

Article

A Year of Pandemic: Psychological Effects in Spanish Children from 3 to 11 Years of Age

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ABSTRACT

Background: After the lockdown, schools adopted measures to avoid infection, which changed pre-pandemic routines. We evaluated whether the new school conditions constituted a stress factor for children or contributed to their recovery after the impact of the lockdown period. **Method:** Participants included 291 families with children between 3 and 11 years of age. The children were assessed by parents through the Child and Adolescent Assessment System (SENA) at three time points: T1 (before COVID-19 confinement), T2 (after the children had spent between 4 and 6 weeks confined), and T3 (one year after the beginning of the pandemic). **Results:** For Preschoolers, no statistical differences were found in any scale or time point. For primary-school children, the differences between T1 and T3 were not significant. Comparisons between T2 and T3 showed significant differences in Willingness to study, Emotional regulation and Hyperactivity and impulsivity. **Conclusions:** Our results suggest that returning to school might have improved some dimensions of primary-school children's well-being. However, it seems that neither the confinement nor the restrictive measures have had a negative effect on our sample. To interpret these findings, we discuss the psychological factors of protection and vulnerability.

Un Año de Pandemia: Efectos Psicológicos en Niños Españoles de 3 a 11 Años

RESUMEN

Antecedentes: Tras el confinamiento, la escuela se adaptó a las restricciones para controlar el COVID-19. Evaluamos si el regreso al colegio constituyó un estresor para los niños o contribuyó a su recuperación tras el impacto del confinamiento. **Método:** Participaron 291 familias con niños entre 3 y 11 años. Los padres evaluaron a los niños a través del Sistema de Evaluación de Niños y Adolescentes (SENA) en tres momentos: T1 (unas semanas antes del confinamiento), T2 (después de estar entre 4 y 6 semanas confinados) y T3 (un año después del inicio de la pandemia). **Resultados:** Para los niños de Infantil, las comparaciones no mostraron diferencias en ninguna de las escalas y ninguno de los tiempos evaluados. Para los niños de Primaria, no se hallaron diferencias entre T1 y T3. La comparación entre T2 y T3 indicó una mejora en las escalas Disposición al estudio, Regulación emocional e Hiperactividad e impulsividad. **Conclusiones:** La vuelta al colegio contribuyó a mejorar algunas dimensiones en los niños de Primaria. Sin embargo, parece que ni el confinamiento ni las posteriores medidas restrictivas han tenido un impacto negativo en los niños de esta muestra. Para interpretar estos resultados discutimos los factores de protección y vulnerabilidad psicológica.

Palabras clave:

Efectos psicológicos
Crisis sanitaria COVID-19
Educación infantil
Educación primaria
Estudio longitudinal

On the 11th of March, 2020, the World Health Organization declared a global pandemic caused by COVID-19. This disease, which spread to 114 countries, has caused an unprecedented global epidemiological situation. The speed of transmission and the high numbers of people affected caused the governments of all countries to adopt extreme preventive measures. Total lockdowns, quarantines and social distancing measures have become a part of everyone's life in the last two years. The increase in cases and the appearance of different waves have led to containment measures that each country and each region have been imposing based on their specific circumstances at different times.

In Spain, six waves of different intensity have been experienced to date. The first measure, taken on the 14th of March, 2020 (*Real Decreto 463/2020, 2020*), decreed the total confinement of the population and the closure of schools, which lasted for 10 weeks. During this period, the children were confined or in partial isolation (as of the 26th of April, they were allowed to go out one hour a day). Between May 2020 and April 2022, more or less restrictive measures continued to be imposed (i.e., perimeter closures, remote work, closure of Autonomous Communities, travel restrictions, closure of entertainment venues, etc.), although the entire population were not completely confined again. With these restrictions, the school context underwent an important adaptation. In September 2020, the children returned to school under very different conditions than usual. The measures adopted in Spain for a safe return to school were the reduction in the number of students per classroom, measuring their temperature at the school entrance, the mandatory use of a mask and hydrogel, bubble groups, social distancing, the elimination of activities with physical contact and the division and restriction of use of outdoor space. In addition to compulsory measures in schools, children's social lives were severely curtailed. After-school activities were suspended and contact with family and friends was reduced.

This situation has caused a large number of researchers to ask how the pandemic has affected the psychological well-being of children. There was a large number of publications related to this issue between 2020 and 2022 (see *Marchi et al., 2021* or *Panda et al., 2020*). In Spain, *Amorós-Reche et al. (2022)* included 27 published studies in their systematic review with Spanish children and adolescents between 2020 and 2021.

