Resilience, Life Satisfaction, And Optimism as Protective Factors Against Depressive Symptoms Among Adolescents During The COVID-19 Pandemic

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Abstract

This study aimed to analyze the resilience and life satisfaction factors that predicted and protected adolescents from depressive symptoms during the COVID-19 pandemic. A total of 278 adolescents aged between 14 and 17 years completed the Children's Depression Inventory (CDI-20), the Resiliency Scale for Children and Adolescents (RSCA), and the Multidimensional Life Satisfaction Scale for Adolescents (MLSSA) at two-time points during the COVID-19 pandemic (2020 and 2021). A LASSO regression was carried out to test the main predictors that could protect against depressive symptoms, and posteriorly, a mixed-effects generalized linear model was calculated to identify the significance of the results. The results indicated that the main predictors selected that protected against depressive symptoms were family, self, compared self, and self-efficacy from the MLSSA, as well as optimism, trust, sensitivity, and impairment from the RSCA. Statistical significance was only found for optimism (OR=.63, p<.05). Accordingly, it was concluded that factors of resilience and life satisfaction could have protected against depressive symptoms during the COVID-19 pandemic, and interventions focused on strengthening these factors could be implemented to minimize adverse mental health outcomes, such as depressive symptoms.

Keywords: psychological resilience, optimism, protective factors, depression, COVID-19

RESILIÊNCIA, SATISFAÇÃO DE VIDA E OTIMISMO: FATORES PROTETORES CONTRA DEPRESSÃO ENTRE ADOLESCENTES DURANTE A PANDEMIA DE COVID-19

Resumo

O objetivo deste estudo foi analisar os fatores de resiliência e satisfação de vida entre adolescentes que predisseram e protegeram contra sintomas depressivos durante a pandemia de COVID-19. Um total de 278 adolescentes com idade entre 14 e 17 anos completaram o Inventário de Depressão Infantil (CDI-20), Escala de Resiliência para Crianças e Adolescentes (RSCA) e Escala Multidimensional de Satisfação de Vida para Adolescentes (MLSSA) em dois momentos durante a pandemia de COVID-19 (2020 e 2021). Foi realizada regressão LASSO para testar os principais preditores que poderiam proteger contra sintomas depressivos e, posteriormente, realizado um modelo linear generalizado de efeitos mistos para identificar a significância dos resultados. Os resultados indicaram que os principais preditores selecionados que protegeram contra sintomas depressivos foram família, self, self comparado e autoeficácia do MLSSA e otimismo, confiança, sensibilidade e comprometimento do RSCA. A significância estatística foi encontrada apenas para otimismo (OR = 0,63, p < 0,05). Portanto, verificou-se que fatores de resiliência e satisfação de vida podem proteger contra sintomas depressivos durante a pandemia de COVID-19, e intervenções focadas no fortalecimento desses fatores podem ser implementadas para minimizar resultados negativos de saúde mental, como sintomas depressivos.

Palavras-chave: resiliência psicológica, otimismo, fatores de proteção, depressão, Covid-19

RESILIENCIA, SATISFACCIÓN DE VIDA Y OPTIMISMO: FACTORES PROTECTORES CONTRA DEPRESIÓN EN ADOLESCENTES DURANTE LA PANDEMIA DE COVID-19

Resumen

El objetivo de este estudio fue analizar los factores de resiliencia y satisfacción con la vida entre adolescentes que predijeron y protegieron contra los síntomas depresivos durante la pandemia de COVID-19. Un total de 278 adolescentes con edades entre 14 y 17 años completaron el Inventario de Depresión Infantil (CDI-20), Escala de Resiliencia para Niños y Adolescentes (RSCA) y Escala Multidimensional de Satisfacción con la Vida para Adolescentes (MLSSA) en dos momentos durante la pandemia de COVID-19 (2020 y 2021). Se realizó una regresión LASSO para probar los principales predictores que pudieran proteger frente a los síntomas depresivos y, posteriormente, se realizó un modelo lineal generalizado de efectos mixtos para identificar la significancia de los resultados. Los resultados indicaron que los principales predictores seleccionados que protegen contra los síntomas depresivos fueron la familia, uno mismo, uno mismo comparado y MLSSA autoeficacia y RSCA optimismo, confianza, sensibilidad y compromiso. Solo se encontró significación estadística para el optimismo (OR = 0,63, p < 0,05). Por lo tanto, se encontró que los factores de resiliencia y satisfacción con la vida pueden proteger contra los síntomas depresivos durante la pandemia de COVID-19, y se pueden implementar intervenciones centradas en fortalecer estos factores para minimizar los resultados negativos para la salud mental, como los síntomas depresivos.

