**Psicothema**

Article

# Mental Health, Quality of Life and Coping Strategies in Vulnerable Children During the COVID-19 Pandemic

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## Abstract

**Background:** The coronavirus pandemic has led to a situation without precedent in modern history. The aim of this study is to analyse the consequences after one year of the pandemic on a group of children and adolescents assessed at the beginning of the pandemic in 2020 and to determine the most effective ways of psychologically coping with this pandemic. **Method:** Two different, but equivalent, groups with a total of 604 (study I, 2020) and 743 (study II, 2021) children and adolescents in residential care, foster families, kinship families or family strengthening programs in Spain were evaluated using the SDQ (mental health measure), KIDSCREEN-10 index (quality of life measure) and Kidcope (coping behaviour measure). An independent sample t-test and a decision tree analysis were used. **Results:** The mental health of children and adolescents decreased by 9.7%, and Self-Perceived quality of life did not change after one year of the COVID-19 pandemic. Nonactive coping strategies predicted worse mental health and worse quality of life. Problem solving served as a protective factor. **Conclusion:** One year after, the COVID-19 pandemic has an effect on the psychological wellbeing of children and adolescents, and the consequences can be reduced if proper coping strategies are used.

*Keywords:* Mental health, quality of life, coping behaviours, children and adolescents at risk, COVID-19.

## Resumen

*Salud Mental, Calidad de Vida y Estrategias de Afrontamiento de Niños Vulnerables Durante la Pandemia de la COVID-19.* **Antecedentes:** la pandemia del coronavirus no tiene precedentes en la historia moderna. El objetivo del estudio es analizar sus consecuencias tras un año de pandemia en niños y adolescentes evaluados al inicio de la misma en 2020 y determinar las estrategias de afrontamiento más eficaces para lidiar con la pandemia. **Método:** 2 grupos distintos pero equivalentes formados por 604 (estudio I, 2020) y 743 (estudio II, 2021) niños y adolescentes en acogimiento residencial, acogimiento familiar (extensa y ajena) y en programas de fortalecimiento familiar en España fueron evaluados usando el SDQ (salud mental), KIDSCREEN-10 (calidad de vida) y Kidcope (afrontamiento). Se utilizó comparaciones de medias para muestras independientes y un análisis de árbol de decisión. **Resultados:** la salud mental de niños y adolescentes ha disminuido un 9,7% mientras que la calidad de vida no ha cambiado tras un año de pandemia. Las estrategias de afrontamiento pasivas predijeron una peor salud mental y una peor calidad de vida. Estrategias de solución de problemas actuaron como un factor protector. **Conclusiones:** la pandemia de la COVID-19 tiene efectos tras el paso de un año en el bienestar psicológico de niños y adolescentes y sus consecuencias pueden reducirse con estrategias de afrontamiento apropiadas.

*Palabras clave:* salud mental, calidad de vida, estrategias de afrontamiento, niños y adolescentes en riesgo, COVID-19.

The coronavirus pandemic has led to a situation without precedent in modern history. Research within the last year has proven the effect of the COVID-19 pandemic on mental health. Specific research has been conducted with children and adolescents regarding their mental health during confinement and in the pandemic context (Nearchou, 2020). It is important to bear mind that children and adolescents have been especially affected by the measures used to address the pandemic, and have shown changes in their emotional status compared with their status before lockdown (Bignardi et al., 2021).

Some studies conducted at the beginning of the pandemic or during the lockdown showed that loneliness, restriction of social interactions and space limitations had an important effect on the mental health and quality of life of children and adolescents (Loades et al., 2020). Pizarro-Ruiz & Ordóñez-Camblor (2021) found that children and adolescents aged between 8 and 10 years old showed emotional and behavioural alterations because of strict lockdown and home confinement. In Germany, children and adolescents experienced significantly lower quality of life, more mental health problems and higher anxiety levels (24.1% vs. 14.9%) than before the pandemic (Ravens-Sieberer et al., 2021). In Spain, Vallejo-Slocker et al. (2020) found that children's and adolescents' mental health was affected by the COVID-19 pandemic and that the mental health levels of children in lockdown decreased in comparison to the national reference in years previous to the COVID-19 pandemic.

Despite the negative effects of the pandemic and the lockdown period, they have not affected all children in similar ways. A lack of space in the home or low socioeconomic resources worsen the mental health of children and adolescents (Ravens-Sieberer et al.,

2021). Another important aspect is children's behaviour to address these difficulties. Ezpeleta et al. (2020) found that adolescent behaviour and parenting styles were relevant, as worse adolescent mental health during COVID-19 lockdown was associated with unhealthy activities, worsening of relationships with others, and a dysfunctional parenting style. This finding indicates the relevance of how children and adolescents cope with the pandemic and the contextual factors related to their coping, considering the resources available.

Coping is central to determining the impact of the pandemic (Buheji et al., 2020). Domínguez-Álvarez et al. (2020) studied this aspect by interviewing over 1,000 children (using parent-report measures) in Spain and found that despite the uncontrollable nature of the pandemic, the coping behaviours and strategies used were important to ensure an appropriate mental health adjustment in young children. Eliciting children's perspective is essential to understanding how they represent and emotionally cope with the COVID-19 crisis (Idoiaga et al., 2020).

Globally, to our knowledge, there have been few studies (Haffejee & Levine, 2020; Wilke et al., 2020; Montserrat et al., 2021) addressing the situation of children and adolescents in care services during the pandemic. These children and adolescents might be affected in a different way than other children due to the higher prevalence of psychological difficulties among those in the welfare system (Bronsard et al., 2016). Other studies have confirmed this disadvantage of children in the protection system compared to those in the general population (Marquis & Flynn, 2009; Jiménez-Morago et al., 2015). This effect also extends to children from families of disadvantaged social classes (Barriuso-Lapres et al., 2012).

