill differences and for differences in socio-economic status (Figure 2.6).

Curiosity was particularly strongly correlated to expectations of completing tertiary education in five cities – Houston (United States), Istanbul (Turkey), Moscow (Russia), Ottawa (Canada) and Sintra (Portugal) – and moderately correlated to the same educational expectations in four others – Bogotá (Colombia), Daegu (Korea), Manizales (Colombia) and Suzhou (China). The assertiveness score was a strong correlate of expectations for completing tertiary education in two cities - Houston (United States) and Moscow (Russia) and a moderate correlate in seven - Bogotá (Colombia), Daegu (Korea), Istanbul (Turkey), Manizales (Colombia), Ottawa (Canada), Sintra (Portugal) and Suzhou (China). Finally, tolerance was associated with expectations of completing tertiary education in eight cities but only moderately so.

In some cities, a few skill scores were negatively related to the likelihood of students expecting to complete tertiary education. Most notably, creativity scores had a strong negative correlation with students' expectations of completing tertiary education among 15-year-old students in Ottawa (Canada) and a moderate correlation in Moscow (Russia) and Sintra (Portugal).

Why is curiosity strongly and consistently related to expectations for completing tertiary education? This likely reflects the fact that students with high curiosity and love of learning tend to have positive dispositions not only towards learning in general, but also towards formal tertiary-education institutions; these students see tertiary institutions such as universities as spaces that can satisfy and fuel their intellectual curiosity. It is, however, worrying that in a few cities – after accounting for students' curiosity and other skills – 15-year-olds who consider themselves most creative are less likely to expect to complete tertiary education. For these students, a long, formal education career may appear too conventional. Also noteworthy is the fact that other correlates of contemporary academic success beyond curiosity (in particular, skills such as persistence and self-control from the task-performance domain) are not related to expectations for further education (persistence has a weak positive association only in Bogotá). This indicates the importance of cultivating the effective dimensions that support academic performance – and not only behavioural tendencies such as persistence and self-control – in order to prepare students for life-long learning.

Figure 2.6. How social and emotional skills relate to expectations of completing tertiary education

Darker colour represent stronger relations between skills and expectations of completing tertiary education

Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to coefficients from a regression of (standardised) grades in reading on (standardised) scores on social and emotional skills scales. The regression controls for gender, socio-economic status, and scores in the cognitive ability test. Ottawa (Canada) is excluded from the analysis on school grades as students' grades were not available. The model for Houston (United States) does not control for cognitive skills, as that part of the assessment was not administered in Houston.*

Source: *OECD, SSES 2019 dataset, Tables A2.5 and A2.6.*

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Occupational expectations

A number of studies have shown that certain social and emotional skills are related to employment outcomes and income (OECD, 2015[14]; Roberts et al., 2007[15]). Yet, how individuals' social and emotional skills relate to the actual occupations they have has barely been studied. SSES offers a unique opportunity to analyse how students' social and emotional skills contribute to shaping their occupational expectations and how this relationship changes as students age. Both cohorts of students were asked about the job they expect to have once they turn 30. Students provided job titles in an open-entry field, which were coded following the International Standard Classification of Occupations (ISCO-08) put forward by the International Labour Organisation.

This section makes use of six large occupational groups that were frequently reported by students and are built up against some of the high-level ISC0-08 groups: (i) armed forces, police, security and fire-fighters; (ii) science and engineering professionals; (iii) health professionals; (iv) managers; (v) artists and sports players; and (vi) teaching professionals. It also looks at the share of students who expect to have a job that is among the 10 most frequently reported occupations across all cities and both age cohorts as a measure of similarity of aspirations among students. Additional analyses on the role that creativity and curiosity specifically play in students' aspirations to embrace a creative or a scientific career are presented in Chapter 4.

Students seem to hold more diverse occupational expectations as they get older. This becomes evident when looking at the share of students who aspire to one of the 10 most popular occupations among their peers (Table A2.24). On average across cities, 54% of 10-year-olds expect to embrace one of the 10 most frequently cited occupations. This goes down to 43% of 15-year-old students, signalling more diversity in occupational aspirations among older students. Such a dip is observed in all cities, with the sharpest one observed in Istanbul (Turkey) where 69% of 10-year-olds aspire to a popular job and only 50% of 15-year-olds do so. At the opposite end of the spectrum, 36% of 10-year-olds and 33% of 15-year olds in Ottawa (Canada) expect to have a commonly expected job. The increasing diversity in students' occupational aspirations as they age might partly result from their increasing knowledge of existing occupational opportunities. For example, fewer 15-year-olds expect to become teaching professionals than 10-year-olds. While this is a popular professional choice among 10-year olds, its popularity reduces as students grow older and become more informed about available job opportunities.

As such, the career expectations of 15-year-olds seem more aligned with job market opportunities than those of 10-year-olds. An illustration of this is that fewer students among the older cohort expect a career in arts or sports. The share of 10-year-olds who expect to become an artist or an athlete drops by half among 15-year-olds in Helsinki (Finland), Houston (United States), Istanbul (Turkey), Moscow (Russia), and Suzhou (China). The share of 10-year-olds who expect to become an artist or an athlete ranges from 9% in Istanbul (Turkey) to 33% in Sintra (Portugal) while it ranges from 4% in Istanbul (Turkey) to 14% in Sintra (Portugal) among 15-year-olds (Table A2.24). Given the actual small sizes of these two work industries, the occupational aspirations of 15-year-olds seem more consistent with the reality of the job market.

How do students' expectations of working in typical occupational groups relate to their social and emotional skills? First of all, the relations between social and emotional skills, and occupational expectations are much stronger among 15-year-olds than among 10-year-olds. This might signal the interdependence of these two factors – students might develop job preferences adapted to their own cognitive, social, and emotional skills and they might also improve their skills to meet the requirements of their personal job aspirations. This mutual influence is likely to crystallise as students age. Given the strength of associations among 15-year-olds, the remainder of this section focuses on the older cohort.

On closely observing the job expectations of 15-year-olds, it becomes evident that certain patterns of social and emotional skills tend to be associated with aspirations to work in certain occupational groups. More specifically, students who report aspiring to become health professionals tend to be more curious (in all cities except in Bogotá and Manizales – Colombia -) and cooperative (in Manizales – Colombia-, Ottawa –Canada-, and Sintra – Portugal-) but also less tolerant and less creative (in most cities) than other students (Figure 2.7). This combination of skills is not surprising given that health occupations require curiosity for sciences and interpersonal skills to cater to patients' needs.

Figure 2.7. How social and emotional skills relate to expectations of working as health professionals

Darker colours present stronger relations between skills and students' expectation

Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to the percentage-point change in the likelihood of 15-year-old students holding this expectation that is associated with a 100-point increase in the corresponding skill score. All models include controls for socio-economic status and gender.*

Source: *SSES 2019 data, Table A2.8.*

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Combined with high levels of creativity and low levels of empathy, a high level of curiosity seems to matter more for aspiring to work in scientific and engineering professions in nearly all cities. Students who reported aspirations to work in scientific and engineering careers also tended to see themselves as less assertive, especially in Bogotá (Colombia), Houston (United States), and Moscow (Russia), and less energetic in Daegu (Korea), Helsinki (Finland), Houston (United States) and Moscow (Russia) (Table A2.10).

Students who reported expectations of working in the armed forces, the police or security tended to represent themselves as more energetic (especially in Daegu [Korea], Istanbul [Turkey] and Moscow [Russia]) and less curious (especially in Bogotá [Colombia], Moscow [Russia], Ottawa [Canada], Suzhou [China] and Istanbul [Turkey]) than other students. Energy and rigour are likely to be useful skills for these particularly active occupations (Figure 2.8).

Figure 2.8. How social and emotional skills relate to expectations of working in the armed forces, police or security

Darker colours present stronger relations between skills and students' expectation

Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to the percentage-point change in the likelihood of 15-year-old students holding this expectation that is associated with a 100-point increase in the corresponding skill score. All models include controls for socio-economic status and gender.*

Source: *SSES 2019 data, Table A2.9.*

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Students who report aspirations of a career in the arts or sports are more likely to represent themselves as more creative and less curious than other students. This holds in every participating city. These students are also more likely to report higher levels of energy in Houston (United States), Manizales (Colombia), Moscow (Russia) and Istanbul (Turkey), and lower levels of responsibility, especially in Bogotá (Colombia), Ottawa (Canada), Sintra (Portugal) and Istanbul (Turkey) (Table A2.11).

One single social and emotional skill is found to matter for expectations to become a manager – assertiveness, which is commonly perceived as a key competency for a leader (Table A2.12). Finally, no particular social and emotional skill stands out in a consistent manner across cities among students who report teaching as a future career choice (Table A2.13).

What do the findings in this chapter mean for parents, educators and policy makers?

SSES data show that students' social and emotional skills are significant predictors of school grades across age cohorts, subjects, and cities. In particular, being intellectually curious and persistent are the social and emotional skills most strongly related to school grades for both 10- and 15-year-olds in all three subjects considered as part of the SSES analysis; reading, mathematics and arts. These findings emphasise the importance of not only dedication in pursuing predetermined goals, even in the face of difficulties, but also cultivating an intellectual curiosity for a diverse range of topics. External forces like parents' or teachers' expectations (see Chapter 3) can drive persistence. External drivers, however, can disappear or change over time but intellectual curiosity is a powerful intrinsic motivator. Those students who are curious about a diverse set of topics and love learning new things are better equipped to face difficulties and are more likely to reach their goals.

SSES findings also show that 15-year-olds who reported being more stress-resistant and sociable tended to have lower school grades. That was not the case for 10-year-olds. Younger students are typically more strictly supervised by parents and teachers, and their group of friends is likely to have remained the same since early childhood. Younger students may have a less demanding school environment and are surrounded by adults who help them contain and channel their energy and desire to interact socially in ways that do not harm their school performance. However, 15-year-olds typically have more autonomy over their learning process and personal life. Schoolwork towards the end of compulsory education can be more demanding. Academic achievement in high school is made even more challenging by students' peer relationships. They are often more complex and may involve students from more diverse backgrounds as compared to primary education, requiring students to re-evaluate priorities and establish new social relationships. Without a supportive home and school-learning environment, students may struggle in managing their social interactions and this may prove detrimental to their schoolwork. However, caution should be exercised in making these learning environments conducive to student development. Parenting styles that are more controlling and intrusive when it comes to homework are associated with lower autonomy and responsibility among children. Learning to work autonomously is an important aspect of academic achievement (Fernández-Alonso, Suárez-Álvarez and Muñiz, 2015[16]). More indirect parenting styles such a parent-child communication about the school are associated with higher academic achievement (Trautwein and Lüdtke, 2009[17]; Fernández-Alonso et al., 2017[18]).

Another interesting finding is that trust is positively related to math grades among 15-year-olds in 7 of the 9 cities with available data in this indicator, after accounting for socio-economic status, gender, the scores from the cognitive ability test, and other social and emotional skills. Students who reported being more trusting are those who feel that they can rely on their peers for support and confide in them. Math is connected to one's self-perception of competence and the acceptance of making mistakes. Students who receive negative or inconsistent responses to the same behaviours (e.g. discouraging or unforgiving responses) from friends, teachers, and family when they make mistakes may feel more vulnerable about making mistakes in front of others (and learning from them). This, in turn, gives rise to insecurity about one's abilities. As a result, family and school environments that are reassuring and understanding about mistakes in the learning process can help students develop trust and seek help from others when needed. This appears conducive to higher math performance (Turner et al., 2002[19]).

The strength of the associations between social and emotional skills, and school grades are relatively weak but consistent across students' backgrounds, age cohorts, and cities. Although students' social and emotional skills differ by socio-economic backgrounds and gender (see Chapter 1), SSES data show that social and emotional skills are associated with school grades even after accounting for gender, socio-economic status, and scores in the cognitive ability test that was administered as part of SSES. It is important to neither overestimate nor underestimate the practical implications of these findings. First, the SSES assessment was designed to be broad enough in scope to cover a wide range of outcomes and not only academic achievement. Targeting subject-specific content would likely show stronger correlations. For example, the reading self-efficacy index in PISA 2018 is strongly correlated with reading performance even after accounting for students' and schools' socio-economic profiles (OECD, 2021[20]). Second, small effects are to be expected when predicting a multiply determined outcome such as academic achievement (Noftle and Robins, 2007[1]). Third, small effects can have a major impact on outcomes over time. Behaviors are reinforced and

maintained through the snowballing accrual of their outcomes (Roberts and Caspi, 2003[21])
It is also important to take into account that although students are aware of their school grades, not all students with the same school grades have the same perception of competence. For example, disadvantaged students in PISA 2018 still perceived the reading assessment as more difficult than advantaged students even after accounting for students' reading scores (OECD, 2021[20]). Gender stereotypes also play a role. In PISA 2018, boys reported they felt the PISA reading test was easier than girls did even though boys scored 25 points lower than girls in reading after accounting for students' socio-economic backgrounds (OECD, 2021[20]).

SSES findings imply that students with the same socio-economic status, gender, and cognitive abilities who have better social and emotional skills are more likely to obtain better grades. The same is true for higher educational expectations. In all cities, the main difference between students who held high expectations for further education and students who did not was their level of intellectual curiosity. This likely reflects the fact that students with high curiosity and love of learning tend to have positive dispositions towards learning, in general, and towards formal tertiary-education institutions, in particular; these students see tertiary institutions such as universities as spaces that can satisfy and fuel their intellectual curiosity. It is however worrying that in a few cities – after accounting for students' curiosity and other skills – 15-year-olds who consider themselves most creative are less likely to expect to complete tertiary education; for these students, a long, formal education career may appear too conventional. This indicates the importance of cultivating the effective dimensions that support academic performance – and not only behavioural tendencies such as persistence and self-control – to prepare students for life-long learning.

SSES also examines how students shape their occupational expectations and how those relate to certain social and emotional skills. SSES findings show that 15-year-olds' career expectations seem more aligned with the job market than those of 10-year-olds. This might be due to the fact that older students have a more comprehensive vision of career opportunities but also that they have a changing perception of their own cognitive and social and emotional skills as well as changing interests. In addition, the relations between social and emotional skills, and occupational expectations are stronger among 15-year-olds than among 10-year-olds. This might signal the interdependence of these two factors – students might develop job preferences adapted to their own social and emotional skills while also improving their skills to meet the requirements of their personal job aspirations. SSES data provide evidence that certain patterns of social and emotional skills tend to be associated with aspirations to work in certain occupations. For example, in most cities, students who reported aspirations to become health professionals tend to be more curious and cooperative while students who reported expectations to work in the armed forces, the police or security tend to represent themselves as more energetic and less curious. This suggests that the development of certain social and emotional skills at school might be beneficial in that students would have a clearer sense of their strengths and interests. This may improve signalling to the industries they expect to be a part of and reduce industry-level soft skill mismatches. A forward-looking approach to education cannot afford to omit analysis of the social and emotional skills needed for future economies and societies.

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Footnotes

[1] SSES included a short cognitive ability test composed of a series of verbal and numerical reasoning items.

[2] Ottawa (Canada) is excluded from the analysis on school grades as students' grades were not available. The analysis for Houston (United States) deviates slightly from the other cities as students from Houston did not take the cognitive ability test.

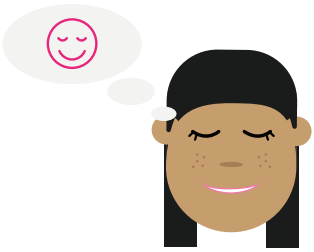
[3] SSES does not provide evidence on the effectiveness of any school-based social and emotional learning interventions described in this box.

03

STUDENTS' PSYCHOLOGICAL WELL-BEING

This chapter looks at the different aspects of student psychological well-being and examines how the skills included in the Survey on Social and Emotional Skills are associated with them.

WHAT THE DATA TELL US

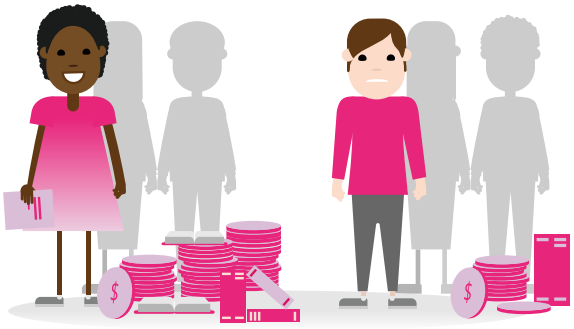


Students' social and emotional skills can make a difference to their psychological well-being.

As children enter adolescence, their life satisfaction and psychological well-being drop

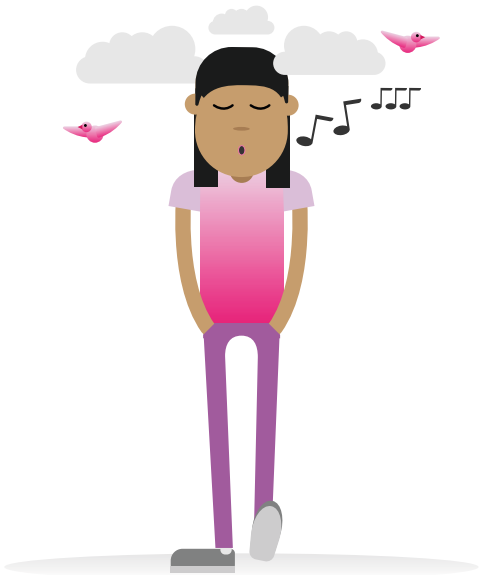
and test anxiety increases – especially for girls.

Students from more socio-economically advantaged backgrounds



reported higher life satisfaction and higher psychological well-being than those from less advantaged socio-economic backgrounds.

Students who are more optimistic are happier about their lives and have better psychological well-being, and less test-anxiety.



Which students are more at risk of suffering from poor psychological well-being?

Well-being is an important measure of the quality of life alongside other social and economic dimensions (OECD, 2013[1]). Education policies increasingly address student well-being as part of a whole-child perspective to education. This has led to increased emphasis on social and emotional skills alongside cognitive skills as drivers of future well-being. There is growing interest in investigating how social and emotional skills are associated with students' well-being and the affective dimensions of students' school experience. Adolescence is a period of rapid physical growth and brain development, increasing demands and expectations regarding school performance, changing relationships with parents and peers as well as increasing autonomy as students start to make their own decisions and develop behaviors that can influence their current and future well-being (Inchley et al., 2020[2]; Patton, 2016[3]). Adolescence is a critical phase not only in the development of students' cognitive skills but also in the development of their social and emotional skills (Kankaras and Suarez-Alvarez, 2019[4]). Therefore, it is crucial to understand how social and emotional skills are related to students' well-being and how they can serve as protective factors. Before discussing how these skills are related to well-being, this section provides insights into which students are more at risk of suffering from poor well-being across the cities participating in SSES.

SSES provides three measures of psychological well-being: life satisfaction, current psychological well-being, and test anxiety. These three measures of psychological well-being provide information on different aspects of psychological well-being but are related to one another. The average correlation across cities between life satisfaction and current psychological well-being is 0.60 (0.64), the correlation between life satisfaction and test anxiety is -0.14 (-0.20) and the correlation between current psychological well-being and test anxiety is -0.15 (-0.23) for the older (younger) cohort (Table A3.15). Besides the aspects of well-being discussed in this chapter, SSES also measures other aspects of well-being. These include students' overall health status, relations with parents, friends and teachers, bullying, school belonging and sense of safety. The relations between social and emotional skills and some of these factors related to students' social relations in school are discussed in Chapter 5.

Life satisfaction

SSES measures students' life satisfaction by asking students "Overall, how satisfied are you with your life as a whole these days?" Students answered the question on a 10-point scale where 0 represents "not at all satisfied" and 10 represents "completely satisfied". This is the same measure that was used in PISA 2015 and PISA 2018. It is, therefore, an evaluation students make of their perceived quality of life according to their chosen criteria and it is based on how people remember their experiences. This can be determined in part by the respondent's current mood and recall capabilities, and by the immediate context. The idiosyncratic effects of recent, irrelevant events are likely to average out in representative population samples like SSES.

SSES shows large variations in students' life satisfaction between cities. Figure 3.1 and Table A3.1 show the percentage of students who reported being "not satisfied", "moderately satisfied", "satisfied" and "very satisfied" with their life. Across cities, the percentage of students who indicated they were "not satisfied" with their life ranges from 3% to 13% for the younger students and from 8% to 19% for the older students. Similarly, the percentage of students who indicated they were very satisfied with their life ranges from 48% to 73% for the younger students and from 15% to 48% for the older students.

On average, younger students reported higher life satisfaction than older students (Figure 3.1 and Table A3.1). Younger students on average across cities rated satisfaction with their life as 8.2 whereas older students reported an average of 7.2, indicating that both age cohorts are satisfied with their life. However, in all cities, younger students reported higher life satisfaction. The difference in life satisfaction is largest in Istanbul (Turkey) (1.8 points) and smallest in Houston (United States) (0.6 points).

The difference in girls' and boys' life satisfaction increases as students enter adolescence. Girls' life satisfaction declines more than boys' life satisfaction from age 10 to age 15. For younger students, gender gaps in life satisfaction are only found in Daegu (Korea) (0.2 points), Moscow (Russia) (-0.2 points) and Suzhou (China) (-0.1 points). Younger girls indicated higher life satisfaction in Moscow (Russia) and Suzhou (China). For older students, gender gaps, where boys indicated higher life satisfaction than girls, are found in all cities. These gender gaps are largest in Helsinki (0.8 points) and Daegu (0.7 points), and lowest in Suzhou (0.3 points) (Table A3.2).

On average across cities, socio-economically advantaged students (students in the top 25% of the socio-economic status index) reported higher life satisfaction than socio-economically disadvantaged students (students in the bottom 25% of the socio-economic status index). For both younger and older students, socio-economic disparities are found in almost all cities. For younger students, the largest socio-economic disparities are found in Houston (United States), Ottawa (Canada) and Suzhou (China) (all 0.8 points). For older students the largest disparity is found in Istanbul (0.8 points). In both age cohorts, no socio-economic disparities are found in Bogotá (Colombia) and Manizales (Colombia) (Table A3.3).

Differences in life satisfaction related to students' migrant background are relatively small and only found in a few cities. Younger students with a migrant background reported lower life satisfaction in Manizales (Colombia), Sintra (Portugal) and Suzhou (China) while older students with a migrant background reported higher life satisfaction in Helsinki (Finland) but lower life satisfaction in Manizales (Colombia) and Suzhou (China) (Table A3.4).

These findings are consistent with PISA. Fifteen-year-old girls and socio-economically disadvantaged students reported being less satisfied with their lives than boys and socio-economically advantaged students, respectively (OECD, 2017[5]; OECD, 2020[6]). In both studies, Colombia and Finland show up as countries where students reported the highest life satisfaction while students in Turkey, China and Korea reported lower life satisfaction (OECD, 2017[5]; OECD, 2020[6]). SSES builds on these findings to provide an enriching age perspective. The finding that socio-economically disadvantaged students and girls reported lower life satisfaction is particularly true among 15-year-olds compared to 10-year-olds. This means that gender and other differences are likely to widen with age and leave older adolescent girls and students from lower socio-economic backgrounds at risk of poor psychological well-being. These findings are aligned with the World Health Organization and they stress the importance of mitigating gender differences as early as possible (2020[2]).

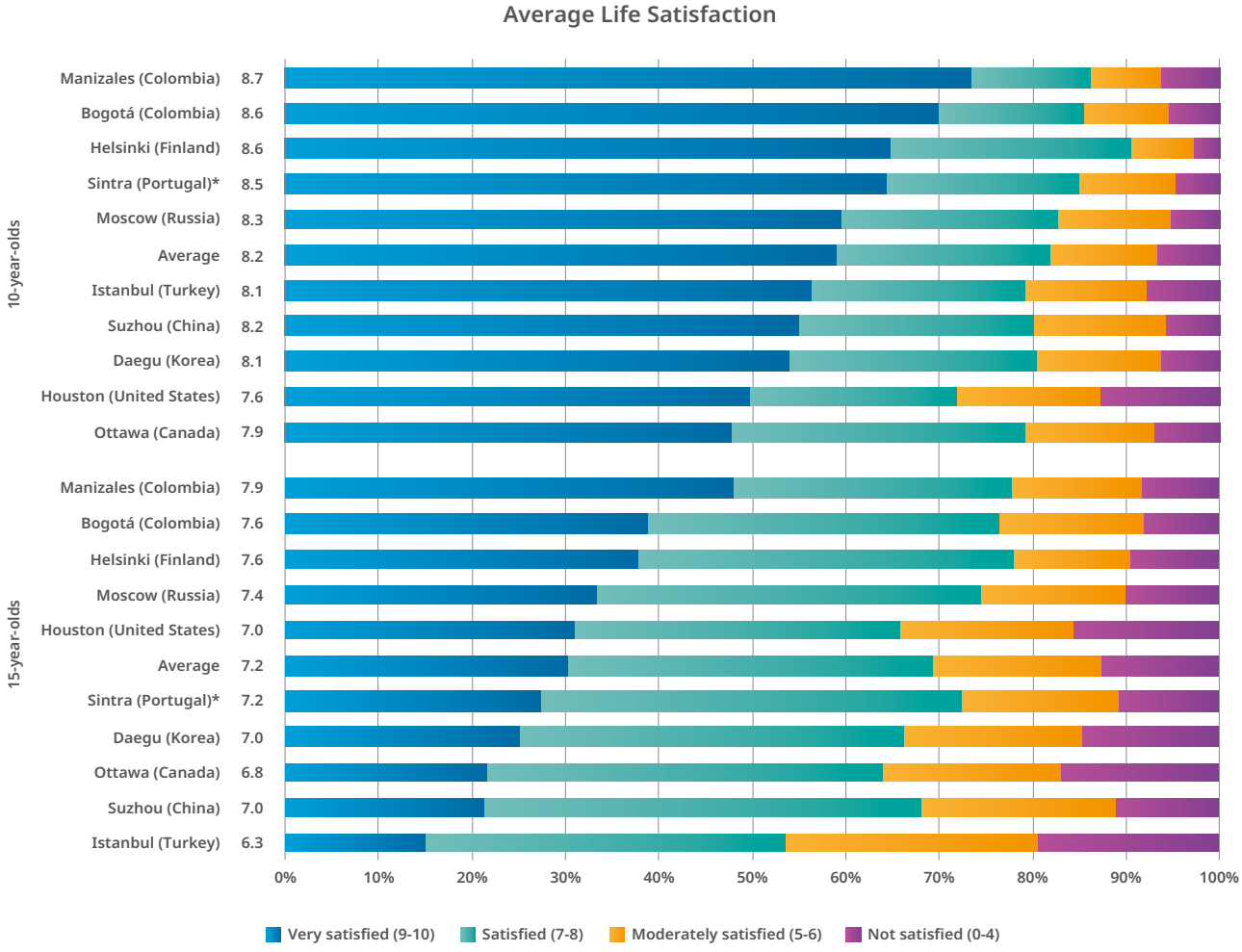
Current psychological well-being

SSES measured current psychological well-being using the World Health Organization-Five Well-Being Index (WHO-5) by asking students about experiences related to how they felt during the previous two weeks: a) I have felt cheerful and in good spirits, b) I have felt calm and relaxed, c) I have felt active and vigorous, d) I woke up feeling fresh and rested, and e) My daily life has been filled with things that interest me. Students answered these questions on a five-point scale from "at no time" to "all of the time". Based on responses to these items, an index of current psychological well-being was created. The WHO-5 is among the most widely used questionnaires for assessing psychological well-being. First published in 1998, it has since been translated into more than 30 languages and has been used in numerous research studies, mainly in health research related to depression (Topp et al., 2015[7]).

Students' responses about their current psychological well-being are consistent with their responses about their life satisfaction. Younger students from an advantaged socio-economic background and boys typically reported higher levels of current psychological well-being.

Figure 3.1. Students' life satisfaction, by age cohort and city

Percentage of students, by level of life satisfaction



Note: *Data for Sintra (Portugal) did not reach student response rate standards. Cities are ranked in descending order of the percentage of students who reported being very satisfied with their life. Jurisdictions are ranked in descending order of students who answer to be very satisfied.*

Source: *OECD, SSES 2019 Database, Table A3.1*

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Figure 3.2 presents the five items of the WHO-5 well-being index. It shows the percentage of students who reported they felt like these five statements "most of the time" or "all of the time" in the previous two weeks. On average across cities, about 45 (65)% of older (younger) students reported that they felt cheerful and in good spirits during the past two weeks; 42 (58)% reported that they felt calm and relaxed; 40 (62)% reported that they felt active and vigorous; 28 (54)% of students reported that they woke up feeling fresh and relaxed, and 40 (62)% of students reported that their daily lives were filled with things that interest them (Table A3.5).

Younger students indicated a higher level of current psychological well-being. On average across cities, about 60% of younger students indicated they felt like these statements most of the time or all of the time while only about 40% of older students indicated this. Younger students in all cities indicated more often that they felt like these five statements most or all of the time, indicating a higher level of current psychological well-being among younger students. The average age gap in current psychological well-being is 21 percentage points. It is largest in Istanbul (Turkey) (32 percentage points) and Suzhou (China) (25 percentage points) and smallest in Houston (United States) (16 percentage points) and Moscow (Russia) (17 percentage points) (Table A3.5).

Current psychological well-being also differs across gender with boys indicating a higher level of well-being. Boys in the older cohort reported a higher level of current psychological well-being across all five statements compared to girls. For younger students the differences between boys and girls are less pronounced. It seems that the current psychological well-being for girls especially declines from childhood to adolescence. Among older students, the average gender gap is about 14 percentage points. The gender gap is largest in Bogotá (Colombia) and Helsinki (Finland) (both 19 percentage points) and smallest in Suzhou (China) (9 percentage points) and Daegu (Korea) (11 percentage points) (Table A3.6).

In the literature, there is no clear relation between psychological well-being and students' gender. For example, adolescent girls are found to present significantly higher levels of adaptation and have fewer behavioral problems than boys but girls tend to have lower self-esteem and show depressive symptoms more frequently than boys (Aunola, Stattin and Nurmi, 2000[8]). Results from PISA 2018 show that in all countries and economies, girls reported feeling sad more often than boys (OECD, 2020[6]).

