Advances in Social Sciences Research Journal – Vol. 10, No. 1
Publication Date: January 25, 2023
DOI:10.14738/assrj.101.13938.
Capodieci, A., Galvani, S., Nobili, L., Ramenghi, L. A., & Uccella, S (2023). The Impact of Distance Learning on Academic and Emotional Aspects of Primary School Children. Advances in Social Sciences Research Journal, Vol - 10(1). 546-570.

The Impact of Distance Learning on Academic and Emotional Aspects of Primary School Children

Agnese Capodieci
Department of General Psychology, University of Padua.

Stefania Galvani
Department of General Psychology, University of Padua.

Lino Nobili
Department of Neurosciences,
Rehabilitation, Ophthalmology, Genetics and Maternal, and Child
Neuropsychiatry Unit, IRCCS Istituto Giannina Gaslini, Genoa, Italy.

Luca A. Ramenghi
Neonatology Unit, IRCCS Istituto Giannina Gaslini, Genoa, Italy,
Department of Neurosciences, Rehabilitation, Ophthalmology,
Genetics and Maternal.

Sara Uccella
Neonatology Unit, IRCCS Istituto Giannina Gaslini, Genoa, Italy,
Department of Neurosciences, Rehabilitation, Ophthalmology,
Genetics and Maternal, and Child, Neuropsychiatry Unit,
IRCCS Istituto Giannina Gaslini, Genoa, Italy.

ABSTRACT

To reduce the COVID-19 spread, people have been forced to reduce social interactions and this strategy has also been applied to the school world. Italian schools were closed from February to early June 2020 (and, also, thereafter), and distance learning (DL) was adopted to maintain the teaching process. Concerns about consequences for students' learning and affective wellbeing have been risen. In the hypothesis that DL may have influenced students' learning, we conducted, starting from November 2020 a screening for learning, reading, writing, and calculating skills in children from grade 1st to 3rd grade, to detect any differences between their performance and normative data. Moreover, a survey was carried out on adults (parents and teachers) close to the children involved in the research, to verify whether the experience of the lockdown may have caused emotional and behavioral changes through a questionnaire addressed to parents and teachers. From the analysis of the results, a general lack of performance in the writing tests emerged, with lower performances in children attending second and third-grade classes. Moreover, a consistent prevalence of children' malaise was observed by adults close to them during the second pandemic wave, with behavioral manifestations seen by the 69.5% of teachers and by the 54.1% of parents.

Keywords: learning, reading, writing, COVID-19, primary school children

INTRODUCTION

The coronavirus disease-2019 (COVID-19) pandemic outbreak has profoundly altered many aspects of life, as it has involved the implementation of drastic measures (including schools' closure) to contain the virus spread [1, 2].

In Italy schools of all levels were forced to interrupt face-to-face learning activities all over the country. From February to early June 2020, for a total of eighteen weeks, the schools were closed with the possibility, at the discretion of each school, to carry out the lessons according to the remote mode use of distance learning (DL) [3].

Many schools, therefore, were challenged to convert teaching and work activities from face-to-face to remote mode, with a lot of difficulties. A survey conducted by Ranieri and colleagues, during the first lockdown, which involved Italian primary school teachers, found out that the Italian schools weren't ready to face this change because teachers weren't trained in the use of remote teaching, students hadn't always the possibility of using technological devices to attend the lessons or they hadn't suitable environments. It was reported that some children hadn't always the possibility of attending the online lessons because other members of their families needed the computer, their families hadn't the economic means to buy the necessary technological devices or parents hadn't the skills to help their children attend the online lessons. This study highlighted that, teachers mainly used recorded lectures, monodirectional synchronous video lessons, homework sent through platforms. Moreover, they overlooked cooperative learning which might have instead supported the acquisition of subjects but also promoted social interactions among students and reducing the feeling of loneliness [4]. Therefore, we might suppose that the teaching in Italy wasn't that good to grant children to achieve good results in reading, writing and math in an effective and affective way, slowing down their learning.

During the first wave other authors explored school achievements among undergraduate students all over the world. Tomasik and colleague conducted a study on primary and secondary school Swiss students on learning gains in the eight weeks of school closure, comparing them to the ones of eight weeks before. They observed more evident interindividual differences among primary school children during the DL in comparison to the previous period. In contrast, secondary school students didn't show any slowdown in their learning pace despite the school closures. The difference between primary and secondary school students in learning during the school closures might have been explained by the younger pupils need of relying on cognitive scaffolding during instruction. Moreover, their executive functioning and their capabilities for self-regulated learning might not be fully developed yet [5].

On the contrary, a study carried out in Australia found equal primary school students' achievements among the late 2019 and late 2020. This maybe because Australian school year starts in late January and ends in late December (being closed from March and April) so that students might have had the possibility to regain the learning slowdown due to the DL in the previous months [6].

In fact, also in The Netherlands (a country which underwent a relatively short lockdown like Switzerland, and which has regular school activity from March to June), a decrease in learning results in mathematics, spelling and reading among students aged eight to eleven years old was

observed. Their results also showed that the learning loss was more pronounced for students belonging to disadvantaged socio-economic contexts [7].

Parallelly, Kapasia and colleagues interviewed with an e-survey a sample of 232 college and university Indian students, finding high levels of anxious-depressive symptoms and of stress due poor facilities to access DL (including bad internet connection and unfavorable study environment at home). Even in their study, subjects from marginalized areas faced the greatest challenges for studying during the very beginning of COVID pandemic [8].

The topic of social-cultural differences has been widely investigated [9, 10] and it had already been warned by experts at the start of the COVID-19 outbreak [2].

Analysing literature, we can find out that the COVID-19 pandemic related lockdown has had emotional and psychological effects on parents and their children [11, 12, 13, 14, 15]. It has been shown that children's and (less) adolescent's psychological distress was related to their parents' perception of the situation, and more specifically to how much they find it difficult dealing with the quarantine restrictions [16, 14, 17, 15, 18]. This directly impacted children's behaviour and emotions but also it could have had an indirect (or direct) influence on children's and adolescent's school learnings and achievements.

We therefore might suppose that school closures, DL and the malaise experienced (by the youngest and their parents) during the quarantine may have affected school children's learning, particularly the one of primary school pupils, that should have been the most affected ones [7, 18]. We aimed to assess primary school children' performances in reading, writing and math in the last months of the 2020 (after the first lockdown) and to relate them to their emotional and behavioural state, according to parents and teachers' point of view.