The aim of this study is (a) to analyse, after one year of the pandemic , the effects of the COVID-19 pandemic on the mental health and Health Related Quality of Life (HRQoL) of children and adolescents in the Spanish welfare system or from at-risk families under the care of SOS Children's Villages Spain, (b) to compare the results with those of a previous study conducted during confinement immediately after the outbreak in 2020 following a cross-sectional design, and (c) to determine the most effective coping strategies used to address COVID-19 after one year of the pandemic.

SOS Children's Villages is an independent and international nongovernmental organization that cares for children who have lost parental care and that works to strengthen the bonds in vulnerable families to prevent the separation of children.

## Method

### Participants

Two sample sets of children and adolescents were recruited for the study. Participants came from 2 settings: (a) the Spanish welfare system under different alternative care modalities, including children in residential care and foster or kinship families, and (b) the prevention system, including children from vulnerable at-risk families who still lived with their parents but received help to prevent separation. All children were living in different regions of Spain and were under the care of SOS Children's Villages Spain.

The first set of participants (study I) included 604 children and adolescents interviewed in May 2020 during confinement following the COVID-19 outbreak in Spain. The results of a smaller group of 459 children and adolescents were previously published in Vallejo-Slocker et al. (2020). This study followed a cross-sectional design.

The participants' ages ranged from 8 to 18 years ($M = 12.88$ years; $SD = 2.739$), and 50.5% were males. 43.9% were in primary school, 44.4% were in secondary school, and 2.3% were in high school. The rest were pursuing postcompulsory studies. A total of 53% were in alternative care (42.1% in residential care, 3.1% in foster families, and 7.6% in kinship families), whereas 47% were in family strengthening programs.

The second set of participants (study II) included 743 children and adolescents interviewed in March 2021, after one year of the COVID-19 pandemic. The participants' ages ranged from 8 to 18 years ($M = 12.50$ years; $SD = 2.692$), and 52.8% were males. 47.1% were in primary school, 33.8% were in secondary school, and 1.9% were in high school. The rest were pursuing postcompulsory studies. A total of 31% were in alternative care (28.4% in residential care, 1.2% in foster families, and 1.3% in kinship families), whereas 69% were in family strengthening programs.

### Instruments

A brief sociodemographic questionnaire was used to collect information on gender, age, educational level, and care modality. Instruments in this study were chosen based on their generalized use to assess the health status of children and adolescents and its previous use in situations similar to a pandemic, such as disaster situations.

The Spanish version (García et al., 2000) of self-report form of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) was used to measure the mental health of children and adolescents. The SDQ is composed of 25 statements and five subscales: emotional symptoms, peer problems, conduct problems, hyperactivity, and prosocial behaviour.Each subscale ranges from 0 to 10. The first two subscales refer to internalizing problems, whereas the next two subscales refer to externalizing problems. All subscales, with the exception of the prosocial behaviour domain, are summed to obtain a total SDQ score that ranges from 0 to 40, where higher scores indicate worse functioning, with the exception of prosocial behaviour, where lower scores indicate worse performance. The self-report form, which uses a 3- point Likert response format (0-1-2), was administered to children from 5 to 18 years of age, since some studies have proven the appropriateness of using this tool with children from 5 years of age and older (Sharratt et al., 2014, Ortuño-Sierra et al., 2015, Español-Martín et al., 2021)

The Spanish version (Rajmil et al., 2014) of the self-report version of the KIDSCREEN-10 index (Ravens-Sieberer et al., 2010) is a HRQoL measure for use in children and adolescents from 8 to 18 years old. In the present study, the self-report version was used. The KIDSCREEN-10 index is composed of 10 items, each of which is rated on a 5-point response scale (1-2-3-4-5). Higher scores indicate better functioning. If direct scoring is used, the total score of the KIDSCREEN-10 index ranges from 0 to 40, where higher scores indicate better functioning.

The Spanish version (Pereda et al., 2009) of the Kidcope questionnaire (Spirito et al., 1988) is a brief screening measure of coping strategies for children and adolescents that has been

widely used in disaster research (Vigna et al., 2009), recently in the COVID-19 pandemic (Domínguez-Álvarez et al., 2020; McFayden et al., 2020), and that has been used in combination with the SDQ and KIDSCREEN-10 index (Faccio et al., 2018; Holen et al., 2012; Krattenmacher et al., 2013; Kühne et al., 2012; Philips, 2014; Reinoso & Forns, 2010). Different versions of the Kidcope exist for children (aged 8 to 12 years) and adolescents (aged 13 to 18 years). Both versions assess the frequency of use and perceived efficacy (helpfulness) of 10 coping strategies (distraction, social withdrawal, cognitive restructuring, self-criticism, blaming others, problem solving, emotional regulation, wishful thinking, social support, and resignation). The efficacy domain measured the perceived helpfulness of each strategy among those who reported using it. The child version is composed of 15 items rated on a dichotomous scale (yes, no) to assess the frequency of use and on a 3-point Likert response scale (not at all, a little, a lot) to assess the helpfulness of each strategy. The adolescent version is composed of 11 items rated on a 4-point Likert scale (not at all, sometimes, a lot of the time, almost all the time) to assess the frequency of use and a 5-point Likert response format (not at all, a little, somewhat, pretty much, very much) to assess the helpfulness of each strategy. As required by the Kidcope questionnaire, participants were asked to report on coping behaviours related to a specific stressor, the COVID-19 pandemic.

For all of the questionnaires administered, the children were asked to report how they felt over the last week.

*Procedure*

The questionnaires were administered using an online assessment platform. The children's responses were collected anonymously, and participation was voluntary under the consent of the care organization. The institutional review board of SOS Children's Villages Spain approved the study.

