

Article

Stressful Life Events in Children Aged 3 to 15 Years During the COVID-19 Pandemic: A Latent Class Analysis

Mireia Orgilés¹, Samuel Tomczyk², Víctor Amorós-Reche¹, José P. Espada¹ and Alexandra Morales¹

¹ Universidad Miguel Hernández.

² University of Greifswald.

ARTICLE INFO

Received: April 26, 2022

Accepted: July 30, 2022

Keywords:

COVID-19 pandemic
Latent Class Analysis
Stressful life events
Children

ABSTRACT

Background: Although several studies have reported an increase in psychological problems during the COVID-19 pandemic, the impact of stressful life events on Spanish children and adolescents using a person-oriented statistical approach and the relationships between the profiles and emotional and behavioral symptoms have not yet been examined. The present study aims to identify profiles of Spanish children and adolescents, considering life-threatening stressful events during the COVID-19 pandemic. **Method:** Participants were 252 parents of children aged 3 to 15 years old who completed an online structured questionnaire that collected information about stressful life events related to the pandemic and its impact on their children's welfare. **Results:** Through Latent Class Analysis (LCA), four profiles of children and adolescents were found according to the stressful events experienced: "COVID infection, social confinement," "economic loss," "reduced social contact" and "parental stress," with no significant age or gender differences. Reduction in social contact was the most prevalent stressor. Comparisons of psychological symptoms across latent classes were analyzed. **Conclusions:** The findings increase our understanding of how stressful life events during the COVID-19 situation impacted young people's psychological welfare and highlight the need to promote strategies to prevent emotional problems during a pandemic considering the identified profiles.

Eventos Vitales Estresantes en Niños de 3 a 15 Años Durante la Pandemia de COVID-19: Un Análisis de Clases Latentes

RESUMEN

Antecedentes: Aunque diversos estudios han informado sobre el aumento de problemas psicológicos durante la pandemia de COVID-19, hasta el momento no se ha examinado el impacto de los eventos vitales estresantes en niños y adolescentes mediante un enfoque estadístico orientado a la persona, y la relación entre los perfiles y los síntomas emocionales y conductuales. El presente estudio tiene como objetivo determinar perfiles identificativos de niños y adolescentes españoles, ante eventos estresantes de riesgo durante la pandemia. **Método:** Participaron 252 padres de niños de 3 a 15 años, quienes completaron un cuestionario estructurado online que recopiló información sobre eventos estresantes relacionados con la pandemia y sobre su impacto en el bienestar de sus hijos. **Resultados:** Mediante Análisis de Clases Latentes (LCA), se encontraron cuatro perfiles, según los eventos estresantes experimentados: "Infección por COVID, encierro social," "pérdida económica," "contacto social reducido" y "estrés de los padres," sin diferencias significativas en las variables edad y género. La reducción del contacto social fue el estresor más prevalente. Se analizaron las comparaciones de síntomas psicológicos entre clases latentes. **Conclusiones:** Los hallazgos resaltan la necesidad de promover estrategias para prevenir problemas emocionales durante la pandemia.

Palabras clave:

Pandemia de COVID-19
Análisis de clases latentes
Eventos estresantes de la vida
Niños

After its appearance in Wuhan in December 2019, SARS-CoV-2 spread all over the world until the World Health Organization (World Health Organisation, 2021) declared COVID-19 a pandemic on March 11th, 2020. Because of the health emergency, a State of Alarm was decreed in Spain on March 14th, involving a limitation on freedom of movement for many activities, as well as the suspension of educational activity (Real Decreto 463/2020). Confinement began on that date, and children under 14 years old were not allowed to go outside until April 26th, 2020 (Orden SND/370/2020), six weeks later. The confinement ended on June 21st, but the scenario it left behind differed from the one before the pandemic.

The COVID-19 pandemic has negatively impacted the mental health of children and adolescents (Delvecchio et al., 2022). Although confinement provoked feelings of happiness and security in children because they were with their families, it also implied feeling nervous, sad, and afraid (Idoiaga et al., 2020). After a month of the pandemic, a large-scale study in the United Kingdom revealed an increase in emotional, behavioral, and attentional symptoms in primary school aged children (Pearcey et al., 2020). The same project found that the most significant behavioral and attentional difficulties occurred during the times of harshest restrictions (Creswell et al., 2021). Vulnerable populations, such as individuals with ADHD, may have experienced even greater psychological difficulties (Cortese et al., 2020). In Spanish youth, a systematic review conducted by Amorós-Reche et al. (2022) showed a high incidence of emotional problems during the early stages of the pandemic, especially in girls and older children and adolescents. Anxiety in Spanish children and adolescents increased as the confinement progressed and decreased after allowing daily walks (Orgilés, Francisco et al., 2021). In addition to emotional problems, Gómez-Becerra et al. (2020) also noted an increase of behavioral and peer problems and hyperactivity during confinement. Along the same line, behavioral, hyperactivity, and prosociality problems were observed (Andrés-Romero et al., 2021), and a worsening of adolescents' self-concept was found during the pandemic (González-Valero et al., 2020). More intense psychological symptoms were also observed in children and adolescents after the beginning of the pandemic by welfare and prevention systems (Vallejo-Slocker et al., 2020), increasing 1 year later (Vallejo-Slocker et al., 2022).

Many children experienced stressful life events during the COVID-19 pandemic, such as a child's quarantine on suspicion of contagion, which includes isolation and separation from the family (Imran et al., 2020). In addition, because of the pandemic, children and adolescents developed new fears related to the disease, for instance, the fear of leaving home, spreading COVID-19 to their relatives (Idoiaga et al., 2020; Waite et al., 2020), or infecting themselves, which has been related to more significant emotional symptoms (Gómez-Becerra et al., 2020; Sandín et al., 2021). The higher impact on depression and anxiety in the children of health workers may be due to a greater presence of various fears: contagion, separation, or loss of their parents (Almis et al., 2022). Likewise, the death from COVID-19 of someone close to children and adolescents provokes their anger (Forte et al., 2021) and can pose a risk for internalizing and externalizing problems (Liang et al., 2022).