METHODS

Participants

This study was conducted on a convenience sample of first, second and third grade primary school children of North-Eastern Italy attending the Casier Institute (located in the province of Treviso, Italy). Distance learning was carried out for 2-3 hours a day per 3 or 4 days a week from October 2020. During this period the teachers provided explanations and exercises to be done in presence or alone at home.

Children already evaluated or diagnosed with neurodevelopmental disorders (specific learning disabilities, autism spectrum disorders, attention deficit disorders or others) and children who had carried out less than 50% of the tests were excluded.

Learning Skills Assessment

Performances of these children were analyzed by comparing them with the existing standard norms of the tests used.

Children were assessed individually on their reading, writing, comprehension, and calculation skills. The assessment was performed by an experienced developmental psychologist (AC), trained in learning disorders.

The assessment took three daily class mornings: one for reading assessment, one for writing under dictation, and one for comprehension and mathematics tests. The first day assessment was performed in a set up silent room (to allow children to be in a comfortable and not disturbing environment) where children were brought one at a time. The second and the third day assessments were performed a few days later, in the class. Teachers of each class were therefore informed about the class performances.

Reading Skills Assessment

The battery "TEST MT-Kit primary school" was adopted for the purpose [19]. For the 1st class there is an understanding test and a correctness and speed test to be carried out in the middle of the first class and the same number to be proposed at the end of the school year. The following passages were proposed: "Santa Claus" for the first-grade children, "The man who could not grow up" for the second-grade children, and "The simplest idea" for third-grade children. After making them at ease, children were invited to read the short story aloud and the examiner had to note the number of errors made (the errors could have a value of .05, for minor errors that did not change the meaning of the text or 1, for other types of errors) and the time taken by the child in reading. The result of the evaluation is therefore based on the indices of correctness (i.e., the number of errors) and speed (i.e., the time taken by the child to read the passage). In this battery the speed is expressed in hundredths of seconds used to decode a syllable (sec/syll). It seemed more appropriate to always relate the time to a reference unit such as the syllables (Carretti et al., 2017). Z scores were calculated for reading speed (child speed in sec/syll minus normative data sec/syll divided for standard deviation of the normative sample), while the number of errors made was considered for the correctness.

Dictation Skills Assessment

To evaluate the spelling ability, the BVSCO-2 "Battery for the evaluation of writing and spelling competence-2" had been adopted [21]. The following texts were administered to the whole class group: "Dad's bicycle" for the first-grade classes, "The blind man and the torch" for the second-grade classes, "The lion and the rooster" for the third-grade classes. From the administration of this test, it is possible to derive the following parameters: total errors, phonological errors, non-phonological errors, accents/doubles errors. From the total number of errors, a performance score can be calculated. Form standard norms, the child's result can be classified in four grades of risk on standardized percentiles: a) request for immediate intervention (RII): reports severe difficulties and corresponds to scores at or below the 5th percentile; b) attention requested (AR): indicates medium or mild severity difficulty and corresponds to the range between the 5th and 15th percentiles; c) sufficient performance (SP): indicates an adequate performance that is in the range 15th-70th percentile; c) fully achieved criterion (FAC): indicates optimal performance levels and corresponds to a value equal to or greater than the 70th percentile.

Comprehension Skills Assessment

To assess the ability to understand, the following tests were administered: single question using imagines and a little text for the first grades for a total of 15 questions; "The fox and the lumberjack" for the second grades and "The donkey in the river" for third grades of 10 questions each. The test takes place in this way: the child must read a passage independently and then must answer some questions by choosing from four alternative answers, of which only

one is correct. The score is given by the sum of the correct answers. The test can be carried out both individually and in the class group, as in the present research have been done.

For comprehension test it is possible to compare the child's score with values that correspond to four performance bands: 1) Request for an Immediate Didactic Intervention (RIDI). Children who fall into this group have serious difficulties and require immediate consideration by the teacher and a possible sending to a specialist; 2) Request for Didactic Attention (RDA). This group includes those children who have mild difficulties and for whom teachers can think of a recovery project within the didactic programming; 3) Sufficient Didactic Performance (SDP). Children who fall into this range can read in a sufficiently good way, despite not having reached optimal levels; 4) Criterion didactically fully achieved (CDFA). It concerns all those cases that manifest a full mastery of the skill.

As for the reading speed parameter, it may be useful to proceed with the calculation of z-points to see how much the child's performance differs from the reference group.

Calculation

For the evaluation of calculation skills, the "Test for the evaluation of calculation skills and solution of arithmetic problems" for primary school students was administered (AC-MT 6-11) [22]. The battery consists of two parts: the paper and pencil part (or collective) and the individual part. For the present research it was decided to administer only the paper and pencil part with the aim of making a general assessment of the calculation skills of the class and identifying any critical cases.

The first part (“paper and pencil”) includes five tests (four for the first-grade students) gathered in a dossier that can be administered at the same time to all the members of the class. The test does not imply speed assessment and therefore raters could let the children complete it at their own pace. The assessment consists of: a) “written calculation”: it includes calculation tasks that vary according to the class attended, with the intention of evaluating the ability to apply the calculation procedures and the automatisms involved; b) "judgment of numerosity": a test of semantic understanding that also requires the ability to know how to read numbers correctly; c) "transformation into digits": this test evaluates the child's ability to process the syntactic structure of the number and is administrable after the first-grade class; d) “sorting of series from minor to major and from major to minor": this test allows to investigate the semantic representation of the number and the working memory skills. This collective part provides partial scores of correctness of each individual test. The scores obtained can be compared with the normative data and identify the corresponding performance range. The scores, therefore, are distinguished in this way: 1) Optimal (O); 2) Sufficient (S); 3) Request for attention (RA); 4) Request for immediate action (RIA).

Assessment Of Adults’ Malaise and Perception of Their Children’ Malaise

Teachers and parents of children enrolled were therefore interviewed anonymously by an online survey, adapted from an online questionnaire already distributed during the first lockdown on a large sample of adults living in Italy for the purpose of evaluating level of malaise of adults and their children [18].

The questionnaires were created with Google Forms (https://www.google.com/forms/about/) and distributed via email to teachers and parents among both parents and teachers close to the children evaluated on the learning profile with the mentioned assessment.

The adaptation was created in collaboration with the Child and Adolescents' Neuropsychiatry team of the Gaslini Children Hospital in Genoa, to best suit the targeted adult population (both teachers and parents) and the period of distribution (from December 2020 to March 2021).

From the initial questionnaire with the necessary modifications and adaptations, two e-surveys were obtained: one dedicated to teachers and another to parents.