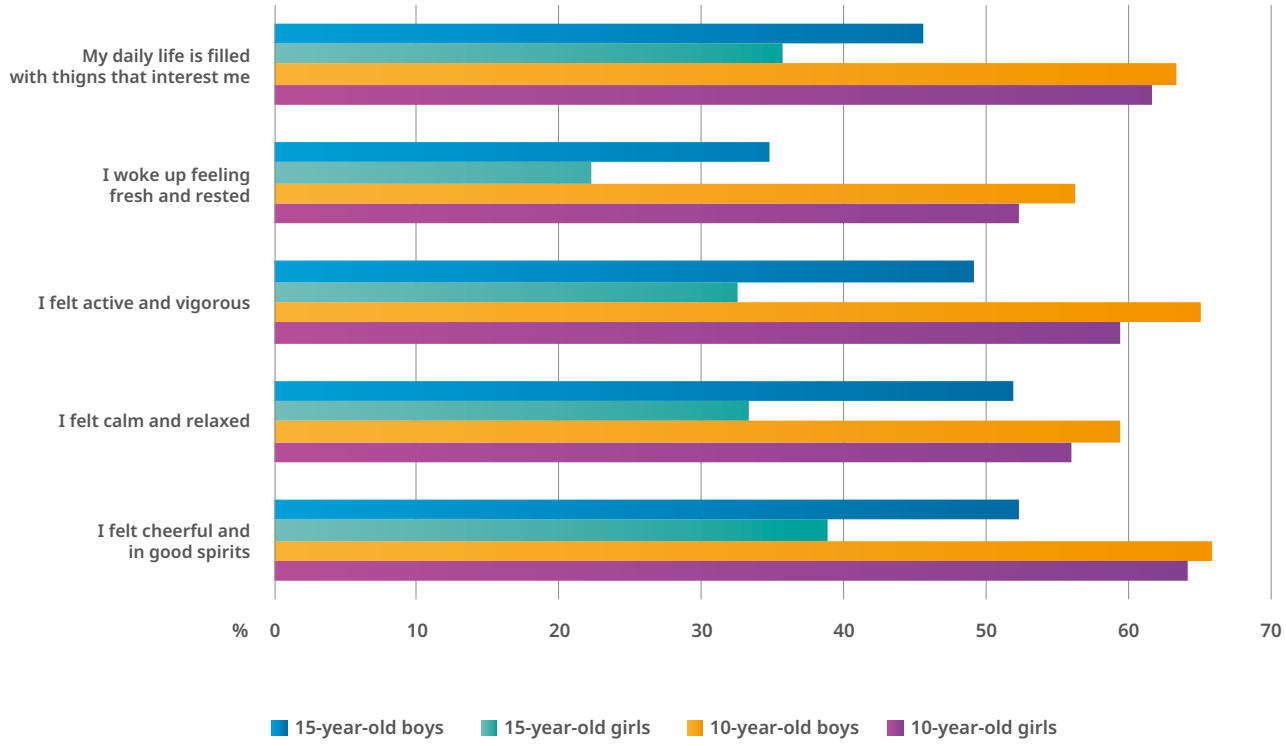
Differences in well-being related to socio-economic status are also marked in almost all cities (Table A3.7). On average, socio-economically advantaged students reported higher levels of well-being than socio-economically disadvantaged students. For younger students, disparities in current psychological well-being related to their socio-economic status were found in the majority of cities, with an average socio-economic disparity of about 10 percentage points. The largest disparities occurred in Ottawa (Canada) and Daegu (Korea) (both 15 percentage points) while the smallest disparities occurred in Istanbul (Turkey) (3 percentage points), Helsinki (Finland) and Manizales (Colombia) (both 6 percentage points). For older students, the average socio-economic disparity is smaller, at 5 percentage points. For these students, the disparities are largest in Suzhou (China) (13 percentage points) and Ottawa (Canada) (10 percentage points) and smallest in Bogotá (-1 percentage point) and Manizales (Colombia) and Moscow (Russia) (both 3 percentage points). Older socio-economically disadvantaged students in Helsinki (Finland) even reported higher current psychological well-being on a number of statements.

Similar to life satisfaction, the relation between current psychological well-being and students' migration background is relatively small and does not show a consistent pattern (Table A3.8).

An example of the importance countries attach to supporting students' physical and psychological well-being and the consequent policies they develop to help realise this is described in Box 3.1 and Box 3.2.

Figure 3.2. WHO-5 well-being items, by cohort and gender

Percentage of students who reported that they feel like this "most of the time" or "all of the time" (international average)



Note: *For older students the differences between boys and girls are significant for all five statements. Data for Sintra (Portugal) did not reach student response rate standards and are not included in international average.*

Source: *OECD, SSES 2019 Database, Table A3.6.*

StatLink https://doi.org/10.1787/888934273753

Box 3.1.
Promoting students' overall well-being in Ottawa (Canada)

The Canadian government introduced the Health and Physical Education curriculum for 6- to 14-year-olds (grades 1 to 8), which underlines key steps that schools can take to promote students' physical and psychological well-being. The curriculum is based on the belief that an active lifestyle that promotes physical and psychological well-being through sports and eating choices can impact various educational and social and emotional outcomes such as:

- Increased productivity and readiness for learning
- Improved morale and better stress-coping mechanisms
- Decreased absenteeism
- Decreased antisocial behavior such as bullying and violence
- Increased personal satisfaction

In this light, the Health and Physical Education curriculum focuses on students' holistic development from a physical and psychological well-being perspective, and incorporates the following social and emotional skills to improve overall well-being:

- Students learn to identify and manage their emotions in order to help them function and interact more effectively. Through learning new movement skills and interacting with others in physical activity, students develop self-awareness and learn how to express their feelings. Activities such as using feeling charts to depict emotions are encouraged within classrooms to reach this goal.

- Students are encouraged to cope with stress using strategies such as deep breathing, guided imagery and unplugging before sleep. Over time, they use these activities to build a personal "coping toolbox" that helps them manage stress and builds resilience against daily issues.

- Students are taught how to stay motivated and persevere despite difficult circumstances through simple practices such as expressing gratitude, appreciating the positive aspects of situations, and reframing negative thoughts. Teachers encourage students to use positive affirmations and to share positive messages with their peers to achieve these outcomes.

- Students learn to mutually respect diversity and establish healthy, cooperative relationships with their peers. Through class activities such as role-play, students are taught how to be more tolerant of others' opinions and engage in effective conflict resolution.

- Students are taught how to think creatively and critically in order to make informed judgements in a variety of settings and contexts. Teachers use various organisational strategies and tools to develop students' strategic thinking skills and help them make connections, solve complex problems, set goals and create plans, thereby enhancing their work skills and innovative mindset.

- Students are also encouraged to explore their identities so that they feel a sense of belonging in a variety of social and cultural contexts. This enhances their well-being by enabling them to support choices that are suitable for their personal growth. To achieve this, students are encouraged to reflect on their strengths and accomplishments while also monitoring their progress in skill development.

The implementation of the Health and Physical Education curriculum is dependent on the promotion of a healthy school environment that helps students make responsible decisions about all aspects related to their well-being. Therefore, the Ministry of Education in Ottawa has identified five important areas that, when implemented together, constitute a holistic environment for students to grow in:

- Ensuring effective implementation of the curriculum and its key ideas and practices by promoting professional learning opportunities for teachers and principals
- Establishing an efficient school and classroom leadership structure, which identifies shared goals and responsibilities among various stakeholders, and is responsive to the needs of the school community
- Promoting student engagement and sense of belonging by providing opportunities to take up leadership roles in both academic and non-academic settings
- Designing healthy school spaces that contribute to the positive cognitive, physical and social and emotional development of students, and cultivate sustained social relationships among peers and members of the community. Schools can achieve this by investing in recreational spaces that provide students opportunities to engage in physical activities as well as build key social and emotional skills such as collaboration and building healthy relationships with their peers. Encouraging home, school and community partnerships by providing parents, community groups, school staff and extended family the opportunity to support healthy learning inside and outside the classroom. This can be achieved through the creation of student and parent councils, and providing community programmes such as childcare and family support.

Source: Ontario Public Service (2019[9])

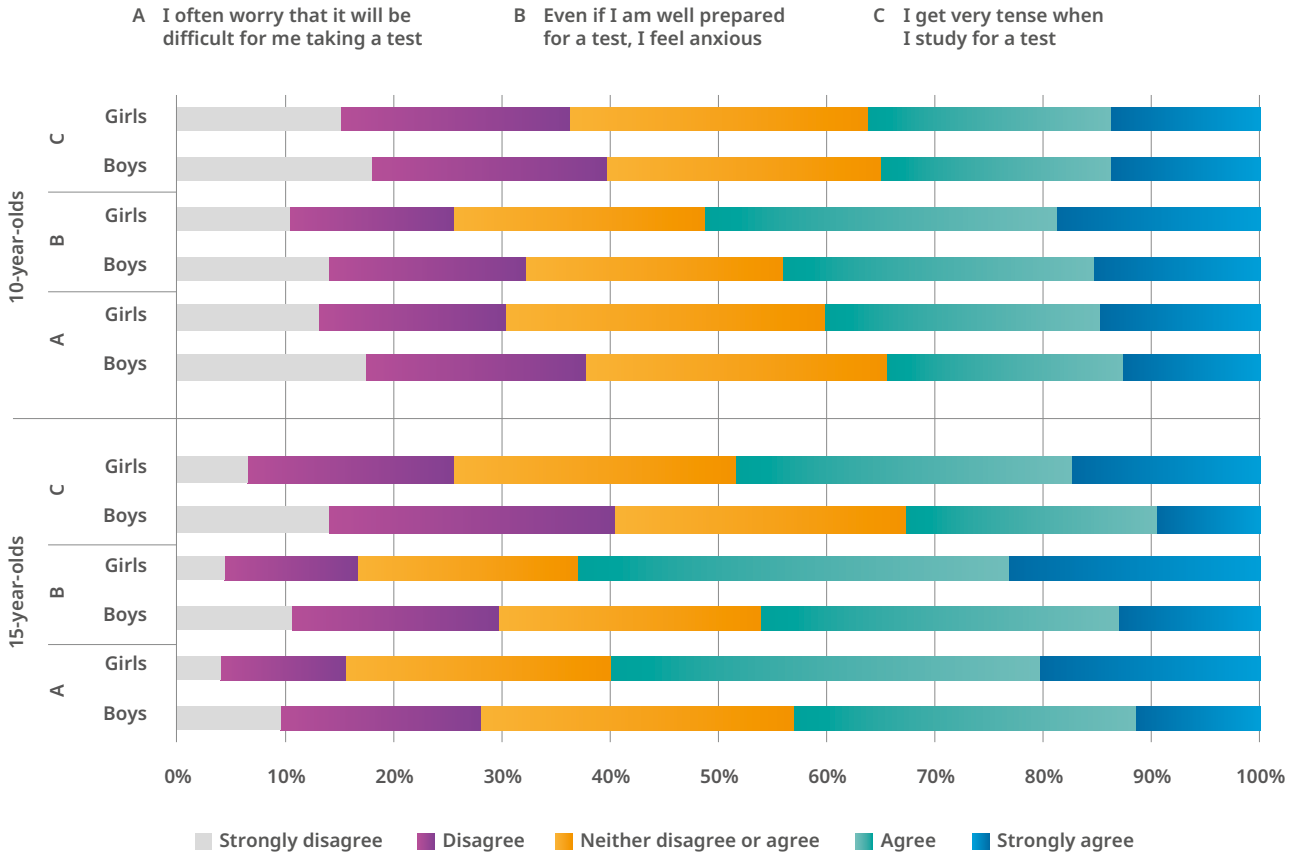
Test anxiety

SSES measured test anxiety using three items with five response options, ranging from "strongly disagree" to "strongly agree": a) I often worry that it will be difficult for me taking a test, b) Even if I am well prepared for a test I feel very anxious, and c) I get very tense when I study for a test. These items are a subset of the five items originally used in PISA 2015 where it was referred to as an index on schoolwork-related anxiety. Based on responses to the following three items an index of test anxiety was created. Test anxiety can be described as "the set of phenomenological, physiological, and behavioural responses that accompany concern about possible negative consequences or failure in an evaluative situation" (Zeidner, 2007[10]). It typically arises in educational settings where students believe their abilities are stretched or exceeded by the demands of the test situation.

In SSES a sizeable proportion of students indicated experiencing test anxiety (Figure 3.3, Table A3.9 and Table A3.10). On average, approximately 50% of older students and slightly more than 40% of younger students "strongly agreed" or "agreed" with all three statements. In the majority of cities, older students reported higher test anxiety than younger students. Ottawa (Canada) (21 percentage points) and Daegu (Korea) (19 percentage points) have the largest age gap in test anxiety while Bogotá (Colombia) (1 percentage point), Manizales (Colombia) (3 percentage points)and Sintra (Portugal) (3 percentage points) have the smallest. Only Moscow (Russia) has a negative age gap as younger students reported higher test anxiety than older students. Anxiety levels typically increase as students get older (McDonald, 2001[11]). Studies regularly find that older students experience more school pressure or stress related to schoolwork.

Figure 3.3. Test anxiety, by cohort and gender

Percentage of students, by level of agreement (international average)



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average.*
Source: *OECD, SSES 2019 Database Table A3.9*
StatLink https://doi.org/10.1787/888934273772

Gender differences in anxiety are especially pronounced among older students where girls reported higher test anxiety (Figure 3.3). In all cities, older girls reported greater agreement with all three statements, indicating higher test anxiety. The largest gender gaps among older students are found in Helsinki (Finland) (25 percentage points) and Manizales (Colombia) (21 percentage points) while the smallest gender gaps are found in Suzhou (China) (7 percentage points) and Daegu (Korea) (8 percentage points). Among younger students, girls reported greater agreement with all three statements only in Helsinki (Finland) (Table A3.11). Overall, the SSES results are aligned with other studies which confirm a consistent gender difference in test anxiety levels, with girls showing a higher level of test anxiety than boys (Currie et al., 2012[12]; McDonald, 2001[11]; OECD, 2017[5]).

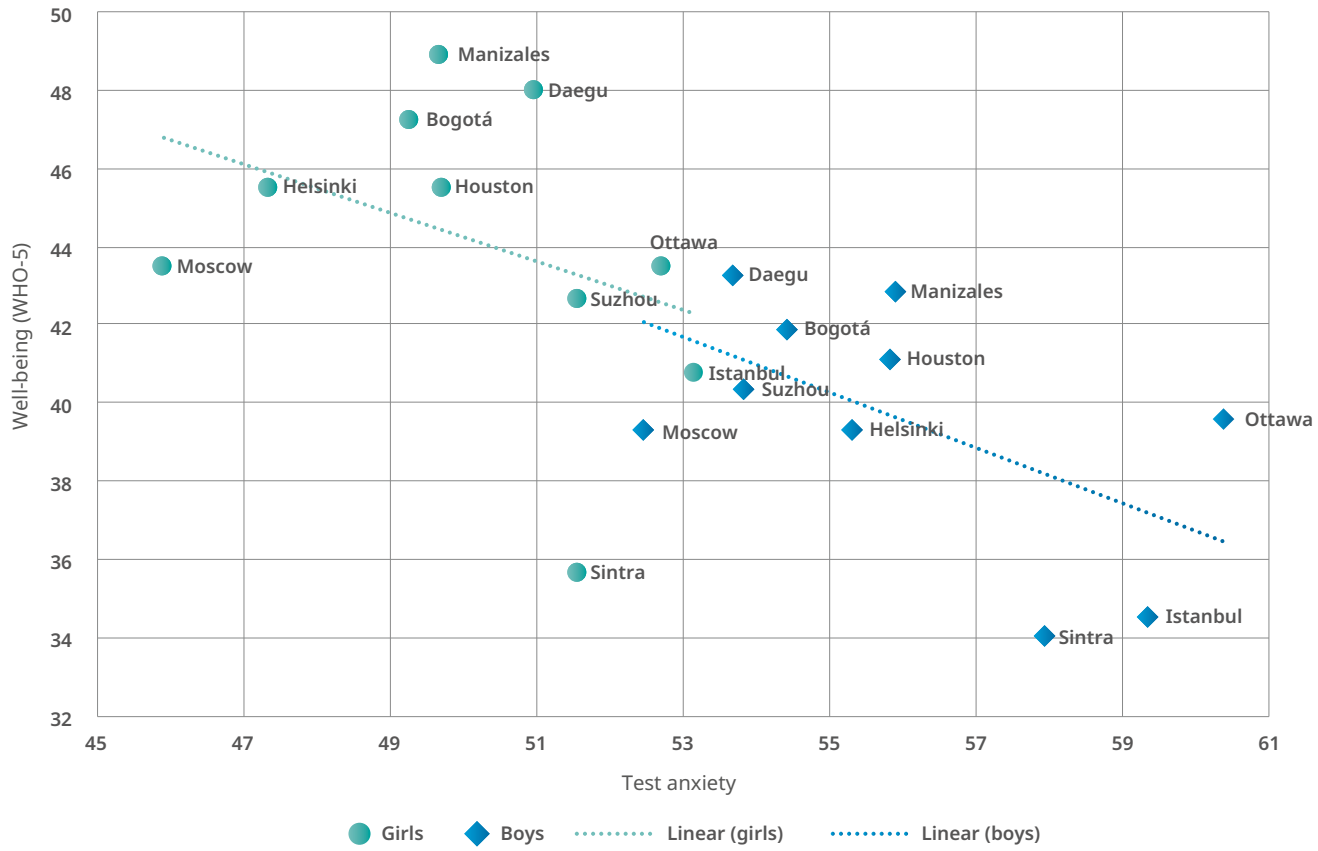
Socio-economically advantaged students reported lower levels of test anxiety compared to disadvantaged students only among the younger cohort. The average socio-economic disparity is about 6 percentage points for younger students with the largest differences found in Ottawa (Canada) (12 percentage points) and Suzhou (China) (11 percentage points). In Manizales (Colombia), Sintra (Portugal) and Istanbul (Turkey), no socio-economic discrepancy was found. For older students, no consistent pattern of differences in students' test anxiety related to their socio-economic status was found. Furthermore, no consistent pattern of differences was found related to students' migration background for both age cohorts (Table A3.12 and Table A3.13).

In sum, SSES data show that there are differences in the three aspects of psychological well-being within cities when considering subgroups like age and gender. Even though there also appear to be some differences between cities, the general trend regarding age and gender is similar across cities. Figure 3.4 provides an example of the relation between two aspects of students' psychological well-being and the consistency of these findings between cities. The figure shows that among older students, girls reporting lower current psychological well-being and higher test anxiety is a consistent pattern across cities.

It is important not to forget that some level of anxiety is normal and can be helpful to stay focused (also known as an inverted-U model or Yerkes-Dodson Law). Being too relaxed might be a sign of feeling bored or not being engaged enough with school. However, when students experience too much anxiety, it can result in emotional and physical distress, and worry that can impair test performance. Results from SSES show there is a negative relation between students' test anxiety and their school performance in math in the majority of cities for both age cohorts. There is also a negative relation between test anxiety and students' reading performance in the majority of cities for younger students; however, no relation is found for older students. Test anxiety is not related to students' performance in arts (Table A3.14). So, where a relationship between test anxiety and grades exists, it is found that test anxiety diminishes with better grades. The results are also aligned with PISA (OECD, 2017[5]). Previous research shows that social and emotional skills, particularly those related to emotional regulation, play a major role in test anxiety (Chamorro-Premuzic, Ahmetoglu and Furnham, 2008[13]).

Figure 3.4. Relation between current psychological well-being and test anxiety for 15-year-olds, by gender

Means of current psychological well-being index and test anxiety index mapped for all cities



Note: *Data for Sintra (Portugal) did not reach student response rate standards.*
Source: *OECD, SSES 2019 Database Table A3.16.*
StatLink https://doi.org/10.1787/888934273791

How are social and emotional skills related to psychological well-being?

This section examines which social and emotional skills are related to the three aspects of psychological well-being. Understanding which social and emotional skills are related to higher (and lower) levels of psychological well-being helps to inform policies aimed at fostering students' psychological well-being via social and emotional skills. As in previous chapters, this section sheds light on the most suitable levers to enhance – in this case, well-being outcomes. Such pragmatic focus on the suitability or relevance of the social and emotional skills discussed responds to an education sector that is often limited in time and resources and where curriculum overload is discouraged (OECD, 2020[14]).

Life satisfaction

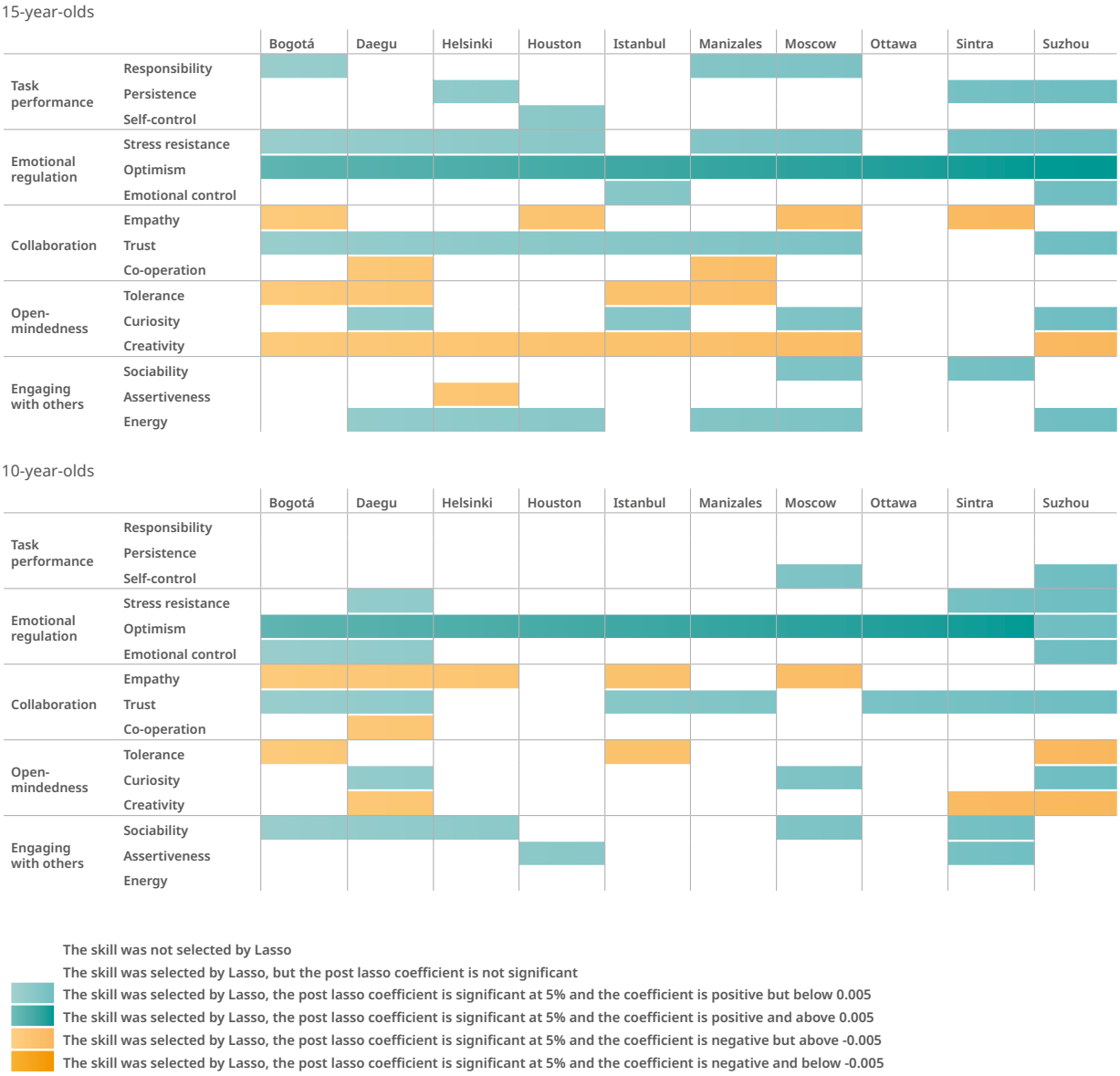
Among the social and emotional skills included in SSES, optimism shows the strongest and most consistent relationship with higher life satisfaction across cities and age cohorts, followed by trust (Figure 3.5 and Figure 3.6). Students who indicated being optimistic reported higher life satisfaction in both age cohorts. These relations were also true for trust, even though the strength of these associations was slightly weaker. These findings for optimism and trust are also consistent across every city participating in SSES. There are also other social and emotional skills that show generally weak but still significant relations with life satisfaction. Older students who indicated that they were more stress-resistant also reported higher life satisfaction while students who indicated being more creative reported lower levels of life satisfaction.

These findings show that optimism is closely related to students' psychological well-being after accounting for gender and socio-economic background. Students who are optimistic have a positive attitude and favourable outlook towards life. On the other hand, students who have enjoyed a more favourable life might be more optimistic as well. More importantly, higher levels of optimism are inversely related to depressive disorders, confer resilience and coping skills related to stressful events, and are related to factors such as socio-economic status and social integration, which generally have protective effects for both psychological and physical well-being (Carver, Scheier and Segerstrom, 2010[15]). As for trust, this refers to interpersonal trust between classmates, friends and people in general. For example, trust is often jeopardised when students receive negative or inconsistent responses to the same behaviours (e.g. discouraging responses or ones lacking understanding) from friends, teachers, and family. This leads to students harbouring insecurities. Warm and nurturing relationships with parents and peers, including mutual trust, have a positive effect on students' life satisfaction (Nickerson and Nagle, 2004[16]).

Students' life satisfaction is most strongly related to skills in the domain of emotional regulation while it is only weakly related to skills in the domains of task performance and engaging with others. Some cities show relations between life satisfaction and numerous social and emotional skills while for other cities only a few skills seem related to how satisfied students are with their lives. For example, in Ottawa (Canada) life satisfaction is only related to optimism for older students and only to optimism and trust for younger students. However, students' life satisfaction in Daegu (Korea) and Suzhou (China) is related to numerous social and emotional skills for both age cohorts. It also seems that the relationships between social and emotional skills, and life satisfaction are stronger for older students.