Furthermore, the COVID-19 pandemic has led to changes in routine practices, such as schooling. Several studies report a high perceived workload during confinement, both among Spanish adolescents (Berasategi-Sancho, Idoiaga-Mondragon, Ozamiz-Etxebarria et al., 2021) and their parents (Berasategi-Sancho,

Idoiaga-Mondragon, Dosil-Santamaria et al., 2021). More conduct and hyperactivity-inattention problems in adolescents were associated with arguments about homework with parents (Ezpeleta et al., 2020). Also, to avoid the transmission of the virus, the educational system was changed towards an online or rotating format. Tzankova et al. (2022) reported that, for some students, this system change also contributed to an increase in the workload and caused modifications in the routines and difficulties in peer relationships, among other areas. Those students who attended remote classes also presented lower academic, emotional, and social wellbeing (Duckworth et al., 2021). Thus, the lack of social contact the school provides can lead to some problems. Due to the restrictions, children and adolescents could not carry out social activities such as attending birthday parties, meeting their friends, or visiting relatives (Imran et al., 2020). The feeling of loneliness during the pandemic has been associated with greater psychological symptomatology and distress (Cooper et al., 2021). Finally, the pandemic's beginning led to a significant change in the routines of children and adolescents (Andrés-Romero et al., 2021; Romero et al., 2020), as well as an increase in sedentary lifestyle (Medrano et al., 2021). Ilari et al. (2022) observed a decrease in children and adolescents' extracurricular activities, especially sports activities. The change in routines has been associated with more significant psychological difficulties (Andrés-Romero et al., 2021).

On another note, the COVID-19 crisis has also affected families' economic situation. Skripkauskaitė et al. (2021) observed that British children and adolescents from low-income families did not show any improvements in psychological symptoms 1 year after the onset of the pandemic compared to those with higher incomes. In the same vein, according to Low and Mounts (2022), family difficulties in affording certain basic goods have negatively impacted adolescents' wellbeing. This relationship is mediated by the parents' psychological stress, such that, if parents are worried about the economic situation and feel stressed, various family conflicts may emerge. In fact, increased stress in adults, with a high incidence during the pandemic (Odrizola-González et al., 2020; Rodríguez et al., 2020), has been related to emotional problems in their children (Andrés-Romero et al., 2021; Orgilés, Morales, Delvecchio et al., 2020; Romero et al., 2020). Moreover, according to Ezpeleta et al. (2020), a worse relationship between adolescents and their parents was associated with higher emotional, conduct, and hyperactivity-inattention problems. The pandemic has also led to an increase of work-to-family conflicts, in which the greater importance granted to work interferes with family roles (Kara et al., 2021). Parents with high levels of this type of conflict also had a less positive relationship with their children (Verweij et al., 2021).

Several studies have reported the presence and increase of psychological problems in children and adolescents associated with the COVID-19 pandemic (Orgilés, Espada, Delvecchio et al., 2021; Orgilés et al., 2021). These problems were worse if the children practiced disengagement or nonactive coping strategies (Domínguez-Álvarez et al., 2020; Vallejo-Slocker et al., 2022), and, more concretely, an emotion-oriented style (Delvecchio et al., 2022; Orgilés, Morales et al., 2021). While many studies have pointed to the psychosocial burden of the pandemic, the differential impact of different types of life events during the pandemic has rarely been studied. Moreover, no studies have examined stressful life events in the Spanish child population using a person-oriented statistical approach. Therefore, the main objective of the current study was

to identify profiles of children based on the stressful life events to which they were exposed during the COVID-19 pandemic. First, we will report the prevalence of children exposed to each stressful life event. Subsequently, we will examine latent classes regarding age and gender differences and psychological symptoms, which include anxiety and mood symptoms, sleep, behavioral, feeding, and cognitive disturbances.

Method

Participants

The inclusion criteria to participate in this study were: a) being parents or caregivers of children between 3 and 15 years old, b) living with their children during the home confinement due to COVID-19, and c) residing in Spain. Participants were 252 parents (84.8% females) who informed about their children aged from 3 to 15 years old (45.5% girls). Parents' mean age of parents was 41.39 ($SD = 5.45$; range 29-60), and mean age of their children was 7.61 ($SD = 3.44$). Most parents were married (86.2%), a small proportion were single (13.3%), and only 0.5% reported an unspecified marital status. The monthly family income was distributed as follows: up to 999 euros (7.5%), between 1000 and 1999 euros (28.6%), between 2000 and 2999 (29.1%), between 3000 and 4999 (28.1%), and 5000 or more euros (6.7%). Respondents' educational level was as follows: primary school (5.5%), secondary school (20.2%), undergraduate (40.8%), and doctoral or master's level (33.5%).

Instruments

General questionnaire. Participants provided information about their age and gender as well as their child's age and gender at the time of the survey.

Stressful Life Events Related to Pandemic Inventory (Orgilés, Espada, & Morales, 2021). We created an ad hoc 25-item inventory for this study to collect information about stressful life events related to the pandemic situation. To develop the inventory, we proposed a list of 43 items based on the scientific literature and the authors' clinical experience. Two experts in clinical psychology reviewed the 43-item inventory, which was finally reduced to 25 items. We included an additional open-response item to assess other possible stressful life events. The inventory included stressful events related to school and peers (e.g., compulsory school has begun), illness (e.g., the mother has had COVID-19; a relative died), and family (e.g., the financial situation has worsened; a new sibling was born).