The questionnaire addressed to teachers was distributed to all the personnel of the Casier Institute and consisted of 36 items divided into three sections. The first section includes items from 1 to 18 and is aimed at collecting information concerning the teacher: personal information, the grade of school in which they teach, which students they teach, their opinion on the impact of the pandemic on children and adolescents, the threat perception with respect to COVID-19, and any pre-existing psychological weaknesses. The second section included 18 items specifically created for teachers working in primary schools, to investigate any emotional or behavioral change manifested by their students. The areas investigated were level of students' malaise perceived by teachers, frequency of questions about COVID-19 expressed by students during routine classes, students' concern for the future, fear of death, need for specialized help. Moreover, students' attitudes at learning and study and towards DL were explored (Appendix 1).

Similarly, the questionnaire addressed to parents consisted of 36 items divided into two sections and traced the one distributed by Uccella and colleagues during the very first weeks of COVID-19 outbreak in Italy [18] (Appendix 2).

Statistical Analysis

Statistical analysis was conducted using SPSS Statistics software, v23 (IBM, Armonk, NY, United States). All the tests were two-sided and statistical significance was set at a p value <0.05.

The Shapiro–Wilk test was performed to evaluate the distribution of the variables.

Categorical variables are presented as numbers with percentages in brackets. Continuous variables are listed with means and standard deviations. Raw scores obtained by children are reported and analyzed by the different class groups (first, second and third grade primary school classes).

To evaluate the trend of learning among the children of the evaluated sample, a comparison between the results obtained by the children evaluated (divided per class) has been performed, referring to standard norms of the assessment used. One-sample T-student test was chosen for evaluating both normally distributed continuous and non-normally group variables due to the consistency of samples numerosity. In case of categorical variables, non-parametric Chi Square test for single groups has been performed.

The performances between classes were compared with One-way Analysis of Variance (One-way ANOVA) for the normally distributed variables and with the Kruskal Wallis test for non-normal ones.

Finally, data extracted from the e-surveys proposed to teachers and parents have been analyzed, comparing teachers and parents' responses. Mann Whitney test for continuous variables and Fisher Exact test for categorical variables had been used.

RESULTS

Two-hundreds and one children took part in the study. Of them, 5 were excluded (2 due to comorbidity with neurodevelopmental disorders, 3 for discontinuation of the assessment). The final sample consisted of 194 students: 51 attending the first-grade primary school (26 boys and 25 girls), 55 attending the second grade (31 boys and 24 girls) and 88 attending the third grade (46 boys and 42 girls). In Tables 1-3 (and Supplemental Tables 1-3) results obtained at the different learning tasks among the three class groups are reported.

Comparing children samples performances in reading fluency, one sample T Student showed: greater speed for the first grade class (166.2±72.28 syllables/second in the first class sample vs 137.55 ±78.43 in the standard norms sample; p=.016) and a slowdown in reading among the second-grade class sample (0.87±1.06 vs. 4.2±4.5 errors; t(54)=2.50, p=.015) and no other significant differences with the normative sample (Table 1)

About dictation, when comparing the samples to standard norms, except for the dictation errors in the 3rd class (41/88 equal to 48,2%; p=.046) that emerged differently distributed with more children in the lower range compared to normative sample. No differences other differences have emerged.

From the One-Way Analysis of Variance (ANOVA), carried out to compare z-points results in the reading speed among the three class groups, a significant difference between classes emerged (F (1,185) =8.61, p<.001, n2p=0.09). Through the post-hoc analysis emerged that children of the first class have a better performance regarding reading fluency in comparison with children of the second class (p<.001) and the third class (p=.023) while there was no difference between the second and the third-grade class (Table 3).

From the Kruskal Wallis non-parametric test for independent samples, a significant difference (H (2) =26.04, p<.001) in reading errors between classes was observed (H (2) =26.04, p<.001). From pair comparisons, the second performed better than the third class (0.87±1.06 vs 2.40±2.53; p<.001). Also, the children of second grade performed better than the first class (0.87±1.06 vs 3.25±3.44; p<.001). In both cases the children of the second-grade class made a minor number of reading errors compared to the children of the other classes.

The analysis shows a significant difference between classes H (2) =8.12, p=0.017 in the frequency of children in the performance bands of dictation, in particular from the pairs comparisons it emerges as significant the difference between the first class and the third class (p=.019), with the first class having a better performance than the third.

For the text comprehension, text dictation and calculation, the number of children who fell into a certain performance range compared to children, of other classes, who fell into the same range were compared. In Supplemental Tables 1, 2 and 3, the frequencies by class, band and the corresponding percentages were reported. A significant difference between classes (H (2) =6.06, p=.048) in the frequency of children in the performance bands of text comprehension emerged. From pairs comparisons the difference between the second and the third class (p=.042) was significant, with the third class having a better performance than the second.

The analysis shows a significant difference between classes (H (2) =11.99, p=.002) in the frequency of children in the performance bands of the written calculation test, in particular from pairs comparisons the difference between the first class and the third class (p= .002) emerges as significant, with the first class having a better performance than the third.

The analysis shows no differences in the 'judgment of numerosity' test. Conversely, a significant difference between classes (H(2)=13.80, p=.001) in the frequency of children in the performance bands of the 'number sorting test', in particular from pair comparisons it emerges as significant the difference between the first class and the third class (p=.001), with the first class having a better performance than the third, as well as between the first class and the second class (p=.048) with the first class having a better performance than the second. For the test of 'turn into digits', the teachers of the first class requested that the children not do this exercise because they believed they were not able to understand and carry it out. Comparing the performance between the second class and the third-grade class shows that are significantly different (H (2) =15.93, p=.001) with the third-grade class having a better performance than the second.

Children' Malaise Through the Eyes of Teachers and Parents

Forty-two teachers replied to the dedicated e-surveys (98% response rate, considered excellent for online surveys, [23]) while 24 parents answered to their questionnaire (12% response rate, considered poorly sufficient for online surveys), The completion rate was of 100%.

With respect to the perceived impact of COVID-19 pandemic and related lockdown on children and adolescents' wellbeing, we observed a general consisted worry among teachers' and parents' responses with no statistical difference between the two groups (median value in a range of 1 to 10: 8 for teachers and 8.5 for parents; p = .896).