Figure 3.5. Skills most strongly associated with students' life satisfaction

Darker colours present stronger relations between skills and students' life satisfaction



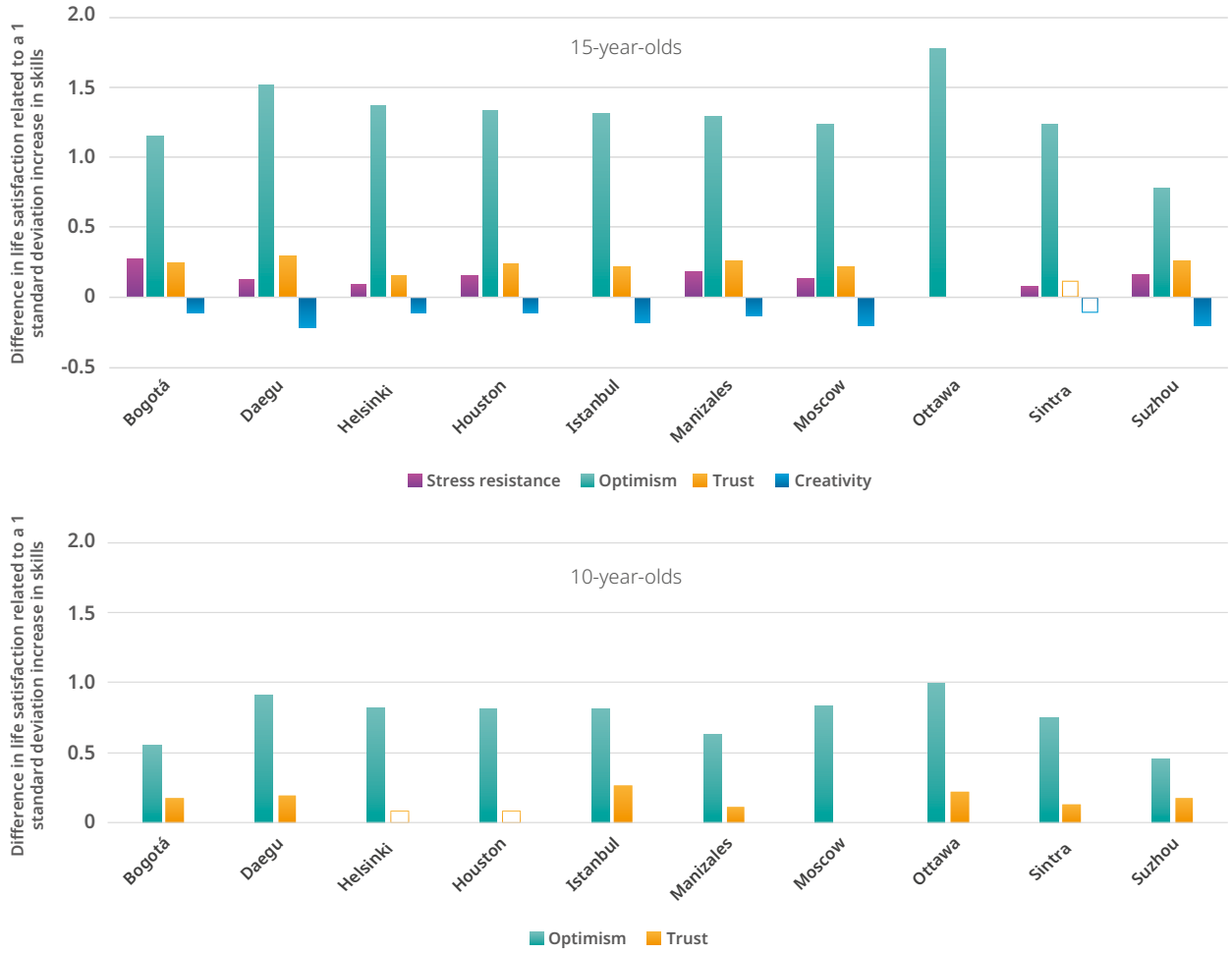
Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to coefficients from a regression of life satisfaction on (standardised) scores on social and emotional skill scales. The regression controls for gender and socio-economic status. Data for Sintra (Portugal) did not reach student response rate standards.*

Source: *OECD SSES 2019 Database, Table A3.18*

StatLink https://doi.org/10.1787/888934273810

Figure 3.6. Social and emotional skills most strongly associated with life satisfaction, by city

Difference in life satisfaction related to a one standard deviation increase in skill



Note: *Data for Sintra (Portugal) did not reach student response rate standards. Coefficients are from OLS regressions including control variables for gender and socio-economic status. Significant differences are coloured, non-significant differences are outlined.*

Source: *OECD, SSES 2018 Database, Table A3.18*

StatLink https://doi.org/10.1787/888934273829

Current psychological well-being

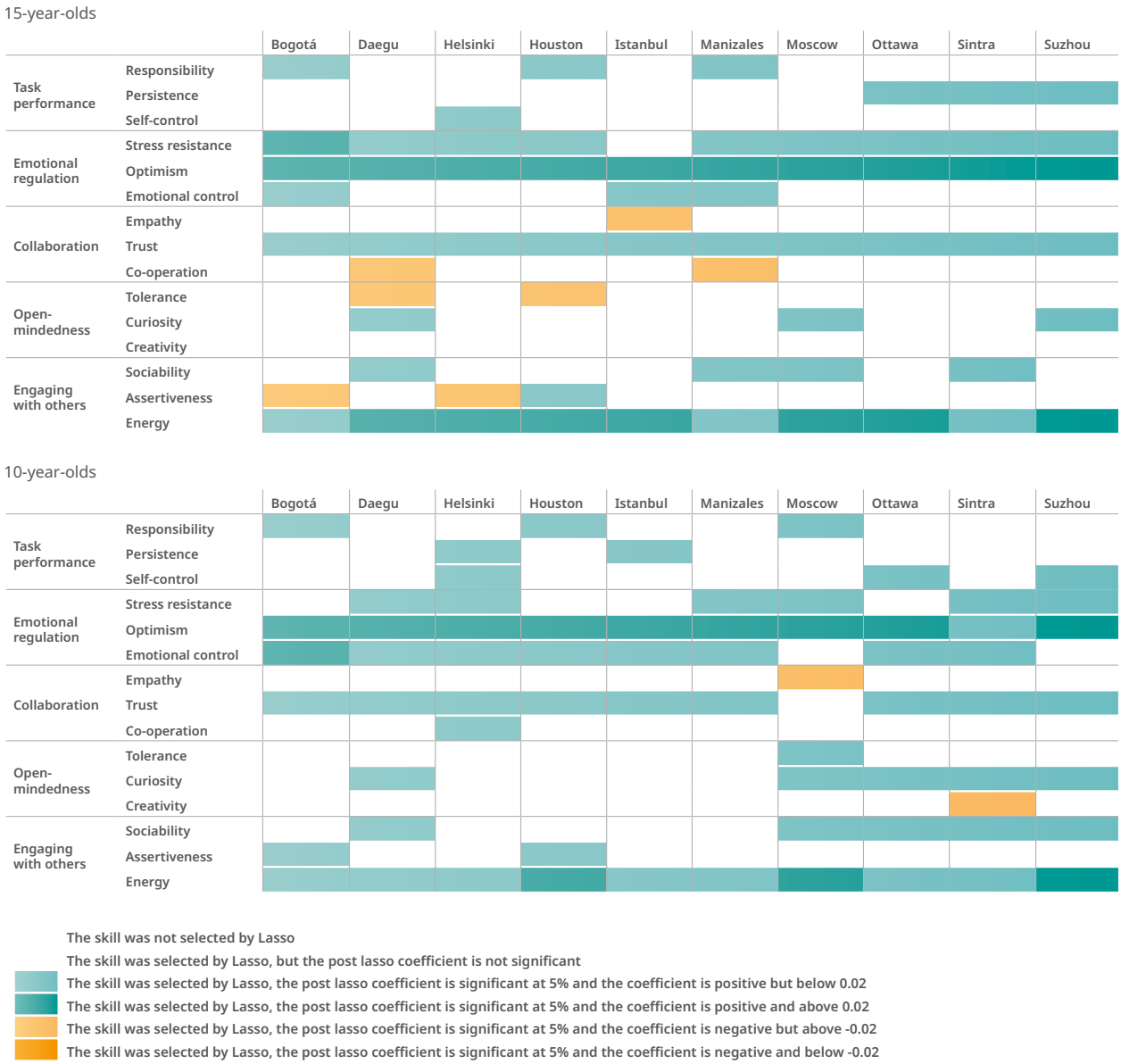
Stress resistance, optimism, emotional control, trust and energy are most strongly associated with a higher level of current psychological well-being (Figure 3.7 and Figure 3.8). In both age cohorts, students who indicated being more stress-resistant, optimistic, trusting of others and energetic also tended to have a higher level of current psychological well-being. For 10-year-olds, being in control of one's emotions was also associated with a higher level of current psychological well-being.

The consistency of the associations between social and emotional skills and students' current psychological well-being across cities is noteworthy. In all cities, being optimistic relates most strongly to a higher level of current psychological well-being (Figure 3.8). Stress resistance, emotional control and trust seem to have weaker but significant relations with a higher level of current psychological well-being across most cities and both age cohorts.[1]

As shown with life satisfaction, skills in the domain of emotional regulation show the strongest relation to students' current psychological well-being while skills in the domains of task performance and engaging with others appear the least related. These findings are aligned with previous research. For example, John, Naumann and Soto (2008[17]) found that low emotional regulation predicts less successful coping mechanisms and poorer reactions to illness, in part because highly neurotic individuals ruminate about their situation. More recently, Strickhouser, Zell and Krizan (2017[18]) performed a meta-synthesis of 36 meta-analyses investigating the relation between the Big Five domains and health and well-being. They found that collaboration, task performance and emotional regulation have particularly strong relations with overall health and psychological well-being.

Figure 3.7. Skills most strongly associated with students' current psychological well-being

Darker colours present stronger relations between skills and students' current psychological well-being



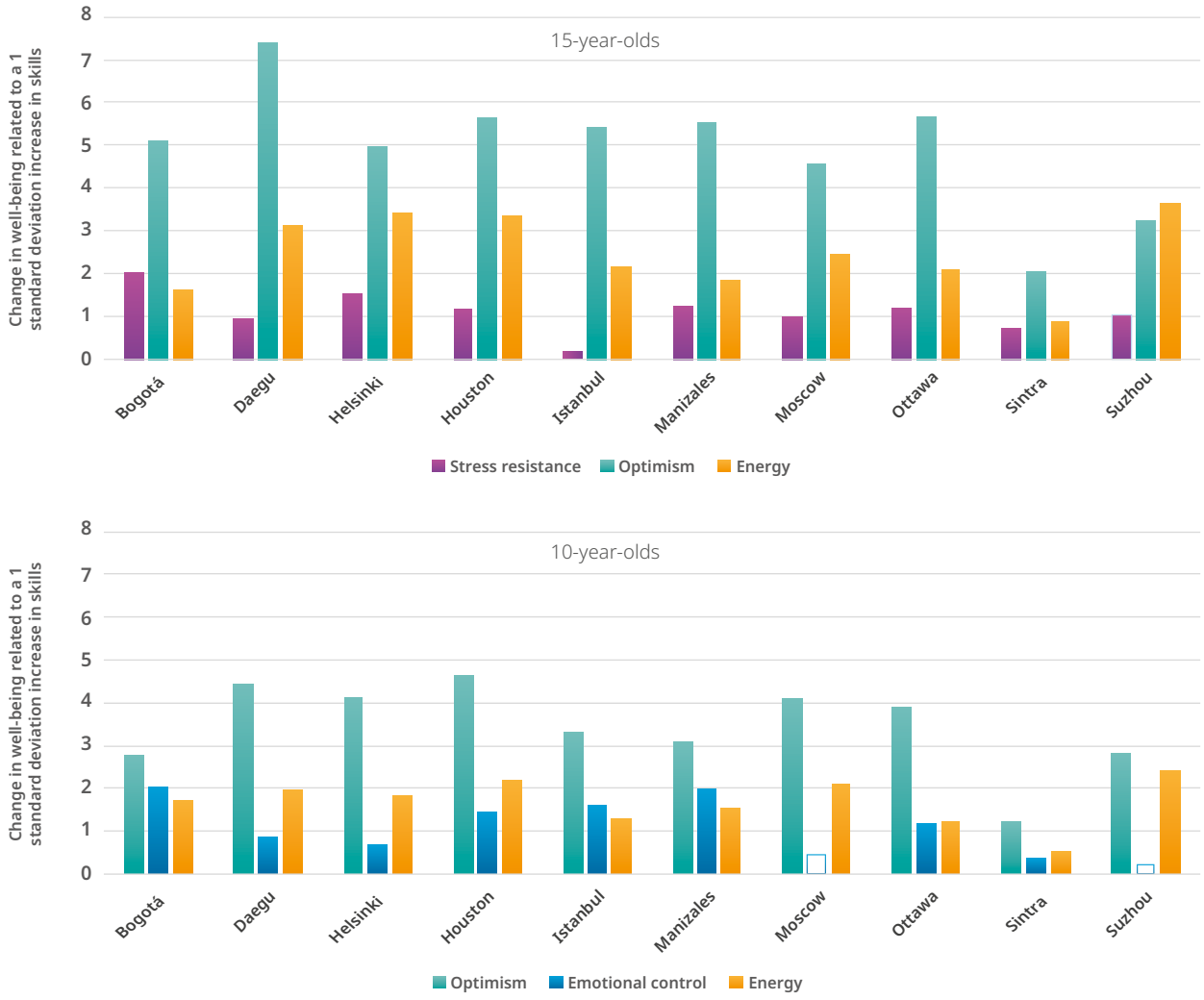
Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations. Numbers in the legend refer to coefficients from a regression of current psychological well-being on (standardised) scores on social and emotional skill scales. The regression controls for gender and socio-economic status. Data for Sintra (Portugal) did not reach student response rate standards.*

Source: *OECD SSES 2019 Database, Table A3.19*

StatLink https://doi.org/10.1787/888934273848

Figure 3.8. Social and emotional skills most strongly associated with current psychological well-being, by city

Difference in current psychological well-being related to a one standard deviation increase in skill



Note: *SData for Sintra (Portugal) did not reach student response rate standards. Coefficients are from OLS regressions including control variables for gender and socio-economic status. Significant differences are coloured, non-significant differences are outlined.*

Source: *OECD SSES 2019 Database, Table A3.19*

StatLink https://doi.org/10.1787/888934273867

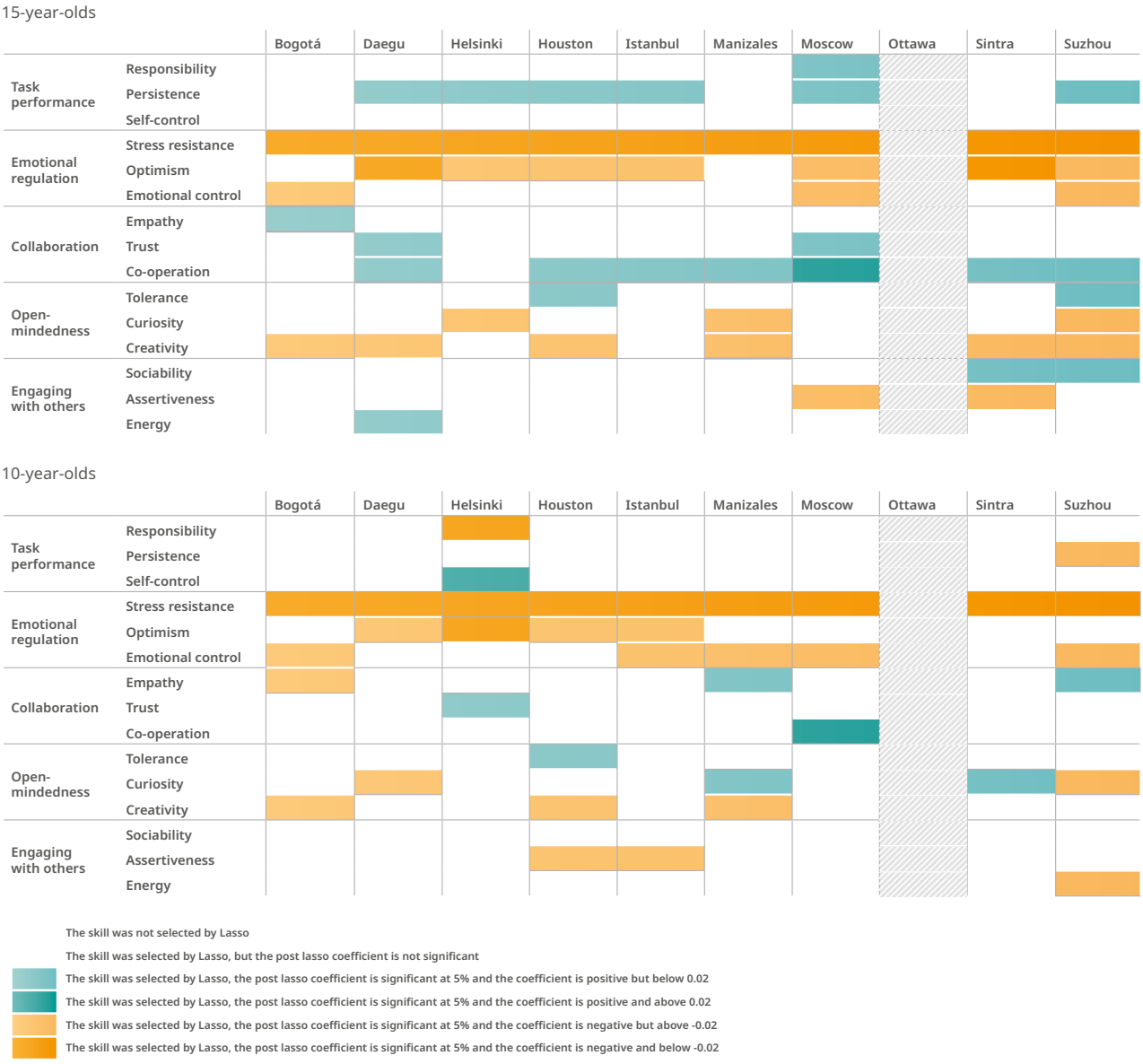
In conclusion, students who are more optimistic generally respond differently to stressful situations than students who are less optimistic. Optimists experience less distress than pessimists do when dealing with difficulties in their lives (Scheier, Carver and Bridges, 2001[19]). This is not because they are simply more optimistic but because they tend to use more effective coping strategies to confront stressful situations than pessimists do. The rationale behind this argument is that thinking that things will only get worse – even if true – may discourage someone from dealing with a situation while thinking that things can improve – even if false – may motivate them to make the best of a given situation.

Test anxiety

In all cities and across both age cohorts, students who indicated higher stress resistance also reported lower levels of test anxiety. This holds true even after accounting for students' grades in both math and reading[2]. Being optimistic is related to a lower level of test anxiety in the majority of cities for 15-year-olds compared to only 4 of the 10 cities for 10-year-olds. For older students, being more creative is also related to a lower level of test anxiety in the majority of cities whereas for younger students it is only related to a lower level of test anxiety in Bogotá (Colombia), Houston (United States) and Manizales (Colombia). For older students, being more co-operative and enjoying working with others is related to higher test anxiety.

Figure 3.9. Skills most strongly associated with test anxiety

Darker colours present stronger relations between skills and students' test anxiety



Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to coefficients from a regression of (standardised) test anxiety on (standardised) scores on social and emotional skill scales. The regression controls for gender, socio-economic status, and scores in math and reading. The model for Ottawa (Canada) is excluded as Ottawa did not provide information on grades. Data for Sintra (Portugal) did not reach student response rate standards.*

Source: *OECD SSES 2019 Database, Table A3.20*

StatLink https://doi.org/10.1787/888934273886

Skills in the domain of emotional regulation are most strongly related to test anxiety while skills in the domains of task performance and engaging with others are the least related. In almost all cities, more social and emotional skills are related to test anxiety for older students. The relation between social and emotional skills, and test anxiety seems to be more focused on a few skills for younger students.

Figure 3.10. Social and emotional skills most strongly associated with test anxiety, by city

Difference in test anxiety related to a one standard deviation increase in skill

Note: *Data for Sintra (Portugal) did not reach student response rate standards. Significant differences are coloured, non-significant differences are outlined.*

Source: *OECD SSES 2019 Database, Table A3.20*

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Similar to life satisfaction and current psychological well-being, studies have found a relation between students' test anxiety, and social and emotional skills. For example, Chamorro-Premuzic, Ahmetoglu and Furnham (2008[13]) used samples of university students in the United States and the United Kingdom to investigate the relationships between test anxiety and the Big Five domains, core self-evaluations and self-assessed intelligence. They found that higher test anxiety was largely a function of having low emotional regulation and liking to engage with others. This is consistent with SSES findings where students with higher stress resistance and those who were more likely to work independently also tended to report a lower level of test anxiety.

It is possible that students who reported lower levels of stress resistance and emotional control are generally more anxious than other students, not just in test situations. Test anxiety is a specific form of a more general group of problems characterised by feelings of anxiety. Individuals with (trait) anxiety have the tendency to present state anxiety in diverse situations and not just in a specific moment (McDonald, 2001[11]). In any case, coping with test anxiety is inextricably related to emotional regulation (Schutz and Davis, 2000[20]; Stoeber and Pekrun, 2004[21]).

Box 3.2.
Measures to enhance students' well-being in the classroom

Junior Cycle Well-being Guidelines, Ireland

In 2015, the National Council for Curriculum and Assessment in Ireland introduced the Junior Cycle Well-being Guidelines to support teachers and schools in planning, developing and implementing comprehensive programmes to enhance the physical, mental, social and emotional well-being of students. The framework aims to develop a sense of personal values and moral decision-making, promote active citizenship skills, encourage students to live sustainably and teach them to safeguard their well-being. The guidelines provide frameworks that schools can adopt to promote their students' well-being in areas such as civic and social engagement, physical education and personal and health education. In order to develop a sustainable and comprehensive programme, schools are recommended to engage with multiple stakeholders and organise consultations with parents, teachers and students to understand how well-being measures in school can be improved. This can help schools plan activities that support student well-being. Actions taken by schools to achieve their well-being goals include developing short courses to target specific areas of well-being, integrating well-being in existing courses, organising initiatives such as school retreats, sports days and sessions on digital media literacy. The impact of these steps on student well-being is reported regularly through the Junior Cycle Profile of Achievement, which tracks student performance across different activities that promote well-being.

Source: National Council for Curriculum and Assessment (2017[22])

Holistic Health Framework, Singapore

Under the aegis of its Trim and Fit programme to reduce obesity, the Ministry of Education in Singapore introduced the Holistic Health Framework (HHF). These are a set of guidelines to support students' overall physical, mental and social well-being. The broad aims of HHF are to support students' well-being in an inclusive manner and ensure that every child receives the knowledge, resources and opportunities to lead a healthy lifestyle. To achieve this, schools and teachers are trained to educate students on the importance of a healthy lifestyle. Schools that adopt HHF undertake various steps to reach their goals such as developing comprehensive formal and non-formal curricula to promote health; partnering with stakeholders to share expertise and resources; and developing an action plan for fast delivery. Common steps taken by schools include counselling pupils on nutrition and promoting physical activities.

Source: Ministry of Education (2007[23]) ; Lee (2003[24])

Australian Student Well-being Framework

Australia's Department of Education, Skills and Employment introduced the Student Well-being Framework, which aims to provide every student with the necessary resources to promote well-being, safety and positive relationships for them to reach their full potential. The five key elements of the framework are developing effective school leadership; including all members of the community to promote well-being; giving students space to voice their opinions; developing partnerships with families and communities to support well-being; and cultivating a collective understanding of positive behaviors required to improve well-being. To assess whether schools are incorporating the above elements to promote student well-being, the School Well-being Check Survey is administered. This survey contains 25 questions to help school leaders think about areas of improvement with respect to the five target elements the framework defines. Items included in this survey cover themes such as tolerance for diversity; teaching social and emotional skills through evidence-informed practices; building staff capacity through training; and active engagement with students and members of the extended community to promote well-being.

Source: Department of Education, Skills and Employment (2018[25])

How are school environment and expectations related to students' psychological well-being?

The goal of a competitive school climate is to motivate students to obtain high grades and perform well. Similarly, high expectations from parents and teachers can encourage students to reach their full potential. However, not all students are equally prepared to deal with high external demands and competition, even if a priori they are equally competent in the skills assessed. This may happen, for example, if a lot of attention is placed on rankings and comparing students' performance, and little on how students feel and whether they have the strategies to confront challenging situations (Putwain, Woods and Symes, 2010[26]; Gherasim and Butnaru, 2012[27]).

SSES asks students whether they experience a competitive school climate; whether they experience high expectations from parents; and whether they experience high expectations from teachers. The variables of competitive school climate and expectations from parents and teachers are created from these questions as described in Figure 3.11.

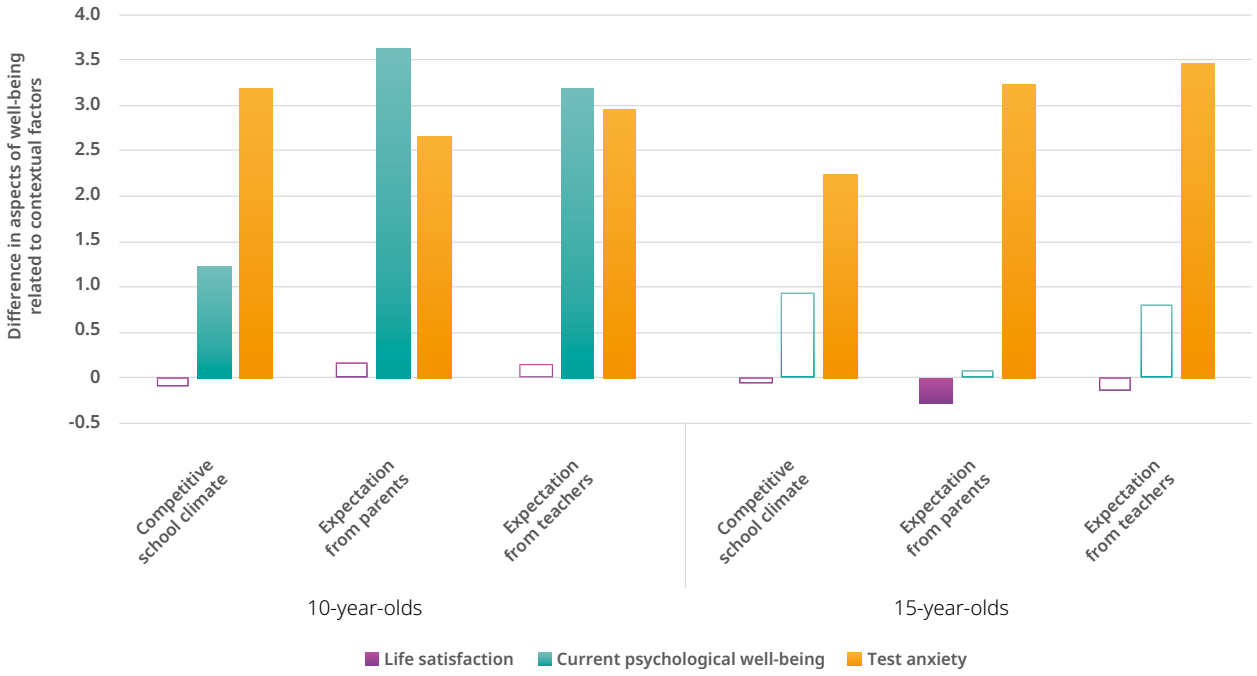
The three variables are binary, where 0 indicates "low" and 1 indicates "high" perceptions. Competitive school climates and high expectations from parents and teachers are differently associated with the dimensions of psychological well-being (Figure 3.11).

On average across cities, 10-year-olds who reported being exposed to more competitive school climates and higher expectations from parents and teachers reported higher current psychological well-being and higher test anxiety than those who reported being exposed to less competitive school climates and lower expectations. Fifteen-year-olds who perceived their school climate to be competitive and their parents and teachers to have high expectations reported only a higher level of test anxiety. Life satisfaction was only marginally associated with higher expectations from parents among 15-year-olds and not associated with expectations from teachers or a competitive school environment. Older students also reported lower levels of current psychological well-being than younger students, which might be shading the relationship between this type of well-being and perceptions of competition and adults' high expectations. Yet, it is also possible that younger students receive support and external expectations that are more tailored to students' needs and skills – i.e. adults are more permissive with 10-year-olds. In contrast, 15-year-olds might be exposed to a more demanding, high-stakes learning environment driven by exams, which typically come at the end of compulsory education.

In PISA 2018, students who saw themselves as more competitive scored higher in reading than those who did not after accounting for socio-economic status (OECD, 2019[28]). Yet, when competitive learning environments and external high expectations are not accompanied by adequate social and emotional support, and training in strategies to cope with test anxiety, students may feel overwhelmed and unable to face challenges. This may lead students to compete only in tasks where they think they will do well instead of those they are most interested in and curious about, limiting their potential to commit mistakes, learn, and grow.

Figure 3.11. Relationships between the three measures of psychological well-being and a perceived competitive school climate, and high expectations from parents and teachers

Difference in aspects of psychological well-being related to the following contextual factors (international average)



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in international average. Significant differences are coloured, non-significant differences are outlined.The regression controls for gender, socio-economic status, migration background, math grades and reading grades. For Ottawa (Canada) information on grades was not available and is therefore not included in this analysis.*

Source: *OECD SSES 2019 Database, Table A3.21*

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What do the findings mean for parents, educators and policy makers?

Promoting well-being at school has become an important priority for education policy. A successful student not only performs well academically but also enjoys learning and psychological well-being. SSES contributes to this education policy priority by providing insights into how social and emotional skills are related to students' well-being and can be protective factors.

Students' social and emotional skills are strongly related to students' psychological well-being after accounting for socio-economic status and gender. This is particularly the case for stress resistance, optimism and emotional control. Being optimistic is strongly and consistently related to both a higher level of life satisfaction and current psychological well-being across cities. Stress resistance and being optimistic are strongly related to a lower level of test anxiety. Students who assessed themselves as being more stress-resistant, optimistic and in control of their emotions reported higher levels of psychological well-being. Furthermore, students who indicated having higher levels of stress resistance also reported lower test anxiety. This is likely because it would be easier for someone with higher stress resistance to avoid or regulate the cognitive and emotional components of test anxiety. Someone with lower stress resistance would need to make a greater effort to regulate the cognitive and emotional components of test anxiety to the same extent. Leaving aside whether the effects of optimism are always good and the effects of pessimism are always bad, optimism is not simply a function of (sometimes) unrealistic expectations but of using coping strategies to deal with stressful situations (Scheier, Carver and Bridges, 2001[19]; Zeidner, 2007[10]). By recognising students' individual differences and offering learning opportunities that respond to students' diverse needs, schools can try to instil coping strategies best suited to each person.

If the demands from school and expectations from parents and educators are the same for boys and girls, advantaged and disadvantaged, why do students from disadvantaged socio-economic backgrounds and girls seem to experience more difficulties? SSES data show that 15-year-olds and, especially, girls reported lower life satisfaction, lower current psychological well-being and higher test anxiety than 10-year-olds. These findings are consistent with the dip in social and emotional skills discussed in Chapter 1 and confirmed by parents and educators in Chapter 4. Longitudinal studies also indicate that when children, particularly girls, enter adolescence, their social and emotional skills (temporarily) dip (Soto, 2016[29]; McCrae et al., 2002[30]). Schools are crucial resources for promoting students' psychological well-being, especially among the most disadvantaged, that, otherwise, would have limited or no support. Schools can help students recognise, understand, and regulate their psychological well-being. Since students spend a lot of time in school, teachers are well placed to identify early behavioral changes and signs of psychological distress. Giving teachers training on students' psychological well-being and how to best support their students is invaluable.

SSES data show that students' perceptions of competitive school climate and high expectations from parents or teachers are related to a higher level of current psychological well-being for 10-year-olds and to a higher level of test anxiety in 10- and 15-year-olds. Some level of test anxiety is normal and can be helpful to stay focused. Being too relaxed might be a sign of boredom or not being engaged enough with school. Too much anxiety can result in emotional and physical distress, and worrying that can impair test performance. Results from PISA have shown that it is not the frequency of tests but rather a perceived lack of teacher support that determines how anxious students feel. Test anxiety can be also related to lack of preparation, previous poor test performances and fear of failure. This is all the more so for high-stakes exams (McDonald, 2001[11]; Putwain, Woods and Symes, 2010[31]).

When competitive learning environments and high expectations by others are not accompanied by adequate social and emotional support or learning strategies to cope with test anxiety, students may feel overwhelmed and ill-prepared to face challenges. This may lead students to compete only in tasks where they think they will do well instead of those they are most interested in and curious about, limiting their potential to commit mistakes, learn, and grow. This is particularly important nowadays as young people increasingly perceive that others are more demanding of them, more demanding of others, and more demanding of themselves (Curran and Hill, 2019[32]). As discussed in Chapter 2 about trust and math performance, home and school learning environments with non-judgmental and supportive attitudes about making mistakes will help students feel less vulnerable when they do make mistakes. In the best of all cases, they would even learn from them. Young people would also be less apt to develop insecurities about their abilities and, more seriously, anxiety disorders during adulthood.

In preventing mental ill-health and promoting psychological well-being, schools have typically focused on teaching students effective study habits such as time management and work schemes, effective coping strategies and techniques to relax (Zeidner, 2007[10]; Merry et al., 2012[33]). More frequent testing that starts with easier goals and gradually increases in difficulty can build students' feeling of competence and sense of control. Furthermore, teacher support such as adapting lessons to the class' needs and knowledge level, providing individual help for struggling students and showing confidence in students' abilities might help reduce students' test anxiety (OECD, 2017[5]). Teachers can allay fears by explaining to students the rationale for regularly assessing their knowledge and skills – that they are useful for identifying what students still need to learn and learning methods they can improve on. Regular testing and feedback can give students a sense of agency and the sense that they can influence their own learning. Regularly assessed students can benefit from a non-threatening assessment context, a culture of ongoing observation, clear individual and collective objectives, supportive teachers as well as opportunities for mutual feedback between teachers and their students.

