SOCIOEMOTIONAL TRAJECTORIES DURING THE PANDEMIC:

First findings from the Sobral Longitudinal Study

Instituto Ayrton Senna
eduLab21

unesco Chair

INSTITUTO AYRTON SENNA

AUTORES
Ana Carla Crispim
Daniel Santos
Filip De Fruyt
Gisele Alves
Karen Cristine Teixeira
Luiz Guilherme D.S. Scorzafave
Oliver P. John
Ricardo Primi
Walacy Maciel de Oliveira

REVISÃO
Ana Carla Crispim
Bruna Castiñeiras Lopes
Gisele Alves
Karen Cristine Teixeira
Marília Rocha
Priscila C. de Castilho

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* Filip De Fruyt: Department of Developmental, Personality and Social Psychology, Ghent University, Ghent, Belgium

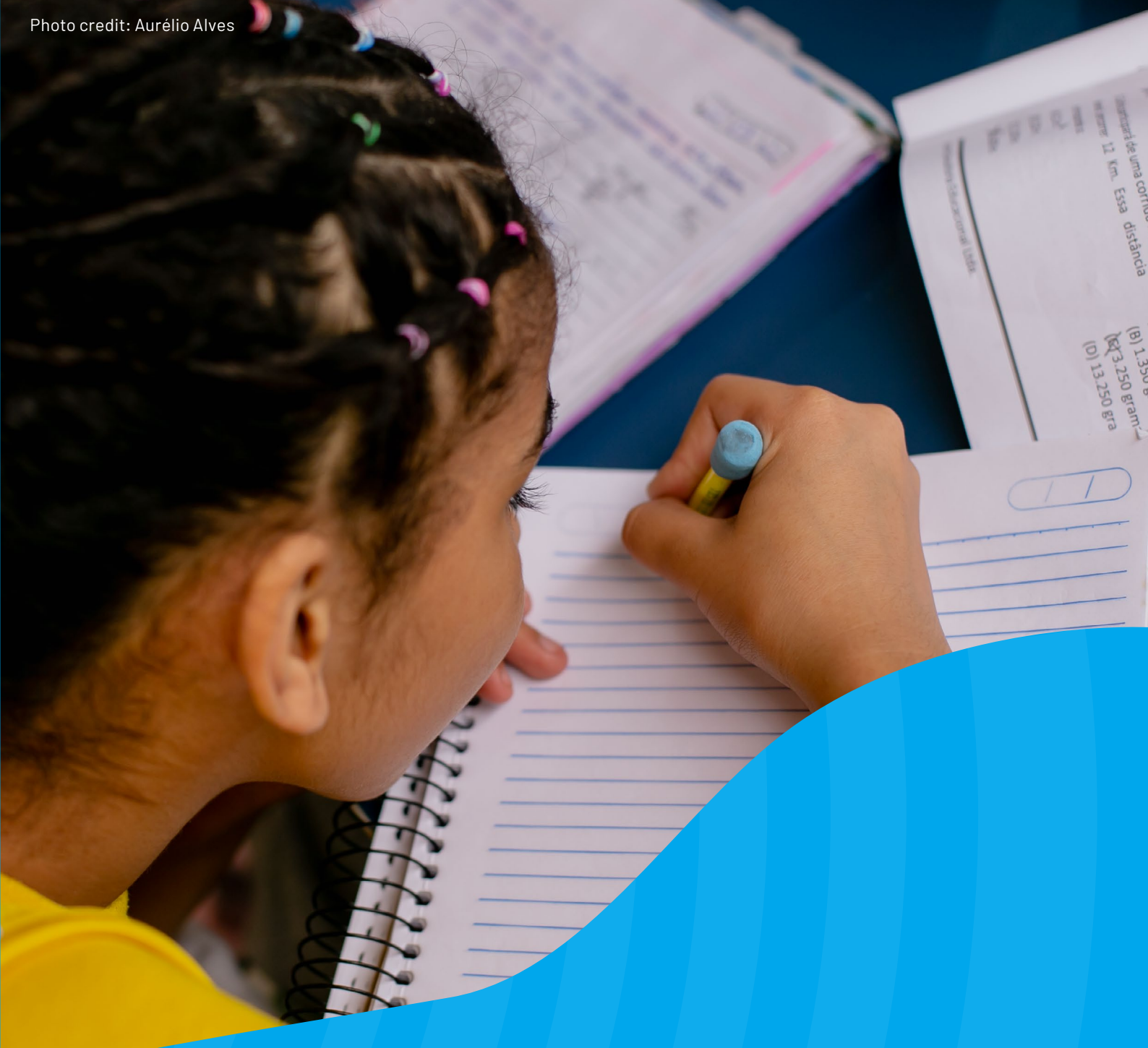
** Ricardo Primi: Programa de Pós-graduação em Psicologia, Universidade São Francisco, Campinas, Brasil

*** Oliver P. John: Department of Psychology and Institute of Personality and Social Research, University of California, Berkeley, United States

**** Daniel Santos: Faculdade de Economia, Administração e Contabilidade de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto, Brasil

Clique para navegar

SUMMARY



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PRESENTATION

Gisele Alves, Ana Carla Crispim,Karen Cristine Teixeira, Filip De Fruyt, Oliver P. John

SUMMARY

Presentation

The short- and long-term effects of the pandemic in the general population are still a matter of interest for researchers and public policy makers. In our society, aside from economic and political changes in the world, these effects encompass changes in children's and teenagers' daily lives too. According to data from schools in São Paulo, 69% of students reported one or more symptoms of depression or anxiety in 2021[2]. According to an UNICEF report in 2020[1], students were one of the most affected populations in Brazil, especially the younger students. The loss of structured learning environments and the increase in demands for students to start monitoring their own study hours were some of the known consequences of the pandemic. And, in Brazil, consequences accumulated effects from a society that has high levels of social inequality. Insights from the TIC Domicílios (2020)[3] have shown that 81% of the Brazilian population (aged 10 or over) use internet, but only 20% of them have appropriate access to internet (*i.e.*, good internet signal).

The situation becomes more troublesome when classroom-based activities are substituted by online-only activities during the pandemic. According to the same report, in addition to the unequal access to internet services, the access to school activities also presented inequalities: students that were part of the less vulnerable socioeconomic groups (> 20% richer population) were more likely to receive school activities at home than students that were part of the most vulnerable socioeconomic groups (< 20% poorer population). The result was found for both Elementary and High school students and reinforce the increase in inequality that already occurs within education systems (Prefeitura de Sobral, 2021)[14]. However, school performance is not the only source of preoccupation in this scenario.

According to a study about socioemotional skills from Ayrton Senna Institute and the São Paulo's Secretary of Education, in 2021, significant drops were found in students' perception about their abilities to plan, organize and pursue their objectives (*i.e.*, self-management) and their ability to create bonds

and have positive expectations about their peers (*i.e.*, amity) after the pandemic. The study presented data from students at the 5th grade, the 9th grade and 3rd year of High School that was collected by the time students came back to schools in the end of 2021 and compared to data from a previous study in 2019.

These results are alarming and urge action from policy makers, school staff and the society. And they raise the need to better understand the effects of the pandemic and its consequences, both in the short and long terms. The longitudinal study in Sobral has been ongoing since 2018 in Sobral and, for the purpose of this e-book, data from 2019 to 2021 will be considered focusing on the years pre- and during-pandemic (early and late pandemic). Thus, aiming to contribute to the debate of the effects of the pandemic on socioemotional trajectories of Brazilian students, researchers at eduLab21 - the Science laboratory for education at Ayrton Senna Institute, together with *Laboratório de Estudos e Pesquisas em Economia Social* (LEPES) and Sobral's Secretary of Education team gathered data from students in Sobral, a city situated in Ceará/Brazil.

First, we will introduce the background about the study and the city of Sobral. Second, we will examine students' socioemotional trajectories during the pandemic. We will compare the socioemotional development from pre and during-pandemic years using normative and non-normative data from national and international studies to understand results and disentangle expected results from pandemic effects. Thirdly, we will present data about well-being and mental health, which will contribute to the debate about how students felt and coped with challenges during the pandemic. Where necessary, we will examine gender differences and also investigate whether socioeconomic status will affect development across the pandemic.

By shedding light on these insights and perspectives, we aim to bring readers closer to the different experiences that students had during the pandemic. And, ultimately, to inform specialists and the general public about our findings in a comprehensible and objective manner. At the end of the e-book, readers can find scientific references and extra materials to learn more about our findings.

The English version of this ebook aims to broaden the scope of the content that is covered in this material, as part of our actions as UNESCO Chair in Education and Human Development, in support of the achievement of the Sustainable Development Goal on Education: "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". Among the strategic approaches indicated for contributing to this goal is the "development of more consistent and comprehensive assessment systems to evaluate learning outcomes at critical points...", "...to reflect both cognitive and non-cognitive skills". We position this ebook, therefore, as a product of our efforts to apply comprehensive and systematized assessment systems for socioemotional skills, and the life outcomes related to them, at critical moments in reality, pre- and post-COVID-19 pandemic. Thus, through such assessments, we identify and inform school community and society about how the socioemotional trajectories of children and adolescents were affected during this period and how such skills can leverage aspects of life such as mental health and student well-being, aiming at a holistic approach to education - one that provides opportunities and seeks to guarantee development that considers the human being as a whole.

Photo credit: Aurélio Alves

CHAPTER 01

Background and rationale of the Sobral study

Ana Carla Crispim, Karen Cristine Teixeira, Gisele Alves, Walacy Maciel de Oliveira, Luiz Guilherme Dácar da Silva Scorzafave, Daniel dos Santos, Filip De Fruyt, Oliver P. John, Ricardo Primi

SUMMARY

01 Background and rationale of the Sobral study

Ayrton Senna Institute and the municipality of Sobral have been developing joint actions to improve education for the past 25 years. The partnership started in 1997 when the *Acelera Brasil* program was implemented with the aim of correcting school's flow (Instituto Ayrton Senna, 2019)[4]. At that time, 40% of students from the 2nd grade of elementary school were not proficient in reading and/or writing, and illiterate students were found even in the 9th grade of middle school (Secretaria de Educação de Sobral, 2020)[5]. Concerned about these findings, policy makers from Sobral adopted a policy that prioritized educational matters, and together with their partners, progress has been made over the years.

In 2004, other programs like *Gestão nota 10* and *Escola campeã* were implemented, focusing on improving managing processes in schools. With multiple efforts involving different working strategies that resulted in: a) the age-grade distortion rate went from 98% to just over 1% in the initial grades of elementary school in 20 years (Instituto Ayrton Senna, 2019)[4], and b) the Sobral's Index of Basic Education Development[a] (*i.e.*, *Índice de Desenvolvimento da Educação Básica*, an index that ranges from 0 to 10) for elementary school went from 4.0 in 2005 to 9.1 in 2017 and 8.4 in 2019 (INEP, 2020)[6]. Middle school indices also increased: they went from 5.8 in 2013 to 7.2 in 2017 and 6.9 in 2019 (INEP, 2020). As a result, Sobral's position in the IDEB's cities ranking went from the 1,366th in 2005 to 1st in 2017, surpassing the city's goal every year (Cruz & Loureiro, 2020)[7].

In 2017, the partnership between the Ayrton Senna Institute and the municipality of Sobral was reaffirmed, gaining new scope and purposes. The Secretary of Education of Sobral and Ayrton Senna Institute signed a cooperation agreement to promote integral education, that considers both

[a] IDEB: *Índice de Desenvolvimento da Educação Básica*, an index that ranges from 0 to 10

cognitive and socioemotional components for the students' development. The relevance of this proposal comes from the need to consider students' full development at the end of basic education, but also comes from a specific challenge from Sobral and the whole state of Ceará: the increase in violence rates during the 2000's. For example, the homicide rate increased 120% among youth in Ceará between 2006 and 2016 despite the IDEB improvement and Sobral showed a similar pattern (Instituto Ayrton Senna & LEPES, 2018)[8]. Schools were losing students to violence and gangs, which increased dropout rates as well.

Thus, policy makers in Sobral and Ayrton Senna Institute sought possibilities to support students' integral development and to mitigate the effects of violence in this reality. Considering that studies point to social-emotional development as one of the possible protective factors against violence (*e.g.*, Espejo-Siles, Zych, Farrington, & Llorent, 2020; Malti, 2020; Polam, Sieving, & McMorris, 2012)[11], one of the strategies consisted of starting a study to monitor socioemotional skills across the elementary school years, and mapping violence indices (*e.g.*, homicide rates, gang involvement, victimization), and educational indices (*e.g.*, IDEB, approval rate, dropout rate) together with sociodemographic and contextual variables about Sobral. The first year of the study was 2018 and the study was carried out in 44 schools of Sobral with 12,220 students from the 5th to the 9th year of middle school. The study comprised census data and a cross-sectional method (*i.e.*, a study that happens only at one point in time), offering insights about how students were perceiving their socioemotional skills and reported about violence and gang membership.