The children completed the questionnaires using devices with an internet connection. The assessment that took place in May 2020 included the sociodemographic questionnaire, SDQ and KIDSCREEN-10 measures. The March 2021 assessment also included the Kidcope.

*Data analysis*

First, the descriptive statistics for the SDQ, KIDSCREEN-10 index and Kidcope were calculated. As specified by Spirito et al. (1988), frequency of use on the Kidcope was analysed by grouping "almost all the time" and "a lot of the time" into the same category in the adolescent version. Efficacy was analysed by grouping "very much" and "pretty much" into the same category in the adolescent version and considering "a lot" for the children's version. Children's and adolescents' differences in the frequency of use of each coping strategy were analysed using the chi-square test. Cramer's V was also calculated to measure the effect size, following Cohen (1988), low (0.10), medium (0.30) and large (0.50) effect sizes considerations.

Second, an independent-samples t-test (95% confidence interval (CI)) was conducted to compare the differences in the SDQ and KIDSCREEN-10 scores between the 2020 and 2021 assessments. The effect sizes were calculated for all comparisons using Cohen's *d* and considering 0.20, 0.50 and 0.80 as low, medium and large effect sizes, respectively (Cohen, 1988). Additionally, the SDQ

score was classified into different categories (normal, borderline and abnormal) according to self-reported cut-off points (Goodman, 1997), and the percentage of cases classified in each group was compared across the 2020 and 2021 studies using the chi-square test and Cramer's V to measure the effect size.

Third, a decision tree analysis was performed to determine the coping strategies (independent variables) that had an impact on children and adolescents' mental health and HRQoL (dependent variables) during the COVID-19 pandemic. The chi-squared automatic interaction detector (CHAID) was used. The correction of multiple comparisons was controlled by Bonferroni adjustments. The minimum root and secondary nodes were established at 50 and 25, respectively (Onwuegbuzie & Collins, 2010). This technique is a data extraction procedure based on algorithms that determine the strongest relationship between the predictors and the outcome variable at each level of the tree, and it performs better than regression analysis if the relation between variables is complex (Loh, 2014; Stewart et al., 2018). The decision tree allows these relations to be determined more adequately; it highlights the main relations and is not forced to distinguish between independent, mediating, or moderating variables, and it offers specific predictive values to make decisions (Everitt, 2004).

For this analysis, mental health scores were drawn from the SDQ and were classified into two groups: internalizing and externalizing problems. Coping strategy scores were drawn from the Kidcope questionnaire, and HRQoL was assessed with the KIDSCREEN-10 index. The 10 strategies in the frequency of use domain were included in the analysis. Different analyses were performed for children and adolescents, resulting in 6 decision trees: (1) internalizing problems for children, (2) internalizing problems for adolescents, (3) externalizing problems for children, (4) externalizing problems for adolescents, (5) HRQoL for children and (6) HRQoL for adolescents.

Results

*Changes in mental health (SDQ scores) and HRQoL (KIDSCREEN scores) after one year of the COVID-19 pandemic*

Table 1 shows the comparison between the 2020 and 2021 studies. The mean scores and standard deviations indicate changes in mental health over the time of the COVID-19 pandemic. The t-test analysis shows that there was a statistically significant deterioration in the mental health (SDQ total score) of children and adolescents after one year of the pandemic; however, the effect size was low. All domains of mental health, except for prosocial behaviour, were significantly affected in the same direction, with low effect sizes in the test of the magnitude of the differences. With regard to prosocial behaviour, there were no statistically significant changes over time.

Additionally, the chi-square test showed an increase of 9.7% in the total number of cases classified as non-normal (borderline or abnormal). These statistically significant differences remained for the emotional, peer problems and conduct problems domain. The distribution of cases within the hyperactivity and prosocial domains did not change over time. Internalizing and externalizing problems were not classified into categories since cut-off points were not specified by Goodman (1997).

HRQoL (KIDSCREEN-10 index) did not change significantly over time.

*Table 1*
Changes in mental health (SDQ scores) and HRQoL (KIDSCREEN scores) after one year of the COVID-19 pandemic

| Measure | Mean levels (SD) | | t-test[a] | Cohen's d | % of participants in 2020 | | | % participants in 2021 | | | Chi-2[b] | Crammer's V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | | | Normal | Borderline | Abnormal | Normal | Borderline | Abnormal | | |
| Internalizing | 5.72 (3.55) | 6.39 (3.70) | 3.365**** | 0.18 | – | – | – | – | – | – | – | – |
| SDQ Emotional | 3.36 (2.39) | 3.72 (2.51) | 2.674**** | 0.14 | 78.8 | 10.1 | 11.1 | 75.4 | 8.2 | 16.4 | 8.563* | 0.079 |
| SDQ Peer problems | 2.36 (1.90) | 2.67 (1.93) | 2.952**** | 0.16 | 76.3 | 16.2 | 7.5 | 69 | 22.5 | 8.5 | 9.499** | 0.083 |
| Externalizing | 7.81 (3.99) | 8.52 (3.82) | 3.325**** | 0.18 | – | – | – | – | – | – | – | – |
| SDQ Conduct problems | 2.75 (2.12) | 3.23 (2.07) | 4.186**** | 0.22 | 67.9 | 12.9 | 19.2 | 58.1 | 14.9 | 26.9 | 14.476*** | 0.103 |
| SDQ Hyperactivity | 5.06 (2.45) | 5.29 (2.40) | 1.732* | 0.09 | 56.5 | 13.9 | 29.6 | 53.2 | 14.1 | 32.7 | 1.675 | – |
| SDQ Total score | 13.53 (6.23) | 14.92 (6.00) | 4.156**** | 0.22 | 64.2 | 18.4 | 17.4 | 54.5 | 23.6 | 21.9 | 13.033*** | 0.098 |
| SDQ Prosocial | 7.43 (1.91) | 7.57 (1.98) | 1.311 | – | 100 | 0 | 0 | 100 | 0 | 0 | 1 | – |
| KIDSCREEN-10 index | 37.86 (6.58) | 37.56 (7.08) | 0.798 | – | – | – | – | – | – | – | – | – |