While all teachers have observed an increase general difficulty in concentration difficulties in their classes, parents referred difficulties only in the 20.8% of cases. Moreover, during the last year, a worsening in the study abilities has been noted by teachers in the 23.9% (11/46) and only in the 4.1% (1/24) of parents, with significance (p = .037). The teachers reported that learning abilities, especially reading (13.1%), writing (8.7%), were more neglected by children (with calculation retained worsened by the 3.8% of teachers).

On the contrary, teachers and parents observed behavioral changes (Figure 1 and 2) in more than half cases (69.5% 32/46 of teachers and 54.1%, 13/24 of parents; p = .293). The most observed children' behavioral change by teachers was difficulty in concentrating (%), while parents reported increase in nocturnal awakenings (23.8%), even if, in general, for what reported by parents, in most cases children were less afraid to go to sleep alone and to lose

their grandparents than during the first lockdown, and it seems that children' questions about death were not so frequent.

DISCUSSION

Our research, conducted by the end of the 2020 on a convenience sample of 194 students at a primary school settled in the North-Eastern Italy (Istituto Comprensivo di Casier, Treviso), highlighted different learning achievements in children attending first, second and third primary grade classes who have attended the previous academic year with the didactic remote mode use of distance learning (DL). We observed lower performances in children attending second and third-grade classes.

Moreover, a consistent prevalence of children' malaise was observed by adults close to them during the second pandemic wave, with behavioural manifestations seen by the 69.5% of teachers and by the 54.1% of parents.

Some researchers have already highlighted that school closures during the lockdown, which required the introduction of DL, had a negative impact on primary school children's learning pace [5,7]. It seems that students from remote areas or from less educated-home might have faced more difficulties in learning during the lockdown due to the covid-19 pandemic [8,9,10].

It's also known that the COVID-19 pandemic negatively affected children and their parents since the very beginning of its outbreak: in fact, it was observed that the level of distress experienced by parents during the lockdown had a negative impact on their children's well-being, causing behavioural and emotional changes [14,15,18]. So, we could also assume that the feeling of uncertainty and anxiety experienced during the lockdown might have had a negative impact on children's emotional state, interfering with their capability of learning.

We observed that children attending the first-grade class showed a general performance in line with normative data and in some cases even superior. Indeed, they showed little bit faster performances in reading and made a few errors, in line with normative data, both in reading and writing. Even comprehension and calculation performance were adequate.

Children attending the second-grade class had a good performance in reading accuracy, but less in reading fluency, and their performance were adequate in comprehension and math. On the contrary, their performances in dictation were weaker compared to children of the first class.

Children attending the third-grade class showed an adequate performance in reading but show greater difficulty in dictation. Their performances in comprehension and math were in line with normative data even if in some math tasks were weaker than the ones of children belonging to first or second grade classes. Moreover, we observed that the third-grade class group was generally weaker than the others in learning performances, suggesting an effect of the lockdown on this group of children more than in the others. Concerning reading, we found out that a lot of children of all classes had read a lot during the lockdown.

Generally, we can observe that, to different degrees, all classes showed greater difficulties in the dictation test which might be due to the interruption of face-to-face learning and to the difficulties that teachers and parents might have had with distance learning.

The teachers themselves admitted that reading (in the 13.1%) and writing (in the 8.1%) respectively were more neglected than the past years. They also reported that they supposed that, due to the poor internet connection during DL, children couldn't well understand the words during the dictation and the teachers had to repeat them often. So, children had also lost their concentration.

Given the results of the present research, teachers reported that they would have made children work on writing and spelling during the summer at the end of the academic year 2020/21. However, we must consider that teachers suddenly found themselves to face something that they had never experienced before and, as Ranieri and colleagues [4] have observed, they weren't ready to switch from face-to-face learning to distance learning. So, we might suppose that if teachers had been trained in using technological devices and other didactical methods more suitable for distance learning, they would have had less difficulties in managing online lessons, and teaching would have been more effective.

Children attending the first three classes of primary school need their parents' help in using the technological devices, but this wasn't always possible when both parents worked, so that some children could not count on any help.

Regarding the psychological effects of the pandemic on children and teenagers, we found out a general bad impact on children mental wellbeing, that teachers observed primarily as a worsening in their ability to concentrate. Strains in concentrating (a stress symptom that could highly impact school achievements) was seen by the totality of teachers interviewed but only by 20.8% of parents. This last result might underly a general difficulty of parents in recognizing sluggishness symptom related to acute stress due to COVID-19 pandemic and related social distancing measures for limiting the contagion among their children and therefore and underestimation of potential detrimental consequences of children mental wellbeing in the future. Moreover, it can be related to the general "children latent neglect" that parents had actuated not only if they belong to a low social class, but that in general they had in some way activate by working at home in smart at distance modality, consequently not caring at their children in their longer spare times (due to school and other social activities closure during the lockdown).

To the best of our knowledge, we were the first to demonstrate the detrimental impact of COVID-19 pandemic on learning achievements of children attending the three first grades of primary school. We were also the first, to directly interview their teachers on their behavioural changes related to that peculiar moment.

Although this research has helped to highlight the effects of school closures on learning, it has surely several limitations. First, the sample is relatively little, and it includes only children attending the first three classes of the primary school of only one primary school institute, whilst it would have been interesting to carry out a survey on a far larger sample to assess if children of other schools of Italy had these difficulties. But this study was initially conducted as an experimental pilot overview. It would have been also interesting to assess if families' socio-cultural background might have influenced children' learning pace.

Moreover, the impossibility of correlating learning assessment results to the teachers' and parents' answers to the e-survey on their children malaise due to the anonym nature of the data collection. By the way, to preserve privacy of students, their families and of their teachers we decided to leave the e-survey anonymous.

CONCLUSIONS

Confinement measures to contain the COVID-19 spread (including distance learning and physical and social distancing) affected the wellbeing of the youngest children attending primary school, both from a psychological and cognitive point of view. Even though distance learning would be bettered, it would remain difficult for primary school children to attend online lessons. New didactical strategies are warranted to prevent the use of distance learning again. In case of compulsory use of distance learning, teachers must be ready and well educated both from technological point of view and an affective point of view, to be ready to manage and prevent also damages caused by social distancing). Implementation of trained specific professionals to manage these situations at a class level could be a strategy.

Ethics Statement

The Local Ethical Committee (Comitato Istituzionale di Revisione, Istituto Giannina Gaslini) approved this prospective observational study (n.0015512), conducted in accordance with the Declaration of Helsinki. The participating parents provided an informed consent in accordance.

Acknowledgements

The authors would like to acknowledge all the families and teachers that participated in the study. This work was developed within the framework of the DINOGMI Department of Excellence of MIUR 2018-2022 (law 232/2016).