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Footnotes

[1] The exception to this pattern is Sintra (Portugal). It is not clear whether the weaker associations between social and emotional skills, and current psychological well-being in Sintra capture a true relationship or reflects a problem in data quality.

[2] Since students' test anxiety is related to lower math performance in the majority of cities and is related to lower reading performance in some cities, the analysis of the relation between students' test anxiety and social and emotional skills accounts for students' grades in both math and reading.

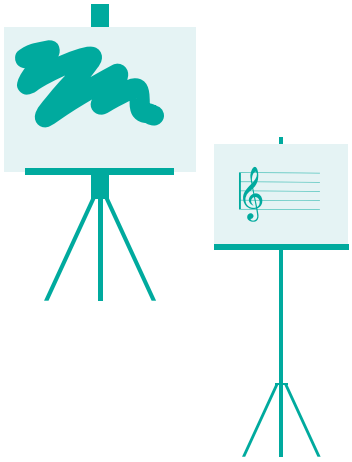
04

STUDENTS' CREATIVITY & CURIOSITY

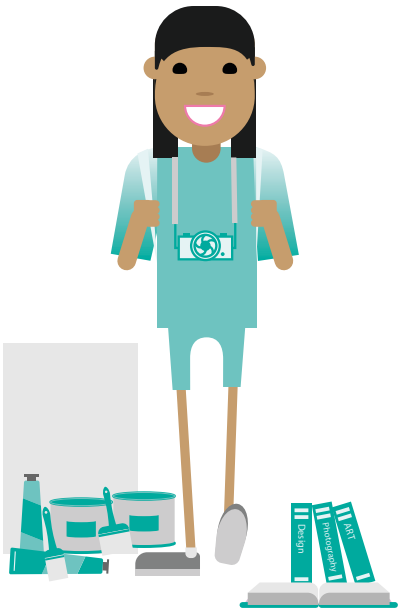
This chapter analyses how students' creativity and curiosity relate to other social and emotional skills, students' background, their behaviours and outcomes. It also summarises and interprets these relationships.

WHAT THE DATA TELL US

Students who participate in after-school art activities



report higher levels of creativity, particularly among 15-year-olds.



15-year-old students who consider themselves to be more creative describe themselves as more persistent and eager to learn new things.

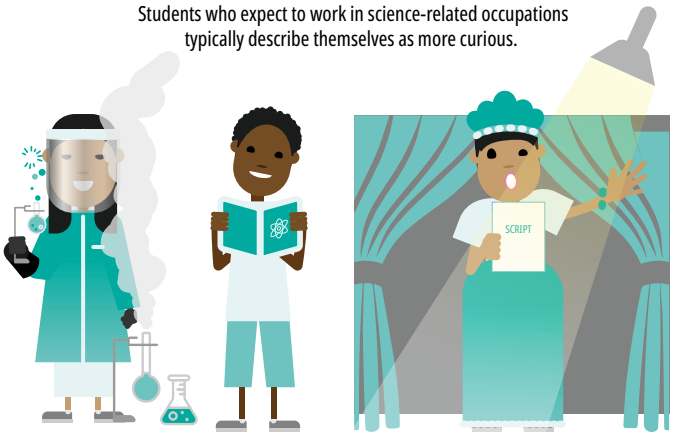
Self-perceived creativity declines as children enter adolescence.

Parents and teachers confirm this. It is truer for girls than boys, although parents and teachers did not observe differences between genders.

There are large socio-economic differences in reported creativity and curiosity skills.

Students from more advantaged socio-economic backgrounds reported higher creativity and curiosity than those from lower socio-economic backgrounds.

Students who expect to work in science-related occupations typically describe themselves as more curious.



Students who aspire to work in creative occupations such as acting and journalism typically describe themselves as being more creative.

Why are creativity and curiosity key to 21st-century citizens and societies?

Individual differences in creativity and curiosity are of interest to educators and policy makers for a number of reasons:

The first reason is that schools are increasingly expected to cultivate skills that contribute to the invention and adoption of new processes and products. The OECD Education 2030 project suggests that education systems should prepare students for "creating new value" by cultivating curiosity and creativity among other traits (OECD, 2018[1]). A recent review of curriculum documents found that student creativity was often mentioned among curriculum goals (though mentions of creativity were often limited to an introductory, aspirational section, and were rarer in the practical sections) (Vincent-Lancrin et al., 2019[2]). One motivation of this reflects the role of innovation (which happens when new and useful products or processes are put into use or made available for others to use) as the main driver of long-term economic growth in OECD countries (OECD, 2010[3]).

A second reason is their relationship to other learning outcomes, well-being, and life-long learning. Chapters 2 and 3 have highlighted strong and consistent associations of persistence and intellectual curiosity with academic success as well as the direct relationship between students' well-being and skills related to the domain of emotional regulation. Because of their relation to valued outcomes, these skills are often considered qualities to be nurtured at school (although a certain level of diversity is accepted and even valued).

For other skill measures such as creativity, however, previous chapters have shown ambiguous or even negative relationships with current academic success and life satisfaction: a negative relationship between creativity and academic success (particularly, mathematics grades) was observed in most cities after accounting for differences in other social and emotional skills. Does this mean that creative students are at a disadvantage at school? And how do creativity and curiosity relate to participation in learning after students reach the end of compulsory education?

The importance of a "creative" personality (i.e. a person with original ideas) for the creative process remains disputed (Dresser, 2020[4]). Other skills such as curiosity and persistence are often considered as being at least as important for success in creative endeavours. Nevertheless, it is likely that the capacity to contribute to creative processes will become more valued in the coming decades, if – as predicted by many – artificial intelligence and robotics lead to the automation of a sizeable share of tasks currently performed by workers (Elliott, 2017[5]; Nedelkoska and Quintini, 2018[6]). Market research by LinkedIn Learning has already repeatedly found in recent years that "creativity" was the "soft skill" most demanded by companies (Pate, 2020[7]; Petrone, 2019[8]).

How do creativity and curiosity relate to each other, and to the other social and emotional skills?

Students who rated themselves as highly creative also tended to describe themselves as eager to learn new things (and other markers of intellectual curiosity). Creativity and curiosity are considered to be facets of the broader "open-mindedness" domain and are expected to be highly correlated.

The correlations with other social and emotional skills tended to be weaker and reflect, to a large extent, similar patterns for both creativity and curiosity.[1] Figure 4.1 shows these associations graphically for 15-year-olds: it depicts the average proportion of students in the top quarter of creativity who are also classified in the top quarter of other social and emotional skills among students from the same city. The height of the bars reflects the strength of the association between two skills. For example, more than 50% of students who are in the top quarter of creativity in their city are also in the top quarter of curiosity; if the two scales were unrelated, the proportion would be only 25% (i.e. the same as the overall proportion of students in the top quarter of curiosity). The figure shows that students who rated themselves as highly creative tended to rate themselves higher on all remaining social and emotional skills but particularly so on curiosity, followed by empathy, persistence, energy, tolerance and co-operation. The associations of creativity with intellectual curiosity and persistence are particularly interesting because of the joint (and mutually reinforcing) role these skills can play for creative achievement in any domain.

Figure 4.2 illustrates similar patterns for students who rated themselves as highly curious (i.e. students in the top 25% of the distribution of self-reported curiosity within their city). More than 50% of students who are in the top quarter of curiosity in their city are also in the top quarter of creativity, tolerance, co-operation and persistence. The association of curiosity with stress resistance, trust and sociability, however, is weaker – as reflected by the fact that less than 40% of students who are in the top quarter of curiosity rate themselves similarly highly on these traits.

A high level of curiosity is the most common trait associated with students who portray themselves as highly creative across all cities except Moscow (Russia) (even in Moscow, however, high creativity is most commonly associated with high curiosity by parents) (Tables A4.1 and A4.2).

Box 4.1.

What aspects of creativity and curiosity does the Survey on Social and Emotional Skills measure?

The main measure of "creativity" in SSES is of students' perception of their creativity and ingenuity based on six self-report questionnaire items: it is thus a measure of creative self-concept. Similarly, the main measure of "curiosity" is based on students' reports about their love of and interest in learning new things. Both measures have been found in previous research to be distinctive traits of creative individuals.

Definitions of creativity typically refer to two qualities of a product or idea: a creative idea or product must be novel, original, or uncommon and, at the same time, adequate, effective or useful (Runco and Jaeger, 2012[9]). Creativity, as an individual skill, is then defined as the ability to produce creative products or ideas: Sternberg and Lubart (1999[10]), for example, define creativity as "the ability to produce work that is both novel (i.e. original, unexpected) and appropriate (i.e. useful, adaptive concerning tasks constraints)". The same attribute, "creative", is sometimes also used to qualify the process that generates such products or ideas: Lubart (2001[11]) defines the creative process as "a sequence of thoughts and actions that leads to novel, adaptive production". Plucker, Beghetto and Dow (2004[12]) define creativity as "the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context". This definition assumes the existence of a creative person making the product, a creative process forming the product, and a creative place, which represents a particular setting conducive to creativity (the "four Ps") (Kankaraš, 2017[13]). Defined in this way, creativity extends beyond the individual and depends on the existence of favourable conditions to realise a person's creative potential. PISA defines creative thinking as "the competence to engage productively in the generation, evaluation and improvement of ideas that can result in original and effective solutions, advances in knowledge and impactful expressions of imagination" (OECD, 2019[14]). This definition also acknowledges that creative potential requires a number of distinct individual skills or aptitudes, some of which are contingent on a particular context and task (the abilities required to compose good lyrics for a song, for example, are different from those required to find a novel solution to an engineering problem).

Creative potential is also associated with a number of more general individual inclinations, including imagination, ingenuity, inquisitiveness, curiosity, and persistence. The study of the personality of creative people; i.e. people whose work or ideas are deemed creative (Plucker and Makel, 2010[15]), has been the focus of significant research in psychology. In this tradition, which can be dated back to Guilford (1950[16]), the goal is to identify (generic) personality traits that are characteristic of creative persons in order to detect and cultivate creative potential.

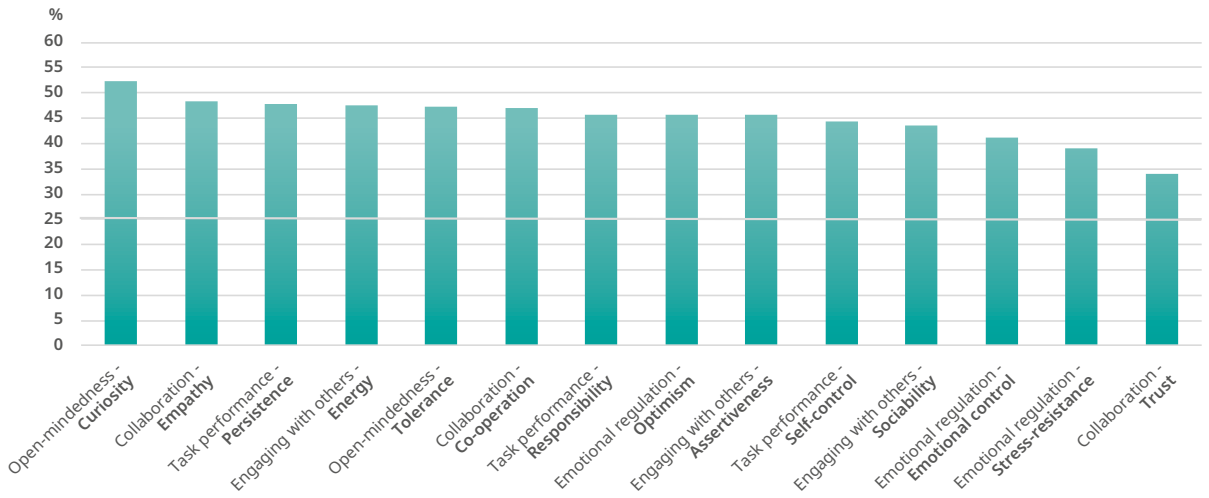
Empirical studies based on questionnaire instruments have since shown that many creative people share a core set of tendencies, chief among them "openness to experience" and related traits (Amabile, 2012[17]; Batey and Furnham, 2006[18]; Feist, 1998[19]; Prabhu, Sutton and Sauser, 2008[20]; Sternberg and Lubart, 1991[21]; Sternberg and Lubart, 1995[22]). Openness to experience includes, in particular, both a cognitive component (imagination, ingenuity, fantasy – the skill, called "creativity" in SSES) and an affective component (love of learning, interest, and intrinsic motivation – the skill labelled "curiosity" in SSES).

For example, Avvisati, Jacotin and Vincent-Lancrin (2014[23]) analysed two international surveys of tertiary education graduates (Reflex and Hegesco), covering 19 European countries and Japan, to identify the traits that most distinguished "innovators" from "non-innovators" across all fields of study: "innovators" reported significantly greater ability to "come up with new ideas and solutions" (i.e. imagination, ingenuity) and "willingness to question ideas" (which relates to intellectual curiosity). "Innovators" refers to professionals whose job contributes to innovation in an organisation at the forefront of absorbing innovation.

SSES measures of creativity and curiosity are related to this tradition. The main measure of creativity in SSES is that of students' creative self-concept, which is not contextualised in a particular domain or setting. Previous research has documented how creative self-beliefs relate to other personality traits such as openness (Karwowski and Lebuda, 2016[24]), creative performance (Choi, 2004[25]), and, among adolescents, classroom perceptions and after-school activities (Beghetto, 2006[26]). Similarly, the main measure of intellectual curiosity is based on students' general dispositions towards learning. These measures are complemented by ratings of curiosity and creativity given by parents and teachers based on the same statements used for students' self-assessment (only three statements were used in the teacher questionnaire while six statements were used in student and parent questionnaires).

Figure 4.1. A profile of 15-year-old students reporting high levels of creativity

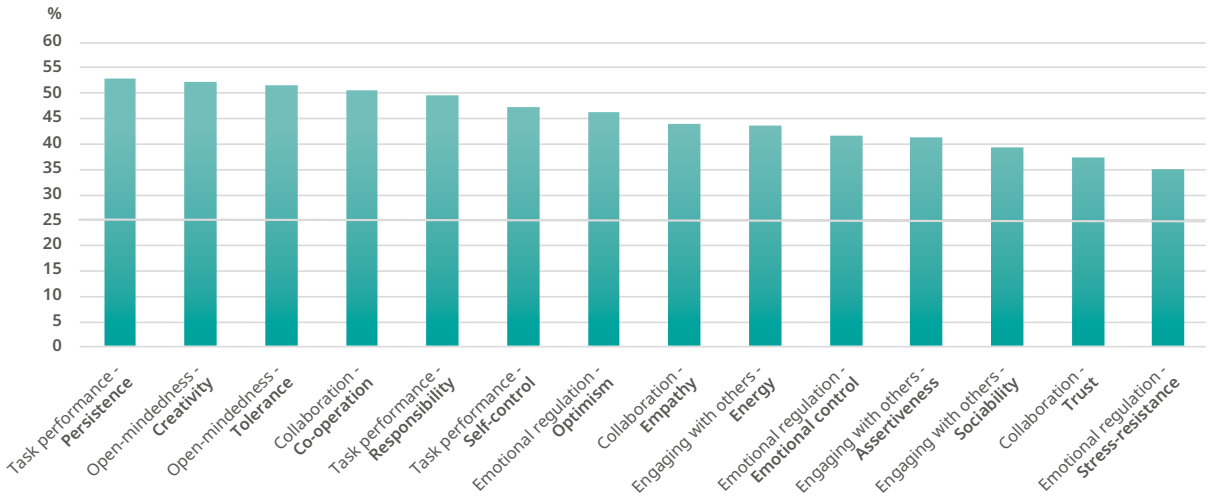
Proportion of students reporting high levels of creativity who also report high levels of other social and emotional skills



Note: *Students reporting high levels of creativity (and of other social and emotional skills) are defined as students whose scale scores are in the top 25% of the distribution within their city and cohort. Values above 25% indicate a greater likelihood for students reporting high levels of creativity to also report high levels of the corresponding skill.*
Social and emotional skills are shown in descending order of the strength of their association with creativity.
Source: *OECD, SSES 2019 Database, Table A4.1*
StatLink https://doi.org/10.1787/888934273943

Figure 4.2. A profile of 15-year-old students reporting high levels of curiosity

Proportion of students reporting high levels of curiosity who also report high levels of other social and emotional skills



Note: *Students reporting high levels of curiosity (and of other social and emotional skills) are defined as students whose scale scores are in the top 25% of the distribution within their city and cohort. Values above 25% indicate a greater likelihood for students reporting high levels of curiosity to also report high levels of the corresponding skill.*
Social and emotional skills are shown in descending order of the strength of their association with creativity.
Source: *OECD, SSES 2019 Database, Table A4.4*
StatLink https://doi.org/10.1787/888934273962

How do individual differences in creativity and curiosity change (or not change) according to students, parents, and educators?

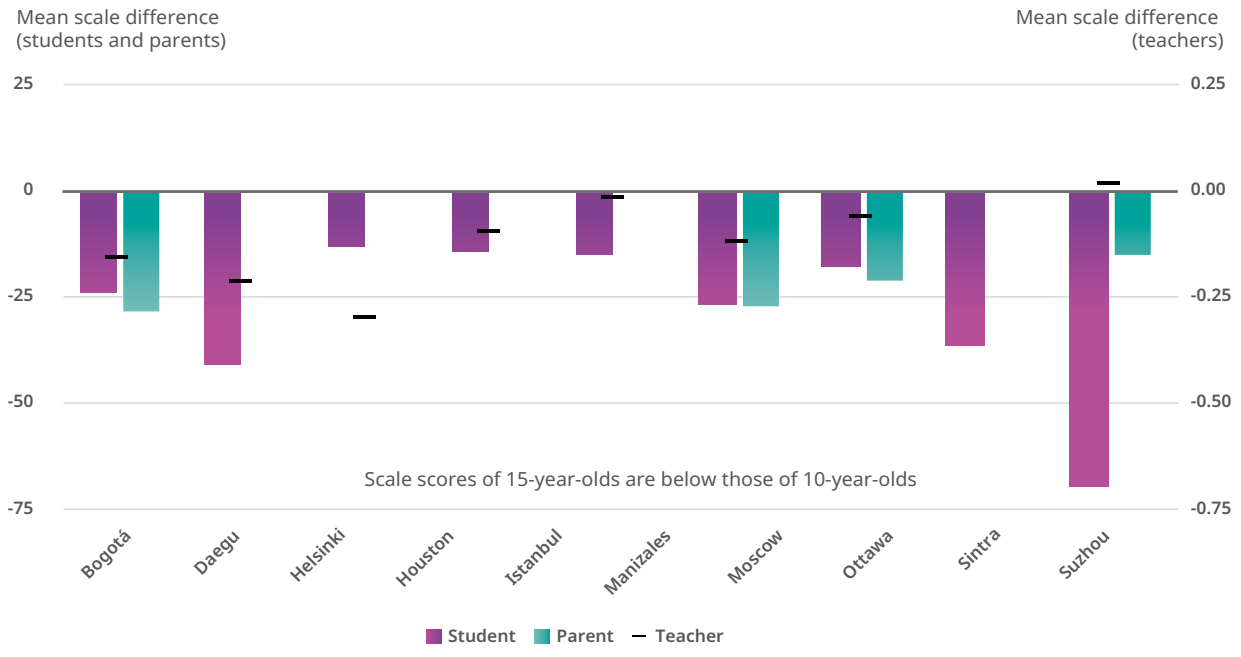
Chapter 1 presented the broad differences in creativity and curiosity between boys and girls across socio-economic quarters and between 10- and 15-year-olds along with differences in other social and emotional skills. This section summarises these differences and extends the discussion to ratings of student creativity and curiosity provided by parents and teachers.

Several prior studies have reported changes in individual curiosity and creativity during childhood. For example, using self-report measures from a sample of English-speaking volunteers recruited on the Internet, Soto et al. (2011[27]) showed that average levels of curiosity (a facet called "openness to ideas" in their study) seemed to dip from age 10 to the early teens and this decrease was especially prominent for girls. De Haan et al. (2016[28]) also found a drop in curiosity between ages 6 and 17 among Belgian children; the latter study, which measured facets of the Big Five domains based on mothers' reports, also measured creativity and found a similar drop. In contrast, after age 15, during late adolescence and early adulthood, both curiosity (Soto et al., 2011[27]) and creative self-concept (Karwowski, 2016[29]) appear to increase.

Data from SSES indicate, across all 10 cities, significantly lower levels of creativity and curiosity among 15-year-olds compared to 10-year-olds, suggesting a decline in creativity as children enter adolescence. The difference in creativity between cohorts ranges from around 15 score points in Helsinki (Finland), Houston (United States) and Istanbul (Turkey) to 70 score points in Suzhou (China), with a majority of cities showing a decline of around 20-40 score points (Figure 4.3). A similar pattern of differences across cities emerges for curiosity where the dip ranged between 71 score points in Suzhou (China) and 17 score points in Moscow (Russia). (Figure 4.4).

Figure 4.3. Age gaps in creativity

Based on student self-assessments, parent assessments and teacher assessments



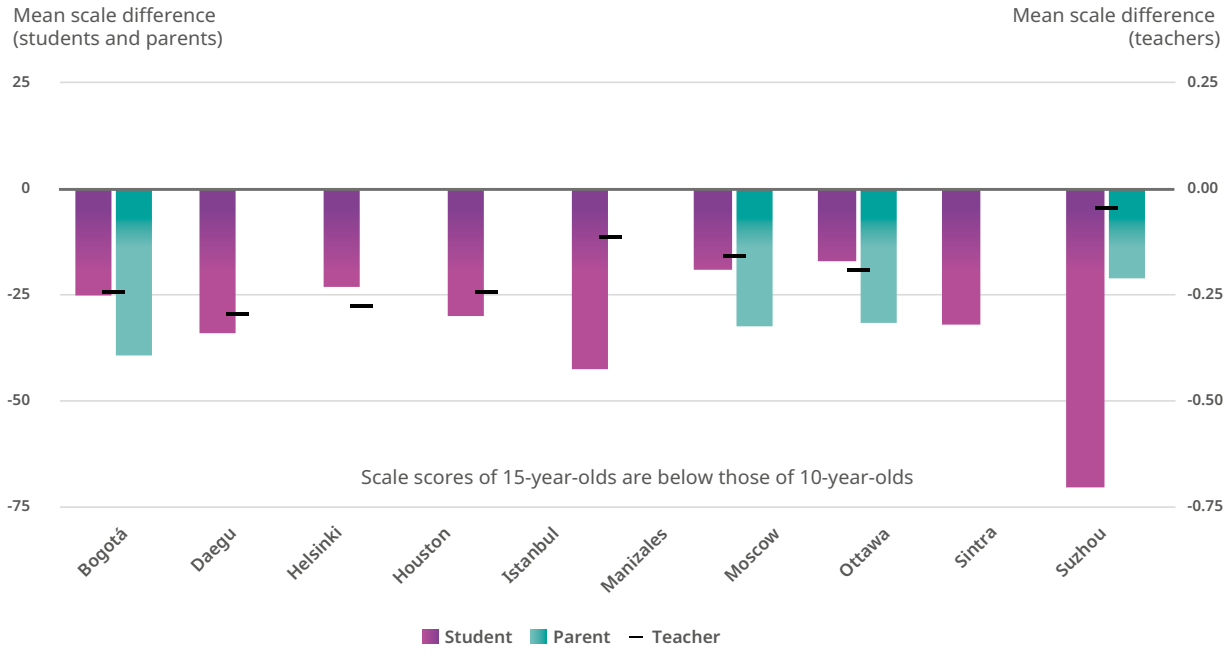
Note: *Student data for Sintra (Portugal), teacher data for Ottawa (Canada) and Sintra (Portugal), and parent data for Daegu (Korea), Helsinki (Finland), Houston (Canada), Istanbul (Turkey), Ottawa (Canada) and Sintra (Portugal) did not reach response rate standards and may not be comparable across cohorts. These data are therefore excluded from the figure. Scale scores based on teacher assessments correspond to simple arithmetic averages of the underlying items; scale differences based on teacher assessments cannot be directly compared to scale differences based on student and parent assessments.*

Source: *OECD, SSES 2019 Database, Tables A4.7, A4.9 and A4.13.*

StatLink https://doi.org/10.1787/888934273981

Figure 4.4. Age gaps in curiosity

Based on student self-assessments, parent assessments and teacher assessments



Note: *Student data for Sintra (Portugal), teacher data for Ottawa (Canada) and Sintra (Portugal), and parent data for Daegu (Korea), Helsinki (Finland), Houston (Canada), Istanbul (Turkey), Ottawa (Canada) and Sintra (Portugal) did not reach response rate standards and may not be comparable across cohorts. These data are therefore excluded from the figure. Scale scores based on teacher assessments correspond to simple arithmetic averages of the underlying items; scale differences based on teacher assessments cannot be directly compared to scale differences based on student and parent assessments.*

Source: *OECD, SSES 2019 Database, Tables A4.7, A4.9 and A4.13.*

StatLink https://doi.org/10.1787/888934274000

An important question is whether the patterns observed with self-assessment measures are also observed in ratings of curiosity and creativity given by parents and teachers. There are at least two main reasons why triangulation is important here. First, social and emotional skills are multi-dimensional constructs manifested differently in different contexts (Ramsey et al., 2016[30]). The multi-dimensional nature of social and emotional skills would be discredited by assessing it through only one method or by relying on a single informant (Abrahams et al., 2019[31]). Second, while self-reported questionnaires are a preferred method for measuring psychological traits, they can be affected, like all questionnaire measures, by the respondents' interpretation of the questionnaire item (see Box 1.1 Chapter 1).

For the cities with acceptable response rates among both cohorts for teacher and parent questionnaires, the data show a consistent direction of change across age groups in ratings of creativity and curiosity; adult respondents reported lower levels of agreement with statements describing the student as creative or curious for older students. Across all cities and all respondents, average creativity and curiosity scores are lower for 15-year-olds than for 10-year-olds when they can be compared. However, while Suzhou (China) had the largest dip in self-report measures, it had among the smallest differences in adult-reported measures. In contrast, teachers in Helsinki (Finland) perceived 15-year-olds as significantly less creative and curious than 10-year-olds while self-report measures indicated rather similar levels of creativity and curiosity among the two cohorts.

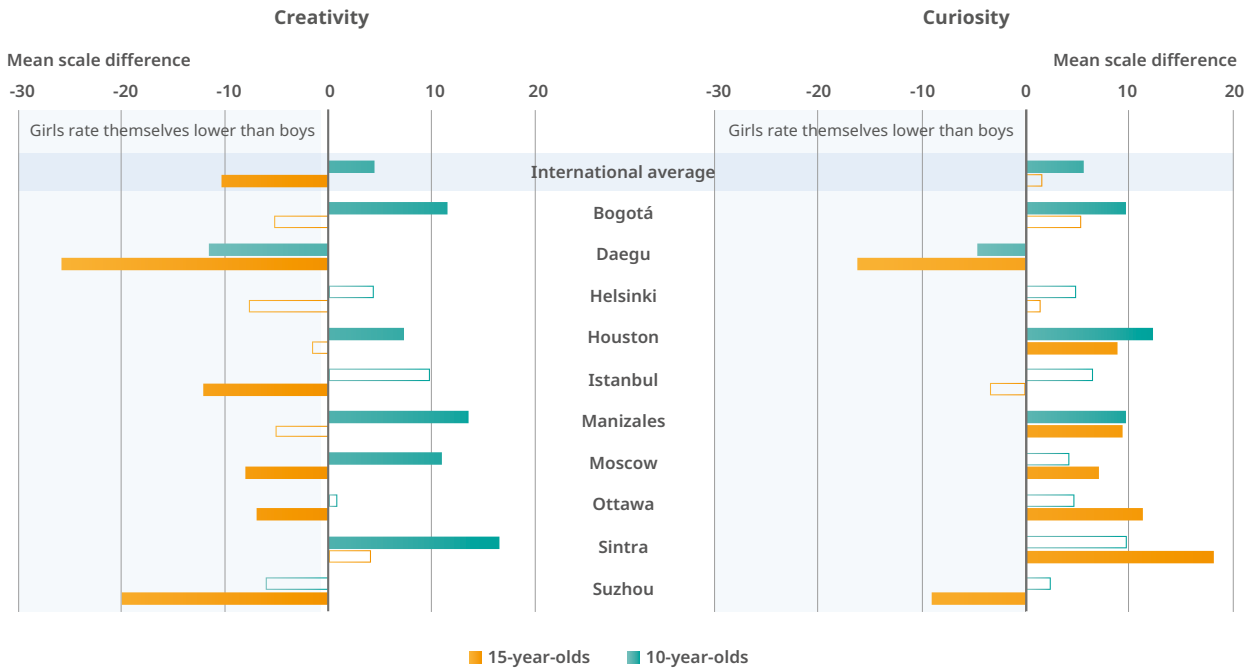
The triangulation of different methods, therefore, confirms a drop in creativity and curiosity between age 10 and 15 in most cities. At the same time, the size of this drop varies considerably depending on whether self- or parent-reported measures were used; this suggests some caution in comparing the magnitude of the gap across cities.

SSES also identified typical patterns of gender and socio-economic differences in creativity and curiosity. At age 15 boys and girls on average reported rather similar perceptions of their own creativity and curiosity (Figure 4.5). Boys reported somewhat higher levels of creativity in most cities but the observed difference was close to or larger than 20 score points only in Daegu (Korea) and Suzhou (China); and the magnitude of gender differences in creativity was, in general, among the smallest skill differences observed (Chapter 1). The gender differences in creativity observed at age 15, as represented in Figure 4.5, are nevertheless in striking contrast to those observed at age 10. In cities where a small gap in favour of boys was already observed at age 10, this gap was larger among 15-year-olds; where no gap existed at age 10 or the gap was in favour of girls, a gender gap in favour of boys was observed by age 15 (Tables A4.14 and A4.15). In other words – and assuming that cohort differences reflect typical differences by age – SSES data show that girls develop a more negative self-concept in creativity compared to boys, between age 10 and 15.