Comparison of study I (n= 604) and study II (n=743) conducted in 2020 and 2021, respectively
* p < .05; ** p < .01; *** p < .001; **** p < .0005
[a] t-test, 1345 d.f. for all comparisons
[b] Chi-2, 2 d.f. for all comparisons

### Coping strategies (Kidcope scores) used by children and adolescents after one year of the COVID-19 pandemic

Table 2 shows the frequency and efficacy rates of children and adolescents with regard to the coping strategies used over the course of the pandemic. According to the chi-square test performed, the most frequently used strategies differed between children and adolescents, with the exception of blaming others, which was used by the same percentage of children and adolescents. Children tended to use social support, wishful thinking, cognitive restructuring, and problem solving, while adolescents tended to use problem solving, wishful thinking, social withdrawal, and resignation.

Both children and adolescents considered problem solving to be the most effective strategy to cope with the COVID-19 pandemic and social support to be the second most effective strategy. Children considered cognitive restructuring and emotional regulation to be the third and fourth most effective strategies, respectively; however, adolescents rated them in the opposite order.

### Relationship among mental health, perceived quality of life and strategies used to cope with the COVID-19 pandemic

Since internalizing and externalizing problems have been related to different ways of coping with stressors (Connor-Smith et al., 2000), different tree analyses were conducted based on these dependent variables. HRQoL was introduced in the model as a dependent variable as well.

Considering internalizing problems as the dependent variable, the decision tree performed for children showed a first-level node with resignation as a predictor [$F$ (1, 355) = 20.84, $p$ <.001]. A second level-level node under the resignation node showed an additional predictor, namely, self-criticism strategy [left branch: $F$ (1, 249) = 11.15, $p$<.001; right branch: $F$ (1, 104) = 6.04, $p$ <.05]. Distraction was the third predictor [$F$ (1, 135) = 5.33, $p$<.001]. The model was able to correctly classify 88.55% of the sample. No other coping strategy became part of the decision tree. Those who reported lower internalizing problems

*Table 2*
Coping strategies (Kidcope scores) used by children and adolescent one year after COVID-19 pandemic

| Kidcope Strategy | Frequency | | Efficacy | | Chi-square[c] | | |
|---|---|---|---|---|---|---|---|
| | Children[a] n (%) | Adolescents[b] n (%) | Children[a] n (%) | Adolescents[b] n (%) | X² (df) | p (two tailed) | Crammer's V |
| Distraction | 228 (64) | 133 (35.2) | 136 (38.35) | 210 (55.8) | 60.428 (1) | <0.001 | 0.286 |
| Social withdrawal | 148 (41.6) | 192 (50.8) | 152 (42.6) | 202 (53.5) | 6.438 (1) | <0.05 | 0.093 |
| Cognitive restructuring | 262 (73.4) | 147 (38.9) | 183 (51.5) | 223 (59) | 88.543 (1) | <0.001 | 0.327 |
| Self-criticism | 167 (46.8) | 136 (36) | 108 (30.3) | 184 (48.9) | 8.838 (1) | <0.05 | 0.109 |
| Blaming others | 93 (26.3) | 109 (29.1) | 118 (33.3) | 187 (49.5) | 0.714 (1) | >0.4 | 0.031 |
| Problem solving | 255 (71.7) | 230 (61.1) | 178 (50) | 269 (71.2) | 9.160 (1) | <0.05 | 0.111 |
| Emotional regulation | 244 (68.35) | 150 (39.9) | 152 (42.75) | 240 (63.6) | 60.658 (1) | <0.001 | 0.287 |
| Wishful thinking | 292 (81.9) | 201 (53.2) | 148 (41.6) | 162 (43.1) | 68.087 (1) | <0.001 | 0.304 |
| Social support | 307 (86) | 159 (42.3) | 227 (63.6) | 250 (66.2) | 159.703 (1) | <0.001 | 0.455 |
| Resignation | 106 (29.7) | 170 (45) | 131 (36.7) | 206 (54.7) | 18.283 (1) | <0.001 | 0.157 |

[a] Children aged 8-12 years (n= 357)
[b] Adolescents aged 13-18 years (n= 378)
[c] Compares children and adolescents's frequency of use of coping strategies

did not use distraction, resignation or self-criticism to cope with the pandemic, and those who used resignation and self-criticism strategies reported higher rates of internalizing problems (see Figure 1).

The decision tree performed for adolescents showed a first-level node with self-criticism as a predictor [$F(2, 375) = 15.39, p < .001$]. A second-level node under the self-criticism node showed social withdrawal as a predictor strategy [$F(1, 134) = 17.63, p < .001$]. The model was able to correctly classify 88.1% of the sample. No other coping strategy became part of the decision tree. Those who referred to lower internalizing problems did not use self-criticism strategies, while those who used them in combination with social withdrawal strategies to cope with the COVID-19 pandemic had more internalizing problems (see Figure 1).