Funding

No funding was received for the present study.

Conflicts of Interest

The authors have financial relationships or conflicts of interest to disclose.

Availability Of Data and Material

The datasets used in the study are available from the corresponding author upon request.

Bibliography

1. Brooks, S. K.; Webster, R. K.; Smith, L. E.; Woodland, L.; Wessely, S.; Greenberg, N.; Rubin, G. J. The Psychological Impact of Quarantine and How to Reduce It: Rapid Review of the Evidence. Lancet 2020, 395 (10227), 912–920. https://doi.org/10.1016/s0140-6736(20)30460-8.

2. Fore H.H. A wake-up call: COVID-19 and its impact on children's health and wellbeing. Lancet Glob Health. 2020 8(7), e861-e862

3. https://www.miur.gov.it/-/decreto-del-presidente-del-consiglio-dei-ministri-del-04-marzo-2020

4. Ranieri, M.; Gaggioli, C.; Borges, M. K. La Didattica Alla Prova Del COVID-19 in Italia: Uno Studio Sulla Scuola Primaria. Práxis Educativa 2020, 15, 1–20.

5. Tomasik, M. J.; Helbling, L. A.; Moser, U. Educational Gains of In-Person vs. Distance Learning in Primary and Secondary Schools: A Natural Experiment during the COVID-19 Pandemic School Closures in Switzerland. Int. J. Psychol.2021, 56 (4), 566–576. https://doi.org/10.1002/ijop.12728.

6. Gore, J.; Fray, L.; Miller, A.; Harris, J.; Taggart, W. The Impact of COVID-19 on Student Learning in New South Wales Primary Schools: An Empirical Study. Aust. Educ. Res. 2021, 48 (4), 605–637. https://doi.org/10.1007/s13384-021-00436-w.

7. Engzell, P.; Frey, A.; Verhagen, M. D. Learning Loss Due to School Closures during the COVID-19 Pandemic. Proc. Natl. Acad. Sci. U. S. A. 2021, 118 (17), e2022376118. https://doi.org/10.1073/pnas.2022376118.

8. Kapasia, N.; Paul, P.; Roy, A.; Saha, J.; Zaveri, A.; Mallick, R.; Barman, B.; Das, P.; Chouhan, P. Impact of Lockdown on Learning Status of Undergraduate and Postgraduate Students during COVID-19 Pandemic in West Bengal, India. Child. Youth Serv. Rev. 2020, 116 (105194), 105194. https://doi.org/10.1016/j.childyouth.2020.105194.

9. Bonal, X.; González, S. The Impact of Lockdown on the Learning Gap: Family and School Divisions in Times of Crisis. Int. Rev. Educ. 2020, 66 (5–6), 635–655. https://doi.org/10.1007/s11159-020-09860-z.

10. Goudeau, S.; Sanrey, C.; Stanczak, A.; Manstead, A.; Darnon, C. Why Lockdown and Distance Learning during the COVID-19 Pandemic Are Likely to Increase the Social Class Achievement Gap. Nat. Hum. Behav. 2021, 5 (10), 1273–1281. https://doi.org/10.1038/s41562-021-01212-7.

11. Chawla, N.; Tom, A.; Sen, M. S.; Sagar, R. Psychological Impact of COVID-19 on Children and Adolescents: A Systematic Review. Indian J. Psychol. Med. 2021, 43(4), 294–299. https://doi.org/10.1177/02537176211021789

12. De Miranda, D. M.; Da Silva Athanasio, B.; Oliveira, A. C. S.; Simoes-E-Silva, A. C. How Is COVID-19 Pandemic Impacting Mental Health of Children and Adolescents? International Journal of Disaster Risk Reduction 2020.

13. Patrick, S. W.; Henkhaus, L. E.; Zickafoose, J. S.; Lovell, K.; Halvorson, A.; Loch, S.; Letterie, M.; Davis, M. M. Well-Being of Parents and Children during the COVID-19 Pandemic: A National Survey. Pediatrics 2020, 146 (4), e2020016824. https://doi.org/10.1542/peds.2020-016824.

14. Cusinato, M.; Iannattone, S.; Spoto, A.; Poli, M.; Moretti, C.; Gatta, M.; Miscioscia, M. Stress, Resilience, and Well-Being in Italian Children and Their Parents during the COVID-19 Pandemic. Int. J. Environ. Res. Public Health 2020, 17 (22), 8297. https://doi.org/10.3390/ijerph17228297.

15. Spinelli, M.; Lionetti, F.; Pastore, M.; Fasolo, M. Parents' Stress and Children's Psychological Problems in Families Facing the COVID-19 Outbreak in Italy. Front. Psychol. 2020, 11, 1713. https://doi.org/10.3389/fpsyg.2020.01713.

16. Araújo, L. A. de; Veloso, C. F.; Souza, M. de C.; Azevedo, J. M. C. de; Tarro, G. The Potential Impact of the COVID-19 Pandemic on Child Growth and Development: A Systematic Review. J. Pediatr. (Rio J.) 2021, 97 (4), 369–377. https://doi.org/10.1016/j.jped.2020.08.008.

17. Panda, P. K.; Gupta, J.; Chowdhury, S. R.; Kumar, R.; Meena, A. K.; Madaan, P.; Sharawat, I. K.; Gulati, S. Psychological and Behavioral Impact of Lockdown and Quarantine Measures for COVID-19 Pandemic on Children, Adolescents and Caregivers: A Systematic Review and Meta-Analysis. J. Trop. Pediatr. 2021, 67(1). https://doi.org/10.1093/tropej/fmaa122.

18. Uccella, S.; De Grandis, E.; De Carli, F.; D'Apruzzo, M.; Siri, L.; Preiti, D.; Di Profio, S.; Rebora, S.; Cimellaro, P.; Biolcati Rinaldi, A.; Venturino, C.; Petralia, P.; Ramenghi, L. A.; Nobili, L. Impact of the

COVID-19 Outbreak on the Behavior of Families in Italy: A Focus on Children and Adolescents. Front. Public Health 2021, 9, 608358. https://doi.org/10.3389/fpubh.2021.608358.

19. Cornoldi, C.; Colpo, G.; Carretti, B. PROVE MT- Kit Scuola Primaria. Dalla Valutazione Degli Apprendimenti Di Lettura e Comprensione al Potenziamento; 2017.