Most studies, including meta-analyses and systematic reviews, find that the pandemic has had a negative impact on the psychological well-being and mental health of children and adolescents (*Duan et al., 2020; Ellis et al., 2020; Seçer & Ulas, 2021; Yue et al., 2020*). However, these reviews conclude that the evidence is mixed because other studies find no changes in children's psychological well-being and some even find improvements (*Adibelli & Sümen, 2020; Asanov et al., 2021; Romero et al., 2020; Tang et al., 2021*). For example, in Spain, *Romero et al. (2020)* evaluated 1,049 children between the ages of 3 and 12 through parental reports during lockdown. The results showed that most of the children did not experience significant behavioral changes, except in hyperactive behavior, where a significant proportion of the preschoolers worsened. At the same time, parents observed a maintenance of routines and a significant improvement in aspects such as prosociality, social bonding, and socially-oriented reflections, especially in school-age children. Along the same lines, in Italy, *Cusinato et al. (2020)* also did not find a decrease in well-being in children aged between 6 and 10 years, although they did find an increase in hyperactive behaviors. The parents of the children in this study reported a reduction in their

personal well-being, although they reported that the confinement had a positive impact on their relationship with their children by spending more time together. In another social and cultural context, *Adibelli & Sümen (2020)* found high levels of quality of life in a sample of 597 Turkish children aged between 7 and 13 years. This measure included six dimensions such as: physical well-being, emotional well-being, self-esteem, family, friends and school, and a disease module. Although parents reported some weight gain, more sleep, and increased Internet use in some children, the children's self-perception was not affected by the lockdown. In China, *Tang et al. (2021)* evaluated life satisfaction and mental health symptoms in a sample of 4,342 children from Shanghai. Although some children experienced symptoms of anxiety and depression (24% and 19%, respectively), most were very or extremely satisfied with their life during quarantine. In addition, 21% increased their life satisfaction during the school closure. In short, this mixed evidence shows that the experience of the pandemic and the lockdown has been very mixed and that resilience and well-being have coexisted with the increase in mental health problems.

A possible explanation for this coexistence of deterioration and improvement has to do with the factors that have been identified as protective and risk factors. It is not surprising that the studies obtain mixed results, given the epidemiological characteristics of the pandemic in the different regions of the world and the diversity of government measures to stop its expansion. Therefore, the mental health of some populations has been affected and that of others has not. According to *Marchi et al.'s (2021)* systematic review, some of the factors that have been identified as protective in children and adolescents are emotional regulation, resilience, physical exercise, parental self-efficacy, family functioning and social support; as risk factors are emotional reactivity, avoidance and high exposure to information and news. In addition, parental mental health problems and excessive use of the Internet, video games, and social media also correlated with poorer mental health in children and adolescents (*Dong et al., 2020; Fazeli et al., 2020; Russell et al., 2020; Shorer & Leibovich, 2020; Spinelli et al., 2020; Yue et al., 2020*). A study carried out in Spain, Italy and Portugal, with children aged between 3 and 18 years, identified the most effective coping strategies in reducing symptoms of anxiety and depression in children (*Delvecchio et al., 2022; Orgilés et al., 2021*). Thus, according to the parents, acceptance, focusing on the positive aspects of the situation, participation in social activities during quarantine (applause for the health workers, drawings on the windows, etc.) and acting as if nothing was happening or showing no concern were the most effective strategies to reduce anxious and depressive symptomatology. On the contrary, the children who often asked about the lockdown or the virus, who were angry with the situation, looked for support from other family members or changed the subject when their parents tried to talk to them about the pandemic, were the ones who showed greater psychological affectation. These behaviors have to do with avoidance and rumination, two strategies that have been related to symptoms of anxiety and depression (*Schäfer et al., 2017, cited in Orgilés et al., 2021*).

Now, what has happened beyond the impact of confinement and the first months of the pandemic? How have the children adapted to going back to school? Can we say that the negative or positive effects have persisted? In an attempt to answer these questions, in the present study, we compare three measures of the psychological well-being of a sample of children in Early Childhood and Primary

Education in Madrid, taken at three different times: the first measure was carried out a few weeks before the start of the lockdown, the second measurement was taken during the lockdown and the third measurement was taken one year after the start of the pandemic.