Considering externalizing problems as the dependent variable, the decision tree performed for children showed a first-level node with blaming others as a predictor [$F(1, 355) = 38.11, p < 0.001$]. A second-level node under the blaming others node showed an additional predictor, i.e., the self-criticism strategy [$F(1, 261) = 13.85, p < 0.001$]. A third level node, under self-criticism, showed two other predictors: problem solving [$F(1, 148) = 6.67, p < 0.05$] and distraction [$F(1, 111) = 5.42, p < 0.05$]. The model was able to correctly classify 84% of the sample. No other coping strategy became part of the decision tree. Those who referred to lower

externalizing problems did not blame others, did not criticize themselves and frequently used problem solving strategies, while those who tended to blame others obtained the worst results (see Figure 2).

The decision tree performed for adolescents showed a first-level node with blaming others as a predictor [$F(1, 376) = 11.70, p < 0.001$]. A second-level node under the blaming others node showed an additional predictor, i.e., cognitive restructuring [$F(1, 266) = 14.02, p < 0.005$]. A third-level node under the cognitive restructuring node showed another predictor, namely, the self-criticism strategy [$F(1, 169) = 6.15, p < 0.005$]. The model was able to correctly classify 92% of the sample. No other coping strategy became part of the decision tree. Those who referred to lower externalizing problems tended to use cognitive restructuring to cope with the COVID-19 pandemic while using the blaming others strategy very few times. In contrast, those who used the self-criticism strategy, did not engage very frequently with cognitive restructuring and did not follow blaming others strategies had more externalizing problems (see Figure 2).

Considering HRQoL as the dependent variable, the decision tree performed for children showed a first-level node with social support as a predictor [$F(1, 355) = 25.14, p < 0.001$]. A second-level node under the social support node showed an additional
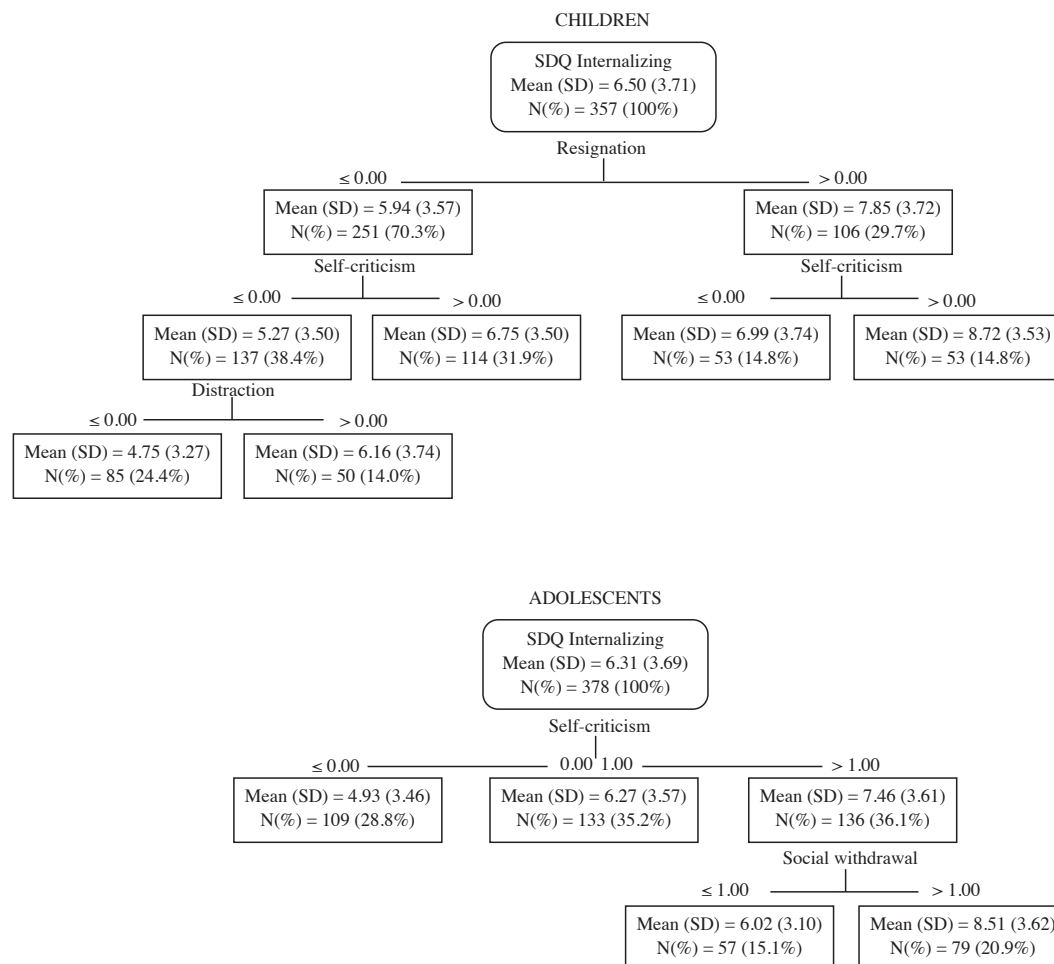


**Figure 1.** Determinants of internalizing problems for children and adolescents

predictor, namely, problem solving strategy [$F$ (1, 305) = 7.52, p <0.001]. A third level node, under the problem solving node, showed one more predictor, namely, self-criticism [$F$ (1, 191) = 7.43, p <0.05]. The model was able to correctly classify 89.9% of the sample. No other coping strategy became part of the decision tree. Those who had higher HRQoL did not criticize themselves and frequently used problem solving strategies and social support, while those who did not seek social support had the worst results (see Figure 3).

The decision tree performed for adolescents showed a first-level node with social withdrawal as a predictor [$F$ (1, 375) = 17.34, p < 0.001]. A second-level node under the social withdrawal node showed an additional predictor, namely, self-criticism [$F$ (1, 190) = 20.04, p <0.001]. The model was able to correctly classify 85.7% of the sample. No other coping strategy became part of the decision tree. Those who had higher HRQoL did not use the social withdrawal strategy, while those who tended to blame themselves and to isolate from people obtained the worst results (see Figure 3).