20. Cornoldi, C.; Carretti, B. Prove MT-3 Clinica: La Valutazione Delle Abilità Di Lettura e Comprensione per La Scuola Primaria e Secondaria Di I Grado; 2016.
21. Tressoldi, P. E.; Cornoldi, C.; Re, A. M. Batteria per La Valutazione Della Scrittura e Della Competenza Ortografica -2. GIUNTI EDU; 2013.

22. Cornoldi, C.; Lucangeli, D.; Bellina, M. Test Di Valutazione Delle Abilità Di Calcolo e Di Soluzione Di Problemi Aritmetici - AC-MT 6-11; 2002.

23. Funkhouser E, Vellala K, Baltuck C, Cacciato R, Durand E, McEdward D, et al. Survey Methods to Optimize Response Rate in the National Dental Practice-Based Research Network. Eval Health Prof. 2017 40(3), 332–58.

https://www.miur.gov.it/-/decreto-del-presidente-del-consiglio-dei-ministri-del-04-marzo-2020

Table 1. Reading results (fluency, accuracy, and comprehension) of the 1st, 2nd, and 3rd grade class children and normative data. Variables are expressed in mean (and standard deviations in brackets).

Class	n	Reading fluency (sec/syll)	Reading accuracy (errors)	Text comprehension (correct responses)
1st grade sample	51	137.55 (78.43)*	3.25 (3.44)	12.39 (2.07)
standard norms	320	166.2 (72.28)	2.32 (2.45)	11.48 (2.5)
2nd grade sample	55	58.05 (22,37)	0.87 (1.06) *	8.04 (1.79)
standard norms	565	50.5 (37.2)	4.2 (4.5)	7.80 (2.0)
3rd grade sample	88	44.36 (15.16)	2.40 (2.53)	7.81 (1.94)
standard norms	500	45.03 (28.05)	4.9 (5.0)	7.30 (2.0)

Note. Text comprehension range 1-15 for the first grade 1-10 for the second and third grade
* p<0.05 at One Sample T student test

Table 2. Children' sample frequency of risk classes at the Dictation task.

Text dictation				
Class	RII	AR	SP	FAC
1st grade (n 51)	9 (17,6%)	14 (27,5%)	25 (49%)	3 (5,9%)
2nd grade (n 55)	16 (29,1%)	13 (23,6%)	21 (38,2%)	5 (9,1%)
3rd grade (n 88)	**41 (48,2%)***	9 (10,6%)	33 (38,8%)	2 (2,4%)

Note. As reported in the methods section, results are expressed in terms of frequencies of performance ranges
Legend. RII: request for immediate intervention; AR: attention requested; SP: sufficient performance; FAC: fully achieved criterion (FAC)
* p<0.05 at One Sample Chi Square test

Table 3. Number of children in each performance range according to class in calculation tasks

Written calculation				
Class	RIA	RA	S	O
1st grade (n 51)	0 (0%)	1 (2%)	20 (39,2%)	30 (58,8%) *
2nd grade (n 55)	3 (5,7%)	8 (15,1%)	17 (32,1%)	25 (47,2%)
3rd grade (n 88)	3 (3,5%)	3 (3,5%)	56 (65,9%)	23 (27,1%)
Transformation into digits				
1st grade (n 51)	/	/	/	/
2nd grade (n 55)	3 (5,6%)	5 (9,3%)	24 (44,4%)	22 (40,7%)
3rd grade (n 88)	4 (4,8%)	0 (0%)	17 (20,2%)	63 (75%) *
Sorting of series from minor to major and from major to minor				
1st grade (n 51)	1 (2%)	3 (5,9%)	1 (2%)	46 (90,2%) *
2nd grade (n 55)	3 (5,6%)	5 (9,3%)	10 (18,5%)	36 (66,7%)
3rd grade (n 88)	9 (10,6%)	8 (9,4%)	18 (21,2%)	50 (58,8%)

Note. As reported in the methods section, results are expressed in terms of frequencies of performance ranges; * p<0.05 at One Sample Chi Square test

Supplemental Table 1. Writing under dictation results (total, phonological, non phonological and double accents errors) among the 1st, 2nd, and 3rd grade children and comparison to the normative data. Variables are expressed in mean (and standard deviations in brackets).

Class	N	Text writing (total errors)	Phonological errors	Non-phonological errors	Double and accents errors
1st grade	51	8.73 (5.71)	3.55 (4.25)	0.82 (0.87)	4.46 (2.69)
standard norms	67	9.70 (7.20)	3.10 (3)	2.80 (1.60)	3.80 (3.60)
2nd grade	55	8.20 (4,83)	3.64 (3.10)	2.02 (1.42)	2.60 (2.54)
standard norms	239	4.34 (3.17)	1.96 (1.74)	1.25 (1.15)	1.14 (1.56)
3rd grade	88	15.42 (10.62)	5.78 (5.58)	1.69 (1.60)	7.95 (5.48)
standard norms	604	5.21 (3.96)	1.69 (1.75)	1.03 (1.14)	2.49 (2.67)

Supplemental Table 2. Calculation results among the 1st, 2nd, and 3rd grade children and comparison to the normative data. Variables are expressed in mean (and standard deviations in brackets).

Class	N	Written calculation	Judgment numerosity	Number sorting	Turns into digits
1st grade	51	3.41 (0.80)	5.61 (1.23)	9.25 (1.54)	/
standard norms	145	3.28 (0.98)	4.98 (1.21)	8.46 (2.50)	
2nd grade	55	3.15 (1.00)	5.89 (0.37)	9.29 (1.34)	4.80 (1.37)
standard norms	129	3.19 (0.87)	5.37 (0.75)	9.40 (1.18)	4.64 (1.50)
3rd grade	88	6.42 (1.58)	5.51 (1.34)	8.84 (2.16)	5.51 (1.23)
standard norms	340	6.80 (1.56)	5.56 (1.16)	9.41 (126)	5.57 (1.13)

Note. Written calculation range for 1st and 2nd grade 0-4 and for 3rd grade 0-8; Judgment numerosity range 0-6; Number sorting range for 1st grade 0-8 and for 2nd and 3rd grade 0-10; Turns into digit range 0-6.

Supplemental Table 3. Number of children in each performance range according to class in text comprehension

Text comprehension				
Class	RIDI	RDA	SDP	CDFA
1st grade	3 (6%)	7 (14%)	23 (46%)	17 (34%)
2nd grade	3 (5,6%)	11 (20,4%)	30 (55,6%)	10 (18,5%)*
3rd grade	7 (8%)	14 (16,1%)	24 (27,6%)	42 (48,3%)

Note. As reported in the methods section, results are expressed in terms of frequencies of performance ranges

APPENDIX 1

Questionnaire For Teachers

This questionnaire is for all teachers, and it was created for assessing the impact that the recent COVID-19 pandemic has had on primary school children.