Impact Scale of the COVID-19 and Home Confinement for Children And Adolescents (Orgilés, Morales, & Espada, 2020). Parents provided information about the impact of the pandemic on their children, comparing their emotional welfare before and after the lockdown ("During the past few days, compared to before home confinement, have you noticed that your child..."). At the time study was run, there were no validated instruments to capture emotional and behavioral changes during the pandemic (compared to before this period). Therefore, we decided to use an ad hoc measure. The symptoms inventory was designed based on the first scale developed about the effects of COVID-19 on Chinese adults (Li et al., 2020). Six experts in clinical psychology in children and adolescents reviewed the scientific literature, the information about the pandemic, and the available scales

to create the questionnaire applied in our study. After an extensive review, we used the proposed instrument in a pilot study with a group of parents to determine their comprehension of the items. Some items were discarded, and we examined the psychometric properties of the scale (reliability) after creating the scale. The scale is formed by 31 items rated from 1 (*much less compared to before home confinement*) to 5 (*much more compared to before home confinement*). It includes six subscales related to anxiety (10 items; e.g., "is afraid of COVID-19 infection"), mood (6 items; e.g., "is sad"), sleep (5 items; e.g., "is afraid to sleep alone"), behavioral disturbances (6 items; e.g., "argues with the rest of the family"), feeding (2 items; e.g., "eats a lot"), and cognitive disturbances (2 items; e.g., "has difficulty concentrating"). Response to each item was coded into two categories (the child had worsened or had not worsened since before confinement). Ordinal alpha in the sample was high ($\alpha = .97$): Anxiety ($\alpha = .93$), Mood ($\alpha = .92$), Sleep ($\alpha = .90$), Behavioral disturbances ($\alpha = .92$), Feeding ($\alpha = .20$, which includes only two items evaluating opposite aspects: no appetite and eats a lot), and Cognitive disturbances ($\alpha = .84$). Evidence of factor structure and validity has been provided elsewhere (Morales et al., 2021).

Procedure

Participants completed an online structured questionnaire, including a previous informed consent form. We used a snowball technique to recruit the sample. The questionnaire was disseminated via social networks, including social media platforms, such as Facebook or Instagram, and researchers' acquaintances (email and WhatsApp contacts) from January 11th to February 15th 2021, when Spain was immersed in the third COVID-19 wave. The study was approved by the Ethics Committee of the Miguel Hernández University.

Data analysis

Latent class modeling. We examined stressful life events related to COVID-19 via latent class analysis with dichotomous indicators using Mplus 7 (Muthén & Muthén, 1998-2015). We excluded four items with three (parental separation) and zero occurrences during the pandemic (child hospitalized, parent hospitalized, parent died). Latent class model estimation used robust maximum likelihood estimation (command MLR in Mplus) with 100 sets of random start values. We estimated models from two to six latent classes and compared model fit.

Model fit was determined by overall goodness of fit, sparseness, classification quality, and theoretical differentiation of classes (Nylund et al., 2007; Tomczyk et al., 2016; Tomczyk et al., 2018). As a measure of overall fit, the bootstrapped likelihood ratio test (BLRT) indicates whether the current model fits better than a model with one less class. We computed BLRT with 50 random starts with 20 bootstrap draws for each comparison. To assess sparseness, we compared the Akaike Information Criterion (AIC) and sample-size adjusted Bayes Information Criterion (BIC) between models, with lower values indicating greater sparseness. Classification quality was captured via average latent class probabilities (ALCP) and entropy. A range between 0 and 1, and the closer to 1, the better the fit--a value of at least .7-- are recommended (Nylund et al., 2007). We examined the best-fitting models further for their theoretical tenability regarding the literature. For the selected model, we compared sociodemographic data and psychosocial symptoms between latent classes using

Kruskal-Wallis tests. To determine the relationship between latent classes and psychological symptoms considering children's sex and age, we also performed a two-way MANCOVA, controlling for children's age and sex. Dependent variables included anxiety, mood symptoms as well as other difficulties; independent variables were latent classes, and the covariates were the children's age and sex. We applied Bonferroni's post hoc analysis for continuous data using SPSS 25. All analyses were based on $\alpha = .05$.

Results

The list of events is detailed in Table 1. The most prevalent (above 30%) were "The child's social contact has been reduced" (87.3%), "The mother or father has felt stressed" (71.8%), "Has suffered from academic stress" (32.9%), and "A close friend of the child has had COVID-19" (31.3%). Four events were not considered for the analysis because the prevalence was 0, including "The child has been hospitalized for COVID-19," and "One of the parents has died." "The mother or father has been hospitalized for COVID-19," and "Separation or divorce of the parents" presented a low prevalence ($n = 3$, 1.2%).

Table 1.
List of events ($N = 252$).

Events	N (%)
1 The child is ill with COVID-19	23 (9.1)
2 The child has changed school	24 (9.5)
3 Compulsory schooling has begun	35 (13.9)
4 The child has moved	17 (6.7)
5 The child's class has been confined	43 (17.1)
6 Conflict between parents has increased	48 (19)
7 A new sibling has been born	16 (6.3)
8 The family's financial situation has worsened	57 (22.6)
9 The child has suffered harassment problems at school	20 (7.9)
10 Mother or father has lost their job	35 (13.9)
11 One of the grandparents has died	16 (6.3)
12 A relative has died (other than parents or grandparents)	29 (11.5)
13 Mother or father has COVID-19 disease	34 (13.5)
14 A sibling has had COVID-19	13 (5.2)
15 Mother or father spends more time away from home for work	67 (26.6)
16 Mother or father has attended to COVID-19 cases for health care	27 (10.7)
17 The child has suffered from academic stress (e.g., difficulty accessing online teaching, failing an exam, or excessive workload)	83 (32.9)
18 A close friend of the child has had COVID-19	79 (31.3)
19 The mother or father has felt stressed	181 (71.8)
20 Mother or father has had psychological problems	42 (16.7)
21 The child's social contact has been reduced (e.g., not attending extracurricular activities or children's birthday parties).	220 (87.3)

Latent class models

The analysis pointed to a model with four classes as the best fitting (see Table 2). Average latent class probabilities were very high (all $> .90$), and all statistical indicators indicated this model as the best fit for the data.