## Discussion

The present study aimed to determine changes in the mental health and HRQoL of children and adolescents from the Spanish welfare system or from at-risk families over the long term as a consequence of the COVID-19 pandemic. Additionally, it intended to determine the coping strategies used by this group to cope with the COVID-19 pandemic and the relationship between these strategies, mental health and HRQoL. The main findings of this study are discussed below.

First, the COVID-19 pandemic had an impact on the mental health of children and adolescents, but not on their HRQoL. After one year of the pandemic, the mental health of children and adolescents decreased by 9.7%, however their self-perceived quality of life did not change. This finding is consistent with those of other studies that have reported high levels of mental health problems but contrary to those of authors who reported a decrease in the HRQoL of children and adolescents during the pandemic (Jiao et al., 2020; Ezpeleta et al., 2020; Ravens- Sieberer et al., 2021).
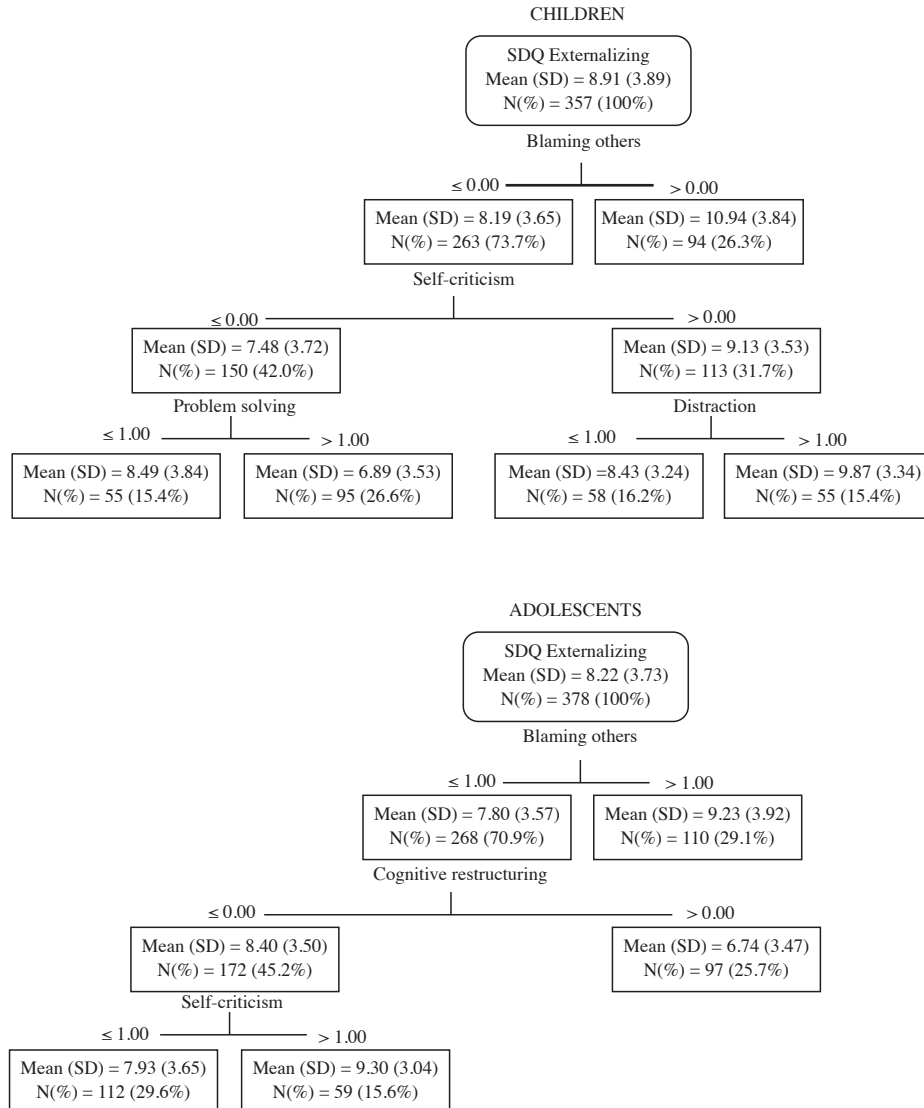


**Figure 2.** Determinants of externalizing problems for children and adolescents

CHILDREN

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┌──────────────────────────────┐
│     KIDSCREEN-10 index        │
│   Mean (SD) = 39.16 (6.45)    │
│     N(%) = 357 (100%)         │
└──────────────────────────────┘
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Social support

≤ 0.00 ———————————— > 0.00

| Mean (SD) = 35.06 (8.72) | Mean (SD) = 39.83 (5.75) |
| N(%) = 50 (14%) | N(%) = 307 (86%) |

Problem solving

≤ 1.00 ———————— > 1.00

| Mean (SD) = 38.67 (5.94) | Mean (SD) = 40-52 (5.53) |
| N(%) = 114 (31.9%) | N(%) = 193 (54.1%) |

Self-criticism

≤ 0.00 ———————————— > 0.00

| Mean (SD) = 41.49 (5.00) | Mean (SD) = 39.35 (5.92) |
| N(%) = 105 (29.4%) | N(%) = 88 (24.6%) |

ADOLESCENTS

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┌──────────────────────────────┐
│     KIDSCREEN-10 index        │
│   Mean (SD) = 35.97 (7.27)    │
│     N(%) = 378 (100%)         │
└──────────────────────────────┘
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Social support

≤ 0.00 ———————— 0.00  1.00 ———————————— > 1.00

| Mean (SD) = 39.40 (6.66) | Mean (SD) = 36.61 (5.49) | Mean (SD) = 34.12 (7.76) |
| N(%) = 84 (22.2%) | N(%) = 102 (27.0%) | N(%) = 192 (50.8%) |