Your answer is important to fully understand the situation and to find the strategies to provide support in this delicate moment and that involves everybody.

We inform you that this questionnaire is anonymous, and it uses a third-party tool (for privacy policy of the third-party service click here: https://policies.google.com/privacy), the data collected with this tool will be processed in compliance with the Privacy Act Regulation (UE) 216/679.

Section 1

1. **State your gender**
   a. Female
   b. Male
2. **How old are you? _____**
3. **Where do you live? _____**
4. **Which is you level of education?**
   a. Primary school certificate
   b. Middle school certificate
   c. High school certificate
   d. Bachelor's degree
   e. Master's degree
   f. Other kinds of degree
5. **What kind of school do you teach in?**
   a. Kindergarten
   b. Primary school
   c. Middle school
   d. High school
   e. Special needs teacher
   f. COVID teacher
6. **What subject do you teach?**
   a. Italian language
   b. Math
   c. Story and Geography
   d. Science
   e. Technology
   f. Arts
   g. Music
   h. English
   i. Second language
   j. Something else_____
7. **How many people is your family made up of?**
   a. 1
   b. 2

c. 3
d. 4
e. 5
f. More than five people

8. **How would you define the impact that the recent COVID-19 pandemic might have on the global population?** Likert Scale from 0 to 10 (0 not at all important; 10 extremely important)
9. **How would you define the impact that the recent COVID-19 pandemic might have on children from 6 to 10 years old?** Likert Scale from 0 to 10 (0 not at all important; 10 extremely important)
10. **How would you define the impact that the recent COVID-19 pandemic might have on children from 11 to 14 years old?** Likert Scale from 0 to 10 (0 not at all important; 10 extremely important)
11. **How would you define the impact that the recent COVID-19 pandemic might have on children older than 14 years old?** Likert Scale from 0 to 10 (0 not at all important; 10 extremely important)
12. **Have you ever tested positive for Covid-19?**
    a. Yes
    b. No
    c. I'd rather not answer
13. **Have there been people who have tested positive for Covid-19 in your family or among your friends?**
    a. Yes
    b. No
    c. I'd rather not answer
14. **Have there been people who have died because of COVID-19 disease in your family?**
    a. Yes
    b. No
    c. I'd rather not answer
15. **Have there been people who have died because of COVID-19 disease among your friends?**
    a. Yes
    b. No
    c. I'd rather not answer
16. **Have you ever suffered from anxiety, even though it hasn't been diagnosed by a specialist?**
    a. Yes, in the past but not anymore
    b. Yes, in the last year
    c. Yes, for several years and still today
    d. No
17. **Have you ever suffered from depression, or a pronounced sadness, even though it hasn't been diagnosed by a specialist?**
    a. Yes, in the past but not anymore
    b. Yes, in the last year
    c. Yes, for several years and still today
    d. No
18. **Have you ever suffered from sleep disorders?**

a. Yes, in the past but not anymore
b. Yes, in the last year
c. Yes, for several years and still today
d. No

Section 2

If you teach at the kindergarten or at the primary school, answer the following questions.

19. What kind of school do you teach in?
a. kindergarten
b. primary school

20. Have you observed some of these behaviours in your pupils currently? (You can choose more than one answer)
a. Loss of language skills
b. Difficulty in concentrating
c. Strong concern
d. Refusal to feed in lunchtime
e. Inconsolable crying
f. More irascibility
g. Motor restlessness
h. Fear of the dark
i. Crying at separation of the caregiver
j. other _____

21. How many of your pupils ask questions about COVID-19? Likert Scale from 1 (nobody) to 5 (everybody)

22. How often do they talk about COVID-19 during the day? Likert Scale from 0 (never) to 10 (always)

23. Do your pupils show fear about the future? Likert Scale from 1 (nobody) to 5 (everybody)

24. Have your pupils asked questions about the future in this period?
a. Yes
b. No
c. Sometimes

25. Have your pupils asked questions about death in this period?
a. Yes
b. No
c. Sometimes

26. Have your pupils ever told you that they fear of losing their grandparents or their parents?
a. Yes
b. No
c. Sometimes

27. Currently, do you think that for your pupils concentrating is:
a. The same
b. Easier
c. More difficult
d. I don't have enough information to answer

28. Do you think that, in the last year, your pupils in reading:

a. have improved
b. have remained at the same level
c. have worsened
d. I don't have enough information to answer

29. Do you think that, in the last year, your pupils in writing:

a. have improved
b. have remained at the same level
c. have worsened
d. I don't have enough information to answer

30. Do you think that, in the last year, your pupils in math:

a. have improved
b. have remained at the same level
c. have worsened
d. I don't have enough information to answer

31. Do you think that, in the last year, your pupils in studying:

a. have improved
b. have remained at the same level
c. have worsened
d. I don't have enough information to answer

32. Do you think that your pupils are more irritable or experience suddenly mood changes? Likert Scale from 1 (nobody) to 5 (everybody)

33. Do you think that your pupils prefer contact games? Likert Scale from 1 (nobody) to 5 (everybody)

34. Do you think that your pupils are finding more difficult to respect the rules? Likert Scale from 1 (nobody) to 5 (everybody)

35. Do you think that your pupils are finding difficult to concentrate or to stay sitting? Likert Scale from 1 (nobody) to 5 (everybody)

APPENDIX 2

Questionnaire For Parents

This questionnaire is for all parents who have one or more children under the age of and it was created for assessing the impact that the recent COVID-19 pandemic has had on Italian families and on children. Your answer is important to fully understand the situation and to find the strategies to provide support in this delicate moment and that involves everybody.

We inform you that this questionnaire is anonymous, and it uses a third-party tool (for privacy policy of the third-party service click here: https://policies.google.com/privacy), the data collected with this tool will be processed in compliance with the Privacy Act Regulation (UE) 216/679.