A reduction in social contacts was reported across all latent classes, which coincides with lockdown policies (see Figure 1). Similarly, levels of academic stress and parental stress were reported by at least half of the participants in each class. The first class ("COVID infection, social confinement"; $n = 21$) showed high probabilities for COVID infections

in the family or close friend circles, and moderate to high probabilities of class confinement and reduced social contact. The second class ("economic loss"; $n = 21$) was characterized by high parental stress and economic misfortune (i.e., parent lost their job, economic situations worsened). The third class ("reduced social contact"; $n = 168$) was the largest class and had mostly low probabilities for negative life events, apart from parental stress and reduced social contact. The fourth class ("parental stress," $n = 42$) had the highest endorsement of parental stress, reduced social contact, and parental conflict.

Table 2.

Model fit criteria for latent class models of stressful life events related to COVID-19 ($N = 252$).

	2 classes	3 classes	4 classes	5 classes	6 classes
Free parameters	43	65	87	109	131
BLRT	183.23***	106.35***	74.68***	43.58	39.33
AIC	4165.72	4103.37	4072.68	4072.45	4079.81
SSABIC	4181.17	4126.72	4103.94	4111.61	4126.88
Entropy	0.78	0.79	0.89	0.89	0.84
ALCP	0.96	1.00	0.97	1.00	0.94
	0.91	0.89	0.97	0.91	0.97
		0.89	0.93	1.00	0.83
			0.96	0.92	0.96
				0.96	0.87
					1.00

Note. BLRT bootstrapped likelihood ratio test; AIC Akaike Information Criterion; SSABIC sample-size-adjusted Bayes Information Criterion; ALCP average latent class probabilities. Fit criteria indicating the best model are printed in bold.

*** $p < .001$.

Comparisons of psychological symptoms across latent classes

Kruskal-Wallis tests revealed are statistically significant differences in anxiety ($K-W = 27.18$, $p < .001$) and mood symptoms ($K-W = 30.83$, $p < .001$), sleep disturbances ($K-W = 21.96$, $p < .001$), behavioral disturbances ($K-W = 38.47$, $p < .001$), feeding disturbances ($K-W = 18.89$, $p < .001$), and cognitive disturbances ($K-W = 20.01$, $p < .001$) across latent classes. Class 4 ("parental stress") presented significantly higher levels of anxiety and mood symptoms, sleep, behavioral, and feeding and cognitive disturbances compared to Class 3 ("reduced social contact") ($p < .001$). We applied the Bonferroni correction factor for multiple comparisons.

We confirmed these results using two-way MANCOVA (Table 3), controlling for children's age and gender as covariates. We obtained a significant multivariate effect of latent classes on psychological symptoms, including anxiety and mood symptoms, sleep, behavioral disturbances, and feeding and cognitive disturbances ($V = .27$; $F_{(11, 240)} = 3.90$, $p < .001$, $\eta^2 = .09$). The models for children's age ($V = .02$; $F_{(11, 240)} = 1.10$, $p = .35$) and gender were not significant ($V = .06$; $F_{(11, 240)} = 1.31$, $p = .20$). Interactions between latent classes and children's gender were not significant.

Post hoc test (Bonferroni) on latent classes showed that the level of anxiety, mood symptoms, sleep and behavioral disturbances, and feeding and cognitive disturbances was significantly higher in Class 4 ("parental stress") than in Class 3 ("reduced social contact") ($p < .001$). Sleep disturbances were more likely in Class 4 ("parental stress") than in Class 2 ("economic loss") ($p < .001$). When applying the Bonferroni correction factor for multiple comparisons, we considered contrasts lower than .002 ($\alpha = .05/24$) statistically significant.

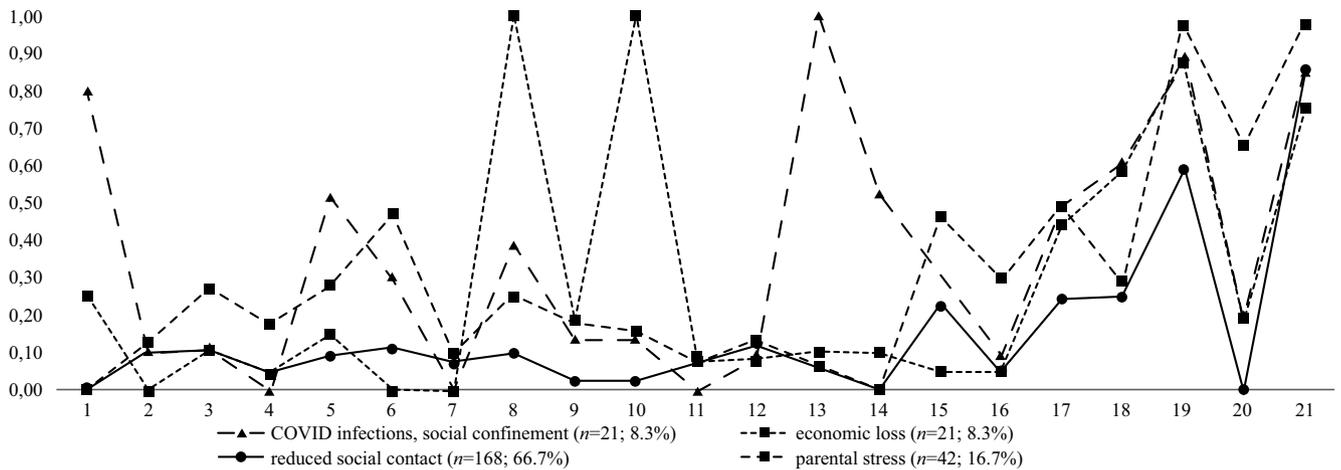


Figure 1. Estimated indicator probabilities and latent class proportions for four latent classes of stressful life events related to COVID-19, as reported by parents in a sample of Spanish schoolchildren. The probabilities correspond to the dichotomized items' response scale (0 = no; 1 = yes). Thus a higher probability indicates a higher chance of having experienced said event. The list of events and the corresponding numbers can be found in Table 1.

Table 3. Two-way MANCOVA results with means and standard deviation by latent class.