This gender difference in the age profile of mean creativity ratings is not observed in ratings of students' creativity given by parents nor in ratings given by teachers (Tables A4.10 and A4.13). For cities that reached acceptable response rates for teacher and parent questionnaires across both cohorts, gender gaps in parent-reported creativity were similar at age 10 and 15; whereas gender gaps in teacher-reported creativity widened, but in favour of girls, in Bogotá (Colombia) and Houston (United States). (In Suzhou, in contrast, boys caught up to girls in teacher-rated creativity between age 10 and 15).

Curiosity or inquisitiveness was also slightly higher among 15-year-old boys than among girls (by 16 score points) in Daegu (Korea); in most other cities, however, only small differences between boys and girls of the same age were observed (Figure 4.5). All differences were smaller than one-fifth of a standard deviation and many were not statistically significantly different from 0. Moreover, with the exception of Daegu (Korea) and Suzhou (China), the differences observed were more often in favour of girls and often remained close to those observed at age 10.

Figure 4.5. The gender gap in curiosity and creativity, among 10- and 15-year-olds
Based on student self-reports

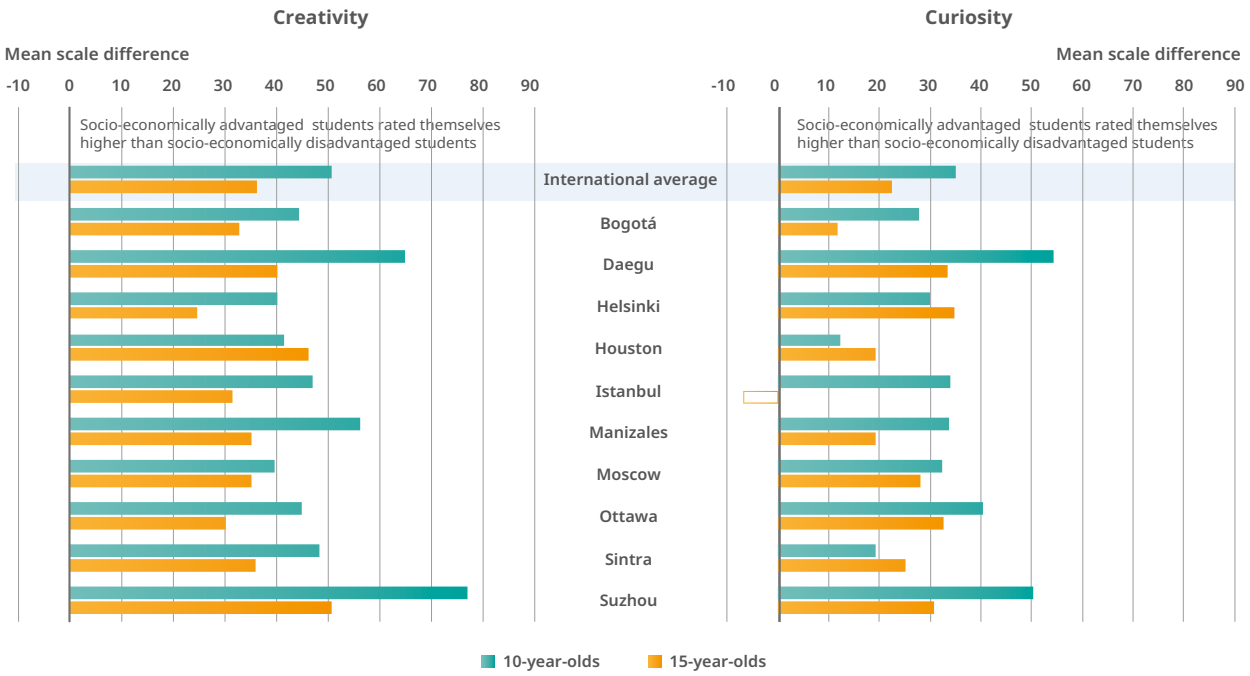


Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in international averages. Significant differences are coloured, non-significant differences are outlined. Note that the difference between two "non-significant" differences (at age 10, and at age 15) may be significant; while the difference between a significant and a non-significant difference may not be significant.*
Source: *OECD, SSES 2019 Database, Tables A4.14 and A4.15.*
StatLink https://doi.org/10.1787/888934274019

Much larger differences were observed by socio-economic status in most cities: in general, the most advantaged students (i.e. the 25% of students with the highest index of economic, social and cultural status, or ESCS) perceived their own creativity and curiosity as significantly higher than the 25% most disadvantaged students. In fact, while gender gaps tended to be among the smallest observed in the study, the association of these two skills with socio-economic status was among the strongest observed in this study (Chapter 1). For self-reported curiosity, the largest socio-economic gaps were around 30 score points or larger in Daegu (Korea), Helsinki (Finland), Moscow (Russia), Ottawa (Canada) and Suzhou (China); and only in Istanbul (Turkey) was the gap non-significant at age 15. For self-reported creativity, all cities found significant gaps by socio-economic status at age 15 with the largest gaps between advantaged and disadvantaged students observed in Daegu (Korea), Houston (United States) and Suzhou (China) where the difference between advantaged and disadvantaged students exceeded 40 score points (Figure 4.6).

Socio-economic gaps in self-reported creativity and curiosity were large and significant in both age cohorts; in many cities they tended to be even larger among 10-year-olds than 15-year-olds (Figure 4.6). In cities reaching acceptable response rates for teacher and parent questionnaires across both cohorts, a socio-economic gap in parent- and teacher-reported creativity and curiosity is also found that is consistent with the direction of the gap observed among self-assessments.

Figure 4.6. The socio-economic gap in curiosity and creativity, among 10- and 15-year-olds
Based on student self-assessments



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in international averages. Significant differences are coloured, non-significant differences are outlined. Note that the difference between two "non-significant" differences (at age 10, and at age 15) may be significant; while the difference between a significant and a non-significant difference may not be significant.*
Source: *OECD, SSES 2019 Database, Table A4.14 and A4.15.*
StatLink https://doi.org/10.1787/888934274038

To what extent are school factors related to creativity and curiosity?

Can school characteristics influence the way in which students perceive their own creativity and curiosity? Many school curricula and pedagogical interventions aim at raising student creativity, and research has helped identify the role and characteristics of successful instructional practices (Cropley, 1995[32]; Ahmadi et al., 2018[33]; Cropley and Patston, 2018[34]; Vincent-Lancrin et al., 2019, p. 199[2]). However, instructional practices tend to vary greatly among teachers within the same school; and the instructional practices may affect creative achievement or divergent thinking (captured by performance task measures) more than creative self-concept or general intellectual curiosity (captured by questionnaires).

SSES data show small between-school variation in social and emotional skills (see Chapter 1). Because of this, no consistent school-level correlates of creativity and curiosity (and of other social and emotional skills) can be established using SSES data. It is possible, however, to analyse how the students' individual school experience – their own perception of the school climate, for example, or their own participation in enrichment activities at school or outside of school – relates to their self-reported creativity and curiosity.

How creativity and curiosity relate to students' perception of the school climate

This report describes students' perception of the school climate through three main indicators: students' sense of belonging at school – an indicator of the quality of students' relationships with the school community, in general; their experience of being bullied – an indicator of problematic relationships with peers; and their perception of teacher-student relationships. The association between these three indicators and each of their self-reported social and emotional skills is described in detail in Chapter 5.

With respect to creativity and curiosity, the analyses presented in Chapter 5 show that, of all skills, curiosity had the strongest relationship with student reports of supportive student-teacher relationships: students who reported that they "got along well with most of their teachers" (and other statements about their teachers included in the index of student-teacher relationship) were significantly more likely to agree that they "love learning new things in school" (and to agree with other statements about themselves that are used to measure intellectual curiosity). The association of creativity with the index of student-teacher relationships was also positive but similar to the average relationship observed with other skills.

Curiosity and creativity were, on average, higher among 15-year-old students who reported a strong sense of belonging at school and lower among students who reported being bullied at school but neither curiosity nor creativity stood out as having a distinctly close relationship with these two indices. Other social and emotional skills were more closely associated with these indicators: the association of sociability with a sense of belonging at school, and optimism and emotional control with the experience of being bullied, for example, are substantially stronger than the associations observed for creativity or curiosity.

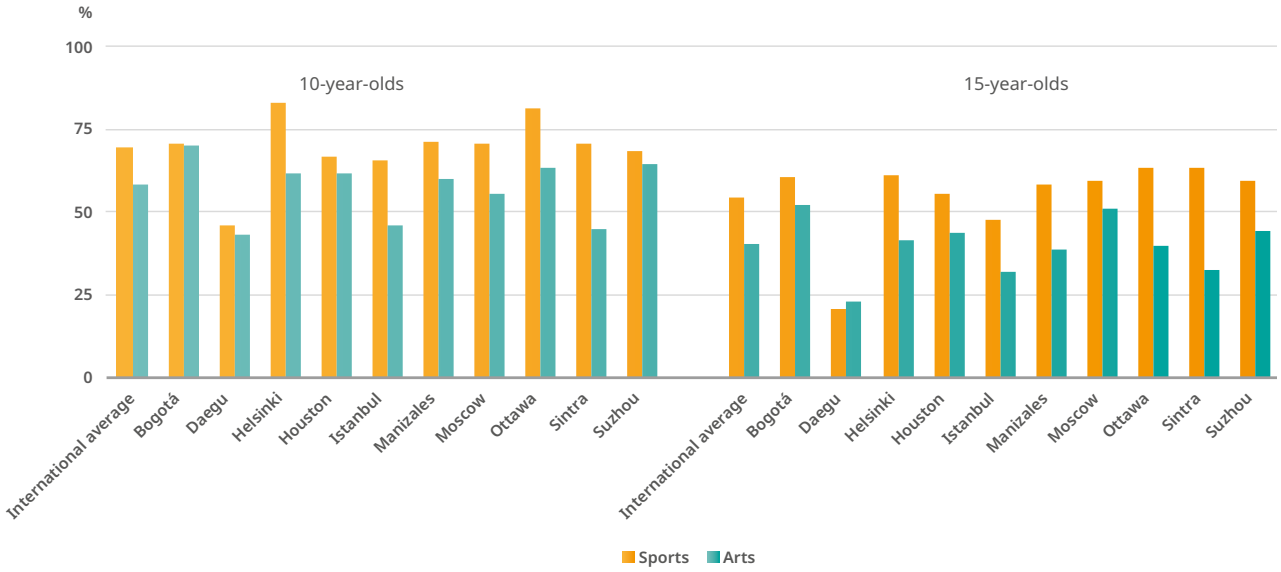
Correlation, in general, does not imply causation. In this case, moreover, the subjective nature of all indicators means that it is unclear whether a similar relationship exists with more objectively measured differences in the behaviour of peers and teachers or whether the association is driven by students' perception of the behaviour of peers and teachers – for example, because their self-description (as optimistic, intellectually curious, etc.) also taints the way in which these behaviours are perceived. What can be concluded from the analysis is that students who reported a love of learning tended to describe their relationship with teachers in more positive terms. In the following section, we turn to some more objective indicators of the learning environment, i.e. students' participation in sports and arts activities outside of school.

How creativity and curiosity relate to students' participation in sports and art activities

Extra-curricular activities, such as participation in a sports club, sports lessons or artistic activities (playing a musical instrument, dancing, drawing, etc.) can provide children with opportunities to exercise their curiosity, receive feedback on their creativity, and develop their social and emotional skills more generally. Across cities participating in SSES, the proportion of 10-year-old students who reported participating in sports activities outside of school ranged from over 80% in Helsinki (Finland) and Ottawa (Canada) to about 46% in Daegu (Korea). Slightly smaller proportions of 10-year-old students reported participating in art activities outside of school in most cities: the highest percentages among 10-year-olds were observed in Bogotá (Colombia) (71%) and Suzhou (China) (69%); the smallest percentage was observed in Daegu (Korea) where 46% so reported. Across all cities, however, SSES data show that participation in sports and arts activities outside of school is lower among 15-year-olds than among 10-year-olds (Figure 4.7).

Figure 4.7. Share of students participating in sports and arts activities outside of school, among 10- and 15-year-olds

Based on student self-reports

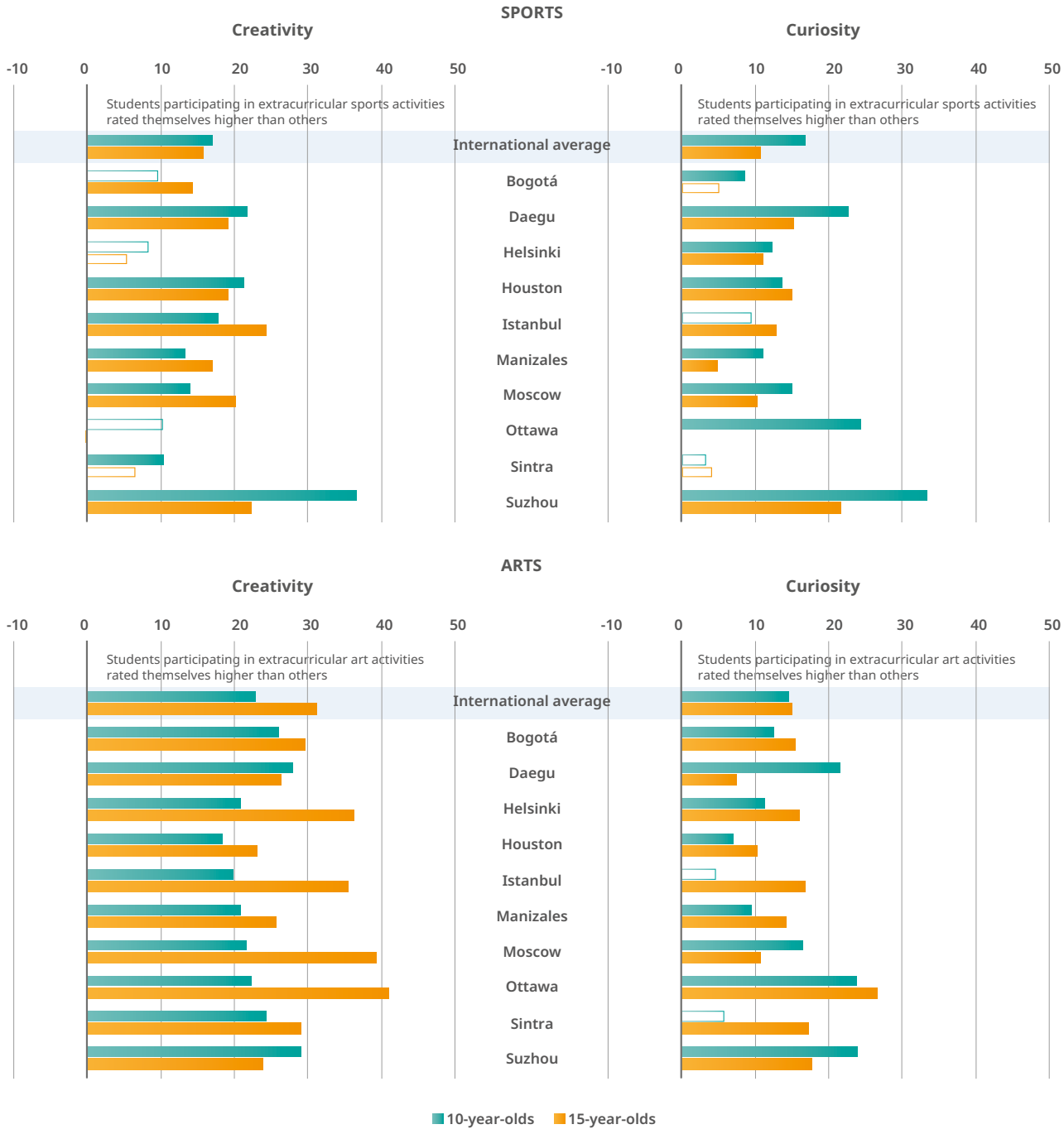


Note: *Student data for Sintra (Portugal) did not reach response rate standards and are not included in the international average.*
Source: *OECD, SSES 2019 Database, Tables A4.16 and A4.17.*
StatLink https://doi.org/10.1787/888934274057

Students who reported participating in artistic activities consistently rated their creativity as higher compared to students who did not, even after accounting for differences in socio-economic status and gender; in addition, larger differences in creativity were observed among 15-year-old students than among 10-year-olds, between students who participated in extra-curricular art and those who did not. In Ottawa (Canada), for example, 40% of 15-year-olds reported participating in arts activities outside of school. After accounting for differences in socio-economic status and gender, the creativity scores of this group of students were, on average, 42 points above those of students who reported not participating in art activities outside of school. The corresponding difference at age 10 (when 63% reported participating in arts activities) was only 23 points on average. This pattern of declining participation but wider differences in creativity scores suggests either that students who think of themselves as not creative are more likely to discontinue their participation in art activities during adolescence, or, perhaps, that sustained participation in art activities helps students build confidence in their creativity. While the nature of SSES data does not allow identifying the direction of causality, the data suggest a strong association of art activities at age 15 with creativity.

Figure 4.8. Difference in skill scores, by participation in sports and art activities

After accounting for socio-economic status and gender, based on students' self-reports



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in international average. Significant differences are coloured, non-significant differences are outlined. Note that the difference between two "non-significant" differences (at age 10, and at age 15) may be significant; while the difference between a significant and a non-significant difference may not be significant.*

Source: *OECD, SSES 2019 Database, Tables A4.16 and A4.17.*

StatLink https://doi.org/10.1787/888934274076

In contrast, smaller differences in creativity are found between students who participated in sports activities outside of schools and students who did not; furthermore, differences in creativity scores related to participation in sports activities (after accounting for gender and socio-economic status) are not consistently larger among 15-year-olds compared to 10-year-olds.

Sports activities outside of school were, on average across cities, positively related also to self-reported curiosity among 10- and 15-year-olds alike. But between students who participated in sports activities outside of school and students who did not, after accounting for socio-economic status and gender, the differences in self-reported curiosity were relatively modest (25 score points, at most), and rarely larger at age 15 compared to age 10. In fact, in many cities, these differences were smaller in the older cohort. Such is the case in Ottawa (Canada), for example, where 63% of 15-year-olds reported participating in sports activities outside of school – and reported similar levels of curiosity as students who did not participate in sports activities (Tables A4.16 and A4.17).

Previous research in the United States had found creative self-efficacy to be significantly higher among middle- and high-school students who participate in after-school activities like band, drama, and art, and somewhat higher among students who practiced or played on a sports team (Beghetto, 2006[26]). The data from SSES corroborate similar associations and extend them to a wider set of countries; they cannot however disentangle the direction of causality. Examples of how local and national governments aim to promote creativity are described in Box 4.2 and Box 4.3.

Box 4.2.
Promoting arts-based programmes to enhance students' creativity

Municipality-driven efforts in Sintra (Portugal)

In recent years, the government of Sintra has been actively implementing various measures at the local level to promote social and emotional skills among students of all ages. Students in Sintra engage in various co-curricular activities that are localised and community-based in nature, aimed towards promoting a wide variety of skills included within the SSES framework.

For example, Sintra regularly organises School Theatre Exhibitions, aimed at encouraging collaborative learning, fostering project work opportunities, and promoting the holistic development of the learner. The target skills include co-operation, creativity, emotional control, tolerance, trust and stress resistance.

Local schools in Sintra also organise orchestra projects for primary and lower secondary students. This project aims to support the holistic development of learners through culture and art. Schools are encouraged to promote social inclusion by strengthening bonds between schools and community. The targeted skills include co-operation, collaborative learning, responsibility, achievement motivation, self-efficacy and persistence.

Source: Municipality of Sintra (2020[35]) and (2018[36])

National-level creativity policies in Ireland

In 2016, the national government of Ireland launched the Creative Youth Plan, which aims to put culture and creativity at the heart of learning. It provides each child in Ireland the opportunity to engage in music, drama, art and coding classes till 2022. This is achieved through formally integrating creativity into classrooms as well as encouraging students to pursue these topics in informal settings. Schools that adopt the Creative Youth Plan receive up to 9 days of support and assistance from Creative Associates every year, who are responsible for supporting the school in building a long-term vision to promote art and creativity. The Creative Associates achieve this by responding to schools' individual needs, challenging them to develop innovative modules to promote creativity, and adopting a community-driven approach by involving the school management, staff, children and parents in promoting creativity.

One of the actions proposed under the Creative Youth plan is the Creative School Plan, which is led by Ireland's Arts Council. It provides several activity plans to increase students' engagement with arts and bolster their creativity. For example, from May to June 2021, Creative Schools in Ireland will offer a module on Self-Expression through Character Development, which will provide students training in areas of acting and performance. The module will encompass workshops with drama practitioners, allowing students to work on emotional expression, characterisation, story-telling and improvisation. Students will be documenting their involvement in the module through a reflective journal. From a social and emotional skills perspective, the key goal of this module is to enhance students' creative thinking, co-operation, imagination, self-expression and confidence.

Source: Creative Ireland (2016[37])

Box 4.3.
Creative experiential learning in South Korean schools

In 2009, schools in South Korea introduced Creative Experiential Learning (CEL) in their curriculum, which comprises extra-curricular activities aimed at developing well-rounded individuals. Students are actively involved in the process of choosing their area of interest and thinking of innovative activities related to the area. This enables students to develop their creative thinking skills as they are encouraged to make autonomous decisions on how they will learn various topics. These include, but are not limited to, multiculturalism, career development, environment and sustainability, human rights, democratic citizenship and financial education. A hands-on approach is employed wherein students are encouraged to learn by doing, thereby enhancing social and emotional skills such as creativity, self-regulation and tolerance, while developing a sense of community.

There are four essential components of CEL education in South Korean schools:

- Self-regulated activities through which students learn to work independently and react proactively in a changing environment.
- Club activities through which students pursue their hobbies while developing social and emotional skills such as creativity and co-operation with other teammates.
- Volunteering activities, which teach students to contribute to causes that are important to their community, such as conserving the environment.
- Career exploration activities, which help students explore their self-identity, design and prepare for their future careers, and explore various sources of information for career guidance.

Source: (Kim and Eom, 2017[38])

How do career choices relate to students' social and emotional skills?

Chapter 2 showed that curiosity is strongly and consistently related to students' expectations for completing tertiary education. This section further explores how students' social and emotional skills relate to their expectation of working in a science-related occupation; and to their expectation of working in a creative occupation. These indicators illustrate more generally the role of social and emotional skills in students' aspirations; they are chosen because it is often considered desirable to raise the proportion of workers who contribute to the most innovative sectors of the economy as part of countries' efforts to promote long-term economic growth. By highlighting the important associations between social and emotional skills, and career aspirations, these analyses suggest that interventions that aim at strengthening certain skills among children and adolescents or at helping them develop a realistic self-concept can have real-world consequences through the choices young people make based on these self-beliefs.

The SSES questionnaire asked students what occupation they expect to be working in when they are 30 years old. Students could enter any job title or description in an open-entry field; their answers were classified according to the International Standard Classification of Occupations (ISCO-08). This section focuses on two classes of occupations in particular.

The first group of occupations includes all science-related occupations, defined as those career expectations whose realisation requires the study of science beyond compulsory education, typically in formal tertiary education (OECD, 2016[39]). This includes science and engineering professionals, information and communication technology professionals, health professionals, and science-related associate professionals.

The second group of occupations identifies "creative occupations" in the economy. This distinction relies on the list of occupations used by the United Kingdom Department for Digital, Culture, Media and Sports (2016[40]) to define creative industries.[2] Creative occupations include, for example, artists, musicians, or actors; but also marketing directors, professionals and associate professionals; architects; journalists, public relations officers; or software professionals, among other occupations (a full list of occupations and discussion of the classification criteria can be found in (Bakhshi, Freeman and Higgs, 2013[41])).

Students' expectations for the job they will have at age 30 vary across cities, perhaps reflecting differences in the demand for particular occupations in the local economy, and different levels and types of career guidance. In SSES the proportion of 15-year-old students who expected to work in a science-related occupation, for example, ranged from 18% in Suzhou (China) to 44% in Manizales (Colombia). Meanwhile, the proportion of 15-year-old students who expected to work in a creative occupation ranged from 7% in Suzhou (China) to 23% in Moscow (Table A4.21).

At the same time, within each city, the group of students most attracted to the different occupations can be characterised, rather consistently, in terms of how they perceive their social and emotional strengths. This section illustrates the importance of social and emotional skills for students' career choices through these two examples.

Students who expected to work in a science-related occupation typically described themselves as having significantly higher intellectual curiosity compared to other students (Figure 4.9). This positive relationship was strong and significant across all cities that participated in the study. An interest in science is one of the behaviours that characterise curious students and it may therefore not come as a surprise that there is a strong association with the expectation to pursue a career in science.

At the same time, students who expected to work in a creative occupation (e.g. as actors, journalists, advertisement professionals) typically described themselves as having greater creativity compared to students who expect to work in other kinds of occupations -the association was weaker in Istanbul (Turkey), Manizales (Colombia), and Suzhou (China), compared to other cities). No other skill showed a significant and consistent association with the expectation to work in a creative occupation (Figure 4.10).

Figure 4.9. How social and emotional skills relate to expectations of working in a science-related occupation (15-year-olds)

Darker colour represent stronger relations between skills and expectations of working in a science-related occupation - 15-year-olds

Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations . Numbers in the legend refer to the percentage-point change in the likelihood of 15-year-old students holding this expectation that is associated with a 100-point increase in the corresponding skill score. All models include controls for socio-economic status and gender.*

Source: *OECD, SSES 2019 Database, Table A4.18.*

StatLink https://doi.org/10.1787/888934274095

Figure 4.10. How social and emotional skills relate to expectations of working in a creative occupation (15-year-olds)

Darker colour represent stronger relations between skills and expectations of working in a creative occupation - 15-year-olds

Note: *Shades of green indicate positive and significant relations, with a darker tone indicating a stronger relationship. Shades of orange indicate negative relations. Numbers in the legend refer to the percentage-point change in the likelihood of 15-year-old students holding this expectation that is associated with a 100-point increase in the corresponding skill score. All models include controls for socio-economic status and gender.*

Source: *SSES 2019 Database, Table A4.20.*

StatLink https://doi.org/10.1787/888934274114

What do the findings in this chapter mean for parents, educators and policy makers?

The findings in this chapter describe how students' creativity and intellectual curiosity relate to their broader social and emotional skills, gender, age, socio-economic status, school experience and career choices. By exploring these associations across 10 cities in four continents, the SSES highlights a large number of commonalities that transcend cultural boundaries, and helps policy makers and educators understand how individual differences in creative self-concept and students' disposition towards learning interact with social norms and educational practices.

The association of creativity with other social and emotional skills shows that students who think of themselves as highly creative tend to also report high levels of intellectual curiosity and persistence, two skills that are likely to play an important role in creative achievements, big and small – i.e. in helping individuals use their expertise to create something that is both novel and useful. At the same time, students with a strong creative self-concept are a relatively diverse group of students in terms of self-control or in terms of emotional regulation skills, which have the strongest association with academic achievement and well-being, respectively. This means that while there are certain commonalities among students with a strong creative self-concept, the diversity of their needs and preferences should not be under-estimated. On the contrary, it may be beneficial to provide opportunities to practice and learn about one's creative potential in a variety of formats (e.g. as part of individual and group activities, in competitive and in cooperative formats).

Students' creativity and curiosity were found to be lower in the older cohort (15-year-olds) than in the younger cohort (10-year-olds). This was also the case on most other measures in SSES (see Chapter 1). This chapter goes one step forward and uses parent and educator ratings to confirm the dip in creativity and curiosity as students grow older. Therefore, changes in these skills may not only be due to changes in response style bias or student's self-image associated with adolescence. Although challenging to disentangle – multidimensional constructs may require multidimensional answers – there might be several potential explanations.

These findings might partly derive from the fact that education systems often expect compliance from students, with the potential consequence of driving out curiosity and creativity as students grow older and stay longer in the education system. As discussed in Chapter 1, extended time in school and being exposed to more rigid learning environments may inhibit student's abilities to build and practice some of these skills (Bailey et al., 2019[42]; Duckworth, Quinn and Tsukayama, 2012[43]). Another possible reason is that as students grow older, they may feel more pressured to meet external expectations. It isn't easy to find examples in the literature of tasks where children's performance does not improve as they mature and grow older, particularly those areas in which education systems have traditionally been good, such as developing cognitive outcomes. As a result, older children may compare themselves to higher personal and peer standards (and be held to higher standards by teachers and parents, see Chapter 3). They may feel more self-conscious about seeking help to develop social and emotional skills that – in their view or the view of an adult close to them – should have already been instinctively developed by then. To avoid this, adults at home and at school should be cautious about how they express their expectations of what young people should be achieving or are capable of achieving. Adults being judgemental about errors young people make may result in young people cultivating negative beliefs about themselves (Esbjørn et al., 2014[44]). Instead, adults at home and school can help students better calibrate their perception of competence with their actual performance and foster student's belief that someone's ability and intelligence can develop over time (known as growth mindset). On average across OECD countries, having a growth mindset in PISA 2018 (i.e. students who disagreed or strongly disagreed with the statement "Your intelligence is something about you that you can't change very much") was positively associated with reading performance, students' motivation to master tasks, general self-efficacy, setting learning goals, perceiving the value of school, and it was negatively associated with their fear of failure (OECD, 2019[45]).

Age-related differences in creative self-concept are much more pronounced among girls than boys (in contrast, this is not true of intellectual curiosity, i.e. the emotional disposition towards learning). By age 15, girls, on average, report significantly lower creativity than boys. Yet, parents' and teachers' ratings were similar across genders in both age groups. It is possible that this pattern is mainly due to boys who are over-confident in their creative skills, whereas girls, on average, have more realistic evaluations. But if adolescents associate creative talent ("having a good imagination", "finding solutions that others don't see") with men more than women, this will be reflected in gendered career choices where fewer girls will opt for educational tracks and, later, jobs where they expect creative talent to be required. This is similar to what is observed for other exceptional intellectual abilities (genius, brilliance) (Leslie et al., 2015[46]). Parents and teachers can help both boys and girls develop a realistic assessment of their strengths and counteract potentially intimidating stereotypes by highlighting role models for both genders and helping students see creativity as a learnable skill rather than a fixed trait.