The results showed that perceived socioemotional skills of those students who were involved with gangs were lower than those who were not involved with gangs, specifically from Amity and Self-management (Instituto Ayrton Senna & LEPES, 2018)[8]. In addition, negative relationships were found between the socioemotional skills of Amity and Self-management and exposure to violence, showing that students that experience violence have lower amity and self-management scores (Instituto Ayrton Senna & LEPES, 2018)[8].

The study findings helped Sobral's policy makers to make an evidence-based

decision and implement an action for the development of socioemotional skills. Considering their results from the violence study, the first intervention prioritized educational initiatives to increase Amity levels across all schools. As part of the actions to implement the socioemotional agenda, staff from the Secretary of Education and the School of Permanent Training for Teaching and Educational Management (ESFAPEGE) participated in trainings provided by the Ayrton Senna Institute team. Later, these training sessions involved the school staff (principals, pedagogical advisors, guidance counselors, etc.) and the teachers, all of them carried out with the direct support of specialists from Ayrton Senna Institute.

Along with the interventions, and as a strategy to keep monitoring violence and socioemotional skills trajectories, the involved teams decided to continue the cross-sectional study across the elementary school years and turn it into a longitudinal study, in the so-called *Sobral's longitudinal study*. This decision considered the importance of keeping track of students' social-emotional development before and after the interventions. As a result, students that were in the 5th grade in 2018 were monitored throughout their years in elementary school. The objective of the study became to understand the trajectory of social-emotional development of students between the 5th and 9th grades of elementary school and to understand how socioemotional skills are related to life outcomes, such as mental health. In 2019 data was collected again with the same students, who were in the 6th grade and answered paper-and-pencil questionnaires. In 2020, the COVID-19 pandemic hit the world and on March 17th, the schools of Sobral were closed by municipal decree (Prefeitura de Sobral, 2020)[12]. In 2020, the data collection was digital and students assessed their questionnaires on a computer or other digital device at home. Back to schools in 2021, in the late pandemic, assessments were made in school with paper-and-pencil questionnaires again. All data collections happened between September and December. A timeline of the study and the data points is presented in Figure 1.

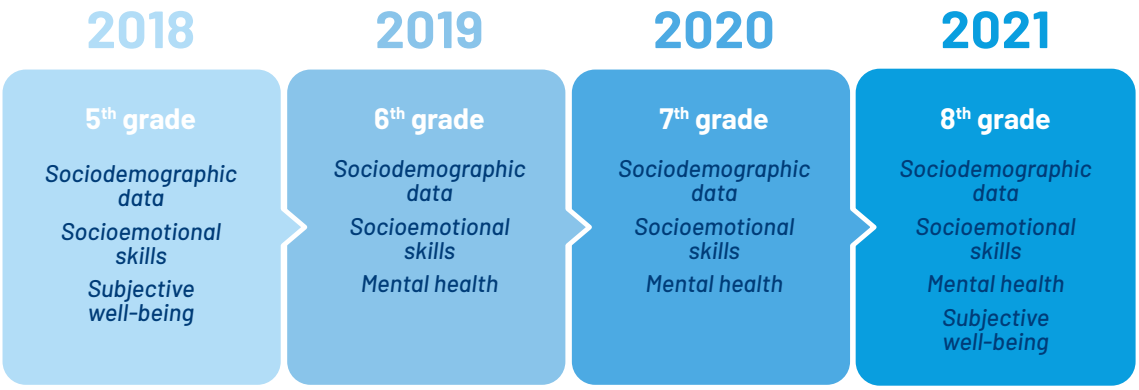


Figure 1- Longitudinal study data collection points

Our methodology

A longitudinal study aims to follow subjects over time to better understand the development of different phenomena in a specific time frame. It can help to comprehend how protective and risk factors relate to life outcomes and it can span over days, years or even decades. Such studies yield complex design characteristics and require attention in the planning and execution of each assessment (Coggon, Rose & Parker, 2009)[13]. One critical piece is to keep all participants through the different time points. In the Sobral Longitudinal Study, assessments were planned to be executed annually, allowing researchers and policy makers to track students' socioemotional trajectories and their benefits. Prior to the pandemic, in 2019, and in the late pandemic, in 2021, students were assessed at school, while in 2020 they were assessed at home. To organize the data collections, the teams from Ayrton Senna Institute, LEPES, Sobral's Secretary of Education and schools arranged specific assessment time slots for students to participate in the study using paper-and-pencil questionnaires. Except for 2020, in which students were contacted by the school staff to take part in the study using online questionnaires at home, given the pandemic restrictions. All students

from the school grade of interest were assessed in each year; however, only data from students that participated in the study since the baseline were analyzed in this material, helping to control for missing data.

Who are our participants?

In total, **1.477 students from 28 schools** participated in the study since 2018, showing satisfactory participation rates across the years (2018: 99.5%; 2019: 97.7%; 2020: 84.1%; and 2021: 89%). The sample presented a homogenous distribution for gender with 48.9% girls and 51.1% boys. On average, they started participating in the study when they were 10 years old (M = 10,6; SD = 0.6) and, in 2021, they were around 13 years old (M = 13,6; SD = 0,53). The socioeconomic status varied across the years, however, about half of the students (51,95%) reported that someone in their families received governmental financial aid (*i.e.*, Bolsa Família) from 2019 to 2021.

How was the schools' routine during the pandemic?

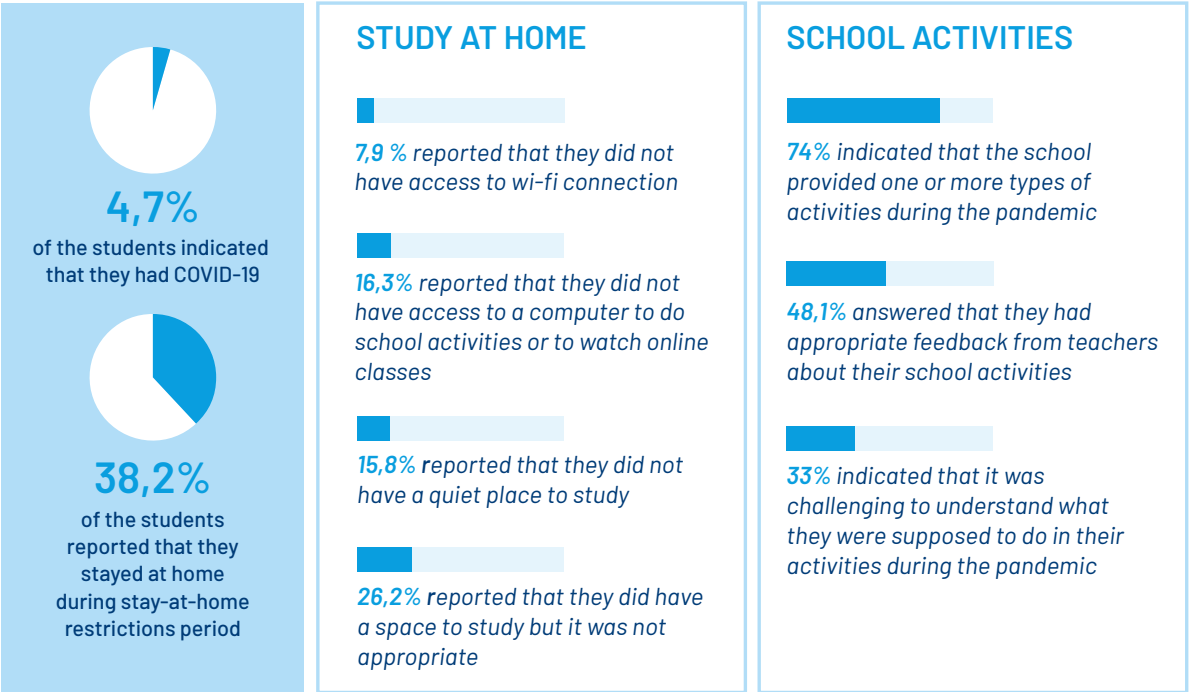
Schools closed in March of 2020 and while schools were closed, students were contacted by teachers and had access to unstructured activities. These activities were not available from the start of the pandemic. Students accessed these activities until December/2020 and accessed it by computer, or by instant messaging app groups, google classroom or with paper-and-pencil materials, in case they did not have access to the internet. According to the results of 2020 data collection, 18% of the students did not have access to a computer to perform activities or attend classes. There were no school tests in 2020 given the events related to the pandemic.

The city started the remote classes in February of 2021 and continued until August of 2021, with synchronous classes through a video conferencing platform. Students got back to school by September of 2021. At the time, schools

were partially re-opened, in a hybrid mode, and continued working like this until November, 2021. The return to face-to-face activities started using the *Plan for the Resuming of Public Education Activities in Sobral* at 50% of the school's capacity (Prefeitura de Sobral, 2021)[14]. Several protective measures were adopted, as well as structural adjustments to ensure the safety from the entire school community (Secretaria de Educação de Sobral, 2021)[15].

There is a relevant difference between the time schools were closed around the world and in Brazil. Among the OECD countries, Brazilian schools (preschool and elementary levels) closed for the longest time with a total of 178 days in Brazil in 2020 in comparison of an average of 48 days in other OECD countries (OECD, 2021)[16]. Two thirds of the primary and secondary schools of OECD countries were 100% open by May, 2021, while in Brazil some schools started to reopen partially in June (OECD, 2021; UNESCO, 2021)[16;17]. The full reopening in Brazilian schools started happening in October of 2021. In Sobral, schools officially reopened full time by November, 2021. Despite the difficulties faced during 2020 and 2021, the longitudinal study continued and the data collections with the students at grade 7 (2020) and 8 (2021) were carried out.

Overview about students' routine during the pandemic



How to read this report?

In this e-book we use two leading questions to guide us through the data of 2019, 2020 and 2021. We will first look at how socioemotional skills developed during the pandemic in chapter 2. Then, in chapter 3, we will investigate well-being and mental health trajectories across the pandemic.

1) Overall, did the pandemic sample show a loss in socioemotional skills?

2) How large are these losses and which skill domains show the most pronounced losses?

3) Do these losses depend on the social class background of the children?

4) Are girls and boys affected in the same way or do they differ?

1) *Socioemotional skills trajectories:* How did the students change overall during the pandemic years? In this chapter, we will discuss socioemotional skills losses during the pandemic and describe the magnitude of the drops in each domain. The pandemic has restricted students' activities and opportunities for engagement with others and with ideas, especially social contact within the structure of the school context, restricting the exercise of skills of Engaging with others or Amity. In addition, during times of unpredictable stress, it is expected that skills related to Emotional Resilience are stretched too, especially for students from higher risk groups;

2) *Well-being and mental health trajectories:* How did students cope and adjust to the pandemic? Did pre-pandemic levels of SEMs help students adjust to the challenges of the pandemic and emerge more resilient? The pandemic posed substantial difficulties and challenges for the students. Thus, in chapter 3, we will investigate well-being and mental health levels, and self-mutilation rates during the pandemic to understand how students felt during this period.

Different trajectories across different groups

When learning about pandemic effects, it has been shown that different groups have experienced the pandemic and its effects in different ways. To understand these differences, we investigated all effects according to gender (girls and boys) and according to socioeconomic status (low and high). Socioeconomic status was informed using mom's education as a proxy. This approach allowed us to explore if specific groups were more at risk than others to pandemic effects and if so, to discuss its implications.

Given the relevance of the context experienced during the pandemic for education and the concerns about the influence of these events on students' lives, the present e-book aims to compare socioemotional data from before (2018 or 2019) and during the pandemic, at the earlier (2020) and later phase (2021). Our aim is to describe the socioemotional development of students during this period and to understand mental health and well-being trajectories in this phase. Using the insights provided here, we hope to reach policy makers, school staff and the general community and enrich the discussion about the pandemic effects on children and teenagers at schooling ages. Furthermore, at the end of e-book, we provide references that were used in this material to readers that are interested in furthering their knowledge.