Variables	Class 1 (n = 21)		Class 2 (n = 21)		Class 3 (n = 168)		Class 4 (n = 42)		F	p	η²
	M	SD	M	SD	M	SD	M	SD			
Anxiety symptoms	3.04	.58	3.06	.56	1.90	.20	3.88	.39	7.48	<.001	.08
Mood symptoms	1.63	.38	1.87	.37	1.12	.13	2.69	.26	9.81	<.001	.11
Sleep disturbances	1.11	.34	1.53	.33	.76	.12	1.86	.23	6.73	<.001	.07
Behavioral disturbances	2.07	.38	1.01	.36	1.15	.13	3.08	.25	15.90	<.001	.16
Feeding disturbances	.48	.10	.27	.10	.19	.03	.53	.07	7.48	<.001	.08
Cognitive disturbances	.73	.15	.56	.14	.31	.05	.77	.10	6.88	<.001	.08

Class 1 ("COVID infection, social confinement"; n = 21), Class 2 ("economic loss"; n = 21), Class 3 ("reduced social contact"; n = 168), and Class 4 ("parental stress," n = 42). η² = partial eta squared; SD = Standard deviation.

Discussion

The present study aimed to identify profiles of children based on the stressful life events to which they were exposed during the COVID-19 pandemic through LCA, and to observe the differences between them in psychological symptoms and the variables age and gender. The prevalence of children exposed to each stressful life event is also discussed.

Although we obtained five latent profile models of between two and six classes, the four-class model had the best fit-indicators. In all profiles, we found that most children and adolescents had experienced a reduction in social contact, which was the most prevalent stressor in the total sample (87.3%). In this way, due to social distancing measures, many children and adolescents reduced their social events (e.g., extracurricular activities or birthday parties), as Imran et al. (2020) noted. Moreover, parental stress was highly prevalent, both in the total sample (71.8%) and in the four profiles. These findings in parental stress support the results of various studies, which reveal a high incidence of stress in Spanish adults during the COVID-19 pandemic (Odrizola-González et al., 2020; Rodríguez et al., 2020).

The four profiles of children and adolescents revealed by the LCA present specific characteristics as a function of the stressful events experienced during the pandemic: "COVID infection, social confinement" (8.3%), "economic loss" (8.3%), "reduced social contact" (66.7%) and "parental stress" (16.7%). These important results allow us to determine classes of children and adolescents according to the stressful events experienced during the pandemic, based on evidence and information about these situations (Cooper et al., 2021; Imran et al., 2020; Orgilés et al., 2020). According to the results, the so-called "reduced social contact" was the most prevalent subtype of children and adolescents. Despite presenting a medium-to-high presence of parental stress, this group was mainly characterized by the decrease in social activities in which they participated. Although with a much lower percentage, the next most prevalent profile was "parental stress," which included children and adolescents with a high reduction of social activities and the highest level of parental stress of the four profiles. These children and adolescents also presented other family-related events, such as the increase of conflict between parents and parents working outside the home for longer times. Next, with the lowest prevalence, were the profiles "COVID infection, social

confinement” and “economic loss.” The former refers to those children and adolescents who experienced circumstances related to COVID-19 infections, such as their own contagion or that of close people, or the confinement of their class. The latter refers to those children whose main stressors were the parents’ loss of work and the worsening of the family’s economic situation.

After identifying the four profiles of children and adolescents according to the stressful events experienced during the pandemic, we studied the differences between them. First, MANCOVA revealed the absence of age and gender differences between classes. Therefore, a greater or lesser age, or being a boy or a girl, was not related to the probability of belonging to any class. On the other hand, Kruskal-Wallis tests, MANCOVA, and post hoc tests revealed differences in psychological symptoms between classes. Children and adolescents of the “parental stress” class presented greater more symptoms (anxiety and mood symptoms; sleep, behavioral, and feeding and cognitive disturbances) than those who belonged to the “reduced social contact” class. Thus, among children and adolescents with a reduction in social activities, as was the case in both groups, more parental stress may be associated with more significant psychological symptoms. We note that several studies have already shown the negative impact of parental stress on children’s psychological wellbeing during the pandemic (Andrés-Romero et al., 2021; Orgilés et al., 2020; Romero et al., 2020).

Similarly, those children and adolescents who stood out for their reduction in social activities and high parental stress (“parental stress”) showed more sleep problems than those whose families had suffered economically (“economic loss”). Dondi et al. (2021) found that the perception of economic instability in the family and the loss of work of one of the parents were risk factors for the development of sleep difficulties in their children. However, high parental stress may have greater weight in these problems than economic factors. Parental stress without major economic problems could be due to the change of children’s habits (Andrés-Romero et al., 2021), difficulties with distance education, or family functioning (Moscardino et al., 2021). Moreover, the profile “parental stress” showed parents working away from home for a longer time and a higher increase in parental conflict compared to “economic loss.” Marital conflict has been previously associated with more sleep difficulties in children (El-Sheikh et al., 2006), so the parental conflicts in the “parental stress” class may have caused some youths’ sleep disturbances.

In the other comparisons, no statistically significant differences between the different profiles were obtained in the psychological symptoms. Therefore, although the profile “COVID infection, social confinement” did not present differences in psychological symptoms compared to “parental stress,” the latter could be considered a risk profile for psychological symptoms.

Several limitations should be noted when examining the results. The sample is not representative of Spanish children and adolescents. The data were reported by parents due to the COVID-19 pandemic situation. It would have been interesting to have the participating children and adolescents’ self-reports. Most of the informants were mothers; therefore, this aspect may have influenced the results. In view of the absence of reliable and validated instruments to evaluate the possible changes in emotional symptoms and other difficulties in children and adolescents during the pandemic (compared to before), we developed the instruments

used in this study, which is considered a limitation. Due to the scarcity of studies that address the same objectives, we could not compare and discuss the results concerning similar studies. The cross-sectional nature of the study does not allow us to establish causal relationships between the variables.