From a methodological point of view, it should be noted that most of the work carried out in these two years is cross-sectional and does not include measures prior to the pandemic. This poses an important problem for the interpretation of the results. Among the longitudinal studies carried out with children who have a previous measurement, [Marchi et al. \(2021\)](#) mention six. Of these six, one does not include measures during confinement or the pandemic but is restricted to the time of the declaration of the pandemic by the WHO. Of the other five, two studies find that children worsen in emotional variables -psychological distress in [Chen et al. \(2021\)](#) and depression in [Bignardi et al. \(2021\)](#)-, while the two others found no changes in depression and anxiety ([Teng et al., 2021](#)) or in internalizing, externalizing and stress problems ([Achterberg et al., 2021](#)). Our previous work showed only a worsening in variables related to self-regulation in children aged 6 to 10 years, but no change in depression or oppositional behavior during confinement. Likewise, we did not find any significant change in 3-year-old children ([Giménez-Dasí et al., 2020](#)). On the other hand, our previous work also showed that the anxiety levels of children aged between 6 and 11 years, assessed through self-report, decreased during confinement and even one year after the start of the pandemic, compared to the measure taken a few weeks before the start of the pandemic ([Giménez-Dasí et al., 2021](#)). These reductions in anxiety levels were statistically significant in the group of children aged between 8 and 11 years.

According to the review carried out by [Amorós-Reche et al. \(2022\)](#), in Spain only two longitudinal studies have been carried out with children during the pandemic that evaluate emotional problems, in addition to ours. Of these three works, one evaluates the role of children's emotional regulation and parenting practices in the adaptation to confinement without comparing possible changes ([Dominguez-Álvarez et al., 2020](#)) and another has no measurements prior to the pandemic ([Orgilés et al., 2020](#)). In this sense, as we will see later, our study has the strength of having previous measurements very close to the start of the pandemic and, despite having suffered the effects of sample attrition, having been able to evaluate a certain number of participants in different moments throughout the first year of the pandemic.

The general objective of the present study was to check whether the levels of children's well-being had changed one year after the start of the pandemic. More specifically, we wanted to know if going back to school under special conditions had been a new stressor in the children's lives or, on the contrary, had contributed to their recovery after the impact of confinement. To do this, parents evaluated their children through a series of scales that measure possible psychological problems (Anxiety, Depression, Attentional problems, Hyperactivity and impulsivity, Defiant behaviors, Emotional regulation and Willingness to study). Our initial hypothesis was that going back to school would have contributed towards improving children's well-being. Thus, we expected similar scores when comparing T1 and T3, that is, the measurements prior to the start of the pandemic and those obtained one year later. In addition, we expected significant differences between T2 and T3 in the scales in which the children had shown a worsening in T2 (i.e., Hyperactivity and impulsivity, Emotional regulation, Willingness

to study and Attentional problems). The present study reports the three measures mentioned: T1 (before the start of the lockdown), T2 (during the lockdown) and T3 (one year after the start of the pandemic), but it focuses specifically on the comparison with the third assessment (T3), as the comparison between T1 and T2 has been previously published ([Giménez-Dasí et al., 2020](#)).

Method

Participants

In this study, a total of 291 families participated. This is a convenience sample composed of 76 families of Early Childhood Education children (45 girls) and 215 families of Primary Education children (112 girls) from three courses (1st, 3rd and 5th class). The children attended two public educational centers in the northwest area of Madrid and belonged to average socioeconomic backgrounds. The mean ages of each school year at each of the measurement times are shown in [Table 1](#).

Instruments

The System for the Evaluation of Children and Adolescents (Sistema de Evaluación de Niños y Adolescentes - SENA; [Fernández-Pinto, et al., 2015](#)) questionnaire, scaled with the Spanish population, was used. The SENA is a test that includes different types of scales (control scales, problem scales, vulnerability scales and personal resources scales) and provides a complete assessment, through more than 100 items, which allows the detection of behavior, affective and social problems. For our study, we selected some of the scales included in the problem scales, in particular, those related to psychological adjustment (Anxiety, Attentional problems, Defiant behavior, Depression, Hyperactivity and impulsivity, Willingness to study and Emotional regulation). These scales have a total of 55 items. Each item is scored on a Likert-type scale between 1 (never or almost never) and 5 (always or almost always). For all the scales, except for the Willingness to study scale, the lowest scores indicate the absence of problems and scores greater than 3 indicate the presence of some type of difficulty. The Willingness to study scale is reverse due to the wording of the items (i.e. "Keeps homework up to date", "Works hard in studies"). On the Willingness to Study scale, a score below 3 indicates some difficulty.

The measurements were obtained at three moments: one month before the start of the pandemic (January-February 2020) (T1), during confinement (April-May 2020) (T2) and one year after the start of the pandemic (February 2021) (T3). The reliability coefficient obtained for the sample was adequate ($\alpha = .80$). The scores of the reliability coefficients of the scales for the Early Childhood Education group are described in [Table 2](#) and were acceptable and good. The reliability of the scales evaluated in Primary is presented below: Anxiety (T1 = .92, T3 = .91); Depression (T1 = .85, T2 = .92, T3 = .91); Attentional problems (T1 = .85, T2 = .90, T3 = .90), Hyperactivity and impulsivity (T1 = .81, T2 = .85, T3 = .85); Defiant behavior (T1 = .67, T2 = .90, T3 = .75); Emotional regulation (T1 = .84, T2 = .73, T3 = .75) and Willingness to study (T1 = .70, T2 = .70, T3 = .81). All coefficients at all times were acceptable and good, except for Defiant behavior at T1, which was somewhat low.