Photo credit: Aurélio Alves

CHAPTER 02

Socioemotional trajectories in adolescence during the pandemic

Oliver P. John, Filip De Fruyt, Ana Carla Crispim, KarenCristine Teixeira, Ricardo Primi, Gisele Alves, Walacy Maciel de Oliveira, Luiz Guilherme Dácar da Silva Scorzafave, Daniel dos Santos

SUMMARY

02 Socioemotional trajectories in adolescence during the pandemic

Studies comparing school performance before and after the COVID-19 pandemic have demonstrated substantial losses in math and language. One recent study in the United States (The Nation's Report Card, 2022)[18] has estimated a 3% loss in math in 8th graders from 2020 before the pandemic started to early 2022. In Brazil, one study in the state of São Paulo estimated losses of 5.1% for math and 3.3% in Portuguese for the 9th graders (Secretaria da Educação do Estado de São Paulo, 2022)[19]. Much less is known, however, about the effects of the pandemic on socioemotional skills. Given the severe restrictions on social contact outside the immediate family, one would expect detrimental consequences for the development of socioemotional competencies, especially during adolescence which poses three major developmental tasks: separating from the parents, forming an independent identity, and establishing new friendships and other types of relationships with their peers. These tasks all require social contact outside the family home, especially meeting previously unfamiliar peers in a natural context where these new relationships can be explored and tested, such as school. These kinds of social contacts were severely curtailed by the pandemic restrictions, suggesting that deficits in socioemotional development would become apparent after 2 pandemic years.

Questions to be addressed

This chapter addresses how socioemotional skills measured in five major domains changed during early adolescence, specifically from grade 6 (when the children were about 12 years old) to grade 8 (14 years old). We are addressing four specific questions:

1. *Overall, did the pandemic sample show a loss in socioemotional skills?*

2. *How large are these losses and which skill domains show the most pronounced losses?*

3. *Do these losses depend on the social class background of the children?*

4. *Are girls and boys affected in the same way or do they differ?*

When assessed in 2019, the children were on average 12 years old, an age widely considered to mark the beginning of adolescence. In other words, these youth were just at the cusp of adolescence when the pandemic began; the 2020 assessment took place when they were 13 years old when severe lockdowns and contact restrictions had been imposed by local health authorities. Restrictions continued throughout 2021 and the now 14-year-old students were assessed again in grade 8, soon after the reopening of the schools in Sobral and the return to in-person classes.

However, a pandemic is not a controlled experiment, and according to prior research, drops in some socioemotional skills typically occur during early adolescence. Self-management and Amity skills are expected to drop temporarily, and substantially, during this stage for both boys and girls, and Emotional resilience skills are expected to drop for girls. This developmental period is characterized by increasing separation from the parents, greater importance of the peer group, and the formation of an independent identity and sense of self, as the individual develops from a child into an adult. Previous research has shown that this period involves exploration, testing of boundaries, and intense questioning of adult rules and norms. In late childhood and early adolescence, students are learning to control their impulses and to exercise their self-control (Soto *et al,* 2011)[20]. These changes require teenagers to learn to manage their emotions and to develop a skillset to deal with setbacks and new challenges that are inherent to adolescence. And while they are facing these situations, students can perceive themselves as less capable to employ these skills or they might not know how to employ them at that moment, which leads to drops in their socioemotional skills levels. Nevertheless, these findings reflect changes during non-pandemic

years in international studies. To understand the effects of the pandemic years in Brazil, we needed a control group to compare with the development of the COVID pandemic sample across the same age and grade levels.

For this purpose, we studied results from the same school system and grades 6, 7, and 8 in the cross-sectional sample, all assessed in 2018 before the pandemic, with about 2,200 youths in each grade. In that way, we compared our *longitudinal* COVID pandemic sample to this earlier *cross-sectional* sample that went through normal (or normative) development in the same place two years earlier.

What do we know about normative changes in socioemotional development? [b]

There is evidence in national and international studies that shows us the typical socioemocional development across the lifespan. Such information is important to understand how results from school networks are comparable to other territories and what effects may be due to the pandemic.

Openness

Expected no major changes from the end of childhood (age 10) to middle adolescence (age 15).

[b] The aim of normative developmental curves is to understand how people's development can vary across different life stages and different cultures. For example, in personality research, it has been found that Neuroticism and Conscientiousness tend to decrease around adolescence, while Amity, Openness and Extraversion do not have substantial drops (Soto et al, 2011). Such data helps to learn about individual and cultural differences and to contextualize research findings.

Source: Soto, John & Gosling (2011)

Question 1. Overall, did the pandemic sample show a loss in socioemotional skills?

Overall, our findings show a clear drop in socioemotional skills from grade 6 to grade 8 for the pandemic sample, where **the average child dropped by 7% from the pre-pandemic 2019 to 2021 when schools were reopened**[3]. This

significant drop contrasts with a much smaller drop of only 2% in the cross--sectional sample that had not been exposed to the pandemic.

Question 2. How large are these losses and which skill domains show the most pronounced losses?

The most pronounced losses were seen in Engaging with others for boys (-5%) and girls (-12%) and Emotional resilience for girls (-16%) in the longitudinal COVID sample.

Figure 2a and Figure 2b - Socioemotional trajectories from grade 6 to 8 in the longitudinal COVID sample (in red) and the normative cross-sectional sample (in green). Mean values for *Engaging with others* (*Figure 2a*) and Emotional resilience (Figure 2b) are in T-score metric.

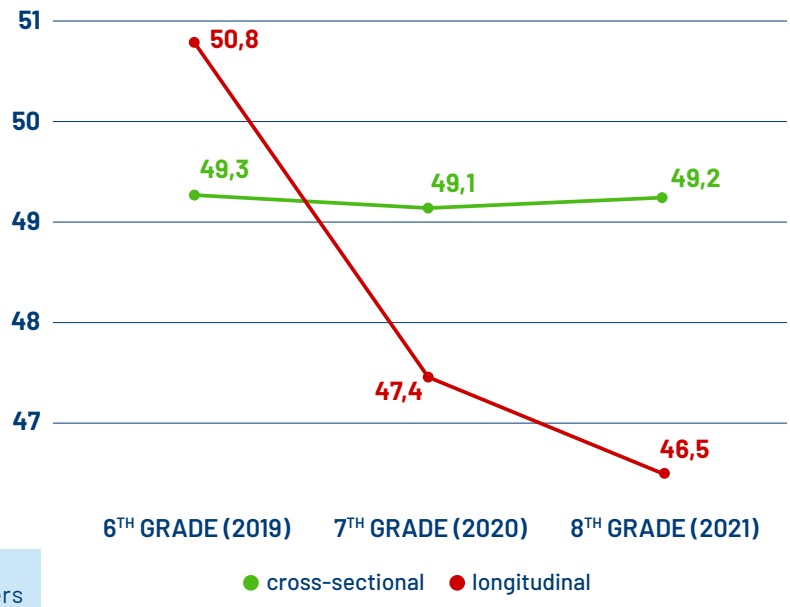


Figure 2a
Engaging with others

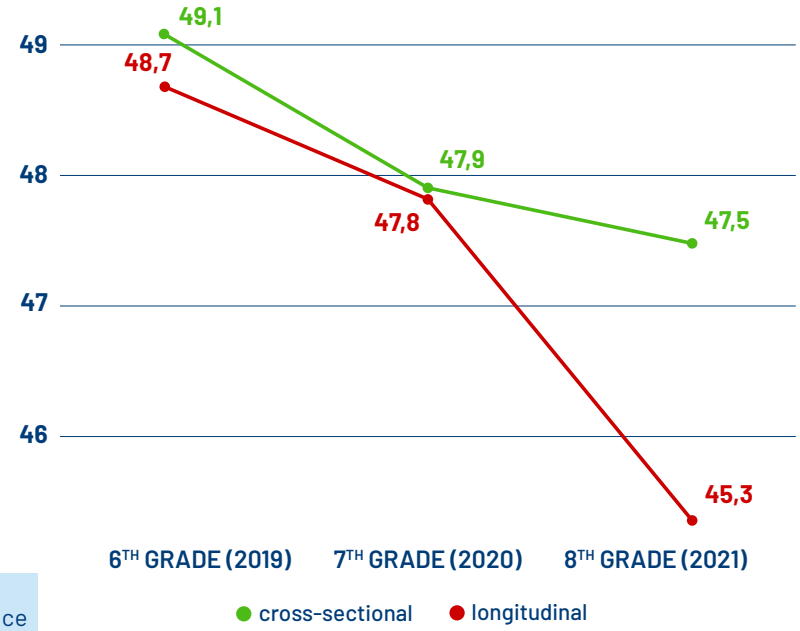


Figure 2b
Emotional resilience

Engaging with others

Closer analyses showed that the five major skill domains differed in how pronounced the losses were. Skills related to Engaging with Others were the most affected, with an effective drop of 8% from 2019 in the longitudinal COVID sample. Note that the cross-sectional controls did not show any drop at all but remained stable. This finding is consistent with the idea that with the school closures and contact restrictions, kids did not have sufficient opportunities to practice and refine these important social skills with their peer group and have fallen back significantly in their development.

Some questions arise when these results are described: How widespread was this drop in social skills? Did the pandemic just have strong influence on a small subgroup of students in the public schools? In the longitudinal sample, we have data from the same kids over time and therefore we can compute the percentage of kids that actually showed the drop in their personal development: it was a clear majority of the kids exposed to the pandemic, namely 62% that decreased from their pre-pandemic levels in grade 6. In contrast, the children in the cross-sectional control group did not differ on average from grade 6 to grade 8. Clearly, this effect in the pandemic group is not limited to a small minority.

The complete data from all 3 years are shown in Figure 2a, separately for the longitudinal COVID group in red and the cross-sectional control group in green[c]. The control group (in green) did not differ across grades 6, 7, and 8 when assessed before the pandemic in 2018. In contrast, the group exposed to the pandemic dropped from a mean score of 50.8 in 2019 (when they were in the 6th grade) to 47.4 in 2020 when the pandemic school closures and lockdowns had happened. And they dropped again in 2021 when schools had finally reopened, for a total drop of 4.3 points, close to half of a standard deviation of the entire skill distribution.

Emotional resilience

The skills in this domain involve regulating negative emotional reactions, such as stress and anxiety, sadness and depression, as well as anger and frustrations. Previous research has shown that many adolescents experience strong negative emotions but their development of effective regulation strategies is lagging behind.

The same pattern is apparent in the control group which drops on average by 3% from grade 6 to 8; however, in the pandemic group, that drop is 7% — more than twice as large. The scores' means in Figure 2b show that the most pronounced difference between the two groups occurred in the *second* year of the pandemic. Whereas both groups drop from grade 6 to 7, their development diverges drastically from grade 7 to 8: the control group showed a smaller drop from grade 7 to 8 whereas the emotion regulation skills of the pandemic group deteriorated further, leading to a substantial gap opening up between the two groups by grade 8.

Figure 3a, Figure 3b and Figure 3c
Socioemotional trajectories from grade 6 to 8 in the longitudinal COVID sample (in red) and in the normative cross-sectional sample (in green). Mean values are shown in T-score metric for Openness (upper; Figure 3a), Self-management (middle; Figure 3b) and Amity (botton; Figure 3c).

[c] The values are T-scores, which have an expected mean of 50 and a standard deviation of 10.