The present study obtained through LCA four profiles of children and adolescents according to the stressful events they experienced during the COVID-19 pandemic: “COVID infection, social confinement,” “economic loss,” “reduced social contact” and “parental stress.” These profiles show a similar distribution of the variables age and gender. The prevalence of the profile “reduced social contact” (66.7%) and the reduction of social activities and the presence of parental stress in the total sample show that these stressful situations were very common among Spanish children and adolescents. The second most prevalent profile (16.7%), “parental stress,” which characterized those children and adolescents with a high reduction in social contacts and a very high level of parental stress, showed the most significant psychological symptoms compared to the others. This finding has several implications at a clinical level. First, in terms of prevention and intervention, specific programs can be directed to those children and adolescents who have experienced these situations during the pandemic because they are more likely to present psychological difficulties. In addition, stress management interventions should be offered to highly stressed parents, due to its relationship with their children’s psychological problems, compared to other profiles with lower parental stress. Concerning parental stress, children and adolescents’ resilience has been shown as a protective factor against psychological problems during the pandemic (Andrés-Romero et al., 2021). The present study has grouped children and adolescents according to the stressful events experienced during the COVID-19 pandemic. Moreover, this research highlights the importance of adapting interventions to each child or adolescent, considering the situations experienced, and extending the interventions to their families.

Acknowledgments

We would like to thank the participants for completing the questionnaires.

References

- Almis, H., Han Alm, B., & Bucak, I. H. (2022). Mental health of children of health workers during the COVID-19 pandemic: A cross-sectional study. *Clinical Child Psychology and Psychiatry*, 27(1), 104-111. <https://doi.org/10.1177/13591045211016527>
- Amorós-Reche, V., Belzunegui-Pastor, À, Hurtado, G., & Espada, J. P. (2022). Emotional problems in Spanish children and adolescents during the COVID-19 pandemic: A systematic review. *Clinica y Salud*, 33(1), 19-28. <https://doi.org/10.5093/CLYSA2022A2>
- Andrés-Romero, M. P., Fluja-Contreras, J. M., Fernández-Torres, M., Gómez-Becerra, I., & Sánchez-López, P. (2021). Analysis of psychosocial adjustment in the family during confinement: Problems and habits of children and youth and parental stress and resilience. *Frontiers in Psychology*, 12, Article 647645. <https://doi.org/10.3389/fpsyg.2021.647645>