Table 1.

Number of participants (N) and percentage by gender (boys and girls) and educational grade. Mean scores (M) and Standard Deviations (SD) in age in the three test times (T1, T2 and T3) by educational Grade.

Educational Grade	Boys	Girls	Total	T1 Age		T2 Age		T3 Age	
				M	SD	M	SD	M	SD
Early childhood	31 (40%)	45 (60%)	76	3.1	0.35	3.2	0.45	4.1	0.35
1st Primary	42 (55%)	34 (45%)	76	6.1	0.39	6.3	0.51	7.1	0.39
3rd Primary	25 (36%)	45 (64%)	70	8.1	0.40	8.3	0.51	9.1	0.40
5th Primary	36 (52%)	33 (48%)	69	10.0	0.30	10.3	0.48	11.1	0.30
Total	134(46%)	157(54%)	291						

Procedure

The researchers contacted the two schools in 2019 to carry out a study that was later modified due to the health situation. The families that participated in the study did so voluntarily and were contacted through the management of the educational center that the children attended. The families were informed of the initial purpose of the study, as well as its subsequent modifications. The initial study already included two measurement moments, although it was later extended to 3 due to the health situation and the follow-up we carried out on the psychological state of the children. Thus, the families were informed from the first contact that it would be necessary to fill in the questionnaires at various points in time. This information was sent in writing, together with the informed consent, through the educational center to each families' email. Likewise, all the questionnaires were sent through the educational center to the families' email and were completed online through Google Forms. The T2 questionnaire had a reduced length (the Anxiety scale was suppressed), with the aim of minimizing the discomfort and possible overload of the participants. This research was approved by the Ethics Committee of our university institution.

Data Analyses

As we have already mentioned, the families had answered the questionnaire during the month of February 2020, a few weeks before the confinement. This situation could sensitize the parents when answering the questionnaire in the successive applications. On the other hand, not all the families responded to the questionnaires in the three assessment moments. To control the possible sensitivity to the test of the participants who answered the first time (T1), the scores of all the scales in both groups -with and without assessment in T1- were compared to the measure T3. To do so, we used a MANOVA in which the main factor was having carried out the assessment at T1. With this analysis, we wanted to rule out that the T1 measurement had interfered with the T3 measurement. The results of the comparison between the differences in the T3 scores with or without assessment in T1 were not significant (Pillai trace $F(7, 42) = 0.33, p = .93, \eta_p^2 = .05$). Therefore, as expected, we did not find differences in the univariate tests either ($p > .45$ in all comparisons).

To assess whether there were differences in psychological adjustment between the three measurement moments, a repeated measures (RM) ANOVA was performed in which psychological adjustment was contrasted at the three moments, observing the possible differences by course and sex. In the Primary Education group, the effect of the course was compared. If there were differences between the courses then we would have to compare the times using

the course as a covariate. Since the SENA scales are different in content and number of items for children in Early Childhood Education (3-6 years) and Primary Education (6-12 years), the statistical analysis was performed for each group separately.

Results

Once the possible bias of the measures repeated over time had been ruled out, we now present the results of the analyzes for each educational cycle separately.

Results by educational cycle

Early Childhood Education. Preliminary analyzes indicated no gender differences. Likewise, we verified that the assumptions of normality in the distribution were fulfilled in each one of the variables and at the three times ($p > .05$).

The mean scores of the parents' assessments for all the scales and at the three measurement times were less than 3, as can be seen in Table 2. As the comparison between T1 and T2 has already been published (Giménez-Dasi et al., 2020), in the present study, only the T1-T3 and T2-T3 comparisons are noted.

Table 2.

Mean scores (M), Standard Deviation (SD) and reliability coefficient (α) obtained in SENA scales in the three measurement times (T1, T2 and T3) in the Early Childhood Education group.

Scales	T1			T2			T3		
	M	SD	α	M	SD	α	M	SD	α
Defiant behavior	2.31	0.72	.85	2.55	0.83	.90	2.44	0.89	.90
Depression	1.23	0.28	.75	1.28	0.47	.92	1.23	0.36	.92
Hyperactivity and impulsivity	2.66	0.70	.75	2.79	0.89	.90	2.57	0.84	.87
Attentional problems	2.11	0.69	.89	2.41	0.80	.90	2.12	0.77	.92
Emotional regulation	2.29	0.66	.82	2.48	0.89	.89	2.38	0.65	.75
Anxiety	1.68	0.41	.82	--	--	--	1.88	0.83	.90

For children in Early Childhood Education, the comparison between T1 and T3 indicated that there were no significant differences in any of the 6 scales evaluated (Pillai Trace: $F(6, 8) = 0.43, p = .84, \eta_p^2 = .24$) (see Table 3).