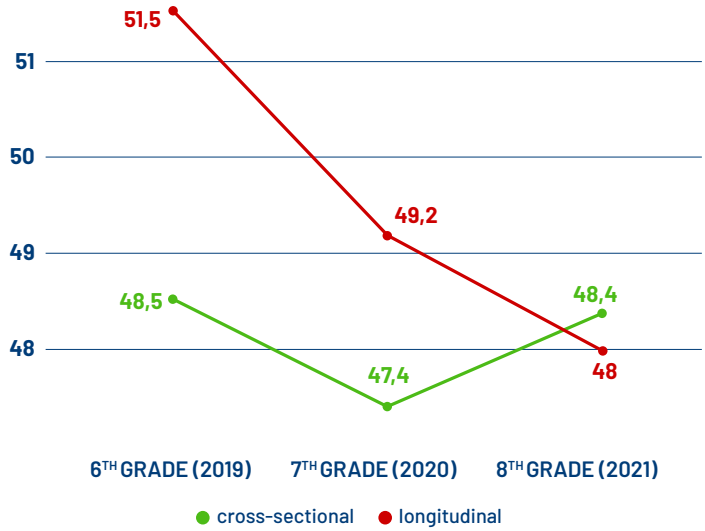


Figure 3a
Openness

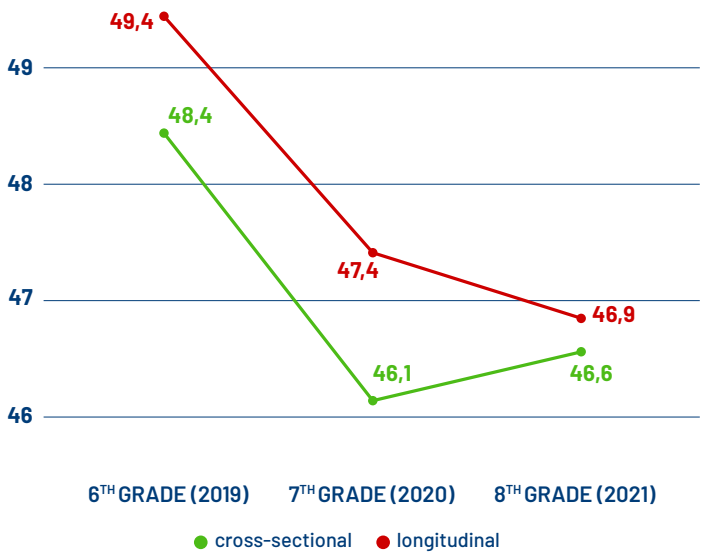


Figure 3b
Self-management

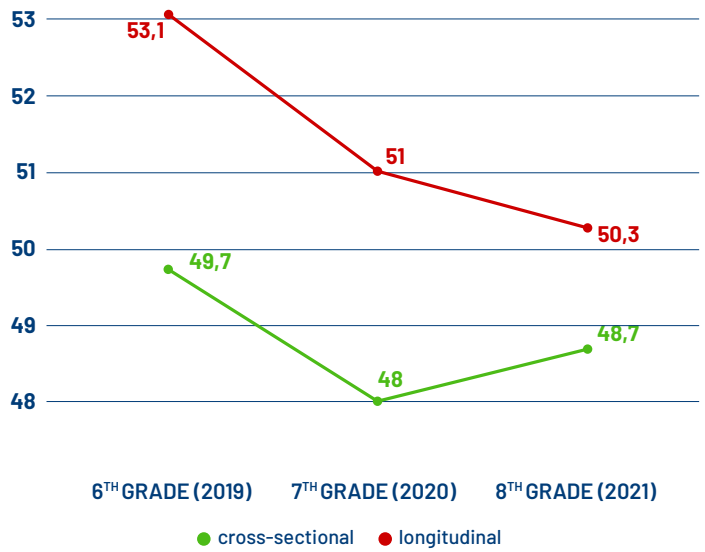


Figure 3c
Amity

Open-mindedness

Overall, the students in the pandemic group lost 7% of the Open-mindedness they had in grade 6, whereas the control group did not differ at all from grade 6 to 8. We also examined how widespread this effect was in the pandemic group: again 62% of the students showed a loss across the two pandemic years.

Figure 3a shows the full data across the years[d]. The control group (in green) had scores' means of 48.5 in grade 6, then 47.4 (slightly lower by 1.1 points) in grade 7, and then back to 48.4 in grade 8—in essence, a small drop and immediate recovery to the earlier level. In contrast, the pattern for the pandemic group was very different: First they showed a steeper fall from grade 6 to 7 (a drop of 2.3). Then, instead of the recovery in the control group, the pandemic group fell further by another 1.2 points. In other words, while the control group recovered their initial level, the pandemic group was down by about 1/3 of a standard deviation.

The question arises how the pandemic group will develop from here on. One possibility is that in grade 9 they will show the recovery we saw in the control group in grade 8 but a year later, thus setting them back on a path towards recovery and growth with a one-year delay. Or, alternatively, will they stay down at their current level?

Self-management

Here we saw the least pronounced losses due to the pandemic, with the pandemic group dropping about 1% more than the control group. Figure 3b shows that the pattern was similar to that of Openness, though with a weaker effect size in the pandemic group. Both the pandemic and the control group fell initially in self-management skills from grade 6 to 7 but the pandemic group again failed to show the recovery seen clearly in the control group.

[d] The values are T-scores, which have an expected mean of 50 and a standard deviation of 10.

Amity

Overall losses for this domain of prosocial skills were 5% for the pandemic group as compared with 2% in the control group, suggesting that about 3% of the loss in the pandemic longitudinal group can be attributed to the pandemic. The changes across all 3 years and grades are similar to the pattern we observed for Open-mindedness. As shown in Figure 3c, even though the pandemic group started at a higher level in grade 6, both groups dropped initially from grade 6 to 7 and did so by a similar amount; however, the pandemic group kept dropping and thus failed to show the recovery that the control group showed from grade 7 to 8.

Question 3: Did children with different socioeconomic status differ in their socioemotional trajectories during the pandemic?

We also began to explore whether the socioeconomic status of the family might moderate these pandemic effects. For an initial analysis, we had the mother's education available, as reported by the adolescents in grade 8. Fathers were absent in many families, and mothers tend to participate more in their children's lives than the fathers do. Therefore, in general, mother's education is used as a proxy of socioeconomic status (Akram & Pervaiz, 2020)[21]. More educated mothers have more resources at their disposal to provide intellectual stimulation and social support for their child as well as scaffolding when problems in development occur. Thus, we wondered whether the pandemic effects described so far were moderated by mother's education.

The findings were clear: more educated mothers had children that consistently scored somewhat higher in all five domains of socioemotional skills than children of less educated mothers. However, **the patterns of loss during the pandemic years were not ameliorated by the mother's education level**—despite the small differences in level (or elevation), the developmental patterns of drops and delayed recoveries we observed in the overall longitudinal study were closely replicated for both higher and lower maternal education, which means that drops were similar between these two socioeconomic

status groups and none of the interaction effects we tested were statistically significant.

Question 4: Are girls and boys affected in the same way or do they differ?

In contrast to socioeconomic status, we did find substantial gender differences. Overall changes in percentage metric are shown in Table 1 separately for girls and boys.

Table 1
How Large Were the Losses in Socioemotional Skills from Pre-pandemic 2019 to 2021?
Percent (%) Change from Grade 6 to 8 in (a) the Longitudinal COVID Sample, (b) the Normative Cross-sectional Sample, and (c) the Difference due to the Pandemic

		% Change from Grade 6 to 8		% Change from Grade 6 to 8		% Change due to the Pandemic	
		Longitudinal COVID sample (2021 minus 2019)		**Normative cross-sectional sample** (2018 pre-COVID)		**Difference % between longitudinal study and cross-sectional study**	
		Girls	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**
DOMAIN	**Engaging with others**	–12%	–5%	0%	0%	–12%	–5%
	Emotional Regulation	–16%	1%	–6%	0%	–10%	1%
	Amity	–7%	–4%	–2%	–2%	–5%	–2%
	Self-Management	–7%	–3%	–6%	–1%	–1%	–2%
	Open-mindedness	–6%	–7%	0%	–1%	–6%	–6%
	Average %	–10%	–4%	–3%	–1%	–7%	–3%
	Combined %	**-7%**		**-2%**		**-5%**	

The short answer is that girls in the pandemic group were much more affected than boys were. Table 1 shows that across all skill domains, girls dropped

on average by 7%, more than twice as much as boys with 3%, even when any changes in the control group had been removed. The gender interactions were significant for 3 of the 5 domains (all except Self-management and Open-mindedness), and most pronounced for Engaging with Others (-12% for girls and -5% for boys) and Emotional resilience (-10% vs +1%). These percentage drops for girls are larger than the drops reported for math grades for students at grade 5 (-9,1%), grade 9 (-5,1%) and grade 12 (-4,5%) in the São Paulo school network (Secretaria de Educação de São Paulo, 2021).

Figures 4 to 8 show the mean scores for all three grades, again separately for the pandemic group in red and the control group in green.

Figure 4
Average T-scores for Engaging with others for boys (upper) and girls (botton) across educational stages.

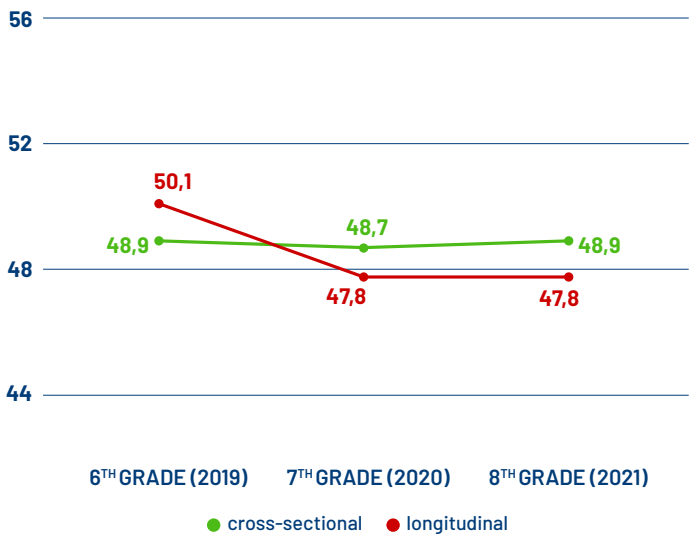


Figure 4a
Engaging with others (boys)

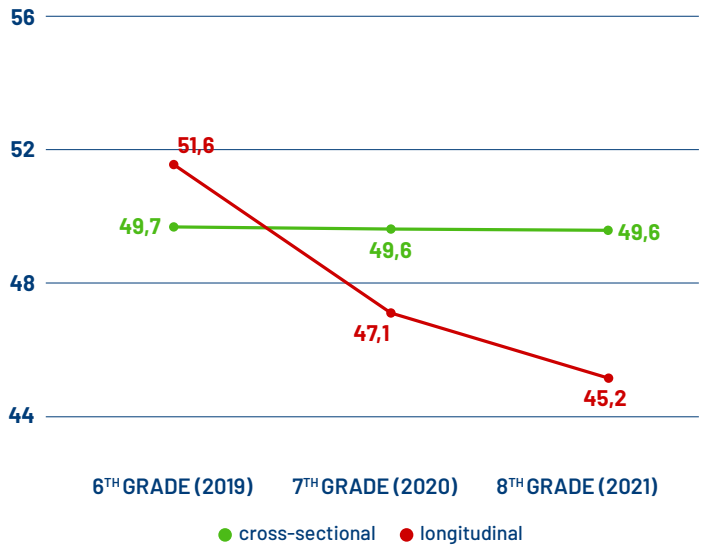


Figure 4b
Engaging with others (girls)

For **Engaging with Others**, the pattern of means in Figure 4 is similar for boys and girls, but the girls show a much more extreme version of it[e]. Whereas the boys drop 2.3 T-score points from their 2019 pre-pandemic levels, the girls dropped 6.4, about 2/3 of a standard deviation in merely two years. These are concerning effects, and they are widely shared among the girls, with 68% of the girls showing a drop in their individual development (see Table 1).

Figure 5
Average T-scores for Emotional Resilience for boys (upper) and girls (botton) across educational stages.

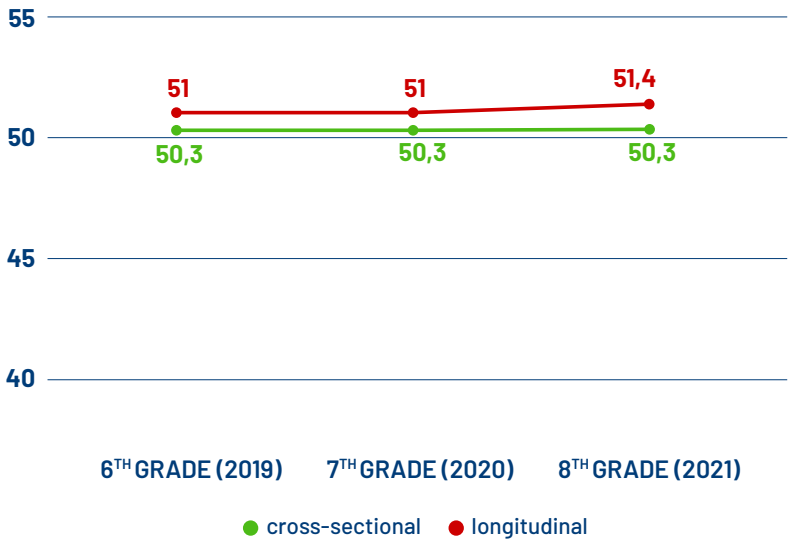


Figure 5a
Emotional resilience (boys)

[e] The values are T-scores, which have an expected mean of 50 and a standard deviation of 10.