Large socio-economic gaps were observed in creativity, particularly among 10-year-olds. Gaps in creativity may reflect similar gaps in creative performance. Indeed, task-based assessments of creativity have also highlighted socio-economic gaps at the end of primary school (Castillo-Vergara et al., 2018[47]; Forman, 1979[48]). The fact that, with limited exceptions, socio-economic gaps in creativity are, on average, smaller among 15-year-olds suggests that the influence of parents and their social class on social and emotional learning reduces with age and schooling as adolescents gain opportunities to socialise and explore their identity in more diverse social circles, and choose role models among a wider set of possibilities.

While strong associations of curiosity and creativity with individual characteristics and experiences could be observed among students attending the same school, the average level of creativity and curiosity did not differ much across schools (see Chapter 1). In other words, the vast majority of schools do not vary significantly in terms of the proportion of students who consider themselves highly creative or not creative. One interpretation is that, in the absence of deliberate school-based interventions to develop creativity (Vincent-Lancrin et al., 2019[2]), schools tend to have similar levels of individual creativity. However, it is also possible that even if there were differences in creativity, self-reported and teacher-reported questionnaire measures may not capture true between-school or over-time variabilities (see Box 1.1, Chapter 1).

The findings in this chapter also highlight some strong associations between students' assessment of their social and emotional strength, and their expectations about future jobs. Students at age 15 may still be far from entering the labour market but the choices they make in the final years of compulsory education and in the few years that follow can have a lasting impact on their future prospects. SSES shows that early adolescence is a period in which students' perceptions of their own social and emotional skills can change rapidly: in many cities, 15-year-olds report on average very different levels of social and emotional skills compared to 10-year-olds. Given that students often make important choices based on their current perception of strengths and preferences (based on what they believe is required to succeed in different careers), it is important to help students cultivate a positive identity and develop a realistic assessment of their strengths. This is important for their current well-being. It will also help them realise their potential over their lifespan.

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Footnotes

[1] Correlation coefficients are also attenuated by a certain amount of measurement error. No correction for attenuation bias has been included in the reported coefficients.

[2] Creative occupations are those that require "creative talent"; in other words, these occupations require workers to solve problems in novel ways, which cannot be easily automated, and to contribute novel or significantly enhanced products, irrespective of the context. The list of "creative occupations" was identified based on expert ratings of each occupation against five criteria: the novel nature of problem-solving processes for which the occupation is responsible; the absence of mechanical substitute for the occupation; the non-repetitive nature of output; the fact that the key contribution of the occupation in the production process is novel or creative, and consists in "interpretation" rather than mere "transformation". Occupations that meet at least four of these criteria are classified as "creative".

05

BULLYING AND SOCIAL INTERACTIONS IN SCHOOL

This chapter examines three measures of students' social relations in school: students' sense of belonging at school, their exposure to bullying and their relationship with teachers. These measures and their association with student demographics, and social and emotional skills are discussed and analysed in this chapter.

WHAT THE DATA TELL US

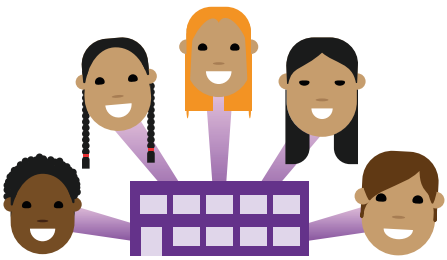
One in every five 10-year-olds reported
that other students made fun of them once a week or more.

Boys reported greater exposure to bullying than girls. But boys reported they fit in at school more than girls - especially 15-year-old girls.

Students who are exposed to bullying

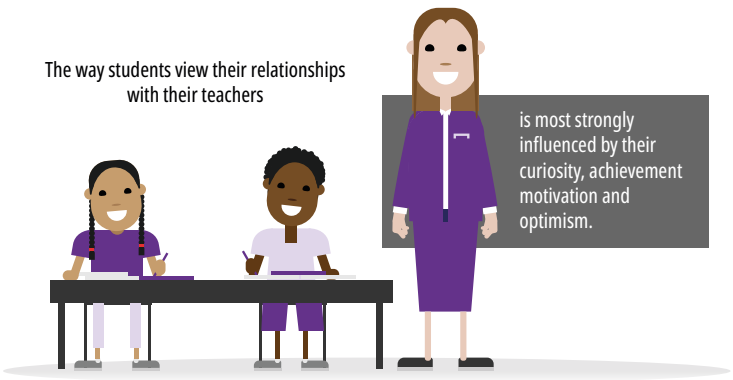
have lower stress resistance,
optimism and emotional control.

Students who reported a greater sense
of school belonging



and better relations with teachers also
tended to assess all their social and emotional skills
more positively than those who did not.

The way students view their relationships
with their teachers



is most strongly
influenced by their
curiosity, achievement
motivation and
optimism.

Students from more socio-economically
advantaged backgrounds

indicated a stronger sense of fitting in well at school and
better relations with their teachers than those from less
socio-economically advantaged backgrounds.

Which students are more at risk of having poor social relations in school?

Family and school environment are probably the two most important social environments in children's lives. Over time, as children enter adolescence, the formative importance of the family fades while the influence of school grows: classmates and peers form the most important social groups while teachers support and guide students academically. Students spend a lot of time at school and social relations at school play a key role in the development of one's identity and social support (Allen et al., 2018[1]; Bokhorst, Sumter and Westenberg, 2010[2]). When students feel a sense of belonging and are able to connect with adults and peers in ways that make them feel safe at school, they can build the social support systems they need as well as navigate and persevere through challenges more easily. This increases their willingness to focus on learning as well (Osher and Berg, 2017[3]). For example, students who believe that teachers support, care about, respect, and praise them are more likely to like school and be more involved (Hallinan, 2008[4]; Danielsen et al., 2009[5]; Wang and Eccles, 2012[6]). In PISA 2018, students who reported a greater sense of belonging scored higher in the reading assessment after accounting for socio-economic status (OECD, 2019[7]). These students also reported higher levels of co-operation among their peers and were more likely to expect to complete a university degree. SSES builds on previous findings and extends the discussion about individual differences in social relations in school by focusing on the role of social and emotional skills. But first, this section provides insights into which students are more at risk of having poor social relations in school in the cities participating in SSES.

SSES provides three measures of social relations in school: students' sense of school belonging; their exposure to bullying; and the relation between students and teachers. These three measures capture the interactions between the three most important actors within the school environment: students, teachers and peers. Sense of belonging is a more general measure of social relations at school and is influenced by friends, peers and other members of the school community. The two remaining measures focus more specifically on students' perceptions of their relationship with teachers and the relationship among peers. These three measures provide information on different aspects of social relations in school but are related to one another (see Table 5.1). Students who feel that they belong to their school are also less likely to report being exposed to bullying (the average correlation across cities is -0.25 for 15-year-olds and -0.36 for 10-year-olds) and they are also more likely to report positive relations with their teachers (the average correlation is 0.26 for the older students and 0.32 for the younger ones). Students who reported getting along well with their teachers are only slightly less likely to report being exposed to bullying (the average correlation is -0.11 for the older cohort and -0.15 for the younger cohort). Even though these associations are small to moderate, they are all statistically significant and aligned with previous research (Allen et al., 2016[8]; Slaten et al., 2016[9]).

Table 5.1. Relations between the three measures of social relations in school, by city

Bivariate correlations among the three measures of social relations in school

	10-year-olds			15-year-olds		
	School belonging - exposure to bullying	School belonging - student-teacher relations	Exposure to bullying - student-teacher relations	School belonging - exposure to bullying	School belonging - student-teacher relations	Exposure to bullying - student-teacher relations
Bogotá	-0.37	0.31	-0.11	-0.23	0.22	-0.06
Daegu	-0.24	0.27	-0.08	-0.21	0.26	-0.07
Helsinki	-0.38	0.32	-0.2	-0.26	0.25	-0.12
Houston	-0.37	0.31	-0.16	-0.27	0.29	-0.1
Istanbul	-0.39	0.35	-0.19	-0.27	0.3	-0.08
Manizales	-0.39	0.34	-0.16	-0.25	0.25	-0.09
Moscow	-0.34	0.34	-0.14	-0.29	0.26	-0.16
Ottawa	-0.35	0.26	-0.16	-0.22	0.21	-0.17
Sintra	-0.33	0.19	-0.1	-0.23	0.13	-0.08
Suzhou	-0.4	0.39	-0.18	-0.28	0.33	-0.17
International Average	-0.36	0.32	-0.15	-0.25	0.26	-0.11

Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average.*
Source: *OECD, SSES 2019 Database Table A5.1.*
StatLink https://doi.org/10.1787/888934274133

Sense of school belonging

SSES measures students' sense of school belonging by asking respondents six questions about how they feel in their school environment and how they feel about their connections to others in school: I feel like an outsider (or left out of things) at school; I make friends easily at school; I feel like I belong at school; I feel awkward and out of place in my school; Other students seem to like me; and I feel lonely at school. Students rated these statements from "strongly disagree" to "strongly agree". Based on responses to these six items, a scale of sense of school belonging was created. This is the same measure that was used in PISA 2015 and PISA 2018 to measure students' sense of school belonging.

In SSES, the majority of students indicated that they feel like they belong at school. However, on each item of the sense of school belonging scale about 15 to 20% of students in both age cohorts indicated that they did not feel they belonged at school (Figure 5.1, Table A5.2). There are relatively small differences in students' school belonging by age cohort. Younger students more often agreed with the statements "I make friends easily at school" and "I feel like I belong at school". However, for other items the associations with age are unclear. It is interesting that in Bogotá (Colombia), Manizales (Colombia) and Sintra (Portugal), younger students simultaneously indicated greater school belonging on positively phrased items such as "I make friends easily at school" and less of a sense of school belonging in agreeing more often with the negatively phrased item, "I feel lonely at school". This creates a mixed picture regarding age differences in students' sense of school belonging in these cities. On average across all six items, the differences between 10- and 15-year-olds are largest in Daegu (Korea) (7.8 percentage points between younger and older cohorts) and Helsinki (Finland) (7.3 percentage points) while the smallest age gaps are found in Istanbul (3.2 percentage point) and Houston (United States) (3.5 percentage points) (Table A5.2 and Table A5.3).

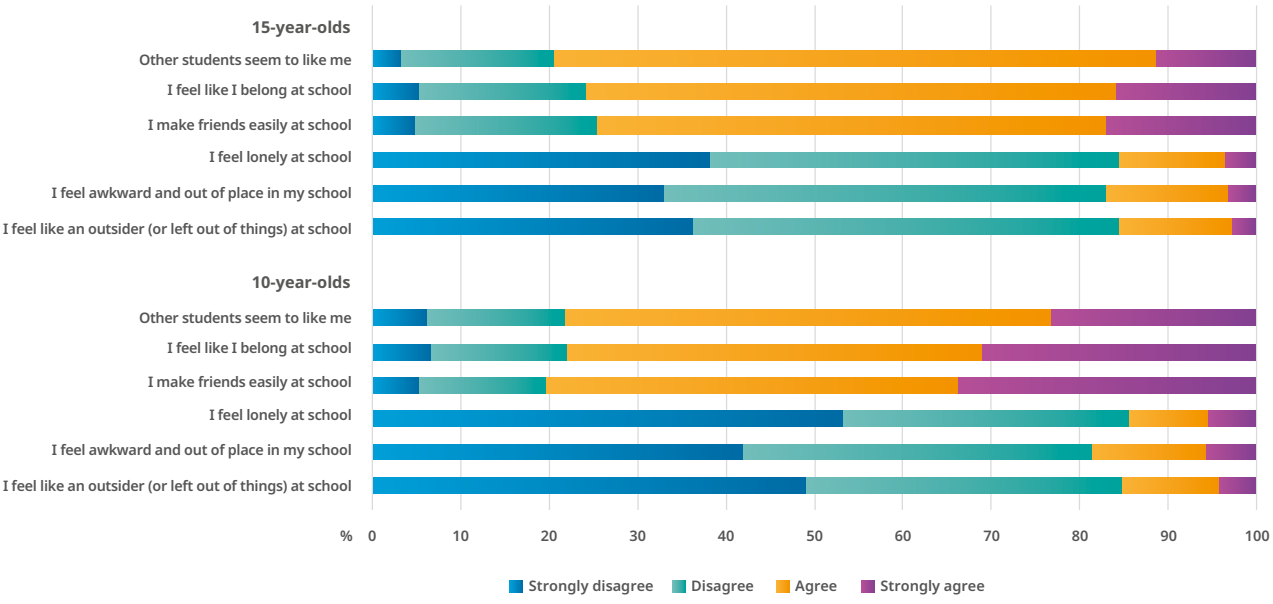
Older girls indicated experiencing slightly lower school belonging. In about half the cities, older girls agreed less with the positively phrased items and more with the negatively phrased ones, suggesting that girls experienced lower levels of school belonging than boys. Not all cities showed a similar degree of gender difference. On average across all six items, the largest gender gaps among older students were found in Helsinki (Finland) (7.9 percentage points between boys and girls) and Moscow (Russia) (7.2 percentage points) while the smallest gender gap was in Suzhou (China) (1.8 percentage points). No consistent pattern in gender differences was found for the younger students (Table A5.4).

Socio-economically advantaged students indicated higher school belonging. On average across cities, socio-economically advantaged students agreed more with positively phrased items such as "I make friends easily at school" and less with negatively phrased items such as "I feel lonely at school. Differences in school belonging related to students' socio-economic status vary by item and are more pronounced for younger students. On average across all six items, the largest socio-economic disparity in school belonging among younger students was found in Suzhou (China) (10 percentage points) while Istanbul (Turkey) had the smallest socio-economic disparity (5 percentage points) (Table A5.5). The relationship between students' school belonging and migration background was also analysed but no consistent patterns were observed (Table A5.6).

SSES results confirm and extend pre-existing knowledge on the interplay between demographics and the measures of school belonging. Results from PISA 2015 and PISA 2018 showed that disadvantaged students tend to feel less socially connected at school than advantaged students (OECD, 2019[10]; OECD, 2017[11]). PISA 2018 also reported mixed results for gender as in about half of the countries, boys indicated a greater sense of school belonging while in the other half, girls indicated a greater sense of belonging (OECD, 2019[10]). Allen et al. (2018[1]) found that gender was only weakly associated with students' sense of school belonging. O'Neel and Fuligni (2013[12]) performed a longitudinal study where they examined how students' sense of school belonging changed over the years of high school. Their results show that in 9th grade, girls' sense of school belonging was higher than that of boys. However, girls' sense of school belonging declined over the course of high school, whereas boys' school belonging remained stable. In contrast, the World Health Organisation study on Health Behaviour in School-aged Children (HBSC), which looks at how much students like school by asking about students' school satisfaction, found that school satisfaction declined with age (from 11 to 15-years-old) among both boys and girls (Inchley et al., 2020[13]). The SSES results reported here are consistent with the findings that these gender differences are not universal and exist within certain country contexts.

Figure 5.1. School belongings, by cohort

Percentage of students, by level of agreement (international average)



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average.*
Source: *OECD, SSES 2019 Database, Table A5.2.*
StatLink https://doi.org/10.1787/888934274152

Exposure to bullying

SSES measures exposure to bullying by asking respondents four questions about in-person bullying experienced in the 12 months prior to the survey: Other students made fun of me; I was threatened by other students; Other students took away or destroyed things that belonged to me; and I got hit or pushed around by other students. For the older students, there were also two questions on cyberbullying, asking about the frequency with which things happened to the student while chatting or using social media (e.g. Facebook, Instagram, Snapchat, etc.): I have been threatened by people; and People have spread nasty rumours about me. Students responded on a four-point scale ranging from "never or almost never" to "once a week or more", with an additional response option for the older cohort, "I don't use social media". Based on responses to these four items, a scale of exposure to bullying was created.

Estimating the prevalence of bullying is rather difficult. SSES provides new results to the discussion. For example, results from PISA 2018 showed that on average across countries, 23% of students reported being bullied at least a few times a month (OECD, 2019[10]). However, both SSES and PISA reported a higher percentage of students being bullied compared to the study on HBSC. HBSC reported that the proportion of students who reported being bullied at least two to three times in the last couple of months was only around 10% (Inchley et al., 2020[13]). Differences between SSES, PISA and HBSC might arise out of the different timeframes considered (the reference to a "couple of months" vs "12 months") or the different geographical areas covered. For example, SSES includes cities of countries that report a high prevalence of bullying (in PISA) such as Houston (United States) and Manizales (Colombia) while the United States and Colombia are not included in the HBSC study.

Certain types of bullying occur more often than others. Both age cohorts reported sizeable proportions of students who agreed with the statement "Other students made fun of me", indicating that verbal bullying is the type of bullying that occurs most often. Some 15% of girls and 20% of boys in the younger cohort, and 11% of girls and 16% of boys in the older cohort indicated other students had made fun of them at least a few times a month over the past 12 months. Fewer students indicated that other students threatened them, that other students took away or destroyed their belongings, or that they were hit or pushed around by other students (Table A5.9). This finding is similar to what was found in PISA 2018, where verbal bullying – students making fun of their peers – was the type of bullying that occurred most often (OECD, 2019[10]).

There is substantial variation across cities in the percentage of students who reported being bullied at least a few times a month during the past 12 months (Table A5.7). For the younger cohort, the percentages range between 17 and 33% while the percentages range between 13 and 25% for the older cohort. Among the younger students, Helsinki (Finland) (17%) has the lowest percentage of students who reported being bullied whereas Houston (United States) and Manizales (Colombia) (both 33%) have the highest percentage of students who reported the same. Among the older students, Sintra (Portugal), Suzhou (China) and Istanbul (Turkey) (all 13%) have the lowest percentage of students who reported being bullied whereas Ottawa (Canada) (25%) and Manizales (Colombia) (21%) have the highest percentage. Countries have created anti-bullying programmes to tackle bullying in schools. An example of such a programme is described in Box 5.1.

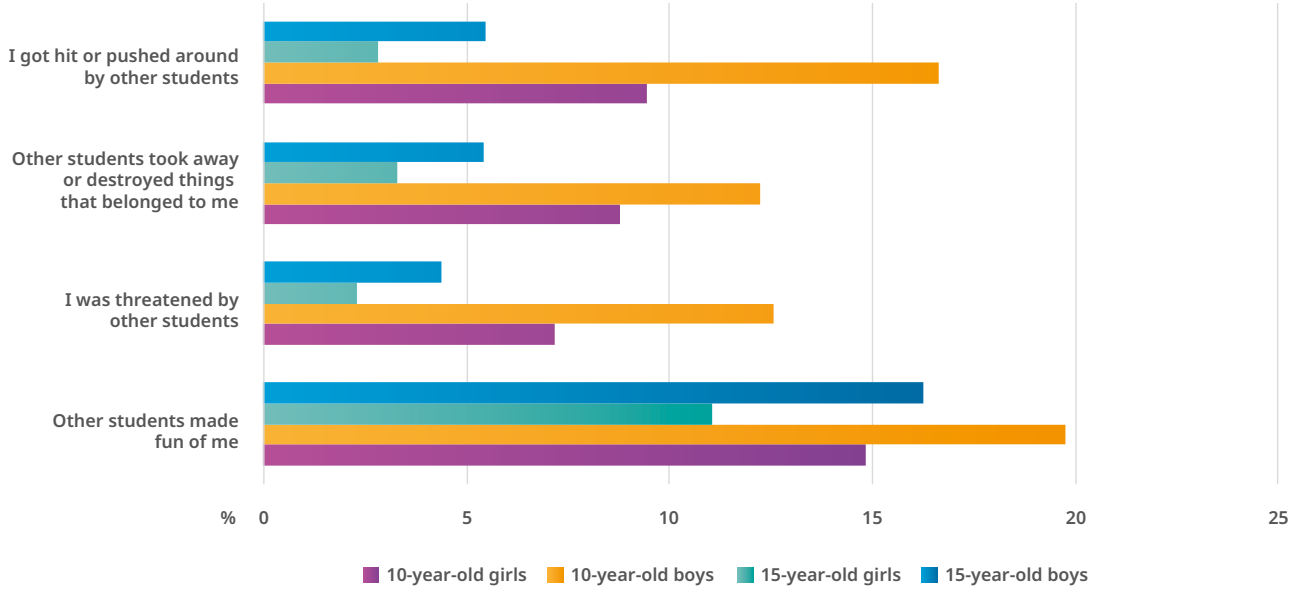
Younger students reported more frequent bullying. On average across all cities, younger students reported more frequent exposure to all four forms of bullying (Table A5.7). The average age gap across all cities is about 6 percentage points. The age gaps are largest in Sintra (Portugal) (11 percentage points) and Manizales (Colombia) (10 percentage points) and smallest in Daegu (Korea), Helsinki (Finland) and Ottawa (Canada) (all 3 percentage points). The HBSC study also found that the prevalence of being bullied was higher among younger students and that this prevalence declined with age in about half of the jurisdictions investigated (Inchley et al., 2020[13]).

On average, boys indicated higher exposure to bullying compared to girls. Gender differences in bullying are particularly pronounced for the younger cohort. Boys indicated higher exposure to bullying across all four items. The average gender gap among the younger students is about 5 percentage points compared to about 3 percentage points among the older students. Among the younger students, gender gaps are largest in Bogotá and Manizales (Colombia) as well as Sintra (Portugal) (all 9 percentage points) while gender gaps are smallest in Daegu (Korea) (2 percentage points). Among the older students, gender gaps are largest in Daegu (Korea) and Ottawa (Canada) (4 percentage points) while no gender gaps exist in Bogotá (Colombia) and Sintra (Portugal) (Table A5.9). The gender gap relating to physical bullying, ("Other students took away or destroyed things that belonged to me" and "I got hit or pushed around by other students") is consistent with findings from the HBSC study which reported that boys, and especially younger boys, were more likely to have been involved in a physical fight (Inchley et al., 2020[13]).

Differences in students' exposure to bullying related to students' socio-economic status and their migration background are observed only in a few cities. Some socio-economic disparities and immigration status-related gaps are found among the younger students. In such cases, disadvantaged students and students with a migration background generally report higher exposure to bullying (Table A5.10 and Table A5.11).

Figure 5.2. Exposure to bullying, by cohort and gender

Percentage of students who responded "a few times a month" or "once a week or more" (international average)



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average.*
Source: *OECD, SSES 2019 Database Table A5.9.*
StatLink https://doi.org/10.1787/888934274171

Cyberbullying does not seem to occur more frequently than in-person bullying. Students were asked whether they "have been threatened by people" and whether "people have spread nasty rumours about [them]" while chatting or using social media. Approximately 7% of the older students indicated that they were exposed to either form of cyberbullying a few times a month or more during the past 12 months. In Suzhou (China) and Daegu (Korea), only 2% of the students indicated being exposed to cyberbullying whereas in Houston (United States) and Ottawa (Canada) 7% of the students indicated being exposed to cyberbullying (Table A5.8).

No gender gaps, socio-economic disparities or migration gaps were found for students' exposure to cyberbullying (Table A5.9, Table A5.10 and Table A5.11). In contrast, the HBSC study found that girls were more frequently the victim of cyberbullying (Inchley et al., 2020[13]).

Box 5.1.
Anti-bullying programme in Finland – KiVa

KiVa is a Finnish national school-based anti-bullying programme. The KiVa programme consists of 10 lessons (2 x 45 minute sessions) and assignments conducted over the course of one school year. Students in targeted classes have KiVa lessons once or twice a month. The lessons consist of discussions about bullying and respecting others, how to function in a group, and different kinds of exercises and group work. The lessons and themes are complemented by the KiVa computer game, where students go into a virtual school to practice anti-bullying actions and are given feedback on their actions.

The goal of the KiVa classroom programme is to educate students about their role in stopping bullying. Instead of encouraging bullying or passively allowing it to happen, students show that they do not condone it by supporting their victimised classmate.

KiVa is based on three main elements:

- **Prevention: to keep bullying from happening**
  Preventive actions, such as the KiVa curriculum, are directed at all students and focus on preventing bullying. Student lessons and online games are concrete examples of these kinds of actions and form the backbone of KiVa.
- **Intervention: tools to tackle bullying**
  Interventionist actions in KiVa are targeted specifically to children and adolescents who have been involved in bullying. The goal is to provide schools and students with solution-focused tools on how to put an end to bullying.
- **Annual monitoring**
  KiVa offers tools to monitor the situation in schools through annual online surveys for both students and staff. These provide schools with information on how to improve their anti-bullying work.

Source: (University of Turku (Finland), 2021[14])

Student-teacher relations

SSES measures relations between students and teachers by asking respondents how often they had the following experiences at school during the past 12 months: Most of my teachers treated me fairly; I got along well with most of my teachers; and Most of my teachers were interested in my well-being. The students responded on a four-point scale ranging from "never or almost never" to "once a week or more". Based on responses to these three items, a scale of student-teacher relations was created.

In SSES, most students in both age cohorts indicated good student-teacher relations. On average across all three items, 79% of students in the older cohort reported that "most of [their] teachers treated [them] fairly", "[they] got along well with most of [their] teachers" and "most of [their] teachers were interested in [their] well-being" at least a few times a month in the 12 months prior to the survey (Table A5.12). About the same share of students in the younger cohort (78%) made similar claims. Yet, about 22% of students indicated they never/almost never had these experiences or that they experienced it only a few times a year.

The prevalence of positive student-teacher relations varies across cities. Fewer students report positive relations with their teachers in Houston (United States), with only 70% of younger and 73% of older students reporting having positive interactions with their teachers at least a few times a month during the 12 months prior to the survey. In contrast, more students in Helsinki (Finland) (85% of younger students) and Suzhou (China) (83% of older students) reported regular positive student-teacher interactions (Table A5.12). Students' perceptions of their relations with their teachers evolve as they age and gain maturity. In most cities, older students more frequently reported that they get along well with most of their teachers whereas younger students more frequently reported that most of their teachers were interested in their well-being. This suggests relationships that evolve, moving from a more caring relationship with 10-year-olds to a more peer-to-peer relation between teachers and 15-year-olds.

Socio-economically advantaged students indicated better student-teacher relations (Figure 5.3). Across both age cohorts and in almost all cities, socio-economically advantaged students indicated that teachers treated them fairly more frequently, they more frequently got along well with their teachers and teachers were more frequently interested in their well-being. Among the younger students, this socio-economic disparity in student-teacher relations is smallest in Istanbul (Turkey) and Daegu (Korea) (both 6 percentage points) and largest in Suzhou (China) (18 percentage points) and Moscow (Russia) (15 percentage points). Among the older students, the socio-economic disparity is smallest in Daegu (Korea) and Helsinki (Finland) (both 5 percentage points) and largest in Houston (United States) (14 percentage points) and Ottawa (Canada) (12 percentage points) (Table A5.14).

Student-teacher relations do not vary much depending on students' gender or migration background. In only a few cases, girls and students without a migration background generally indicated better student-teacher relations. For example, younger girls in Helsinki (Finland) indicated better student-teacher relations on all three dimensions (Table A5.13 and Table A5.15).

Associations between student-teacher relations and students' demographic characteristics are relatively inconsistent in the research literature on education. This partly derives from the different terms, items and respondents used to refer to and measure student-teacher relations. Examples of terms to describe student-teacher relations include teacher support, teacher relatedness and student-teacher closeness. Furthermore, most of the studies reporting on student-teacher relations, especially those on younger students in primary school, are based on information obtained from teachers. Student reports on student-teacher relations generally show a low-to-moderate correspondence with teacher reports (Wu, Hughes and Kwok, 2010[15]).

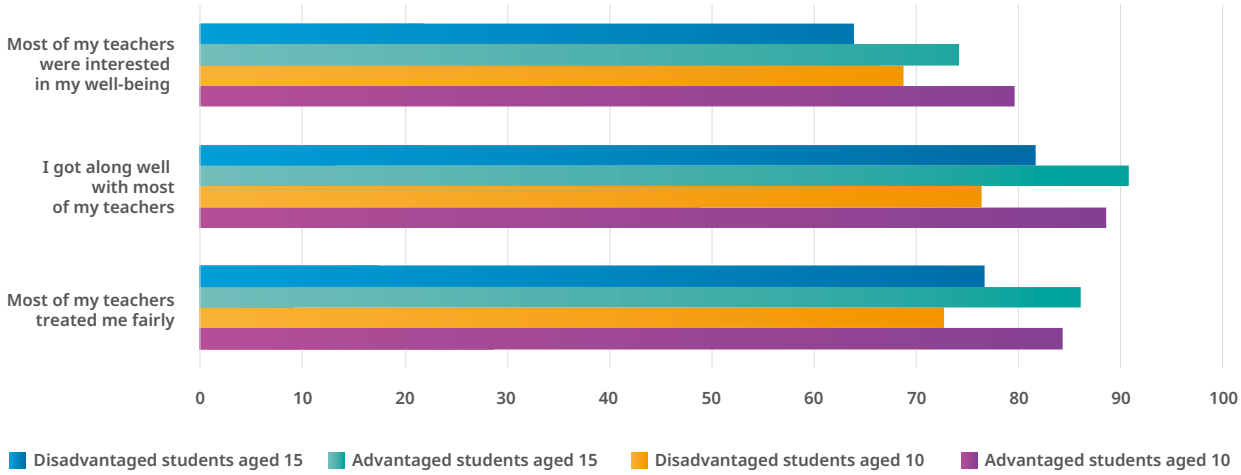
Based on student reports, the gender effect is unclear (McGrath and Van Bergen, 2015[16]). Some older studies found that boys experience less support and more conflict in their relationships with teachers than girls do (Wu, Hughes and Kwok, 2010[15]; Furrer and Skinner, 2003[17]). However, more recent studies find no clear gender effect (Inchley et al., 2020[13]). Results from the SSES align with the recent research that gender does relate to student-teacher relationships in a few jurisdictions but not in all settings.