Regarding the comparison between T2 and T3, no significant differences were found in the evaluated scales (Pillai trace, $F(5, 12) = 0.53, p = .75, \eta_p^2 = .18$) nor were any differences observed in the univariate tests (see Table 3).

Table 3.
Univariate test results on the SENA scales between T1-T3 and T2-T3 in the Early Childhood Education group.

SENA scales	T1-T3 differences		T2-T3 differences	
	F(1, 13)	p	F(1, 16)	p
Defiant behavior	0.27	.61	0.01	.91
Depression	1.01	.33	0.50	.49
Hyperactivity and impulsivity	0.18	.68	0.07	.79
Attentional problems	0.06	.82	0.71	.41
Emotional regulation	1.32	.27	0.65	.43
Anxiety	1.64	.22	.*	-

Primary Education.

Differences between the courses: Before evaluating the longitudinal changes through the measurement times, we considered it necessary to check whether there were differences in scores between the courses. If this turned out to be the case, the longitudinal analysis should use course as a covariate. To analyze the differences between the courses, we used a one-factor ANOVA (course) with the simulation for 1000 samples with a confidence interval of 99%.

Table 4 shows the scores of the scales evaluated for each course and for each moment of measurement. At T1, significant differences were found between the courses in the scales of Hyperactivity and impulsivity, Attentional problems and Defiant behavior. At T2, the scales that revealed differences between the courses were Hyperactivity and impulsivity, Attentional problems and Emotional regulation. At T3, differences were found between the courses in the scales of Hyperactivity and impulsivity and Attentional problems. The effect size of these differences was medium to large (see Table 4). The result of this analysis advises us to use the course as a covariate to be able to detect whether there are differences between T1 and T3 and between T2 and T3.

Table 4.
Means, Standard Deviations, and Unifactorial ANOVA Statistics for Study Variables.

SENA Scales	GRADE	T1					T2					T3				
		N	M	SD	F(2,73)	η²	N	M	SD	F(2, 103)	η²	N	M	SD	F(2, 49)	η²
Anxiety	1	28	2.06	0.81	2.18	.06						19	2.05	0.61	2.72	.10
	3	24	2.55	1.01							16	2.48	0.93			
	5	22	2.26	0.85							15	1.87	0.71			
Attentional problems	1	28	2.02	0.72	4.64**	.12	40	2.49	0.81	4.02*	.07	19	1.91	0.57	6.31**	.21
	3	24	2.60	0.84			35	2.65	0.89			16	2.55	0.84		
	5	22	2.01	0.76			29	2.09	0.68			15	1.73	0.62		
Defiant behavior	1	28	2.26	0.61	3.14*	.08	40	2.42	0.72	1.98	.04	19	2.19	0.68	1.02	.04
	3	24	2.37	0.65			35	2.51	0.75			16	2.43	0.83		
	5	22	1.97	0.37			29	2.17	0.66			15	2.06	0.70		
Depression	1	28	1.22	0.27	4.29**	.11	40	1.66	0.72	0.16	.01	19	1.42	0.41	1.75	.07
	3	24	1.47	0.44			35	1.59	0.72			16	1.65	0.54		
	5	22	1.93	0.65			29	1.57	0.62			15	1.85	0.97		
Hyperactivity and impulsivity	1	28	2.34	0.66	5.11**	.13	40	2.76	0.81	6.82**	.12	19	2.26	0.66	6.86**	.23
	3	24	2.62	0.87			35	2.86	0.94			16	2.66	0.91		
	5	23	1.96	0.66			29	2.14	0.74			15	1.72	0.52		
Willingness to study	1	28	4.39	0.60	4.06	.10	40	3.74	0.93	0.48	.01	19	4.38	0.69	1.75	.07
	3	24	3.86	0.65			35	3.75	0.64			16	4.02	0.96		
	5	22	4.25	0.79			29	3.90	0.62			15	4.48	0.45		
Emotional regulation	1	28	1.96	0.69	2.78	.07	40	2.41	0.94	2.97*	.06	19	1.94	0.72	2.71	.10
	3	24	2.42	0.74			35	2.62	0.90			16	2.48	0.99		
	5	22	2.06	0.75			29	2.07	0.88			15	1.82	0.84		

*p < .05. **p < .01

Comparison between measurement times

T1-T3 Comparison

Before describing the results, it is necessary to point out that, of the measurements obtained at both times (one year between them), only 34 families coincided. The general multivariate test indicated that there were no significant differences between the total means of the two times (Pillai trace, $F(7, 26) = 0.41, p = .89$) (see Figure 1). Therefore, within-subject univariate tests did not indicate significant differences between T1 and T3 on any of the scales ($p \geq .25$ for all comparisons).