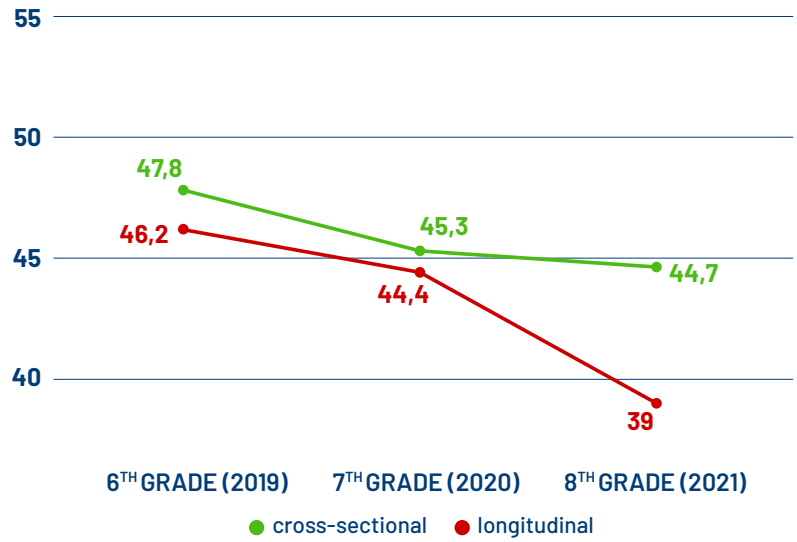


Figure 5b Emotional resilience (girls)

For **Emotional Resilience**, the moderator effect of the gender differences is even more extreme: boys scored higher than girls, as it has been observed widely, but more important, they did not change at all, even in the pandemic group. This pattern indicates that the entire pandemic effect we described earlier is due to the girls.

The mean scores in Figure 5 show this in detail[f]. On the left, notice the flat line for boys in both the control and the pandemic sample. For the girls, the lines fall in parallel initially, from grade 6 to 7, but then the pandemic group diverges substantially, opening up that gap we had noticed earlier. In all, the girls exposed to the pandemic dropped by 7.2 points, compared to only 3.1 in the normative control group. Clearly, the scores obtained for the girls point to deteriorating emotion regulation skills, especially during the second year of the pandemic.

[f] The values are T-scores, which have an expected mean of 50 and a standard deviation of 10.

Figure 6
Average T-scores for Self-management for boys (upper) and girls (botton) across educational stages.

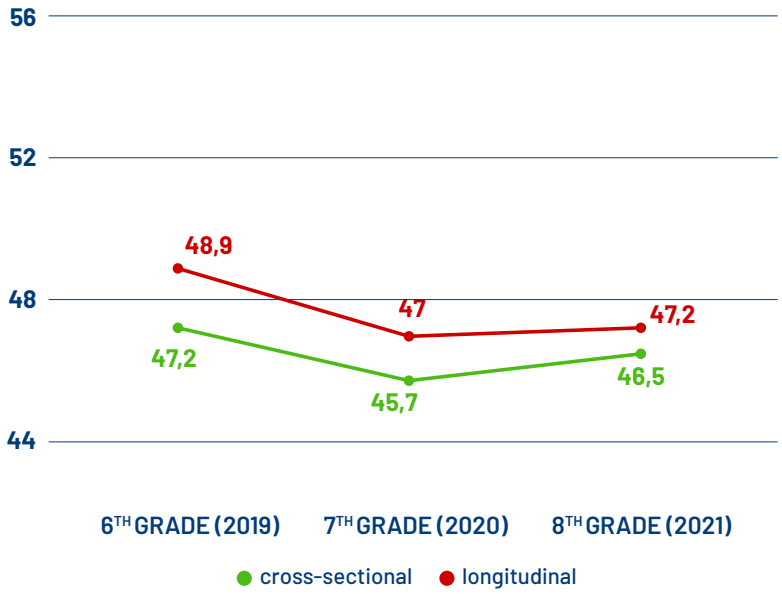


Figure 6a
Self-management (boys)

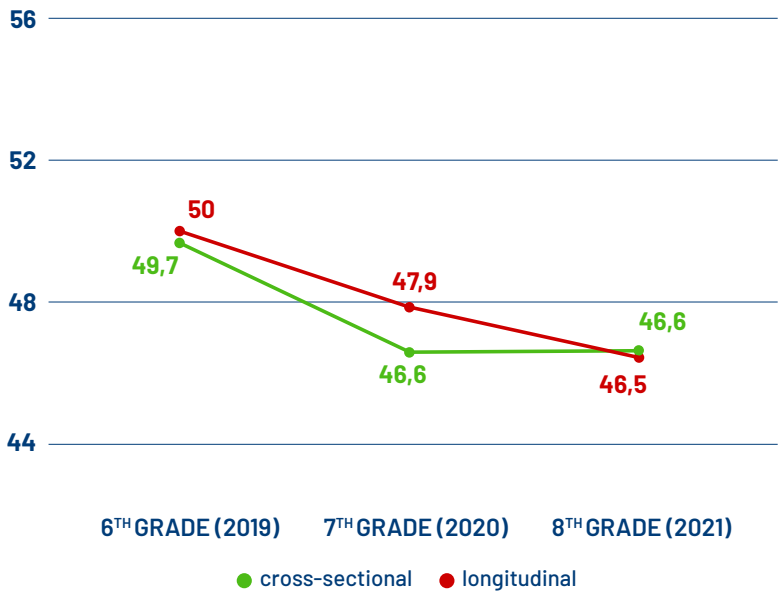


Figure 6b
Self-management (girls)

Figure 7
Average T- scores for Amity for boys (upper) and girls (botton) across educational stages.

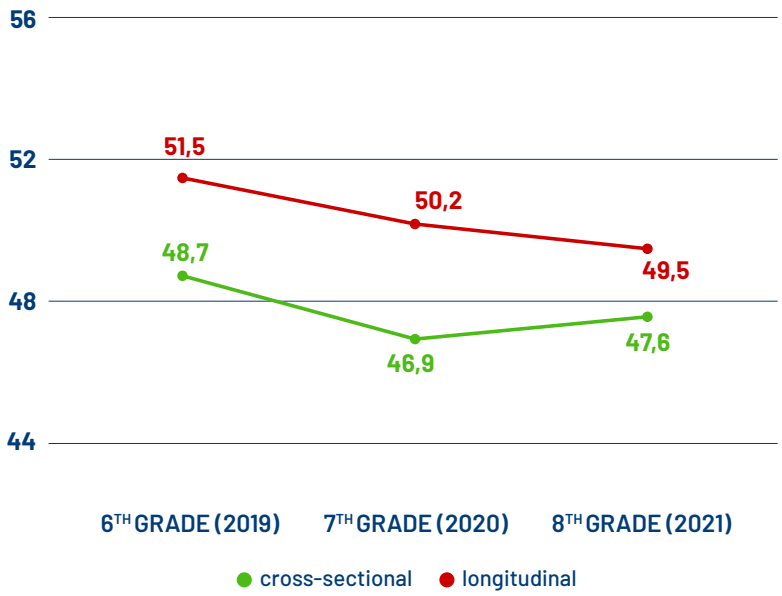


Figure 7a
Amity (boys)

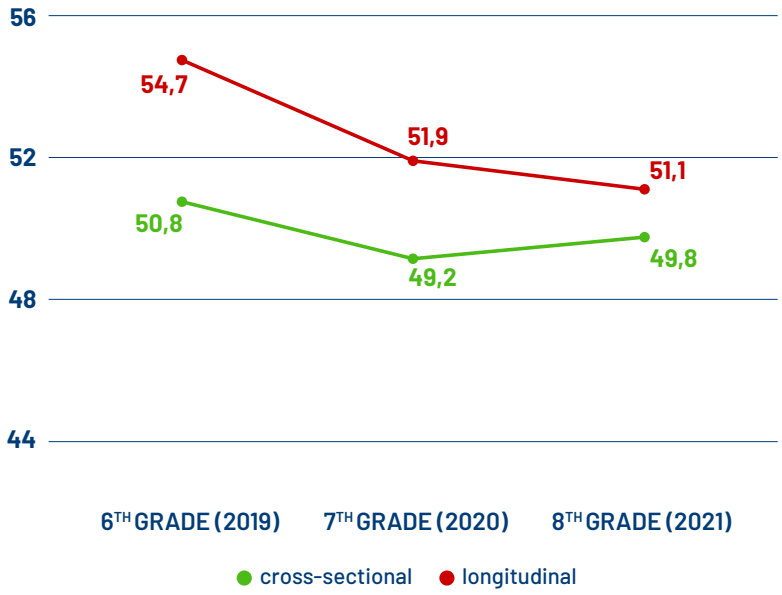


Figure 7b
Amity (girls)

Figure 8
Average T- scores for Openness for boys (upper) and girls (botton) across educational stages.

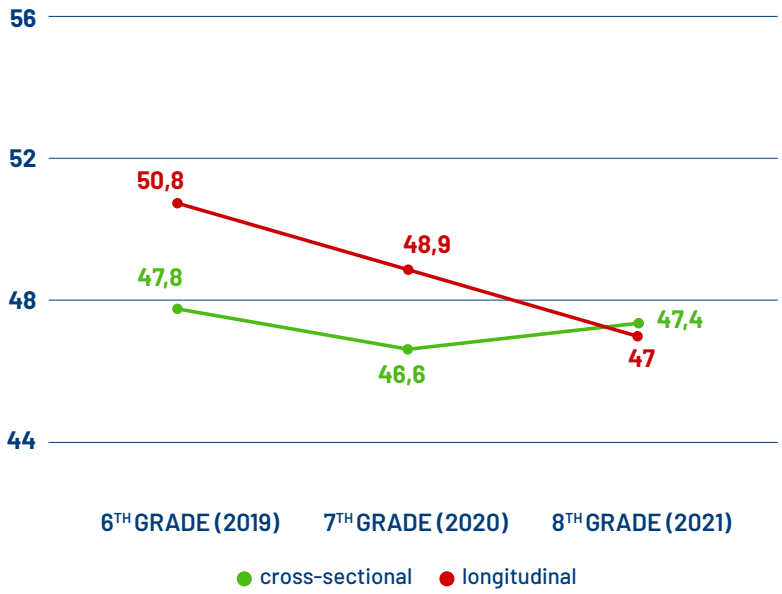


Figure 8a
Openness (boys)

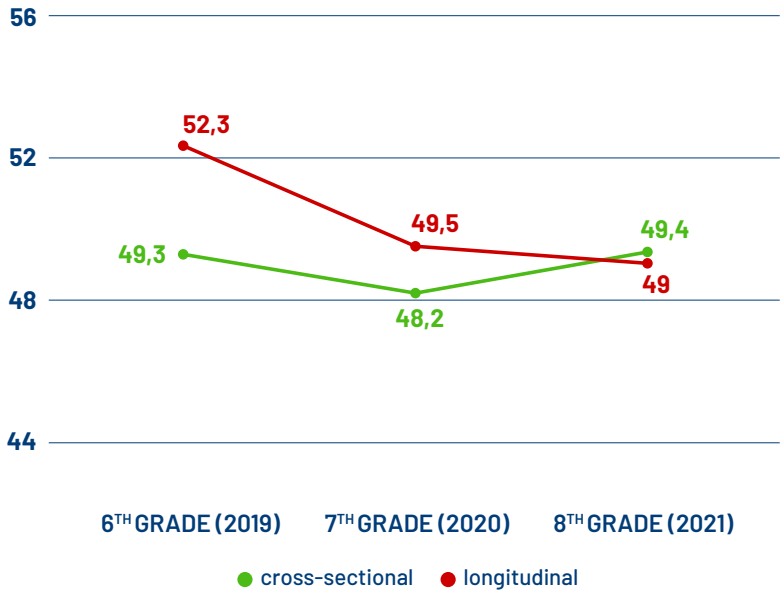


Figure 8b
Openness (girls)

Potential Policy Implications

The most stunning effect is that socioemotional skills were so much more impacted for girls than for boys. We expected greater vulnerabilities in the interpersonal domain during the pandemic as girls tend to be more socially oriented and have closer relationships than boys at this developmental stage, which would seem particularly important during this period of identity development. This is particularly problematic because previous research has found that teenagers tend to use more social media, especially girls, and the frequent use of such technology is associated with greater rates of depression and anxiety (Haidt, 2020)[22]. For girls a shift away from in-person relationships to reliance on social media for social contact and comparison would seem detrimental and may account, in part, for the decrease in emotional resilience we observed. And reports from more than 20 countries have emphasized that women reported higher levels of social isolation symptoms and loneliness during the pandemic than men (Ernst et al., 2022)[23].

Note that boys and girls experience different demands at home, too. According to gender data from IBGE (2021)[24], girls and women at the age of 14 or older tend to spend the double number of hours in domestic chores compared to boys and men (21,4 hours against 11,0 hours). Being confined to the family home may well have additional negative impacts for girls who are more likely to be expected to help in the household, may experience more abuse, and may not have the positive self-experiences that come with achievement in school. Thus, we can speculate that when boys stayed home from school during the pandemic and were left unsupervised, they were in a situation less detrimental to their socioemotional development, an explanation consistent with their surprising lack of drops in Emotional Resilience.