From the literature, student-teacher relationships generally decline as students age but SSES results provide a more nuanced picture of the situation. Furrer and Skinner (2003[17]) found that students' sense of relatedness to their teachers dropped from 5th to 6th grade. Similarly, the HBSC study found that the majority of students reported high levels of support from their teachers but that younger students (11 years old) tended to indicate higher levels of support from their teachers than older students (15 years old) (Inchley et al., 2020[13]). Although weaker student-teacher relations among older students might be the result of students becoming more independent, researchers have also speculated that the decrease in positive relationships could be due to teachers expecting older students to be more mature compared to younger students. Older students also generally spend less time with individual teachers than their younger counterparts, which could result in students being less close to their teachers (McGrath and Van Bergen, 2015[16]). Findings from SSES indicate that positive student-teacher relationships with age depends on the aspect of the relationship, suggesting a change from a caring relationship between teachers and 10-year-olds to a relationship on a more equal footing with 15-year-olds.

Findings from SSES on socio-economic status and student-teacher relationships are consistent with much of the pre-existing research. A review of the literature by McGrath and Van Bergen (2015[16]) indicates that students from minority ethnic groups and socio-economically disadvantaged students have relationships that are less close with their teachers compared to non-minority students and advantaged students. However, another study finds little evidence for a relation between socio-economic status and teacher support (Inchley et al., 2020[13]).

Figure 5.3. Student-teacher relations, by cohort and socio-economic status

Percentage of students who responded "a few times a month" or "once a week or more" (international average)



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average.*
Source: *OECD, SSES 2019 Database Table A5.14.*
StatLink https://doi.org/10.1787/888934274190

How are social and emotional skills related to social relations in school?

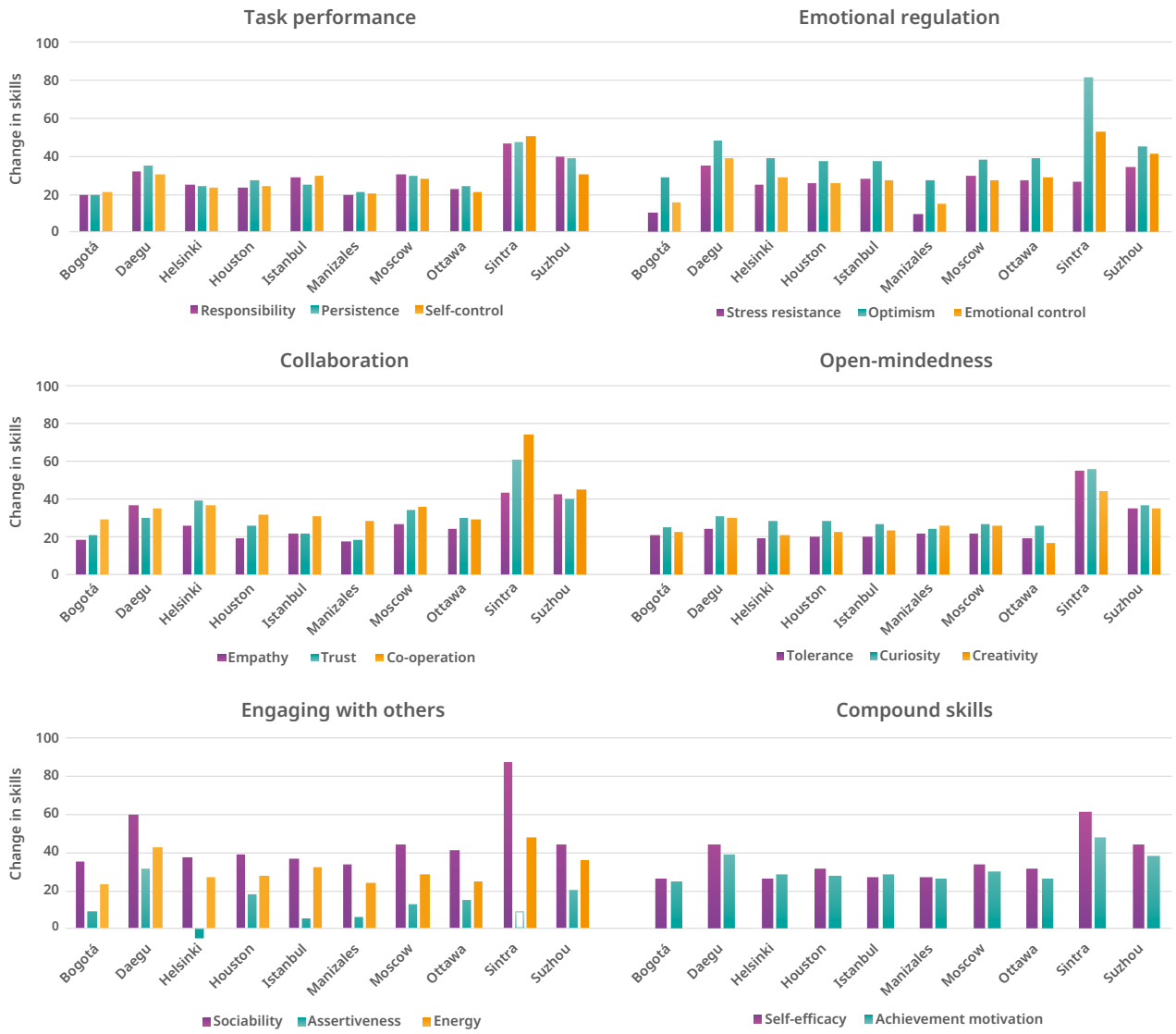
This section examines which social and emotional skills are related to the three dimensions of social relations in school included in SSES. Understanding which social and emotional skill is more strongly associated with each dimension of social relations in school can help inform policies to prevent bullying and foster a higher sense of school belonging and better teacher-student relationships.

Sense of school belonging

Students' sense of school belonging is most strongly related to specific social and emotional skills across different domains such as sociability, optimism and co-operation. This pattern is consistent across both age cohorts and cities (Figure 5.4, Figure 5.5 and Table A5.16). The strength of the relations between social and emotional skills, and students' perceptions of their social relations vary depending on student age. On average across cities, the largest age differences in the relations between students' sense of belonging, and social and emotional skills are found for assertiveness, curiosity and self-control. Students who like their schools better tend to be more assertive and particularly so when the students are older. Similar patterns are found for younger students who report higher levels of curiosity and self-control (an age difference is identified when in at least half of the cities the relation between school belonging and a skill differs by age cohort) (Table A5.16).

Figure 5.4. Relations between students' sense of school belonging and social and emotional skills, 10-year-olds

Change in social and emotional skills related to a one standard deviation increase in school belonging



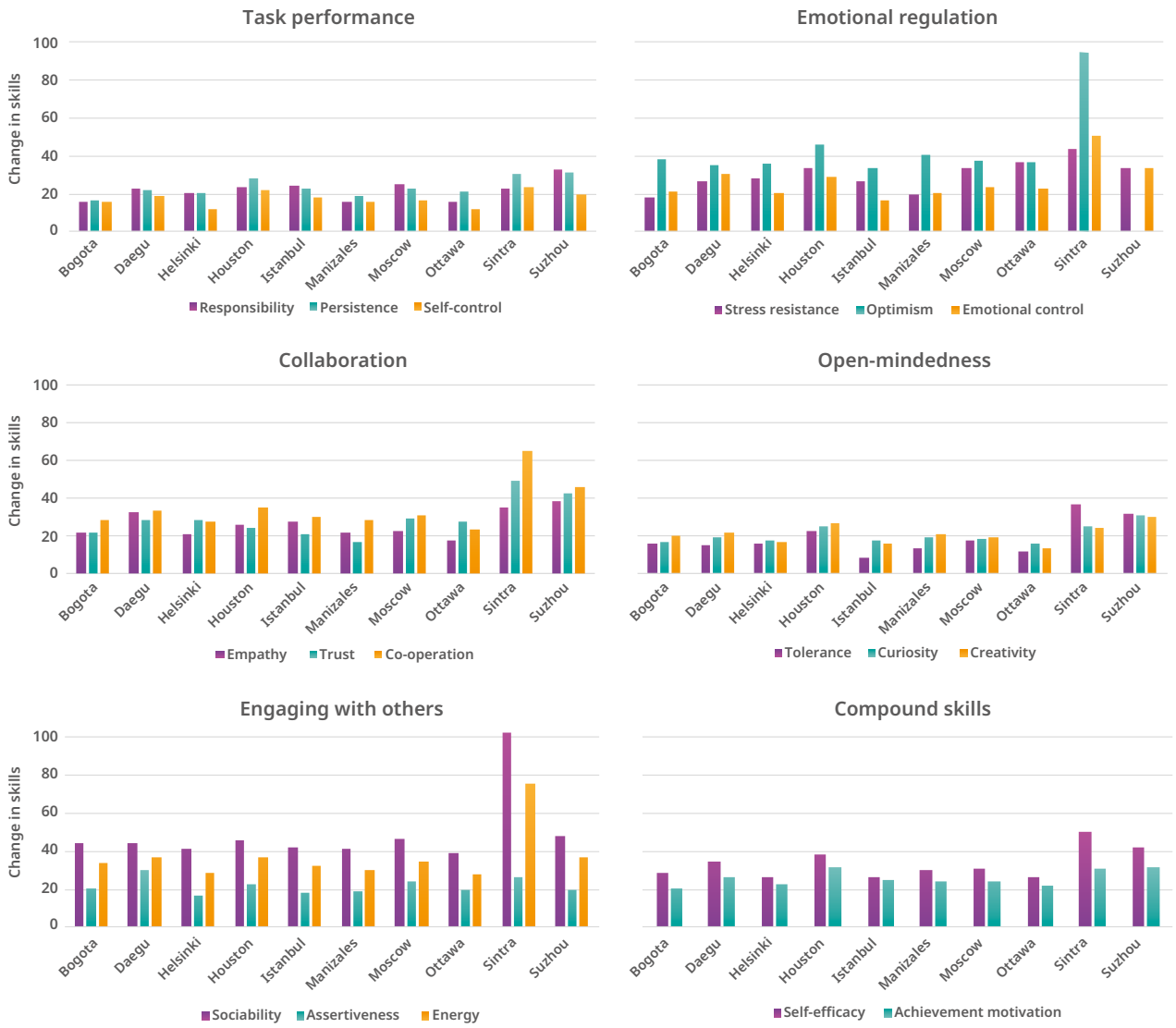
Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average. Significant differences are coloured, non-significant differences are outlined. Control variables include gender, socio-economic status and immigration background.*

Source: *OECD, SSES 2019 Database Table A5.16.*

StatLink https://doi.org/10.1787/888934274209

Figure 5.5. Relations between students' sense of school belonging and social and emotional skills, 15-year-olds

Change in social and emotional skills related to a one standard deviation increase in school belonging



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average. Significant differences are coloured, non-significant differences are outlined. Control variables include gender, socio-economic status and immigration background.*

Source: *OECD, SSES 2019 Database Table A5.16.*

StatLink https://doi.org/10.1787/888934274228

Figure 5.4 and Figure 5.5 show the individual associations between students' sense of school belonging, and social and emotional skills by city. In general, the pattern of the associations between students' sense of school belonging, and their social and emotional skills is similar across cities and age cohorts except for Sintra (Portugal). For Sintra, the relations between students' sense of school belonging, and most social and emotional skills appear stronger than for other cities. Since Sintra (Portugal) did not meet the student response rate standards, it is not clear whether this finding represents the actual relationships between students' sense of school belonging and these skills or whether this is due to the potential selectivity of the sample.

SSES results provide more specificity to what is known about the relationships between school belonging, and social and emotional skills. For example, in a meta-analysis and review of the literature, Allen and colleagues (2018[1]) found that school belonging was positively related to students' personal characteristics of academic self-regulation, emotional stability, conscientiousness, and self-esteem. The SSES results align with these findings but also suggest relations between school belonging and sociability, and school belonging and co-operation. PISA 2018 data also suggested that students who reported a greater sense of belonging also reported higher levels of co-operation among their peers (OECD, 2019[7]). SSES results inform stakeholders on how school belonging is relatively consistent across age and country samples although some differences exist.

Exposure to bullying

Students' exposure to bullying is negatively related to almost all social and emotional skills. This holds true across both age cohorts. On average across cities, students' exposure to bullying seems to be most strongly linked to lower skills in the domains of emotional regulation (stress resistance, optimism and emotional control) as well as trust. Students who reported higher exposure to bullying tended to report lower optimism, emotional control, stress resistance and trust (Figure 5.6, Figure 5.7 and Table A5.17). Other studies generally support these findings. For example, a meta-analytic study on the relation between personality, bullying and victimisation behavior found that being bullied is mainly related to high neuroticism (low emotional regulation in SSES) (Mitsopoulou and Giovazolias, 2015[18]). Kim, Leventhal and Koh (2006[19]) followed students in Korean middle schools for 10 months and found that being bullied caused the onset of new symptoms of later psychopathologic behaviors. Other studies also report deteriorating behavioral, emotional, and psychosocial functioning in students who were bullied (Hanish and Guerra, 2002[20]; Ladd and Troop-Gordon, 2003[21]). Victims of bullying tend to show lower levels of emotional stability (Glasø et al., 2007[22]; Tani et al., 2003[23]) and lack effective emotional coping skills to ease stress or negative emotions (Wilton, Craig and Pepler, 2000[24]).

Relations between students' exposure to bullying and some of their social and emotional skills vary by age. This holds in particular for curiosity and sociability skills on average across cities. Among younger students, these skills appear to be more negatively affected by bullying. (Table A5.17).

These findings are consistent with other studies showing that bullying is a major risk factor for students' mental and physical health in both the short and long term (Wolke and Lereya, 2015[25]). Being bullied increases students' risk of depression, anxiety, low self-esteem, sadness and feelings of loneliness (Kochel, Ladd and Rudolph, 2012[26]; Livingston et al., 2019[27]; OECD, 2019[7]; Rigby and Cox, 1996[28]). A supportive and caring school environment, however, is linked to fewer incidents of bullying and students' willingness to seek help (Låftman, Östberg and Modin, 2017[29]; Ma, 2002[30]; Olweus, 2012[31]). In schools where students perceive greater fairness, feel they belong at school, work in a more disciplined, structured and cooperative environment, and have less punitive teachers, students are less likely to engage in risky and violent behaviors (Gottfredson et al., 2005[32]; Kuperminc, Leadbeater and Blatt, 2001[33]). Box 5.2 shows how schools pay attention to and promote a positive school environment with the aim of increasing students' social and emotional skills, particularly skills related to the domain of emotional regulation.

Figure 5.6. Relations between students' exposure to bullying, and social and emotional skills, 10- year-olds

Change in social and emotional skills related to a one standard deviation increase in exposure to bullying

Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average. Significant differences are coloured, non-significant differences are outlined. Control variables include gender, socio-economic status and immigration background.*

Source: *OECD, SSES 2019 Database Table A5.17.*

StatLink https://doi.org/10.1787/888934274247

Figure 5.7. Relations between students' exposure to bullying and social and emotional skills, 15- year-olds

Change in social and emotional skills related to a one standard deviation increase in exposure to bullying

Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average. Significant differences are coloured, non-significant differences are outlined. Control variables include gender, socio-economic status and immigration background.*

Source: *OECD, SSES 2019 Database Table A5.17.*

StatLink https://doi.org/10.1787/888934274266

Box 5.2.
Promoting student resilience in primary and secondary schools: evidence from Victoria (Australia)

In 2016, primary and secondary schools in Victoria (Australia) adopted the Resilience, Rights and Respectful Relationships (RRRR) curriculum. It aims to develop students' social and emotional skills and promote safety within the classroom. The curriculum covers 8 key social and emotional competencies, including emotional literacy, developing personal strength and positive coping mechanisms, enhancing problem-solving and stress management skills, emphasising help-seeking in times of crisis, and helping students discover their gender and identity while maintaining positive gender relations. These skills are emphasised using a "whole school" approach, which promotes a school-wide culture of respect and safety through classroom practices, curriculum and overarching school policies. By taking concrete steps within and outside the classroom that promote student resilience, teachers and school leaders can promote overall student well-being and enhance social relations at all levels of education. In this light, the curriculum states various steps that teachers can take to ensure a positive classroom climate:

- **Setting up a safe space:** Teachers are encouraged to work with students to establish a friendly and respectful atmosphere for learning, asking questions and expressing opinions. This is achieved by involving students in identifying rules and expectations, and setting standards relating to privacy. This helps students seek help for mental distress, and develops their personal strength through close teacher interaction.

- **Discussing issues of violence:** Teachers are encouraged to initiate discussions on the prevention of school violence in a gentle and non-triggering manner. Recommended activities include scenario-based games, art projects and story-telling to educate students about different forms of violence. This helps students understand that gender-based violence is harmful from an early age and enables them to respond appropriately.

- **Recognising mental distress through observation:** Teachers are encouraged to observe and respond appropriately to signs of distress and gender-based violence inside and outside classrooms. This can be achieved by being vigilant to patterns of rough interaction, verbal harassment and absenteeism among students.

- **Following signs of distress:** In addition to observing distress, teachers are encouraged to initiate follow-up conversations with students and school authorities. It is recommended that conversations are conducted discreetly and students' accounts of bullying and harassment listened to attentively.

- **Reassuring students:** Teachers should also reassure students that they have their full support and help. In cases where there is a threat to students' safety and well-being, teachers are expected to report this to senior school staff.

Source: (Department of Education and Training, 2018[34])

Student-teacher relations

On average across cities, student-teacher relations are positively related to all social and emotional skills. Certain social and emotional skills relate more strongly to student-teacher relations. These are optimism, curiosity and achievement motivation, closely followed by co-operation and self-efficacy (Figure 5.8 and Figure 5.9). The relations between student-teacher relations, and social and emotional skills do not vary depending on student age except for empathy. Students who enjoy more positive relations with their teachers tend to be more empathetic and even more so when they are 10-years-old (Table A5.18).

Figure 5.8. Relation between student-teacher relations, and social and emotional skills, 10-year-olds

Change in student-teacher relations related to a one standard deviation increase in skills

Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average. Significant differences are coloured, non-significant differences are outlined. Control variables include gender, socio-economic status and immigration background.*

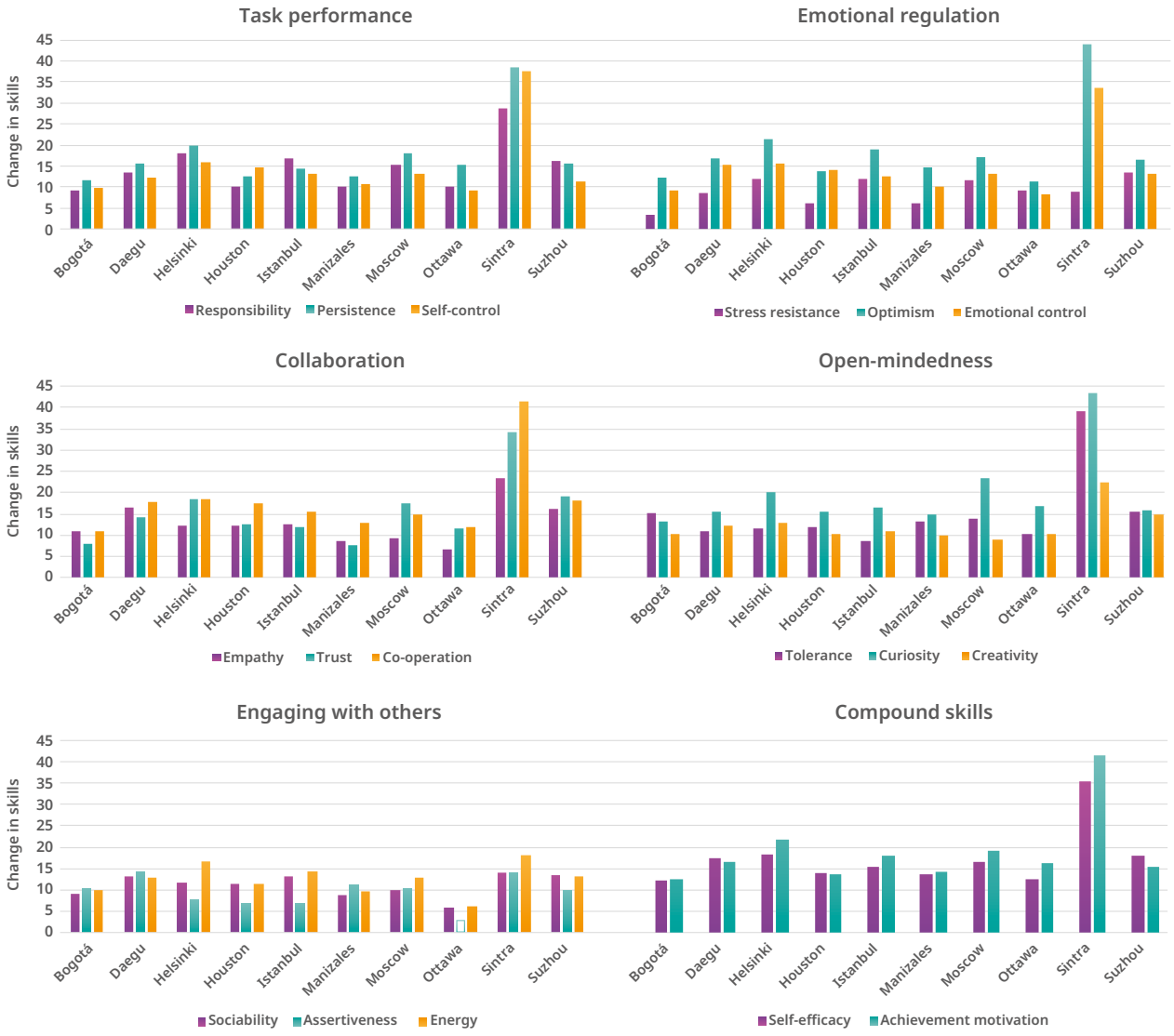
Source: *OECD, SSES 2019 Database Table A5.18.*

StatLink https://doi.org/10.1787/888934274285

Optimism, curiosity and achievement motivation, mainly, are related to how well students and teachers get along, a finding also observed in other studies. Zee, Koomen and Van der Veen (2013[35]) found that task performance and collaboration are related to close, non-conflictual relationships between students and teachers while low emotional regulation is related to dependent and conflictual relationships. Achievement motivation most closely identifies with the domain of task performance and optimism is part of the domain of emotional regulation. Furthermore, students' feelings of closeness to teachers are positively related to their classroom engagement, which can be seen as a form of achievement motivation (Furrer and Skinner, 2003[17]).

Figure 5.9. Relation between student-teacher relations, and social and emotional skills, 15-year-olds

Change in student-teacher relations related to a one standard deviation increase in skills



Note: *Data for Sintra (Portugal) did not reach student response rate standards and are not included in the international average. Significant differences are coloured, non-significant differences are outlined. Control variables include gender, socio-economic status and immigration background.*
Source: *OECD, SSES 2019 Database Table A5.18.*
StatLink https://doi.org/10.1787/888934274304

What do the findings mean for parents, educators and policy makers?

Education systems nowadays strive for a more holistic development of students. This includes more than the development of students' cognitive skills. It recognises the importance of students' psychological well-being and social relations in the school environment. A more supportive and caring school environment can help to combat bullying and encourage students to seek help when they need it. When students perceive that they are treated in a fair way, when the school and its staff help students develop a sense of belonging, when they provide for a disciplined, structured and co-operative environment, when the environment is supportive and less punitive, students' social and emotional skills develop better and they are less likely to engage in violent and negative interactions.

Differences in students' social relations in school-related to student demographics have been found for age, gender and socio-economic status. Overall, students' sense of school belonging, exposure to bullying and student-teacher relations are different, depending on student demographics. Older girls reported a weaker sense of school belonging. Younger students, especially younger boys, indicated more exposure to different types of in-person bullying. Nevertheless, boys still indicated a greater sense of fitting into school than girls. Furthermore, socio-economically advantaged students indicated a higher sense of school belonging and better student-teacher relations compared to disadvantaged students. However, there were few differences between students with and without a migration background in terms of school relations, and social and emotional skills.

The analyses indicate that students' sense of fitting in at school and student-teacher relations are consistently and positively related to social and emotional skills. Exposure to bullying is consistently and negatively related to social and emotional skills. Additionally, different social and emotional skills are most strongly related to students' sense of school belonging, exposure to bullying and student-teacher relations. Students who report a greater sense of fitting in at school also tended to report more co-operation, optimism and sociability while good student-teacher relations were most strongly related to greater optimism, curiosity and achievement motivation. Students who reported being bullied tended to have lower social and emotional skills in the domain of emotional regulation: emotional control, optimism and stress resistance.

In other words, students who feel like they belong at school are more likely to get along well and work well with classmates and friends. In contrast, students who are bullied tend to report lower skills in the domain of emotional regulation as well as trust. These skills are related to lower psychological well-being (see Chapter 3). It is likely that students who are bullied experience negative emotions and become less trusting of other people. This may also have an impact on academic achievement: trust is positively related to math grades among 15-year-olds in 7 of the 9 cities with available data in this indicator after accounting for socio-economic status, gender, scores from the cognitive ability test, and other social and emotional skills (see Chapter 2). Finally, students who get along well with their teachers report greater curiosity and achievement motivation. Curiosity and achievement motivation both indicate a love or determination for learning and doing well at school. It is likely that students who get along well with their teachers are more engaged, want to do well in school and like learning more than students who do not get along well with their teachers.

There is ample evidence that improving students' sense of school belonging and relations with teachers, and reducing bullying are positively related to desirable student outcomes such as higher academic performance and greater well-being (OECD, 2019[7]). Student-teacher relationships are related to better social functioning, engagement in learning, academic achievement, and lower behavioral problems (Roorda et al., 2011[36]). At the same time, bullying and cyberbullying can have negative and long-lasting effects. Students who are bullied are more likely to develop physical and psychological issues such as depression and a higher tendency to attempt suicide (OECD, 2018[37]; Burns and Gottschalk, 2019[38]). Bullying can also adversely affect students' academic performance and is shown to even adversely affect students' health, income and social outcomes as adults (Wolke et al., 2013[39]). Bullying is a serious policy concern and understanding the prevalence of bullying both online and in person can help combat it. Results in this chapter show that improving social and emotional skills could also be a way to help students enjoy better social relations in school and vice versa. There are numerous school-based interventions that tackle bullying. The results from this chapter could help target these strategies more closely. For example, boys indicated being bullied more than girls and verbal bullying is the type of bullying that occurs most often. Girls and disadvantaged students, on the other hand, indicated a weaker sense of fitting in at school. It is important to learn more about the associations between

social relations in school and social and emotional skills to get a better understanding of how schools and teachers can create school and teaching environments that are most conducive to students' learning and well-being.

SSES data show that different social and emotional skills are related to different measures that are considered important in students' lives. Chapter 2 shows that curiosity and persistence, especially, are positively related to students' academic performance. Chapter 3 shows that optimism, followed by trust and stress resistance are especially positively related to measures of students' psychological well-being. Chapter 4 shows that students who rated themselves as highly creative tended to describe themselves as persistent and eager to learn new things. This chapter shows that optimism is related to all three measures of social relations in school but that co-operation and sociability are also positively related to students' sense of school belonging. Emotional control, stress resistance and trust are negatively related to bullying and curiosity and achievement motivation are related to how well students and teachers get along. These results show that different skills matter for different student outcomes. Despite the fact that social and emotional skills is often used as a catch-all term to denote common characteristics, they are, in fact, a compendium of complementary skills that are differently related to different outcomes and contexts.

Some of these skills, such as curiosity, emotional control, and co-operation have an implicit positive impact on a wide range of outcomes and contexts both at the individual and societal level. In other cases, some skills such as being more outgoing and sociable may depend more specifically on the student's goals. For example, in the job market, extraversion might be more relevant for entrepreneurial and management roles where social interaction is crucial. Introversion might suit technical and professional jobs better where attention to detail is required. If someone were introverted but wanted to go into sales, learning how to be more comfortable in social interactions would be useful. Conversely, someone who was extroverted but interested in developing machine-learning algorithms might benefit from working on strategies to remain focused and avoid social interactions. Like musicians in an orchestra, students can reach their maximum socio-emotional potential when they find their role in the concert, and train until they become proficient.

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ANNEX A

Technical Background

Annex A1:
Construction of social-emotional assessment scales

Annex A2:
Construction of background indices

Annex A3:
LASSO regression analysis

ANNEX A1
Construction of social and emotional assessment scales

Corrections for potential biases in measurement

The SSES assessment, like all assessments, is susceptible to several possible measurement errors. Despite the extensive investments SSES makes in monitoring the process of translation, standardising the administration of the assessment, selecting questions and analysing the quality of the data, complete comparability across countries and subpopulations cannot always be guaranteed. While self-reported questionnaires are a preferred method for measuring psychological traits, they can be affected by the respondents' interpretation of the questionnaire item. These self-reported measures are susceptible to multiple biases: social desirability bias, where students provide answers they think are more socially acceptable; reference-group bias, where students compare themselves to the group of persons around them while answering questions, and when the reference group itself can differ from one student to another, and from school to school; response style bias, where students from different cultures provide different patterns of responses, such as providing more extreme or more modest responses.

SSES acknowledges these potential biases and tries to minimize the effect of these potential biases on the variables and relations between variables presented in this report. First, SSES controls for acquiescent response tendencies in students' social and emotional skills. Second, SSES uses anchoring vignettes to combat potential reference group bias. Third, SSES assesses students' social and emotional skills via direct (student) and indirect (parent and teacher) assessment.

Acquiescent response style

Acquiescence refers to tendencies among respondents to provide their agreement or disagreement to different positively and negatively worded statements irrespective of the content, wording and direction. Such response styles may result in biased measures and calculation of acquiescence response sets (ARS) has been suggested as a way of modelling such response tendencies for Likert-type items (Primi et al., 2020[1]).

One way to control for acquiescence is using a balanced set of items per scale in which positively and negatively worded items are paired within scales. One of the design features of the SSES assessment was to have both positively and negatively worded items within each item set measuring a particular construct scale. However, the items were not evenly balanced. In order to derive an acquiescence response set, 25 pairs of items across all scales were selected for both student and parent data.