- Berasategi-Sancho, N., Idoiaga-Mondragon, N., Dosil-Santamaria, M., & Eiguren-Munitis, A. (2021). The wellbeing of children in lockdown: Physical, emotional, social and academic impact. *Children and Youth Services Review*, 127, Article 106085. <https://doi.org/10.1016/j.childyouth.2021.106085>
- Berasategi-Sancho, N., Idoiaga-Mondragon, N., Ozamiz-Etxebarria, N., & Dosil-Santamaria, M. (2021). Wellbeing of adolescents in de-escalation situation: Physical, emotional, social, and academic impact. *Frontiers in Psychology*, 12, Article 646027. <https://doi.org/10.3389/fpsyg.2021.646027>
- Cooper, K., Hards, E., Moltrecht, B., Reynolds, S., Shum, A., McElroy, E., & Loades, M. (2021). Loneliness, social relationships, and mental health in adolescents during the COVID-19 pandemic. *Journal of Affective Disorders*, 289, 98-104. <https://doi.org/10.1016/j.jad.2021.04.016>
- Cortese, S., Asherson, P., Sonuga-Barke, E., Banaschewski, T., Brandeis, D., Buitelaar, J., Coghill, D., Daley, D., Danckaerts, M., Dittmann, R. W., Doepfner, M., Ferrin, M., Hollis, C., Holtmann, M., Konofal, E., Lecendreux, M., Santosh, P., Rothenberger, A., Soutullo, C.,... Simonoff, E. (2020). ADHD management during the COVID-19 pandemic: Guidance from the European ADHD Guidelines Group. *The Lancet Child and Adolescent Health*, 4(6), 412-414. [https://doi.org/10.1016/S2352-4642\(20\)30110-3](https://doi.org/10.1016/S2352-4642(20)30110-3)
- Creswell, C., Shum, A., Pearcey, S., Skripkaskaite, S., Patalay, P., & Waite, P. (2021). Young people's mental health during the COVID-19 pandemic. *The Lancet Child and Adolescent Health*, 5(8), 535-537. [https://doi.org/10.1016/S2352-4642\(21\)00177-2](https://doi.org/10.1016/S2352-4642(21)00177-2)
- Delvecchio, E., Orgilés, M., Morales, A., Espada, J. P., Francisco, R., Pedro, M., & Mazzeschi, C. (2022). COVID-19: Psychological symptoms and coping strategies in preschoolers, schoolchildren, and adolescents. *Journal of Applied Developmental Psychology*, 79, Article 101390. <https://doi.org/10.1016/j.appdev.2022.101390>
- Dominguez-Álvarez, B., López-Romero, L., Isdahl-Troye, A., Gómez-Fraguela, J. A., & Romero, E. (2020). Children coping, contextual risk and their interplay during the COVID-19 pandemic: A Spanish case. *Frontiers in Psychology*, 11, Article 577763. <https://doi.org/10.3389/fpsyg.2020.577763>
- Dondi, A., Fetta, A., Lenzi, J., Morigi, F., Candela, E., Rocca, A., Cordelli, D. M., & Lanari, M. (2021). Sleep disorders reveal distress among children and adolescents during the Covid-19 first wave: Results of a large web-based Italian survey. *Italian Journal of Pediatrics*, 47(1), Article 130. <https://doi.org/10.1186/s13052-021-01083-8>
- Duckworth, A. L., Kautz, T., Defnet, A., Satlof-Bedrick, E., Talamas, S., Lira, B., & Steinberg, L. (2021). Students attending school remotely suffer socially, emotionally, and academically. *Educational Researcher*, 50(7), 479-482. <https://doi.org/10.3102/0013189X211031551>
- El-Sheikh, M., Buckhalt, J. A., Mize, J., & Acebo, C. (2006). Marital conflict and disruption of children's sleep. *Child Development*, 77(1), 31-43. <https://doi.org/10.1111/j.1467-8624.2006.00854.x>
- Ezpeleta, L., Navarro, J. B., de la Osa, N., Trepat, E., & Penelo, E. (2020). Life conditions during COVID-19 lockdown and mental health in Spanish adolescents. *International Journal of Environmental Research and Public Health*, 17(19), 1-13. <https://doi.org/10.3390/ijerph17197327>
- Forte, A., Orri, M., Brandizzi, M., Iannaco, C., Venturini, P., Liberato, D., Battaglia, C., Nöthen-Garunja, I., Vulcan, M., Brusci, A., Quadrana, L., Cox, O., Fabbri, S., & Monducci, E. (2021). "My life during the lockdown": Emotional experiences of European adolescents during the COVID-19 crisis. *International Journal of Environmental Research and Public Health*, 18(14), Article 7638. <https://doi.org/10.3390/ijerph18147638>
- Gómez-Becerra, I., Fluja, J. M., Andrés, M., Sánchez-López, P., & Fernández-Torres, M. (2020). Evolution of psychological state and fear in childhood and adolescence during COVID-19 lockdown. *Revista de Psicología Clínica con Niños y Adolescentes*, 7(3), 11-18. <https://doi.org/10.21134/rpcna.2020.mon.2029>
- González-Valero, G., Zurita-Ortega, F., Lindell-Postigo, D., Conde-Pipó, J., Grosz, W. R., & Badicu, G. (2020). Analysis of self-concept in adolescents before and during COVID-19 lockdown: Differences by gender and sports activity. *Sustainability*, 12(18), Article 7792. <https://doi.org/10.3390/SU12187792>
- Idoiaga, N., Berasategi, N., Eiguren, A., & Picaza, M. (2020). Exploring children's social and emotional representations of the COVID-19 pandemic. *Frontiers in Psychology*, 11, Article 1952. <https://doi.org/10.3389/fpsyg.2020.01952>
- Ilari, B., Cho, E., Li, J., & Bautista, A. (2022). Perceptions of parenting, parent-child activities and children's extracurricular activities in times of COVID-19. *Journal of Child and Family Studies*, 31(2), 409-420. <https://doi.org/10.1007/s10826-021-02171-3>
- Imran, N., Zeshan, M., & Pervaiz, Z. (2020). Mental health considerations for children and adolescents in COVID-19 pandemic. *Pakistan Journal of Medical Sciences*, 36(COVID19-S4), S67-S72. <https://doi.org/10.12669/pjms.36.COVID19-S4.2759>
- Kara, S. B. K., Günes, D. Z., & Tüysüzler, B. S. (2021). Work-family conflict during working from home due to pandemic: A qualitative research on female teachers. *International Journal of Curriculum and Instruction*, 13(1), 251-273.
- Li, J. B., Yang, A., Dou, K., Wang, L. X., Zhang, M. C., & Lin, X. Q. (2020). Chinese public's knowledge, perceived severity, and perceived controllability of COVID-19 and their associations with emotional and behavioural reactions, social participation, and precautionary behaviour: A national survey. *BMC Public Health*, 20(1), Article 1589. <https://doi.org/10.1186/s12889-020-09695-1>
- Liang, N., Becker, T. D., & Rice, T. (2022). Preparing for the COVID-19 paediatric mental health crisis: A focus on youth reactions to caretaker death. *Clinical Child Psychology and Psychiatry*, 27(1), 228-237. <https://doi.org/10.1177/13591045211061802>
- Low, N., & Mounts, N. S. (2022). Economic stress, parenting, and adolescents' adjustment during the COVID-19 pandemic. *Family Relations*, 71(1), 90-107. <https://doi.org/10.1111/fare.12623>
- Medrano, M., Cadenas-Sanchez, C., Osés, M., Arenaza, L., Amasene, M., & Labayen, I. (2021). Changes in lifestyle behaviours during the COVID-19 confinement in Spanish children: A longitudinal analysis from the MUGI project. *Pediatric Obesity*, 16(4), Article e12731. <https://doi.org/10.1111/ijpo.12731>
- Morales, A., Espada, J. P., & Orgilés, M. (2021). *How to evaluate the impact of the COVID-19 and home confinement on children and adolescents?* Poster presented in the 7th International Congress of Clinical and Health Psychology in Children and Adolescent (online), 18-20 November 2021.
- Moscardino, U., Dicataldo, R., Roch, M., Carbone, M., & Mammarella, I. C. (2021). Parental stress during COVID-19: A brief report on the role of distance education and family resources in an Italian sample. *Current Psychology*, 40(11), 5749-5752. <https://doi.org/10.1007/s12144-021-01454-8>
- Muthén, L. K., & Muthén, B. O. (1998-2015). *Mplus user's guide*. Seventh edition. Muthén & Muthén.
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling: A Multidisciplinary Journal*, 14(4), 535-569. <https://doi.org/10.1080/10705510701575396>