Highlights of the chapter

- The average kid dropped by 7% in socioemotional levels from 2019 (pre-pandemic) to 2021 (late pandemic)
- Overall, the most pronounced losses were seen in Engaging with others for boys (-5%) and girls (-12%) and in Emotional Resilience (-16%)
- In Engaging with others, 62% of the students in the 8th grade decreased from their pre-pandemic levels
- Drops in Engaging with others and Emotional resilience reflect that students might be facing difficulties to return to school and resume their social interactions and activities as before. Interactions with the world, either with people or other interests, play an important role to help teenagers regulate their energy, their emotions and their motivation towards their daily routine.

Photo credit: Aurélio Alves

CHAPTER 03

Influences of the pandemic on students' mental health and well-being

Filip De Fruyt, Karen Cristine Teixeira, Ana Carla Crispim, Gisele Alves, Ricardo Primi, Walacy Maciel de Oliveira, Luiz Guilherme Dácar da Silva Scorzafave, Daniel dos Santos, Oliver P. John

SUMMARY

03 *Influences of the pandemic on students' mental health and well-being*

The pandemic has significantly affected socioemotional skills trajectories and the way students interact with themselves and the world. Greater losses were seen in skills related to Engaging with others, Open-mindedness and Emotional Resilience. However, other outcomes, such as mental health, have been significantly affected according to previous research (Instituto Ayrton Senna & Secretaria da Educação de São Paulo, 2022)[25], which leads to the question: how much of students' mental health and well-being have been affected by the pandemic?

Outcomes do not develop in a vacuum, but are usually the result of multiple factors. Their development may reflect biologically driven influences such as hormonal changes during puberty and/or result from environmental influences, such as societal roles that may require patterns of development for many individuals with a rather similar impact (*i.e.*, so-called normative development). Such developmental patterns have been described in detail by Soto et al. (2011)[20] for personality traits and for socioemotional skills in the previous chapter of this e-book. Alternatively, outcomes and their developmental patterns may be also affected by factors that are specific to the individual, such as life events happening to an individual student, like divorce of the parents, absence of the father in the household, or exposure to domestic violence, for example. All these factors may impact students' well-being and mental health. Moreover, during the pandemic, students were also affected by the temporary closure of schools and the absence of formal learning opportunities. All these factors may impact students' well-being and mental health. Similar to socioemotional skills, the patterns described in this chapter may hence reflect various kinds of influences.

The longitudinal study in Sobral further assessed well-being and indicators of mental health, such as internalizing behaviors and self-mutilation, in at least two out of three stages of the pandemic (pre, early and late).

Considering the relevance of these outcomes for students' learning and development (Abrahams et al., 2019)[26], the aim of this chapter is to investigate the changes in students' well-being, mental-health and self-mutilation rates in pre- and late-pandemic years. Contrary to the socioemotional skills data reported in the previous chapter, we had no cross-sectional data available on well-being, internalizing behavior and self-mutilation to be in a position to estimate potential effects of normative development on these outcomes and separate their effects from impact due to the pandemic and its accompanying restrictions. Data should hence be interpreted with caution, from an understanding that impact may reflect both normative and idiosyncratic effects and impact from the pandemic.

Questions to be addressed

This chapter investigates how well-being, mental health, and auto-mutilation developed in the longitudinal COVID sample from grade 6 (when students were about 12 years old) to grade 8 (when students were 14 years old on average), marking pre- and late-pandemic years but also a transition from late childhood to adolescence. In this chapter, we address three critical questions. For each outcome, we investigate:

1) *Was the outcome negatively affected across time? And how big are these effects?*

2) *Were boys and girls affected in the same way or do they differ?*

3) *Did the effects vary according to the socioeconomic status of the students?*

4) *And, more specially for mental health, did Emotional Resilience act as a protective factor during the pandemic?*

Well-being

Well-being assesses how students generally feel in their lives and has been widely examined in various populations and groups using a short quality of life measure designed by the World Health Organization, the WHO-5 Well-Being Index (WHO, 1998)[27]. In the longitudinal study of Sobral, well-being was assessed in 2018 and 2021 using the Portuguese version of the WHO-5[g] (see Table 2 for a description) and its score[h] reflect how students generally felt during the past two weeks at each assessment point, with higher scores indicating better well-being.

Table 2. Well-being items

	Items
Well- being (WHO-5)	• During the last two weeks: I have felt cheerful and in good spirits
	• During the last two weeks: I have felt calm and relaxed
	• During the last two weeks: I have felt active and vigorous
	• During the last two weeks: I woke up feeling fresh and rested
	• During the last two weeks: My daily life has been filled with things that interest me

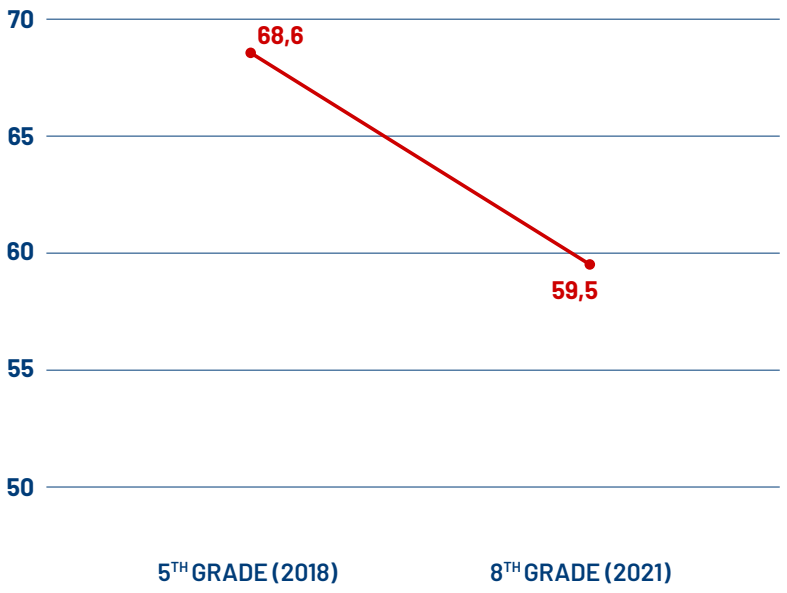
Question 1: Did well-being levels increase or decrease across the years?

Overall, there was a significant drop in well-being scores between grade 5 and grade 8. On average, well-being scores decreased 13% between 2018 and 2021.

[g] Reliability indexes ranged from α =.73 (2018) to α =.89 (2021).

[h] Percent of maximum possible score or "POMP" score, which ranges from 0 to 100 (Cohen, Cohen, Aiken, & West, 1999)[28].

Figure 9
Change in Well-being scores from 2018 pre-pandemic levels to 2021 in the longitudinal sample



Note: *Well-being scores are represented by POMP scores, which range from 0 to 100. Greater scores are related to better well-being levels..*

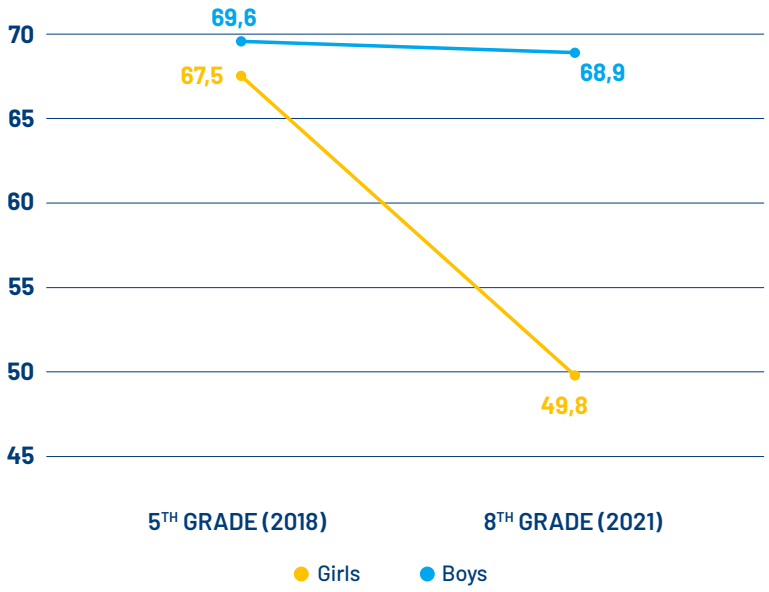
Question 2: Were boys' and girls' well-being affected in the same way or did they differ?

Prior to the pandemic, boys and girls did not significantly differ in well-being, but differed significantly in 2021, with boys obtaining substantively greater scores (approximately ¾ of a standard deviation). Boys' well-being did not significantly change across time, whereas well-being scores for girls dropped considerably from 2018 to 2021[i]. This result has been found in previous research, in which girls showed a slight decrease in well-being during adolescence years (Gutman, Brown, Akerman, & Obolenskaya, 2010)[29] and during pandemic years too (Schwartz et al, 2021)[30].

[i] $p < .0001$

Figure 10 shows this developmental effect for boys and girls visually, with girls significantly decreasing. The lines indicate well-being over the years, with the blue line representing the boys' scores and the yellow line the girls' scores. Comparing their scores, the results showed an insignificant drop for the boys (1%), whereas for girls, the drop is 26%. Girls' well-being dropped significantly from 2018 to 2021.

Figure 10
Well-being scores across 2018 and 2021 for boys and girls



Note: *Well-being scores are represented by POMP scores, which range from 0 to 100. Greater scores are related to better well-being levels.*

Question 3: Were the differences observed in well-being influenced by the socioeconomic status of the student?

Socioeconomic status, as operationalized by mothers' education, did not interact significantly with assessment time. In other words, there were no significant changes in well-being in the socioeconomic status of the

participants over the years[j]. In 2018, students from a lower socioeconomic status did not differ significantly from students of higher socioeconomic status in well-being scores. The same result replicated in 2021 in late pandemics, in which well-being levels did not vary significantly across socioeconomic status[k]. Thus, in this sample, socioeconomic status did not play a significant role in well-being levels in 2018 and 2021.

Mental health: Internalizing behaviors

Internalizing behaviors refer to a range of students' negative emotions such as anxieties, insecurities and concerns, self-esteem, mood swings, depleted energy, and feeling melancholic and depressed. In other words, internalizing behaviors refer to an amalgam of negative emotions directed towards the self (De Bolle, Beyers, De Clercq, & De Fruyt, 2012)[31]. Some people tend to deal with life events and situations by externalizing their emotions and reactions towards the environment and other people around them, but when it comes to internalizing behaviors, the reactions and emotions are directed towards the self.

In the longitudinal study, we used a short Portuguese instrument to assess internalizing behavior, *i.e.*, the General Health Questionnaire (GHQ; Goldberg & Hillier, 1979)[32], originally including 12 items. The measurement is frequently used in international research as a broad indicator of mental health, reflecting mainly internalizing behaviors. The GHQ has a long research tradition and is often used in population-based research. Due to assessment time constraints, we used a selection of 8 GHQ items across three assessment points[l]. The 8 GHQ items that were administered across 2019, 2020 and 2021 can be found in Table 3. Higher scores indicate fewer internalizing behaviors and better mental health. To make results more comparable to the international literature, the auto-mutilation item was kept among the 8 items to compute the internalizing mental health index. Given the specific interest of many school directors, educationists and psychologists in Brazil in prevalence

[j] ($p < 0.76$)

[k] $t = 0.60153$, $df = 665.71$, $p = 0.5477$ in 2018 and $t = 0.12079$, $df = 674.44$, $p = 0.90$ in 2021

[l] Cronbach's alphas across time were .70 (2019), .77 (2020) and .80 (2021) indicating good reliability.

rates and evolution of this behavior across time, special attention will be given to the auto-mutilation item in the next topic as well.