Section 1

1. **State your gender**
   a. Female
   b. Male
2. **How old are you? _____**
3. **Where do you live? _____**
4. **Which is you level of education?**
   a. Primary school certificate
   b. Middle school certificate
   c. High school certificate
   d. Bachelor's degree
   e. Master's degree
   f. Other kinds of degree
5. **What is your job?**
   a. administrative / employee
   b. artisan / manual labourer
   c. police
   d. self-employed
   e. worker
   f. healthcare professional
   g. restaurateur
   h. other
6. **Have you started using a smart-working mode for your job?**
   a. yes
   b. No
7. **How many people is your family made up of?**
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5
   f. More than five people
8. **How many children have you got?**
   a. 1
   b. 2

c. More than two

9. **How old are they? (More answers are possible)**
   a. from 0 to 5
   b. from 6 to 10
   c. from 11 to 14
   d. older than 14 years old
10. **How would you define the impact that the recent COVID-19 pandemic might have on the global population?** Likert Scale from 0 to 10 (0 not at all important; 10 extremely important)
11. **How would you define the impact that the recent COVID-19 pandemic might have on children from 6 to 10 years old?** Likert Scale from 0 to 10 (0 not at all important; 10 extremely important)
12. **How would you define the impact that the recent COVID-19 pandemic might have on children from 11 to 14 years old?** Likert Scale from 0 to 10 (0 not at all important; 10 extremely important)
13. **How would you define the impact that the recent COVID-19 pandemic might have on children older than 14 years old?** Likert Scale from 0 to 10 (0 not at all important; 10 extremely important)
14. **Have you ever tested positive for Covid-19?**
   a. Yes
   b. No
   c. I'd rather not answer
15. **Have there been people who have tested positive for Covid-19 in your family or among your friends?**
   a. Yes
   b. No
   c. I'd rather not answer
16. **Have there been people who have died because of COVID-19 disease in your family?**
   a. Yes
   b. No
   c. I'd rather not answer
17. **Have you ever suffered from anxiety, even though it hasn't been diagnosed by a specialist?**
   a. Yes, in the past but not anymore
   b. Yes, in the last year
   c. Yes, for several years and still today
   d. No
18. **Have you ever suffered from depression, or a pronounced sadness, even though it hasn't been diagnosed by a specialist?**
   a. Yes, in the past but not anymore
   b. Yes, in the last year
   c. Yes, for several years and still today
   d. No
19. **Have you ever suffered from sleep disorders?**
   a. Yes, in the past but not anymore
   b. Yes, in the last year
   c. Yes, for several years and still today

d. No

20. Choose your child's age (if you have got more than one child of different ages you can choose both of them):

a. from 3 to10 years old
b. from 11 to 18 years old

Section 2

If you have got a child of 3 – 10 years old, answer the following questions.

21. Have you observed some of these behaviours in your child currently? (you can choose more than one answer)

a. Loss of language skills
b. Peeing in bed
c. Pooping on oneself
d. Difficulty in falling asleep
e. Nocturnal awakening
f. Refusal to fall asleep
g. Inconsolable crying
h. More irascibility
i. Motor restlessness
j. Fear of the dark
k. Crying at separation of you
l. other _____

22. How many times a day is your child exposed to news or imagine regarding COVI-19? Likert Scale from 0 (never) to 10 (always)

23. Does your child ask you about COVID-19?

a. Yes
b. No
c. Sometimes

24. How often do you talk about COVID-19 during the day? Likert Scale from 0 (never) to 10 (always)

25. Does your child show fear about the future?

a. Yes
b. No
c. Sometimes

26. Has your child asked questions about the future in this period?

a. Yes
b. No
c. Sometimes

27. Has your child asked questions about death in this period?

a. Yes
b. No
c. Sometimes

28. Has your child told you that he/she fears of losing his/her grandparents or his/her parents?

a. Yes
b. No
c. Sometimes

29. **Has your child started fearing to go to bed alone?**
    a. Yes
    b. No
    c. Sometimes
30. **Currently, do you think that for your child concentrating is:**
    a. The same
    b. Easier
    c. More difficult
31. **Do you think that, in the last year, your child in reading:**
    a. has improved
    b. has remained at the same level
    c. has worsened
32. **Do you think that, in the last year, your child in writing:**
    a. has improved
    b. has remained at the same level
    c. has worsened
33. **Do you think that, in the last year, your child in math:**
    a. has improved
    b. has remained at the same level
    c. has worsened
34. **Do you think that, in the last year, your child in studying:**
    a. has improved
    b. has remained at the same level
    c. has worsened
35. **The amount of your child's sleeping:**
    a. Has remained the same
    b. Has increased
    c. Has decreased
36. **Currently, how many hours a night does your child sleep?**
    a. Less than 5 hours
    b. 5
    c. 6
    d. 7
    e. 8
    f. 9
    g. More than 9 hours
37. **From 1 to 10, how difficult is for him/her to fall asleep**? Likert Scale from 0 (very easy) to 10 (very difficult)
38. **Has your child nocturnal awakenings?**
    a. Yes
    b. No
39. **Has your child nightmares?**
    a. Yes
    b. No
40. **In the morning, how rested does your child seem to you after having slept?** Likert Scale from 0 (little rested) to 10 (very rested)
41. **His/her eating habits:**

a. Have remained the same
b. He/she is hungrier and eats more
c. He/she is less hungry and eats less

42. Currently, do you think that your child is eating in a healthier manner?
a. Yes
b. No

43. Currently, do you think that your child is eating more sweets and carbohydrates?
a. Yes
b. No

44. The time that your child devotes to his/her hobbies:
a. Has remained the same
b. He/she devotes less time to his/her hobbies
c. He/she devotes more time to his/her hobbies

45. Does he/she do sport?
a. As before
b. More than before
c. Less than before

46. Has he/she had some of these exacerbations of chronic diseases that you have recognized?
a. Allergic rhinitis
b. Asthma
c. Atopic dermatitis
d. itch
e. gastroesophageal reflux
f. constipation (alvo stitico)
g. diarrhetic bowel
h. migraine
i. nothing
j. other_____

47. Has your child felt physical sensations that he/she can't explain to him/herself (Palpitations, chest pain, sore throat, feelings of strangeness or something else)?
a. Yes
b. No

48. How many physical sensations that he/she can't explain to him/herself does your child experience during the day (Palpitations, chest pain, sore throat, feelings of strangeness or something else)? Likert scale from 0 (none of them) to 10 (10 or more)

49. Does he/she feel more irritable or experience suddenly mood changes?
a. Yes
b. No

50. How many times in a day does your child experience mood changes? Likert scale from 0 (never) to 10 (more than 10 times a day).

51. Do you think that your child's physical contacts with people who live with him/her:
a. Have remained the same
b. Have decreased
c. Have increased

52. Do you think that your child's telephonic or telematic contacts with his/her friends:
a. Have remained the same

b. Have decreased
c. Have increased