T2-T3 Comparison

In this comparison we have taken into account the covariate only for the two dimensions whose differences between the courses were significant (see Table 4). The general multivariate test revealed significant differences between the total means of the two times calculated with the course covariate (Pillai trace, $F(6, 37) = 1.51, p < .001, \eta_p^2 = .20$). When comparing the mean scores between T2 and T3 ($N=44$), a decrease is observed in all the scales, except for Depression (see Figure 2). Univariate analyzes revealed significant differences in the Willingness to study ($F(1, 42) = 5.52, p = .02, \eta_p^2 = .12$), Emotional regulation ($F(1, 42) = 8.79, p = .005, \eta_p^2 = .12$) and Hyperactivity and impulsivity ($F(1, 42) = 5.20, p = .03, \eta_p^2 = .11$) scales. The comparison for this last scale was not significant when the covariate was included ($p = .24$). The Attentional problems scale obtained a trend result ($F(1, 42) = 3.78, p = .06, \eta_p^2 = .08$), but with the covariate, it was not significant ($p = .42$). The rest of the scales were not significant (all $p > .11$).

Figure 1.
Scores obtained before (T1) and one year after the beginning of the pandemic (T3) in the scales evaluated in Primary Education children.

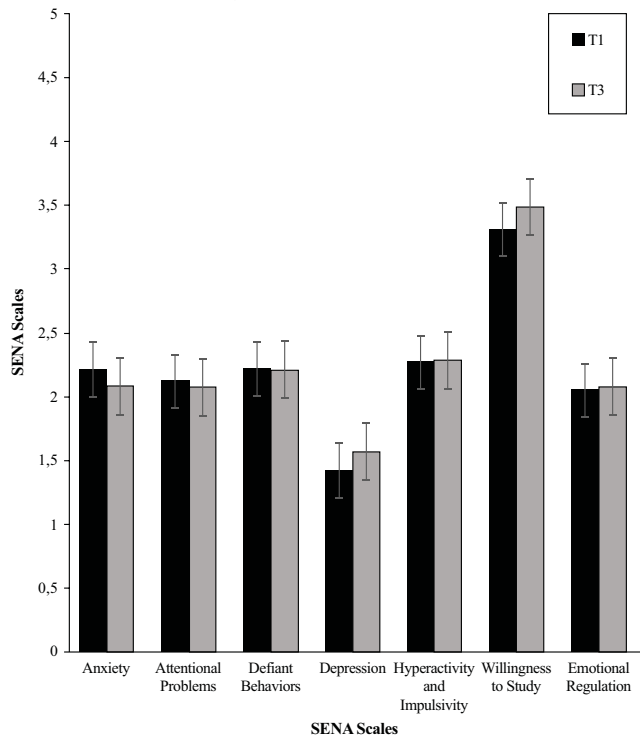
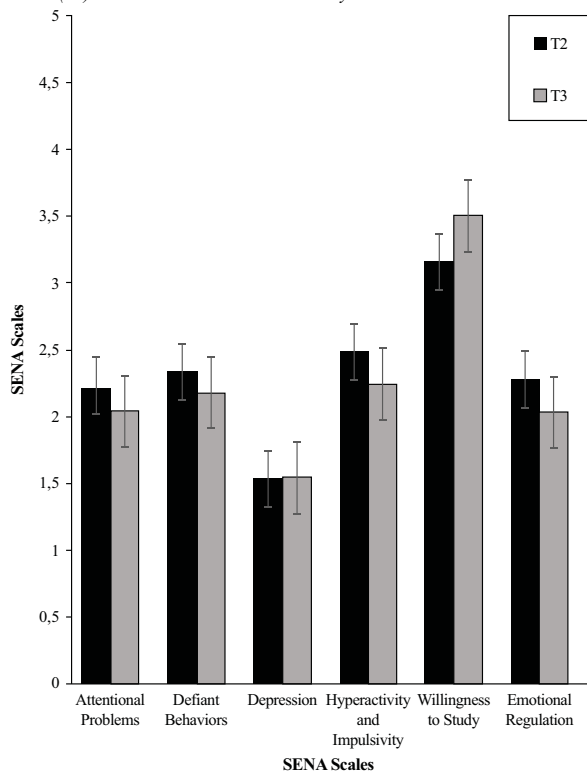


Figure 2.
Scores obtained during confinement (T2) and one year after the beginning of the pandemic (T3) in the scales evaluated in Primary Education children.