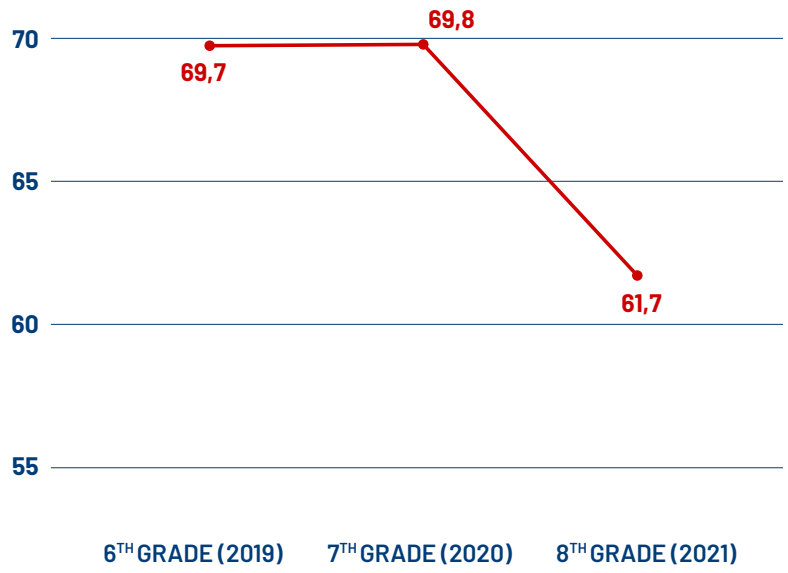
Table 3. Mental health items.

		Items
Mental health	Internalizing behavior (GHQ-8)	• Have you been able to concentrate on what you do? • Have you been feeling tired and under pressure? • Have you been feeling the urge to hurt yourself? • Have you been able to deal well with your problems? • Have you been feeling unhappy and depressed? • Have you been feeling that you cannot overcome your difficulties? • Have you been feeling difficulty to sleep because you are worried? • Are you able to enjoy activities on your daily life?
	Self-mutilation	• Have you been feeling the urge to hurt yourself?

Question 1: Did mental health increase or decrease across the years?

Overall, there were no significant changes in mental health scores between grades 6 and 7. However, there is a drop of 11% of mental health between grades 7 and 8, when schools reopened in 2021.

Figure 11
Mental health scores across 2019, 2020 and 2021



Note: *Mental health scores are represented by POMP scores, which range from 0 to 100. Greater scores are related to less internalizing behaviors.*

Question 2: Were boys' and girls' mental health affected in the same way or do they differ?

Across time points, the students showed similar internalizing scores before and during the first phase of the pandemic, which means that their mental health has not changed significantly until the stage of early pandemic. However, a substantive and significant decrease in mental health occurred during the late pandemic assessment in 2021[m].

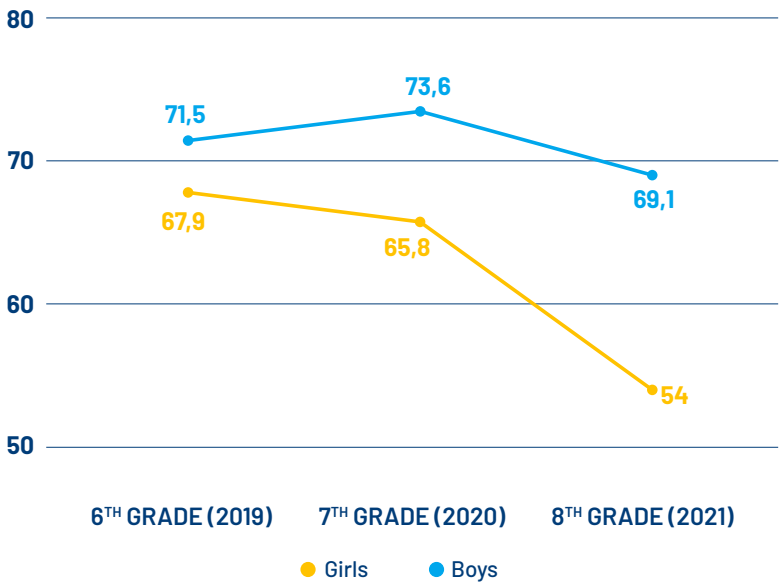
At each assessment point boys (blue line) reported significantly higher mental health than girls (yellow line) across all the years[n]. For both boys and girls,

[m] $p < .0001$

[n] 2019: $t = -3.8111$, $df = 1400.1$, $p < .0001$, $d = 0.20$; 2020: $t = -7.7401$, $df = 1392.6$, $p < .0001$, $d = 0.40$; 2021: $t = -13.979$, $df = 1396.6$, $p < .0001$, $d = 0.73$

mental health indicators were stable from 2019 to 2020, which means that there were no significant differences. However, both groups experienced detrimental mental health when the pandemic progressed in 2021°. The drop in mental health was most pronounced during the late phase from 2020 to 2021, with a drop of about 17.9% for girls versus only 6% for boys. Overall, boys' scores were relatively less affected later in the pandemic.

Figure 12
Mental health scores across 2019, 2020 and 2021 for boys and girls



Note: *Mental health scores are represented by POMP scores, which range from 0 to 100. Greater scores are related to less internalizing behaviors.*

° p < .0001

Question 3: Were the differences observed in mental health influenced by the socioeconomic status of the student?

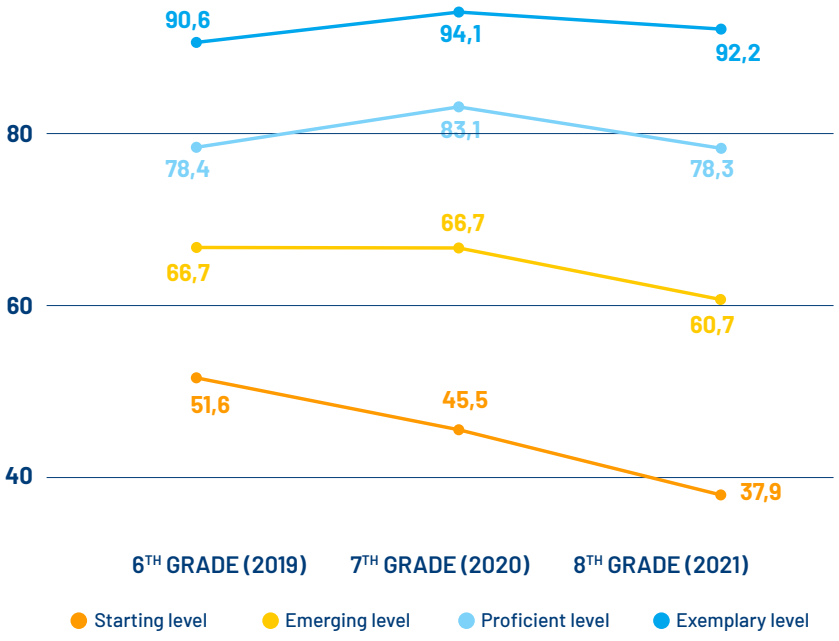
Internalizing behaviors showed no significant mean differences for socioeconomic status across the three years[p] as operationalized by mothers' education, that is, the socioeconomic status didn't affect mental health directly. An analysis of the development of internalizing behaviors by gender and social-economic status together showed no significant main effects for social-economic status or its interaction with gender. The described developmental patterns for internalizing behaviors were hence alike for high and low social-economic groups.

Question 4: Did socioemotional skill levels in 2019 help explain subsequent mental health levels in 2021?

We additionally analyzed whether students with less developed socioemotional skills would report poorer mental health. From previous international studies, we know that students with better developed emotion resilience skills are better equipped to deal with challenges they encounter in their life. In order to examine this hypothesis, we constructed four groups with different levels of emotion resilience skills, *i.e.*, groups with starting (orange), emerging, proficient and exemplary (darker blue) levels of emotional resilience skills. A visual representation of the developmental patterns for these four groups is shown in Figure 13.

[p] 2019: $t = 1.9223$, $df = 626.23$, $p = 0.055$; 2020: $t = 1.5663$, $df = 686.39$, $p = 0.12$; 2021: $t = 1.1198$, $df = 693.58$, $p = 0.2632$

Figure 13
Internalizing behaviors scores across three time points for 4 groups differing in emotional resilience skills in 2019.



Note: *Mental health scores are represented by POMP scores, which range from 0 to 100. Greater scores are related to less internalizing behaviors. More information about children's development and internalizing behaviors can be found in the references section (Achenbach, 1991; Achenbach, 2008).*

Students with lower scores on emotional resilience skills reported consistently lower mental health across all time points. Those with lower levels of socioemotional resilience skills reported twice as much internalizing behaviors than those with exemplary levels of these skills. The analysis across time shows that especially those with starting levels of socioemotional resilience skills reported poorer mental health already early-on in the pandemic crisis, and this further dropped during the pandemic. This group is hence affected early-on but also cumulatively.

Those with emerging levels did not show changes in mental health in the first

phase of the pandemic, though manifest a strong drop during the late pandemic stage. Students with proficient and exemplary skills levels, however, first report a slight increase in mental health but come back to their pre-pandemic levels in 2021. These analyses convincingly show that (pre-pandemic) socioemotional skill levels do matter and help explain subsequent mental health levels of students.

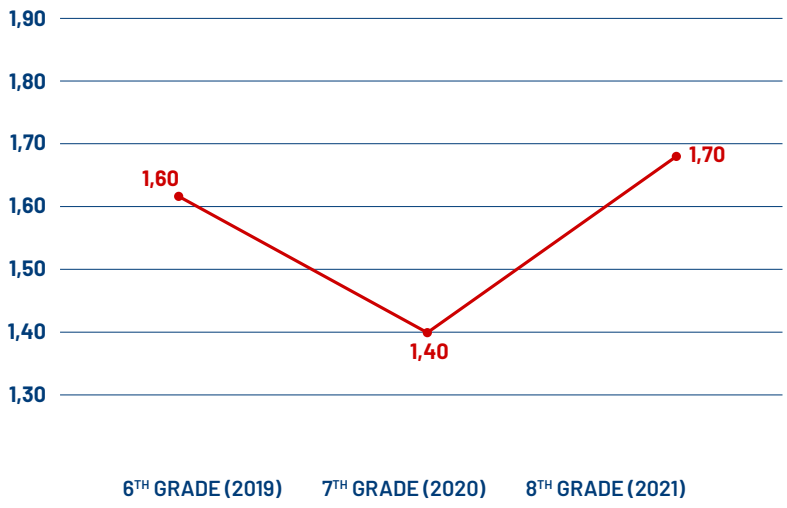
Mental health: Auto-mutilation

Auto-mutilation is a specific form of aggression against the self. Scores reflect students answer on the question: "Do you feel the need to hurt yourself?", so greater scores indicate more problematic behavior.

Question 1: Did auto-mutilation rates increase or decrease across the years?

The pattern for auto-mutilation across the three time points is described in the Figure 14. Students at grade 8, in 2021, presented more problematic behaviors when compared to the previous years.

Figure 14
Self-mutilation scores across three time points

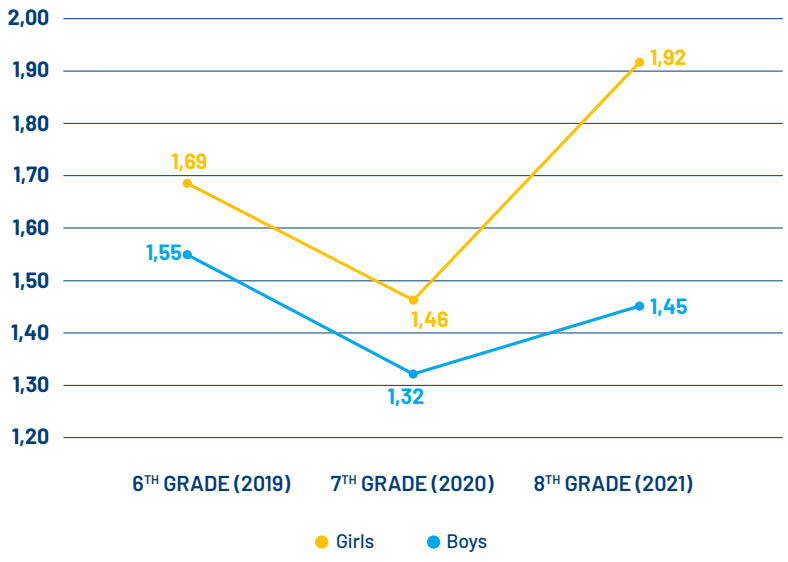


Note: *Self-mutilation scores range from 1 (the student never has feels the need to hurt himself) to 4 (the student feels the need to hurt himself in a lot of moments).*

Question 2: Were boys' and girls' auto-mutilation tendencies affected in the same way or do they differ?

Across all time points, girls indicate higher auto-mutilation tendencies. However, both boys and girls reported a drop in auto-mutilation tendencies during the first phase of the pandemic, followed by a strong increase in the late pandemic phase, especially for the girls (causing a widened gap with the boys). The differences were significant across boys and girls and the effect sizes were small across the years[q].