Self-criticism

≤ 1.00 ———————————— > 1.00

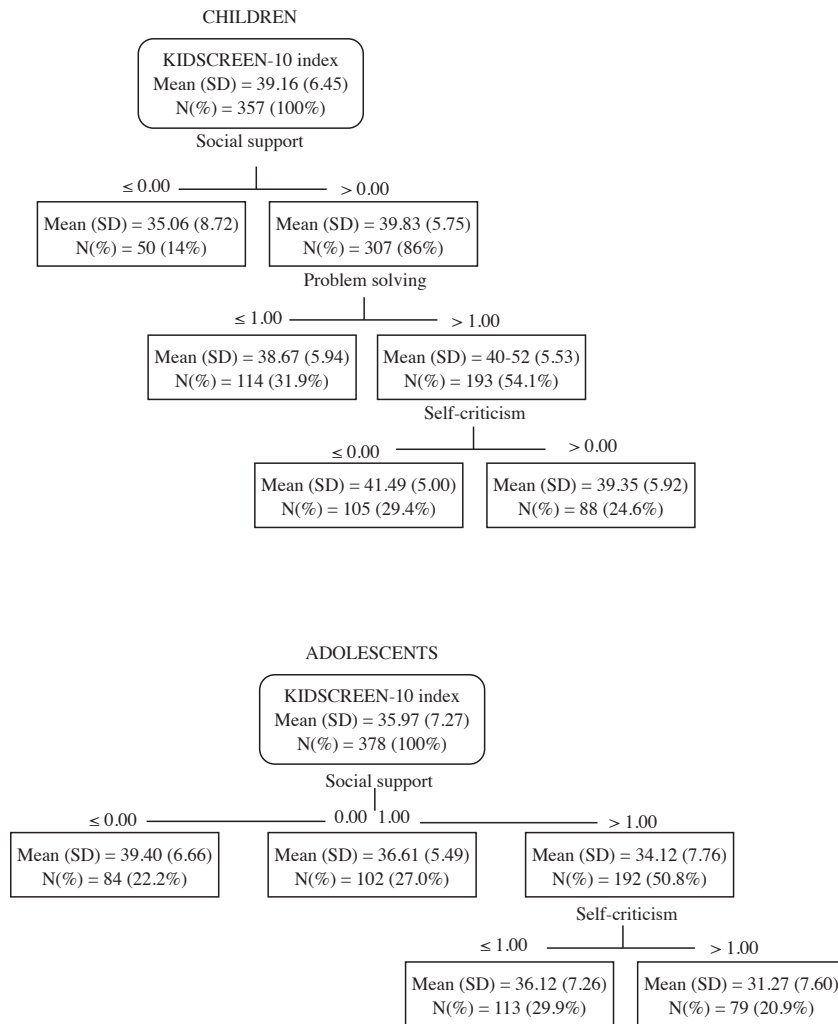| Mean (SD) = 36.12 (7.26) | Mean (SD) = 31.27 (7.60) |
| N(%) = 113 (29.9%) | N(%) = 79 (20.9%) |

**Figure 3.** Determinants of HRQoL for children and adolescents

In general, the number of cases classified as "normal" decreased in all mental health domains while the number of cases classified as "borderline" or "abnormal" increased. Specifically, after one year of the pandemic, children and adolescents showed a 3.4% increase in emotional problems, a 7.3% increase in peer problems, a 9.8% increase in conduct problems and a 3.3% increase in hyperactivity. In contrast, prosocial behaviour did not change over time, which means that despite the adversity and challenges that emerged during the pandemic, the children and adolescents in this study continued to engage in helping others and caring for others, which was also found by Reinoso & Forns (2010) in a group of adoptees in Spain. Overall, these differences were low in terms of effect size for mental health domains.

With regard to HRQoL, the results are consistent with a previous study (Vallejo-Slocker et al., 2020). The KIDSCREEN-10 index might be a very generic measure of self-perceived quality of life, which may cause underestimation or overestimation of HRQoL. Longer versions of the KIDSCREEN composed of 52 and 27 items comprise up to 10 different health domains from a variety of fields. In contrast, the KIDSCREEN-10 offers just a single dimension, not allowing us to separate the effects of these different variables.

One possible reason to explain the lack of change over time, or the lack of sensitivity of the questionnaire over time, could be that not all of these aspects of HRQoL change following the same direction (Ravens-Sieberer et al., 2014; Palacio-Vieira et al., 2008). Another explanation could be that this screening tool is not the most appropriate for children of vulnerable settings or health problems (Davis et al., 2009; Ravens-Sieberer et al., 2014).

Notably, the majority of children and adolescents were well adjusted despite the decline in mental health and performed similarly to general population. This finding is comparable to the results of Reinoso & Forns (2010), who used Kidcope and SDQ in a sample of adoptees and found that this group performed similarly to the general population.

Second, this study confirms the trend of a previous study by Vallejo-Slocker et al. (2020), in which it was found that the mental health of children and adolescents was affected by COVID-19 in an early stage of the pandemic outbreak and that mental health worsened in comparison to prepandemic data. Other studies with a similar methodology and screening instruments also found that the proportions of children and adolescents reporting lower mental health and lower HRQoL, instead of no effects on HRQoL as this

study found, had increased compared to the proportions both pre-pandemic and during the first wave (Ravens-Sieberer et al., 2021).