To control for acquiescent response styles, Multiple Group Confirmatory Factor Analysis (MGCFA) models were estimated using acquiescence response sets as control variables as part of multiple indicator multiple cause (MIMIC) models, which generally showed improved model fit and higher levels of measurement invariance (OECD, 2021[2]) .

Anchoring vignettes

Cross-cultural comparability is an important methodological aspect of SSES. Reference bias represents a potential source of cross-cultural incomparability for self-report measures (Kankaraš, 2017[3]). It refers to a situation in which people from different countries answer the same question using different reference standards. In particular, a question such as: "I see myself as someone who tends to be lazy" may be answered differently depending on a person's standards or reference points regarding what it means to be lazy. Therefore, it is possible that national rankings of the responses to this question do not correlate with factual measures such as average working hours (Schmitt et al., 2007[4]). Reference bias can be a problem when comparing aggregate data between cultures, but not when comparing individual scores within the same culture (Kyllonen and Bertling, 2013[5]).

One way to try to reduce potential reference bias is by using anchoring vignettes. Anchoring vignettes are designed to identify the reference system used by respondents for evaluating behaviours presented on a given scale. Based on the answers obtained from the anchoring vignettes, respondents' answers to the social and emotional skills can be adjusted to account for differences in their reference systems. This adjustment could potentially reduce possible bias introduced by respondents from different cultures using different reference systems for evaluating the same behaviours. Examples of the anchoring vignettes used in SSES 2019 can be consulted in SSES 2019 Technical report (OECD, 2021[2]).

Unlike adjustments by acquiescence, anchoring vignettes did not generally improve the assessment beyond what was already done and, therefore, they are not included in the final scaling of the social and emotional skills. However, it is possible that exposure to the anchoring vignettes at the beginning of the assessment had already ameliorated potential reference group bias.

Triangulation of assessment methods

SSES assessed students' social and emotional skills using a triangulation approach. More specifically, in evaluating students' social and emotional skills, SESS combines information from three separate sources of information about these skills: reports provided by students themselves but also by their parents and teachers. Triangulation can be important for several reasons. First, collecting information from multiple sources and across multiple contexts improves the representation and understanding of the behaviour of school-going students in several important contexts and situations. Students may behave differently in different settings and choosing information from any one of those settings may provide a somewhat biased representation of students' social and emotional skills. Additionally, obtaining information from parents and teachers allows us to control for measurement error in self-reports, such as social desirability and unrealistic self-perceptions. When response rates in the parent and teacher questionnaires allowed it, the report uses triangulation to verify the consistency of its results (see Chapter 4).

Cross-city comparability of social-emotional assessment scales

SSES asked students what level of education they expect to complete (STQM02301). Response categories are based on the International Standard Classification of Education (ISCED). Response categories are: 1) ISCED level 3 or lower, 2) ISCED level 4 or 5, and 3) ISCED level 6 or higher.

Career expectations

While the SSES 2019 Technical Report (OECD, 2021[2]) explains in detail the scaling procedures and the construct validation of all social-emotional assessment scales, this section presents a summary of the analyses carried out to validate the cross-city comparability of the social-emotional assessment scales used in this report. The internal consistency of scaled indices, factor analysis to assess construct dimensionality and the invariance of item parameters are the three approaches that SSES 2019 used to examine the comparability of scaled indices across cities. Based on these three approaches, all indices examined in this report meet the reporting criteria.

Internal consistency refers to the extent to which the items that make up an index are inter-related. Cronbach's Alpha was used to check the internal consistency of each scale within the cities and to compare it amongst cities. The coefficient of Cronbach's Alpha ranges from 0 to 1, with higher values indicating higher internal consistency. Similar and high values across cities are an indication of reliable measurement across cities. Commonly accepted cut-off values are 0.9 for excellent, 0.8 for good, and 0.7 for acceptable internal consistency. The reliability for each of the social-emotional assessment scales was higher than 0.70 in each city and for each scale (concretely in 148 of the 170) with following exceptions:

- Creativity: Houston (0.66).
- Curiosity: Bototá (0.66), Manizales (0.66).
- Empathy: Bogotá (0.65), Houston (0.68), Manizales (0.65), Sintra (0.65).
- Resilience: Bogotá (0.64), Helsinki (0.68), Houston (0.66), Manizales (0.62).
- Sociability: Bogotá (0.69), Sintra (0.68), Istabul (0.66).
- Stress resistance: Bogotá (0.66), Manizales (0.68).
- Tolerance: Bogotá (0.67), Manizales (0.67).
- Self-efficacy: Bogotá (0.68), Helsinki (0.68), Manizales (0.69), Sintra (0.65).

The analyses of the SSES data involved a series of iterative modelling and analysis steps. These steps included the application of confirmatory factor analysis (CFA) to evaluate constructs and a multiple-group confirmatory factor analysis (MGCFA) to review measurement invariance across groups (gender, age cohorts and cities). In addition, MGCFA models were estimated using acquiescence response sets as control variables as part of multiple indicator multiple cause (MIMIC) models, which generally showed improved model fit and higher levels of measurement invariance.

All items had a Likert-type format with five categories and included both positively and negatively worded statements. The five categories were 'strongly disagree', 'disagree', 'neither agree nor disagree', 'agree' and 'strongly agree'. Each item was scored from 0 to 4 for items with positively worded statements and reverse-scored for the negatively worded ones.

The SSES student survey in Sintra (Portugal) did not meet the sample participation requirements for SSES and was not included in the data for estimating the scaling parameters for the student direct assessment.

In testing for measurement invariance, three different models were specified and compared (i.e. configural, metric and scalar models):

- Configural invariance is the least constrained model. In this model, it is assumed that the items measuring the underlying latent construct are equivalent across all groups of reference (e.g. cities). If the strength of the associations between the groups are the same, then the latent construct is assumed to have the same meaning for all groups (i.e. the structure of the construct is the same). Configural invariance would allow examining whether the overall factor structure stipulated by the measures fit well for all groups in your sample. However, for scales reaching configural invariance, neither scores nor their associations can be directly compared across groups.
- The metric level of invariance is achieved if the structure of the construct is the same across groups (i.e. configural invariance is achieved) and the strength of the association between the construct and items (factor loadings) is the same across groups. Metric invariance would allow for comparisons of within-group associations among variables across groups (e.g. correlations or linear regression), but not for the comparison of scale mean scores.
- Scalar level invariance is achieved when metric invariance has been achieved and the intercepts/thresholds for all items across groups are equivalent. When scalar invariance is achieved, it is assumed that differences in scale means across groups are free of any cross-group bias. At this level of measurement equivalence, scale scores can be directly compared across groups.

Results of the MGCFA are presented in Table 1. Finally, IRT (Item Response Theory) Generalised Partial Credit Model (GPCM) was used to scale items and generate scores. Similar analyses regarding the indirect assessment of students' social and emotional skills through parents and teachers can be found in the SSES 2019 Technical Report (OECD, 2021[2]).

Table 1. Levels of measurement invariance – social and emotional skills

	Age cohorts	Gender	Cities
Achievement motivation	Metric	Scalar	Configural
Assertiveness	Metric	Scalar	Configural
Co-operation	Scalar	Scalar	Metric
Creativity	Scalar	Scalar	Metric
Curiosity	Scalar	Metric	Metric
Emotional control	Scalar	Scalar	Metric
Empathy	Metric	Scalar	Metric
Energy	Scalar	Metric	Metric
Optimism	Scalar	Scalar	Metric
Persistence	Scalar	Scalar	Metric
Responsilibilty	Scalar	Scalar	Metric
Self-control	Scalar	Scalar	Metric
Self-efficacy	Metric	Metric	Metric
Sociability	Metric	Scalar	Metric
Stress resistance	Scalar	Scalar	Metric
Tolerance	Metric	Scalar	Metric
Trust	Scalar	Scalar	Metric

Note: *More detailed information on measurement invariance of the scales can be found in chapter 12 of the Technical Report.*
Source: *(OECD, 2021[2])*

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ANNEX A2
Construction of background indices

Types of background indices

This section explains the indices derived from the SSES 2019 background questionnaires. Several SSES measures reflect indices that summarise responses from students to a series of related questions. The questions were selected from a larger pool based on theoretical considerations and previous research – see the SSES 2019 Assessment Framework (Kankaraš and Suarez-Alvarez, 2019[1]) for an in-depth description of this framework. For a detailed description of other SSES indices and details on the methods, see the SSES 2019 Technical Report (OECD, 2021[2]).

There are two different types of indices:

Simple indices: constructed using an arithmetic transformation or recoding of one or more items in exactly the same way across assessments. Here, item responses are used to calculate meaningful variables, such as the recoding of the four-digit ISCO-08 codes into "Highest parents' socio-economic index (HISEI)".

Scale indices: constructed through combining multiple items which are intended to measure an underlying latent construct. The indices were scaled using Generalised Partial Credit Model (GPCM) unless otherwise indicated. For example, the index of socio-economic status based on data from parental education, parental occupation and home possessions, was derived from component scores obtained through principal component analysis.

Student-level simple indices

Student age

Student age (Age_Std) was calculated as the age in months at the time of the questionnaire administration. It is the difference between the date the student questionnaire was administered and the student's date of birth (STQM003). Student age was derived from information about the student's date of birth and the actual start date of the administration of the student questionnaire. Generally, data from the Student Tracking Forms (STF) were given priority over information provided by students' when responding to the questionnaire.

Gender

A student gender variable (Gender_Std) was computed by using valid codes (i.e. not missing) from the STF (1 for girls and 2 for boys). When STF had a missing code, a valid code from the variable STQM00401 reflecting student gender information from the student questionnaire was inserted.

Grades

SSES collected information on school grades in three subjects: reading (Sgrade_Read_Lang), mathematics (Sgrade_Math) and the arts (Sgrade_Arts). As different cities used different grading systems, all grades were transformed on a scale from 1 to 50.

Parents' level of education

In the parent questionnaire, respondents were asked (PAQM006) about the highest level of education of each of the student's parents with questions using nationally appropriate terms according to the International Standard Classification of Education scheme (ISCED) (UNESCO, 2011[3]). Respondents were asked to select from eight

levels ranging from ISCED level 1 (primary education), through to ISCED level 8 (Doctoral or equivalent level). A condensed version of this question was asked (STQM007) in the student questionnaire, with nationally adapted options given to respondents- 'ISCED 3 and below' (Upper secondary education and below), 'ISCED 4 or 5' (post-secondary non-tertiary education and short-cycle tertiary education) and 'ISCED 6 and above' (bachelor's degrees and above). An index, HISCED was derived by taking the highest level of education of either parent from the parent questionnaire. If the data was only available for one parent, then that is used as the highest level. In instances where there was no information from the parent questionnaire, data from the student questionnaire was used. For each city, the number of years typically spent at each ISCED level was converted into a continuous variable based on the number of years spent in formal education (PAREDYRS). In order to obtain consistency between the parent and student data, the computation of PAREDYRS using data from the parent questionnaire was capped at the number of years for ISCED 3, ISCED 4 or 5 and ISCED 6. For example, if a respondent indicated that one parent completed an ISCED level 8 qualification, the appropriate number of years for formal education for an ISCED level 6 qualification was recorded for PAREDYRS.

Parents' highest occupational status

Occupational data was collected using open-ended questions in both the parent (PAQM008-PAQM011) and student questionnaires (STQM011- STQM014). The responses were coded to four-digit ISCO codes and then mapped to the international socio-economic index of occupational status (ISEI) (Ganzeboom and Treiman, 2003[4]). The highest occupational status of parents (HISEI) corresponds to the higher ISEI score among parents or to the only available parent's ISEI score. In instances where there was no information from the parent questionnaire, data from the student questionnaire was used. A higher ISEI score indicates higher levels of occupational status.

Immigrant background

Information on the country of birth of students and their parents was also collected. Included in the database are three country-specific variables related to the country of birth of the student, and his or her mother and father (STQM015). The variables are binary and indicate whether the student, mother and father were born in the country of assessment or elsewhere. The index on immigrant background (IMMBACK) is calculated from these variables and has the following categories: 1) native students (students who are born in the country of assessment and students who had at least one parent born in the country of assessment), and 2) non-native students (students who are born abroad and/or parents who are born abroad). Students with missing responses for either the student or for both parents were given missing values for this variable.

Life satisfaction

SSES asked (STQM019) students: "Overall, how satisfied are you with your life as a whole these days?" Students answered the question on a 10-point scale where 0 represents "not at all satisfied" and 10 represents "completely satisfied". This is the same measure that was used in PISA 2015 and PISA 2018.

Education expectations

SSES asked students what level of education they expect to complete (STQM02301). Response categories are based on the International Standard Classification of Education (ISCED). Response categories are: 1) ISCED level 3 or lower, 2) ISCED level 4 or 5, and 3) ISCED level 6 or higher.

Career expectations

In SSES 2019, students were asked to answer a question (STQM02401) about "'what kind of job [they] expect to have when [they] are about 30 years old". This was an open-ended question and students were asked to enter a job title. Responses to this question are recoded based on the International Standard Classification of Occupations (ISCO) to a 4-digit ISCO-08 code.

This variable was used to derive several indices related to career expectations. The classification used in this report includes the following groups of jobs:

- Health professionals: All health professionals in sub-major group 22 (e.g. doctors, nurses, veterinarians).

- Armed forces, police, security, and fire-fighters: All protective services workers in sub-major group 54 (e.g. firefighters, police officers) and minor group 3355 (police inspectors and detectives).
- Science and engineering professionals: All science and engineering professionals in sub-major group 21.
- Artist or sports players: All artists and sport players professionals in minor groups 265 (e.g. visual artists, musicians, actors), 342 (e.g. athletes, sports coaches), and 343 (e.g. photographers, chefs).
- Managers: All manager professionals in group 1 (e.g. legislators and senior officials, business services and administration managers).
- Teaching professionals: All teaching professionals in sub-major group 23 (e.g. University teachers, secondary education teachers, primary school and early childhood).

Expectations from parents and teachers

SSES 2019 asked (STQM034) students to report the extent to which they agree ("strongly disagree", "disagree, "neither agree nor disagree", "agree", "strongly agree") with the following statements: "my parents expect me to be perfect in everything I do", "my parents always expect me to do better than others", "my teachers expect my work to be perfect" and "my teachers ask too much of me". The variable measuring expectations from parents is the sum of the first two items and the variable measuring expectations from teachers is the sum of the two last items. The two variables are recoded so that values smaller than or equal to seven are set to 0 and values larger than seven are set to 1.

Competitive school climate

SSES 2019 asked (STQM038) students to report how true ("almost never or never true", "sometimes true", "often true", "almost always or always true") the following statements are: "Students seem to value competition (e.g. competing with each other)", and "It seems that students are competing with each other". The variable measuring competitive school climate is the sum of these two items. The variable is recoded so that values smaller than or equal to five are set 0 and values larger than five are set to 1, where 0 indicates a "low" and 1 indicates a "high" perception of a competitive school climate.

Participation in after-school activities

SSES asked (STQM043) students if they participated in any of the following extracurricular activities outside of school: a) Sports, b) Art, c) Social activities, d) Community service, and e) Environmental protection activities. There were two response options: "No" and "Yes".

Student-level scale indices

Current psychological well-being

The index of current psychological well-being (ST_WELLBEING) was constructed using students responses (STQM020) about how they have been feeling over the last two weeks ("At no time", "Some of the time", "More than half of the time", "Most of the time", "All of the time") in relation to the following statements: "I have felt cheerful and in good spirits", "I have felt calm and relaxed", "I have felt active and vigorous", "I have woken up feeling fresh and rested" and "My daily life was filled with things that interest me". Higher scale scores correspond to higher perceived levels of positive student well-being.

Test anxiety

The index of test anxiety (ST_ANXTEST) was constructed using students responses (STQM042) about the extent to which they agree ("strongly disagree", "disagree, "neither agree nor disagree", "agree", "strongly agree") with the following statements: "I often worry that it will be difficult for me taking a test", "Even if I am well prepared for a test I feel very anxious" and "I get very tense when I study for a test". Students received higher scores on this scale if they indicated higher levels of anxiety.

Bullying

The index of bullying (ST_BULLY) was constructed using students responses (STQM039) about how often ("Never or almost never", "A few times a year", "A few times a month", "Once a week or more") they experienced the following in the past 12 months: "Other students made fun of me", "I was threatened by other students", "Other students took away or destroyed things that belonged to me" and "I got hit or pushed around by other students". The bullying scale asked students how often they had experienced bullying in school over the past 12 months by reporting on the frequency of the situations mentioned above. Students received higher scores on this scale if they indicated a higher frequency of occurrence of these situations.

Student-teacher relations

The index of student-teacher relations (ST_RELTEACH) was constructed using students' responses (STQM041) about how often ("Never or almost never", "A few times a year", "A few times a month", "Once a week or more") they experienced the following in the past 12 months: "Most of my teachers treated me fairly", "I got along well with most my teachers" and "Most my teachers were interested in my well-being". Students received higher scores on this scale if they indicated a higher frequency of occurrence of these situations.

School belonging

The index school belonging (ST_BELONG) was constructed using students' responses (STQM037) about the extent to which they agree ("strongly disagree", "disagree, "agree", "strongly agree") with the following statements: "I make friends easily at school', I feel like I belong at school", "Other students seem to like me", "I feel like an outsider (or left out of things) at school", "I feel awkward and out of place in my school" and "I feel lonely at school". For analysis and scaling purposes, the negatively worded items were reverse-coded. Students indicating a greater sense of belonging obtained higher scores on the scale.

Scaling related to the index of socio-economic status

A measure of parental socio-economic status (SES) was derived for each city, based on three indices: highest level of parental occupation (HISEI), highest level of parental education (PAREDYRS) and household possessions (HOMEPOS).

Household possessions

The household possessions index (HOMEPOS) consists of student-reported possessions at home, resources available at home and the number of books at home. City-specific wealth items were also included in the computation of the HOMEPOS index. HOMEPOS is a summary index of all household and possession items (STQM008, STQM009 and STQM010).

Computation of ESCS

Missing values for respondents with missing data for only one variable were imputed with predicted values plus a random component based on a regression of the other two variables. If there was missing data on more than one variable, the index was not computed for that student and a missing value was assigned. Variables with imputed values were then used for a principal component analysis at the city level.

The index scores were obtained as component scores for the first principal component with zero being the score of an average respondent within each city and one being the standard deviation.

Cross-city comparability of background scaled indices

While the SSES 2019 Technical Report (OECD, 2021[2]) explains in detail the scaling procedures and the construct validation of all context- questionnaire data, this section presents a summary of the analyses carried out to validate the cross-city comparability of the main scaled indices used in this report. The internal consistency of scaled indices, factor analysis to assess construct dimensionality and the invariance of item parameters are the three approaches that SSES 2019 used to examine the comparability of scaled indices across cities. Based on these three approaches, all indices examined in this report met the reporting criteria.

Internal consistency refers to the extent to which the items that make up an index are inter-related. Cronbach's Alpha was used to check the internal consistency of each scale within the cities and to compare it amongst cities. The coefficient of Cronbach's Alpha ranges from 0 to 1, with higher values indicating higher internal consistency. Similar and high values across cities are an indication of reliable measurement across cities. Commonly accepted cut-off values are 0.9 for excellent, 0.8 for good, and 0.7 for acceptable internal consistency. The average reliability for each of the scale indices described above was higher than 0.70, and by city only in the following exceptions:

- School belonging: Bogotá (0.69)
- Bullying: Daegu (0.65)

The analyses of the background scale indices also involved a series of iterative modelling and analysis steps. Items from all scales were initially evaluated through an exploratory factor analysis (EFA). A confirmatory factor analysis (CFA) was then carried out on the scales, with only acceptable items from the EFA, to assess the constructs. Generally, maximum likelihood estimation and covariance matrices are not appropriate for analyses of categorical questionnaire items because the approach treats items as if they are continuous. Therefore, the SSES analysis relied on robust weighted least squares estimation (WLSMV) models (Muthén, du Toit and Spisic, 1997[5]; Flora and Curran, 2004[6]) to estimate the confirmatory factor analysis. In instances where there were only three items for the scale (such as for student-teacher relations and test anxiety), the models indicated perfect fit and could not be evaluated due to the limited number of degrees of freedom. Therefore, the measurement invariance was evaluated using multi-dimensional models.

For ease of interpretation, all negatively worded items were reverse coded, so the highest value for each item represents a higher attribute.

The SSES student survey in Sintra (Portugal) did not meet the sample participation requirements for SSES and was not included in the data for estimating the scaling parameters in the student background questionnaire.
Furthermore, a multiple-group confirmatory factor analysis (MGCFA) was used to test measurement invariance. For the student questionnaire, the MGCFA was evaluated for the following groups; gender, age cohorts and cities. In testing for measurement invariance, three different models were specified and compared (i.e. configural, metric and scalar models):

- Configural invariance is the least constrained model. In this model, it is assumed that the items measuring the underlying latent construct are equivalent across all groups of reference (e.g. cities). If the strength of the associations between the groups are the same, then the latent construct is assumed to have the same meaning for all groups (i.e. the structure of the construct is the same). Configural invariance would allow examining whether the overall factor structure stipulated by the measures fit well for all groups in your sample. However, for scales reaching configural invariance, neither scores nor their associations can be directly compared across groups.
- The metric level of invariance is achieved if the structure of the construct is the same across groups (i.e. configural invariance is achieved) and the strength of the association between the construct and items (factor loadings) is the same across groups. Metric invariance would allow for comparisons of within-group associations among variables across groups (e.g. correlations or linear regression), but not for the comparison of scale mean scores.

- Scalar level invariance is achieved when metric invariance has been achieved and the intercepts/thresholds for all items across groups are equivalent. When scalar invariance is achieved, it is assumed that differences in scale means across groups are free of any cross-group bias. At this level of measurement equivalence, scale scores can be directly compared across groups.

Results of the MGCFA are presented in Table 1. Finally, items were scaled using the Generalised Partial Credit Model (GPCM).

Table 1. Levels of measurement invariance – scales in the student background questionnaire

	Age cohorts	Gender	Cities
1. Current psychological well-being	Scalar	Scalar	Metric
2. Test anxiety	Scalar	Scalar	Scalar
3. Bullying	Scalar	Scalar	Scalar
4. Student-teacher relations	Scalar	Scalar	Scalar
5. School belonging	Scalar	Scalar	Metric

Note: *More detailed information on measurement invariance of the scales in the background questionnaires can be found in chapter 14 of the Technical Report.*

Source: *(OECD, 2021[2]).*

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ANNEX A3
LASSO regression analysis

Purpose

One of the major contributions of this report is the analysis of how social and emotional skills are associated with noteworthy outcomes such as school grades or career aspirations. As social and emotional skills are associated with each other, and with background variables as well, spurious associations can arise in simple models featuring only one skill and multivariate models are thus preferable. However, as only a few skills have unique predictive value on key outcomes in each of these models, the presentation of standard Ordinary Least Squares (OLS) models using all skills collected in this survey brings a mass of information that can harm readability. Focusing instead on those skills that would bring more value in predicting certain outcomes (e.g. academic achievement) responds to common education sector constraints, where time and resources are often limited. In order to circumvent this issue, this report makes use of LASSO as a preliminary step to OLS in order to select models with a small number of skills.

LASSO

The least absolute shrinkage and selection operator (also known as LASSO) is a machine learning prediction algorithm that aims at estimating efficient and sparse models. Sparse prediction models are models which include only a small subset of all variables available, with the aim of increasing tractability and limiting overfitting. The context of the report is different from a prediction exercise and the threat of overfitting remains low given the size of the samples collected. Nonetheless, analyses in this report make use of LASSO in order to discard skills in each relationship that are more weakly associated with the outcome considered, without actually letting spurious associations appear.

Similar to OLS, the LASSO algorithm estimates linear models and uses an algorithm based on minimizing least squares. However, LASSO differs from OLS on two main grounds:

1. The objective function also includes a penalty term that limits the size of the linear coefficients that are estimated. Most importantly, this penalty term is designed to constrain coefficients of variables with too little explanatory power to zero. Thanks to this property, LASSO allows to select a subset of variables that can be deemed empirically relevant: those with a non-zero coefficient. The use of LASSO in this report is motivated by this model selection feature.
2. LASSO is a machine learning prediction algorithm, and as such, it is estimated through a succession of cross-validations: the model parameters are estimated on a training sample, its predictions are evaluated on a validation sample, and this process is repeated until convergence is achieved.

The LASSO estimator proceeds thus from the minimization of the following objective function, which comprises two terms, the least-squares fit measure, identical to OLS, and the penalty term:

$$\hat{\beta}^{LASSO} = \underset{\beta}{\operatorname{argmin}} \left\{ \frac{1}{2N} \sum_{i=1}^{N} \left(y_i - \beta_0 - \sum_{j=1}^{p} x_{ij}\beta_j \right)^2 + \lambda \sum_{j=1}^{p} \omega_j |\beta_j| \right\}$$

$\boldsymbol{y}$ is the outcome variable, $\boldsymbol{x}$ refers to the potential covariates, $\boldsymbol{\beta}$ is the vector of coefficients on $\boldsymbol{x}$, $\boldsymbol{\lambda}$ is the lasso penalty parameter, $\boldsymbol{\omega}$ refers to the parameter-level weights known as penalty loadings and $\sum |\beta|$ is the lasso penalty. As the penalty term is not scale-invariant as such, the penalty loadings parameter $\boldsymbol{\omega}$ allows to balance the contribution of all covariates. In addition, covariates can be excluded from the penalty term by fixing their penalty loading parameter to 0. In such a case they are always selected in the model.

Central to LASSO is a trade-off regarding the size of the coefficients. A higher coefficient may reduce the least-squares fit measure, but it will also increase the penalty term, and the joint contribution can thus move the objective function away from the optimum. As a result, covariates with a non-zero coefficient will be associated with a coefficient whose absolute value will be lower than the OLS coefficient. The magnitude of this trade-off is governed by λ, which needs to be set according to a predetermined rule. The higher λ, the lower the number of covariates with a non-zero coefficient, and hence the lower the number of covariates kept in the model. Readers can consult (Hastie, Tibshirani and Friedman, 2017[1]) to obtain further details on LASSO, along with the definition of the main rules used to select λ: cross-validation, adaptive and plugin.

Implementation in the SSES report

As highlighted above, LASSO is used in this report as a model selector rather than as a prediction tool. Its implementation proceeds in two steps:

1. A LASSO model is estimated in order to obtain a subset of skills relevant to the relationship under consideration.
2. An OLS model using this subset of relevant skills rather than all skills, along with a fixed set of background variables is estimated in order to obtain post-LASSO coefficients. This model accounts for sampling variance.

The estimations were performed in STATA using the lasso command (see (Drukker and Lui, 2019[2]) for an introduction) and the repest module (Avvisati and Keslair, 2014[3]).

Because the nature of the association between an outcome and skills can vary according to age and place, a LASSO model is estimated in each site and in each cohort for each relationship. All 15 social and emotional skills are included while the two additional skills are left out. Since the two additional skills (self-efficacy and motivation) are built out of items which already appear in the 15 social and emotional skills, their inclusion could lead to collinearity. Penalty loadings for the skills are set in proportion to the inverse of the standard deviation of each skill at the site level in order to secure an equal contribution to the penalty term. Other covariates are also included in the model, but their penalty loadings are assigned to 0 to make sure that they are always selected. The set of additional covariates always includes student gender and socio-economic background.

The penalty term (λ) is set following the adaptive rule. A stricter rule such as plugin leads to the selection of too few skills and leaves out skills that are actual sources of spurious correlation. A less restrictive rule such as cross-validation selects too many skills and as a result fails to select a subset of skills, which is the main reason for using LASSO in this report.

Once LASSO selects a subset of skills, an OLS estimate is computed in each sample by city and cohort. Two reasons justify this second step. First, the coefficients for skills that are selected by LASSO are shrunk towards zero and do not reflect the true magnitude of the relationship, contrary to OLS coefficients. Second, it is not possible to compute standard errors for LASSO coefficients and get a proper account of the sampling structure in the precision of the estimates. This technique has already been applied to OECD Education data - for further information, see Annex B (OECD, 2021[4]).

Since the set of selected skills can vary from one city to another, with a pattern of missing coefficients which is city-dependent, the average coefficient across cities is computed setting these missing coefficients to zero. This assumption reflects the lack of predicting power of skills that were not selected. However, as a result, it is not possible to compute standard errors for the average coefficient, because standard errors for missing coefficients remain undefined.

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ANNEX B

SSES 2019 Tables by Participating City

All tables in this report are available on line

Chapter 1:	**https://doi.org/10.1787/888934274323**
Chapter 2:	**https://doi.org/10.1787/888934274342**
Chapter 3:	**https://doi.org/10.1787/888934274361**
Chapter 4:	**https://doi.org/10.1787/888934274380**
Chapter 5:	**https://doi.org/10.1787/888934274399**
Correlation Matrix:	**https://doi.org/10.1787/888934274418**

Beyond Academic Learning

FIRST RESULTS FROM THE SURVEY OF SOCIAL AND EMOTIONAL SKILLS

Over the last few years, social and emotional skills have been rising on the education policy agenda and in the public debate. Policy makers and education practitioners are seeking ways to complement the focus on academic learning, with attention to social and emotional skill development. Social and emotional skills are a subset of an individual's abilities, attributes and characteristics important for individual success and social functioning. Together, they encompass a comprehensive set of skills essential for students to be able to succeed at school, at work and fully participate in society as active citizens.

The benefits of developing children's social-emotional skills go beyond cognitive development and academic outcomes; they are also important drivers of mental health and labour market prospects. The ability of citizens to adapt, be resourceful, respect and work well with others, and to take personal and collective responsibility is increasingly becoming the hallmark of a well-functioning society. The OECD's Survey of Social and Emotional Skills (SSES) is one of the first international efforts to collect data from students, parents and teachers on the social and emotional skills of students at ages 10 and 15. This report presents the first results from this survey. It describes students' social and emotional skills and how they relate to individual, family, and school characteristics. It also examines broader policy and socio-economic contexts related to these skills, and sheds light on ways to help education leaders and policy makers monitor and foster students' social and emotional skills.

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