- Odrizola-González, P., Planchuelo-Gómez, Á., Iruña, M. J., & de Luis-García, R. (2020). Psychological symptoms of the outbreak of the COVID-19 confinement in Spain. *Journal of Health Psychology, 27*(4), 825-835. <https://doi.org/10.1177/1359105320967086>
- Orden SND/370/2020, de 25 de abril, sobre las condiciones en las que deben desarrollarse los desplazamientos por parte de la población infantil durante la situación de crisis sanitaria ocasionada por el COVID-19 [on the conditions in which displacement by the child population must take place during the health crisis situation caused by COVID-19]. *Boletín Oficial del Estado, 116*, de 25 de abril de 2020, 1-5. <https://www.boe.es/buscar/pdf/2020/BOE-A-2020-4665-consolidado.pdf>
- Orgilés, M., Espada, J. P., Delvecchio, E., Francisco, R., Mazzeschi, C., Pedro, M., & Morales, A. (2021). Anxiety and depressive symptoms in children and adolescents during COVID-19 pandemic: A transcultural approach. *Psicothema, 33*(1), 125-130. <https://doi.org/10.7334/psicothema2020.287>
- Orgilés, M., Espada, J. P., & Morales, A. (2021). *Stressful Life Events related to Pandemic Inventory*. Manuscript in preparation.
- Orgilés, M., Francisco, R., Delvecchio, E., Espada, J. P., Mazzeschi, C., Pedro, M., & Morales, A. (2021). Psychological symptoms in Italian, Spanish and Portuguese youth during the COVID-19 health crisis: A longitudinal study. *Child Psychiatry and Human Development, 53*, 853-862. <https://doi.org/10.1007/s10578-021-01211-9>
- Orgilés, M., Morales, A., Delvecchio, E., Francisco, R., Mazzeschi, C., Pedro, M., & Espada, J. P. (2021). Coping behaviors and psychological disturbances in youth affected by the COVID-19 health crisis. *Frontiers in Psychology, 12*, Article 565657. <https://doi.org/10.3389/fpsyg.2021.565657>
- Orgilés, M., Morales, A., Delvecchio, E., Mazzeschi, C., & Espada, J. P. (2020). Immediate psychological effects of the COVID-19 quarantine in youth from Italy and Spain. *Frontiers in Psychology, 11*, 579038. <https://doi.org/10.3389/fpsyg.2020.579038>
- Orgilés, M., Morales, A., & Espada, J. P. (2020). *Impact Scale of the COVID-19 and Home Confinement on Children and Adolescents*. Manuscript in preparation.
- Pearcey, S., Shum, A., Raw, J., Waite, P., Patalay, P., & Creswell, C. (2020). *Changes in children and young people's emotional and behavioural difficulties through lockdown (report 04)*. (Co-SPACE study). <https://cospaceoxford.org/findings/4th-update/>
- Real Decreto 463/2020, de 14 de marzo, por el que se declara el estado de alarma para la gestión de la situación de crisis sanitaria ocasionada por el COVID-19 [declaring the state of alarm for the management of the health crisis situation caused by COVID-19]. *Boletín Oficial del Estado, 67*, de 14 de marzo de 2020, 25390-25400. Boletín Oficial del Estado. <https://www.boe.es/boe/dias/2020/03/14/pdfs/BOE-A-2020-3692.pdf>
- Rodríguez, S., Valle, A., Piñero, I., Rodríguez-Llorente, C., Guerrero, E., & Martins, L. (2020). Sociodemographic characteristics and stress of people from Spain confined by COVID-19. *European Journal of Investigation in Health, Psychology and Education, 10*(4), 1095-1105. <https://doi.org/10.3390/ejihpe10040077>
- Romero, E., López-Romero, L., Domínguez-Álvarez, B., Villar, P., & Gómez-Fraguela, J. A. (2020). Testing the effects of COVID-19 confinement in Spanish children: The role of parents' distress, emotional problems and specific parenting. *International Journal of Environmental Research and Public Health, 17*(19), 1-23. <https://doi.org/10.3390/ijerph17196975>
- Sandín, B., Espinosa, V., Valiente, R. M., García-Escalera, J., Schmitt, J. C., Arnáez, S., & Chorot, P. (2021). Effects of coronavirus fears on anxiety and depressive disorder symptoms in clinical and subclinical adolescents: The role of negative affect, intolerance of uncertainty, and emotion regulation strategies. *Frontiers in Psychology, 12*, Article 716528. <https://doi.org/10.3389/fpsyg.2021.716528>
- Skripkauskaitė, S., Shum, A., Pearcey, S., McCall, A., Waite, P., & Creswell, C. (2021). *Changes in children's mental health symptoms from March 2020 to June 2021 (report 1)*. (Co-SPACE study). <https://cospaceoxford.org/findings/changes-in-childrens-mental-health-symptoms-from-march-2020-to-june-2021/>
- Tomczyk, S., Isensee, B., & Hanewinkel, R. (2016). Latent classes of polysubstance use among adolescents – a systematic review. *Drug and Alcohol Dependence, 160*, 12-29. <https://doi.org/10.1016/j.drugalcdep.2015.11.035>
- Tomczyk, S., Schomerus, G., Stolzenburg, S., Muehlan, H., & Schmidt, S. (2018). Who is seeking whom? A person-centred approach to help-seeking in adults with untreated mental health problems via latent class analysis. *Social Psychiatry and Psychiatric Epidemiology, 53*(8), 773-783. <https://doi.org/10.1007/s00127-018-1537-7>
- Tzankova, I., Compare, C., Marzana, D., Guarino, A., Di Napoli, I., Rochira, A., Calandri, E., Barbieri, I., Procentese, F., Gatti, F., Marta, E., Fedi, A., Aresi, G., & Albanesi, C. (2022). Emergency online school learning during COVID-19 lockdown: A qualitative study of adolescents' experiences in Italy. *Current Psychology*. Advance online publication. <https://doi.org/10.1007/s12144-021-02674-8>
- Vallejo-Slocker, L., Fresneda, J., & Vallejo, M. A. (2020). Psychological wellbeing of vulnerable children during the COVID-19 pandemic. *Psicothema, 32*(4), 501-507. <https://doi.org/10.7334/psicothema2020.218>
- Vallejo-Slocker, L., Sanz, J., García-Vera, M. P., Fresneda, J., & Vallejo, M. A. (2022). Mental health, quality of life and coping strategies in vulnerable children during the COVID-19 pandemic. *Psicothema, 34*(2), 249-258. <https://doi.org/10.7334/psicothema2021.467>
- Verweij, R., Helmerhorst, K., & Keizer, R. (2021). Work-to-family conflict, family-to-work conflict and their relation to perceived parenting and the parent-child relationship before and during the first covid-19 lockdown. *Journal of Family Research, 33*(3), 734-771. <https://doi.org/10.20377/jfr-636>
- Waite, P., Patalay, P., Moltrecht, B., McElroy, E., & Creswell, C. (2020). *Covid-19 worries, 1 parent/carer stress and support needs, by child special educational needs and parent/carer work status (report 02)*. (Co-SPACE study). <https://cospaceoxford.org/findings/exercise-social-behaviours/>
- World Health Organisation. (2021). *Listings of WHO's response to COVID-19*. <https://www.who.int/news/item/29-06-2020-covidtimeline>