Third, children and adolescents used a variety of strategies; however, as noted by Reinoso & Forns (2010), not all of them were beneficial for mental health and HRQoL, even when rated as highly effective. Some authors have argued that the perception of efficacy acts as a psychological protective mechanism even when the strategies used are not the most appropriate (Kühne et al., 2012). The most frequently used or most "useful" strategies are not necessarily the most predictive strategies to explain mental health outcomes since there might be other mediating factors. This might be a reason to explain why cognitive restructuring and social withdrawal were not predictors of mental health during the COVID-19 pandemic, even when they were among the most frequently used strategies. Additionally, there were statistically significant differences in the strategies used by children and adolescents, which influenced the overall mental health of each of these groups, leaving younger children at a disadvantage, as noted by another Spanish study related to COVID-19 (Domínguez-Álvarez et al., 2020).

Fourth, nonactive coping strategies used together or on their own predicted worse mental health (higher internalizing and externalizing problems) and lower self-perceived HRQoL in children and adolescents. However, the use of active coping strategies or their combination with some nonactive coping strategies contributed to better mental health outcomes. This is consistent with other studies conducted during the COVID-19 pandemic that also used SDQ and Kidcope items (Domínguez-Álvarez et al., 2020; Krattenmacher et al., 2013; Faccio et al., 2018). These studies found that disengagement coping was associated with higher internalizing and externalizing difficulties, whereas engagement coping predicted psychosocial adjustment across all age groups. Strategies used to cope with uncontrollable stressors have an impact on mental health, leading to worse mental health and HRQoL outcomes for those who use avoidance-oriented coping and better outcomes for those who use problem-focused coping. COVID-19 acts as an uncontrollable stressor, and similar to studies conducted in adult populations in the context of pandemics, avoidant coping predicted the worst psychological health (Domínguez-Álvarez et al., 2020).

Fifth, self-criticism, as defined by the Kidcope ("I blame myself for causing the problem"), seemed to be the most important predictor for children's and adolescents' psychological wellbeing, as it was present in all the decision trees. Those who used this strategy to cope with the COVID-19 pandemic reported higher internalizing and externalizing problems and lower HRQoL. Additionally, the use of self-criticism in combination with distraction ("I try to forget it" or "I do something like watching TV or playing to forget it"), resignation or social withdrawal techniques, which are a way of avoidance, were associated with higher internalizing and externalizing problems along with a poorer HRQoL. According to Reinoso & Forns (2010), strategies such as distraction were associated with a wide variety of psychological problems since individuals high in self-criticism were extremely sensitive to stressors and more likely to make negative self-judgements. In contrast, those who did not use self-criticism strategies reported fewer internalizing problems during the pandemic and better HRQoL than those who used it. The implication in familiar activities could be a good strategy to promote acceptance and to avoid withdrawal or internalizing responses (Szabo et al., 2020).

Sixth, problem solving ("I try to sort out the problem by thinking of answers" or "I try to sort it out by doing something or talking to someone about it") seemed to be a relevant predictor of children's psychological wellbeing, acting as a protective factor, while cognitive restructuring ("I tried to see the good side of things and/or concentrated on something good that could come out of the situation") was a predictor of well-being for adolescents. The use of problem solving and cognitive restructuring improved the prediction of better mental health during the pandemic in all of the decision trees in which it appeared, and it was also associated with better HRQoL. Krattenmacher et al. (2013) found consistent results demonstrating that HRQoL and mental health decrease as a consequence of using avoidance rather than problem-solving strategies.

Seventh, not using social support strategies ("I tried to feel better by spending time with others like family, grownups, or friends") in the case of children or engaging in social withdrawal behaviours in the case of adolescents ("I stayed away from people, kept my feelings to myself, and just handled the situation on my own") contributed to the worst results (Richardson et al., 2021; Cicognani, 2011). Furthermore, along with self-criticism (Reinoso & Forns, 2010), these strategies were the most important predictors of HRQoL.

Eighth, other relevant predictors were resignation and blaming others and distraction, especially for children. Those who did not use these non-active coping strategies reported lower internalizing problems and lower externalizing problems. It seems that doing nothing, blaming others or distracting oneself are not very effective ways of coping with the COVID-19 pandemic. As reported by Krattenmacher et al. (2013) and Faccio et al. (2018), distraction and coping strategies based on avoidance were associated with worse mental health functioning and a higher prevalence of psychopathological problems in children and adolescents dealing with uncontrollable stressors.

Ninth, it is important to use standardized and well-established questionnaires because it enables to make comparisons between studies. It is also important to use self-report questionnaires to collect evidence directly from children and adolescents.

To summarize the results of this study, active coping strategies are essential to determine the mental health of children and adolescents in a pandemic. In this effort, children, their caregivers and families must be on the same path, to create a healthy climate that promotes activity over avoidance. (Szabo et al., 2020).

It is necessary to support children and adolescents in coping with the COVID-19 pandemic while protecting and maintaining their mental health and HRQoL. Special attention should be given to socially disadvantaged children to mitigate the burden caused by the pandemic (Ravens-Sieberer et al., 2021). Specific strengthening and protection programs should be put in place or reinforced to support these families and help them reduce the added risk factors caused by the pandemic and its effects on mental health. Additionally, further studies should examine in depth the determinants and measurement of HRQoL to better understand the progression of self-perceived quality of life in the context of pandemics and long-term catastrophes. Expectations about the end of the pandemic may have had a positive impact on HRQoL as well as the progressive return to normality and current improvement of day-to-day life.

Finally, one limitation of this study is its cross-sectional design. Further studies should find a way to maintain confidentiality while identifying participants to track each case. Even so, the majority

of children and adolescents who participated in the first study also participated in the second study. Additionally, participants were recruited from a single organization. Thus, the extent to which the findings can be generalized to other populations is not known;

however, the sample might be representative of children and adolescents in a similar situation since it was previously proven that they yielded similar results to the general population (Vallejo-Slocker et al., 2020).

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