Discussion

The objective of the present study was to verify whether the levels of well-being of the children evaluated by the parents had changed one year after the start of the pandemic. The results of the assessments carried out in February and March 2021 (T3), compared to those carried out before the start of the pandemic (T1) and during confinement (T2), have not shown any significant differences in the children from Early Childhood Education, yet some specific differences are observed in Primary School children. In this last age group, changes are found on some scales between the confinement stage and the return to school stage. Specifically, Emotional regulation, Willingness to study and Hyperactivity and impulsivity (the latter when the covariate is not included) have improved significantly.

In general, the results of our work allow us to establish two conclusions: 1) the children in Early Childhood Education did not experience changes due to the pandemic. Neither the confinement nor the return to school with the special measures seem to have modified their well-being, according to the parents; 2) Primary School children in our sample seem to have improved on some scales compared to the levels shown in confinement. However, the absence of differences between T1 and T3 on all scales suggests that the pandemic is not significantly affecting their well-being. Similarly, going back to school with all the special measures does not seem to have affected their well-being either compared to the levels found before the start of the pandemic. Next, we will discuss both results.

The result of the lack of impact on children in Early Childhood Education is consistent with that obtained in our previous study, where the emotional well-being of these children was compared in February 2020, before the start of confinement, and in April of the same year after six weeks of total confinement (Giménez-Dasí et al., 2020). As has been already argued in our previous study, it seems that young children are more protected from reality than older ones. This protection comes, on the one hand, from external agents such as their family and school environment and, on the other, from internal factors such as the cognitive system of young children. In this sense, the care that young children receive from their families and teachers has the objective of promoting stability in their lives. In the case of the health crisis, it is possible to think that families and teachers have favored that the restrictions and concerns derived from this situation affect children of these ages minimally. The protection of the cognitive system of these younger children is due to the fact that it works to a great extent within the framework of fiction (Harris, 2000). Fiction plays a very relevant role at these ages and is a fundamental element for development and learning. It is possible that the time and cognitive effort that children have dedicated to fiction, during and after confinement, have been protective elements of psychological well-being in adverse circumstances, such as the time of the pandemic (Giménez-Dasí et al., 2020).

Along the same lines, a study on the emotions of children at an early age (up to 4 years old) during confinement found that joy was the most common emotion, which would indicate the ability of the little ones to adapt to new situations (Serrano-Martínez, 2020). In other studies, it has been found that when all age groups are analyzed together, from the age of 3, negative emotions such as fear or sadness predominate, although there is a tendency to show more

emotional difficulties at older ages and during adolescence, which would be in line with our results (see, for example, [García-Adasme et al., 2021](#)).

In the Primary Education group, we found no differences between T1 and T3 on any scale. The number of restrictive measures that the children have been subjected to does not appear to have had an impact on their well-being or to have caused significant stress to them. Perhaps these stressors are compensated by other protectors of a social nature already mentioned in the scientific literature ([Marchi et al., 2021](#)). Regarding the comparison between the time of confinement (T2) and the return to school (T3), some improvements have been found, specifically, in Hyperactivity and impulsivity, Emotional Regulation and Willingness to study (remember that this scale scores inversely and a higher score indicates fewer problems). It is possible that some protective factors have had an impact on these improvements (i.e., contact with peers, physical exercise, return to certain normal routines and greater social support) and that the reduction of some risk factors has also been positive (i.e., excessive use of devices and exposure to information and news) ([Marchi et al., 2021](#)).

Within the protective factors, from our point of view, the practice of physical exercise deserves special attention. There is increasing evidence in favor of the impact of physical exercise in aspects closely related to the measures we have taken. Thus, different previous studies found that physical exercise in children and adolescents has a positive impact on aspects such as hyperactivity, emotional regulation and competence, anxiety and depression ([Gapin y Etnier, 2010](#); [Gapin, et al., 2011](#); [McPhie & Rawana, 2015](#); [González, et al., 2017](#); [Vaquero Solís, et al., 2018](#); [Medina & Reverte, 2019](#), among others). Although our work has not evaluated this variable, it is very possible that, as previous studies in relation to the pandemic pointed out, some of the improvements found are due to increased physical activity after returning to school ([Hurter, et al., 2022](#); [Montalva-Valenzuela, et al., 2022](#)). In addition, reintegrating into their usual school occupation and being able to be in contact with their peers and with the people in their school environment could have provided an important social support that has mitigated the negative effects of the restrictions derived from the health situation. On the other hand, numerous studies have shown the negative impact that the excessive use of technology has had on children during the period of confinement ([Chen et al., 2021](#); [Dong et al., 2020](#); [Fazeli et al., 2020](#); [Teng et al., 2021](#)). Thus, the return to school has had an impact on the reduction of the time of technology use and has possibly led to a decrease in hyperactive behaviors and imbalances in emotional regulation.