Figure 15
Self-mutilation scores across three time points for boys and girls



[q] 2019: $t = 2.6561$, $df = 1391.4$, $p < 0.001$, $d = 0.14$; 2020: $t = 3.4828$, $df = 1412.2$, $p < 0.001$, $d = 0.18$; 2021: $t = 9.1162$, $df = 1338.4$, $p < 0.001$, $d = 0.48$.

Note: *Self-mutilation scores range from 1 (the student never has feels the need to hurt himself) to 4 (the student feels the need to hurt himself in a lot of moments).*

Question 3: Were the differences observed in self-mutilation tendencies influenced by the socioeconomic status and background of the student?

The students were divided in two groups, one with low socioeconomic status and the other with high socioeconomic status, and their mean score on self-mutilation was compared to see if there were any differences. There were no significant differences for students from low and high socio-economic status across all time points in the report of self-mutilation behavior[r].

Potential Policy Implications

A first main finding of the present study is that specifically the mental health development of girls decreased across time, especially later on in their development. Boys' well-being remained rather stable and their mental health (both internalizing behaviors and self-mutilation) was only slightly affected later in their development. This pattern is observed consistently across two different, though related, measures of well-being and mental health, hence internally replicating this finding in our study. Recall that this gender differences may reflect both normative developmental trends, idiosyncratic influences (*e.g.*, life events or specific issues that happened to individual students during the assessment cycle), or may reflect the impact of the pandemic.

These findings on gender differences are in line with what has been observed in the international literature on developmental effects of internalizing behaviors (De Bolle et al., 2012) and the patterns described for ssocioemotional skills in the previous chapter. Well-being and internalizing behaviors are both related to engaging with others and also to emotional resilience skills,

[r] 2019: $t = -0.80357$, $df = 653.1$, $p = 0.4219$; 2020: $t = -2.2013$, $df = 594.83$, $p = 0.0281$; 2021: $t = -0.95114$, $df = 666.58$, $p = 0.3419$

and we saw comparable and substantive drops in engaging with others' skills in the previous chapter.

A second important message to take from these data, is that there is variability in individual developmental trajectories for both boys and girls. The previously described patterns reflect averages observed for boys and girls. In classrooms, however, teachers need to pay attention to students as individuals, who may have deviating patterns from this average, up or down.

Third, socioeconomic status does not seem to play a significant role in explaining the observed developmental patterns, nor in describing differences at each assessment occasion. We need to be careful to generalize from these findings, however, because our sample includes many students with low educated mothers, inducing range restriction for socioeconomic status.

Fourth, and finally, students' socioemotional skill levels, and especially emotional resilience skills, at the first assessment point (pre-pandemic), explained their subsequent mental health developmental trajectories. Those with the lowest developed emotional resilience skills reported considerably poorer mental health across time, whereas those with well-developed resilience skills reported rather stable patterns of mental health across puberty and the pandemic.

The present design, however, is correlational in nature and although longitudinal, it does not allow to make causal inferences, so it is necessary to keep these constraints in mind when reviewing the results and making policy inferences from this research. A detailed discussion about policy implications and study limitations will be presented in chapter 4.

Chapter highlights

- Boys' well-being did not significantly change across time (-1%), whereas well-being scores for girls dropped considerably (-26%) from 2018 to 2021.
- Overall, there is a drop of 11% in mental health between grade 7 (2020) and grade 8 (2021). The drop is more pronounced for girls (-17.9%) than boys (-6%).
- Emotional resilience skills levels prior to entering adolescence were important: students that perceive themselves with poorer socioemotional skills suffered more with internalizing behaviors, whereas those with well-developed socioemotional skills perceived themselves with better mental health indicators during the pandemic.

Photo credit: Aurélio Alves

CHAPTER 04

Next steps

Oliver P. John, Filip De Fruyt, Gisele Alves, Ana Carla Crispim, Karen Cristine Teixeira

SUMMARY

04 Next steps

This e-book summarized the first set of results from the Sobral Longitudinal Study. Like all empirical studies, the analyses presented in this report have some important limitations:

1

These data were collected in the public schools in Sobral, a municipality in the State of Ceará in the Northeast, where the vast majority of the students reported that their family received some type of state assistance. The full participation of the entire school system is a great strength of this study because we were able to follow the students that were expected to be in each particular grade. However, the private schools in Sobral did not participate and our data likely underrepresent students from families that could afford tuition for private schools. Thus, we can only generalize to public schools' students. It is also unclear how well the findings from Sobral will generalize to other parts of Brazil.

2

We used a prospective longitudinal research design. The great strength of this design is that we were able to follow the same children over time, starting before the pandemic and then document how they changed during the next two years. However, adolescents change substantially during puberty in their socioemotional skills. Therefore, we used data from another group as a control, namely students in the same school system and grades as our longitudinal sample assessed in 2018, and sampled using the same procedures. Although we cannot know for sure that the longitudinal sample and the cross-sectional sample are fully equivalent, these two sources of data taken together allowed us to compare social-emotional development in the same school network during the pandemic years with adolescent development just prior to the pandemic.

3

Because the majority of the children in the Sobral schools participated in all of our assessments, attrition was a much smaller problem than in many longitudinal studies. Nonetheless, further analyses are needed to address the possibility that a larger percentage of the most vulnerable students did not participate as regularly and might thus be underrepresented in our analyses so far. We are currently planning additional analyses that will track students who did not continue in the longitudinal sample but maybe attending other grades in the same school (*e.g.*, skipped a grade ahead), are attending a different school, etc.

4

The heterogeneity in the distribution of socioemotional skills increased from 2019 to 2021, suggesting that not all students were affected by the pandemic to the same extent. Therefore, we have begun to examine potential demographic and psychological characteristics of the students to check whether some subgroups of students were affected by the pandemic years to a greater or lesser extent. Most obviously we identified differences between girls and boys, and two skill domains (Engaging with Others and Emotional Resilience) where girls were affected much more than boys. We also examined the effects of emotional resilience (one of the five socioemotional skill domains) on other aspects of functioning during the pandemic (like Well-being and Mental health), and found important differences, with the kids entering the pandemic with the lowest levels of skills doing less well in our last assessment in 2021.

Our first analysis of socio-economic status examined mother's education as reported by the students in grade 8; students with mothers that finished high school or college had higher scores across all three years but there were no significant differences in students' socioemotional development according to the mothers' educational level during the pandemic years. Further works are needed here, as students' report of their parents' education and use of financial grants, like Bolsa Familia, may have limited reliability. We are planning more fine-grained analyses of indicators of vulnerability, such as family backgrounds and structure, and we will make use of differences between schools that are known to differ in socioeconomic status and access to resources.

5

We have not yet begun to analyze our data on the particular conditions and life contexts the students faced during the pandemic. These include a broad range of life variables, such as resources the students had available at home (*e.g.*, access to a computer and the internet), domestic abuse and violence, and continued contact with teachers during the lockdowns and feelings of belonging while away and after their return to school.

6

Finally, in interpreting the present findings, it is important to remind the reader that our results are bounded not only by place (*i.e.*, Sobral) and time (*i.e.*, 2019 to 2021) but also by the age of the students studied. As we explained earlier, the age range studied here (grades 6 to 8, or ages 12 to 14) is the period of early adolescence where separation from the parents begins, the peer group becomes increasingly important, and concern with identity are paramount. The deficits observed during the pandemic years for this age group are likely quite different from other age groups, such as children who were in the early elementary grades before the pandemic and thus more likely to miss out on learning skills related to self-management (*e.g.*, being a focused and hardworking student) or even amity (*e.g.*, developing cooperation and close friendships with classmates).

In conclusion...

With these limitations in mind, we can now consider the major conclusions and implications of the present analyses. Overall, the results of our analyses showed that **no group of students was spared from a decline in socioemotional development by the pandemic and remote schooling**: both girls and boys declined as did students whose mothers had at least finished high school or college and those whose mothers did not finish middle school or never studied.

The main takeaway is that we did not find any increases in socioemotional skills for any student group in this assessment. The decreases were most pronounced for socioemotional skills related to Engaging with others and Open-mindedness overall, and more related to Emotional resilience skills for girls. Nonetheless, even for the other three skill domains we studied, there were only declines or stagnant scores for the adolescents in Sobral. Scores for well-being and mental health decreased for girls, reflecting combined effects of puberty and the pandemic.

Reviewing the available evidence, we argue that the disruptions the pandemic caused to the students' education and life are the reason. No other set of factors could have had such a dramatic effect on student's socioemotional development in the short time period of two years. In conclusion, these data strongly suggest that COVID-19 shocked the generally well-functioning school system in Sobral, as it probably did in many other parts of Brazil, and may well have stunted the socioemotional growth of this age group of adolescents. We now await the data from 2022 to see whether students are already recovering from the pandemic losses or whether they are still lagging behind in their socioemotional development.

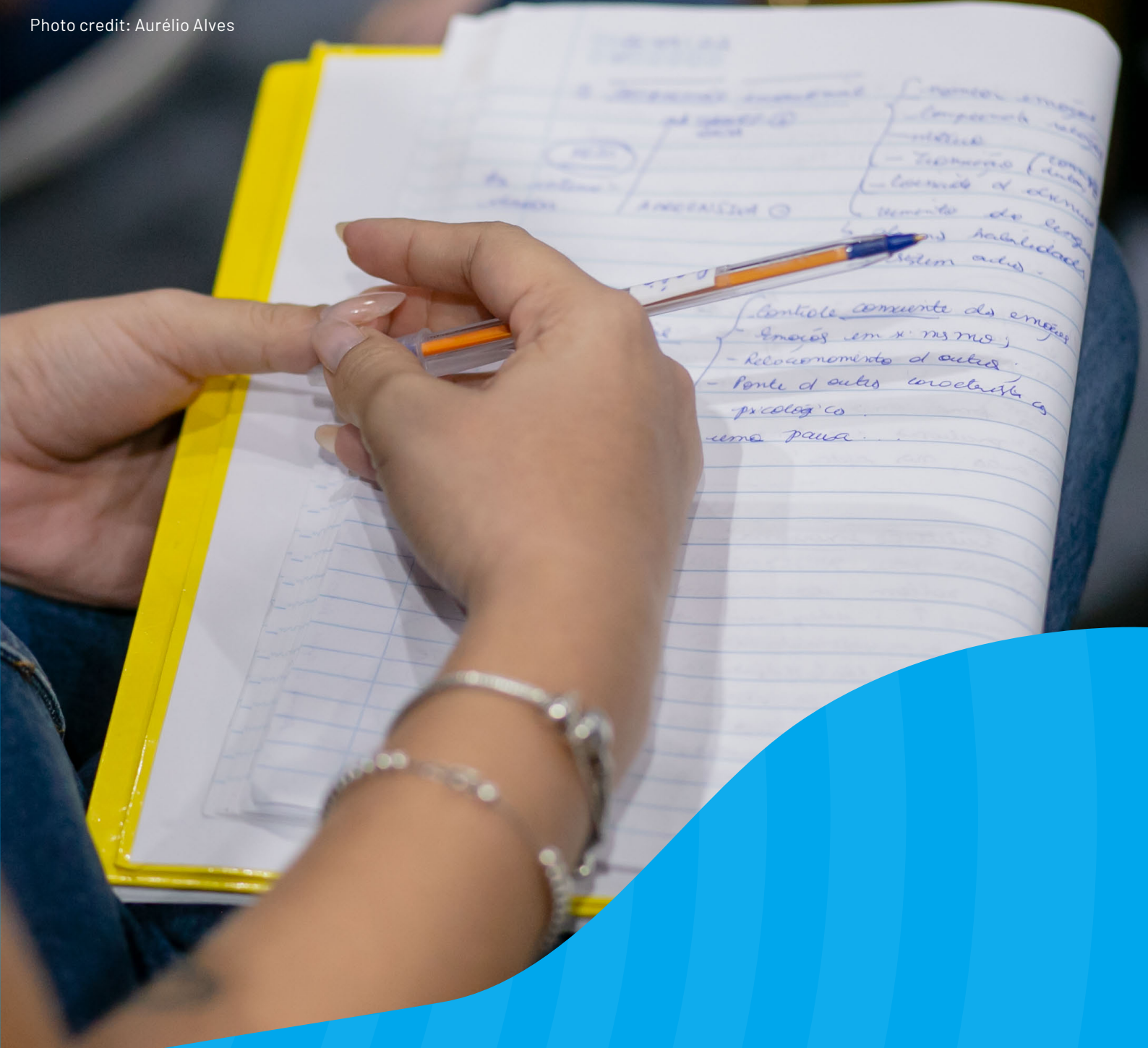


Photo credit: Aurélio Alves

WANT TO KNOW MORE?

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Instituto
Ayrton
Senna

unesco
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