Finally, regarding the scale that evaluates Willingness to study, we also found a significant improvement when comparing confinement (T2) with going back to school (T3). The imposition of distance learning as a result of the pandemic has caused many studies to evaluate the effects of this way of learning on children and adolescents. Although there are mixed outcomes and many factors affect each child's learning, most studies find that teaching during lockdown led to a decrease in student learning (see [Panagouli et al., 2021](#) for a review). In addition, younger children seem to suffer more from the negative consequences of this way of teaching, due to their poor ability to maintain sustained attention and their poorer autonomy to learn and the use of technology ([Engzell et al., 2021](#); [Gore et al., 2021](#); [Schult et al., 2022](#); [Tomasik et al., 2021](#);

[Vainikainen et al., 2021](#)). A study carried out in Italy, in which the mothers of 1601 children were asked about the experience of distance education, showed that the greatest difficulties perceived by the mothers referred to Primary school children ([Scarpellini et al., 2021](#)). A very important proportion indicated a deterioration in the quality of children's learning (40%) and they thought that this type of teaching was not an adequate way of learning (72%) due to the great need that children had for their parents to substitute to the teacher (78%). On the other hand, Primary school teachers have also indicated a lack of preparation in their digital skills. This lack of competence, in addition to being an added source of stress, may have affected the quality of teaching ([Andía Celaya, et al., 2020](#); [Pérez Escoda & Rodríguez Conde, 2016](#)). In this sense, our results suggest that going back to school may have influenced the improvement of children's involvement in schoolwork, reflected, for example, in the improvement in their willingness to study, and support the proposal of other studies on the need to maintain face-to-face teaching, especially in the case of Primary Education (i.e., [Schult et al., 2022](#)).

In short, the results of this study support the hypothesis that going back to school may have contributed towards improving children's emotional well-being and that neither the pandemic nor the restrictive measures had a negative effect on the children in our sample. These results differ from the studies that indicate that the pandemic has brought on more social and emotional instability to children, but, as we have already discussed in the introduction, our results are not comparable to those of other studies that do not have previous measures. A strength of this work is that we have been able to know the psychological state of children in their daily lives prior to the pandemic and longitudinally contrast (with the limitations of sample attrition previously explained) its effects on their well-being. The clearest hypothesis that would explain this maintenance of the well-being levels of the participants can be attributed to the socioeconomic situation of the sample. As other previous works have found, socioeconomic status (SES) has turned out to be a key protective factor regarding the impact of the pandemic in all areas ([Bryant et al., 2020](#); [Panagouli et al., 2021](#); [UNICEF, 2021](#)). For example, through a study carried out in 19 countries and with more than 4,000 adults, [Treviño et al. \(2021\)](#) found that SES was an important predictor of parental involvement in children's educational and leisure activities during the pandemic in all countries studied. Given that the participants in our study belong to the middle and upper middle classes, the effects produced by the pandemic in the economic and social spheres do not seem to have worsened their living conditions. Families may not have been seriously affected by the consequences that the pandemic has brought (unemployment, illness, family losses, etc.). It should be considered whether the socioeconomic environment has provided greater stability, contrasting with other studies with populations in a more disadvantaged situation (e.g., [Vallejo-Slocker et al., 2020](#)). In this line, [Vallejo-Slocker et al., \(2022\)](#) study with a vulnerable population one year after the start of the pandemic shows a worsening of the mental health of this group.

Regarding the limitations of the present study, we can highlight that, as they are convenience samples, they are not representative of the population and, therefore, the results are not generalizable. This is something common in the studies that address the situation of the health crisis due to COVID-19. In our case, the participants

are children from a stable socioeconomic background and without associated problems. The sample size is another limitation as, being a longitudinal study, it has suffered a significant experimental mortality throughout the three measurement times. In future research, it would be important to take into account factors related to the well-being of minors during the pandemic, such as age and socioeconomic conditions. In addition, it would be interesting to continue evaluating these areas to detect possible changes depending on how the health crisis evolves.

Despite the limitations, the results of the present study suggest that, under some circumstances, children have not experienced a worsening in their well-being after the COVID-19 pandemic. These children have not suffered a detriment in their emotional well-being that could be due to the fact that they start from a stable socioeconomic environment that, perhaps, has suffered less from the consequences of the pandemic and that has allowed certain protective factors to act. The results of this study provide relevant data on the status of the participants before the start of the pandemic and throughout their longitudinal follow-up. At the moment, there are no studies that can provide data like these, at least in Spain.

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