Palabras-clave: resiliencia psicológica, optimismo, factores protectores, depresión, Covid-19

Some studies have shown that during the COVID-19 pandemic, which disrupted daily lives leading to social distancing and the implementation of remote classes, children and adolescents presented increased depressive and anxiety symptoms (Hawes et al., 2021; Kirsch et al., 2020; Magson et al., 2020; Orban et al., 2023). These pandemic containment measures limited the possibilities for socializing and performing daily physical activities, which are crucial for the development of young people (Orban et al., 2023). Accordingly, these limited possibilities for social contact added to significant routine changes due to the pandemic, and the natural challenges associated with their developmental stage, such as entering puberty, finding one's identity, and seeking approval from peers, may have played an essential role in contributing to depressive symptoms among adolescents (Tamarit et al., 2022). This increase in depressive symptoms seems to have been especially frequent among older children (Nearchou et al., 2020) and girls (Hawes et al., 2021; Racine et al., 2021). The systematic review by Orban et al. (2023) that included data from longitudinal studies since the pandemic indicates that although the results were mixed, the majority of studies showed evidence of increased depressive symptoms after the beginning of the pandemic and higher peaks of symptomatology during the pandemic restrictions, lockdowns and at times of higher COVID-19 infection rates (Orban et al., 2023).

In addition to its impacts on depression, the COVID-19 outbreak also affected life satisfaction. Life satisfaction (LS) is defined as an individual's evaluation of their life experiences. Therefore, it is associated with subjective well-being (Tamarit et al., 2022). Subjective LS might be a relatively stable component in children and adolescents' lives, being more affected by long-term experiences rather than short-term events (Choi et al., 2021). Therefore, overall, LS for young people could involve many life dimensions, such as family and school environment satisfaction, self-esteem, self-efficacy, and friendships (Segabinazi et al., 2010). Additionally, there is evidence in the literature that LS is inversely correlated with depressive symptoms, with greater LS equating to fewer depressive symptoms (Tamarit et al., 2022).

Some studies found decreased LS among children and adolescents (Magson et al., 2020; Pascale et al., 2021; Soest et al., 2020). Girls also seem to have presented more significant reductions in LS and well-being than boys (Magson et al., 2020; Pascale et al., 2021). Other studies did not find differences in LS between the pre-pandemic and during the pandemic period (Choi et al., 2021; Hamza et al., 2021). Choi et al. (2021) argued that this result could indicate the coexistence of negative impact and resilience co-occurring in children during the pandemic. Therefore, high-quality social relationships and academic engagement might have contributed to LS during the pandemic and worked as protective factors (Choi et al., 2021). Tamarit et al. (2022) found evidence that LS may have worked as a mediating factor for depressive symptoms among adolescents and young adults during the COVID-19 pandemic, which indicates that LS constitutes an essential protective factor (Tamarit et al., 2022).

Life satisfaction is also associated with resilience (Tamarit et al., 2022). Resilience is often identified as an essential factor that can protect individuals from adverse outcomes, such as depressive episodes (Konaszewski et al., 2021; Song et al., 2021; Tamarit et al., 2022).

Resilience depends on many cognitive and behavioral aspects, such as optimism, self-efficacy, adaptability, trust in people, tolerance to discomfort, sensitivity, and recovery from difficult situations (Barbosa, 2008). Therefore, it depends on personal and contextual factors (Tamarit et al., 2022). People with these characteristics tend to adapt faster and respond better to unexpected situations, which makes them less likely to experience psychological distress and mental health problems in a way that significantly impacts their functionality. Generally, resilience might be defined as a positive adaptation to adversity (American Psychology Association [APA], 2020; Pinto et al., 2021. Tamarit et al., 2022). Given that resilience is related to the ability to deal with stressors by using coping mechanisms to manage them, the COVID-19 pandemic might be considered a significant source of stress and possible adversity, as this outbreak led to significant life changes during this period (Tamarit et al., 2022). Resilience was critical during the pandemic as it could have minimized possible depressive symptoms due to its role as a buffer against risk factors, as well as possibly helping to maintain individuals' relative well-being (Konaszewski et al., 2021; Hu et al., 2023; Song et al., 2021; Tamarit et al., 2022). Accordingly, resilience can also be considered a protective factor for individuals (Hu et al., 2023; Tamarit et al., 2022).

Studies have shown that resilience and LS are inversely correlated with depressive symptoms and reduce the risk for depression in adolescents (Konaszewski et al., 2021; Tamarit et al., 2022; Uribe et al., 2021; Vasconcelos et al., 2020). Therefore, higher resilience and LS equate to a lower likelihood of adolescents being affected by depression.

Objective

This study aimed to analyze which factors of resilience and LS among adolescents predicted and protected from depressive symptoms during the COVID-19 pandemic.

Method

Participants

Participants were recruited by convenience, in person, from a private high school in São Paulo city.

Adolescents were considered eligible if they regularly attended any high school grade of the school where data collection took place. Participants were excluded from the study if they had any intellectual disability that impacted their understanding of the scales or did not agree to participate.

The study included 278 adolescents (170 female), with a mean age of 15.9 years (range 14 to 17 years).

Instruments

To assess depressive symptoms, the participants answered the Children's Depression Inventory (CDI-20) (Wathier et al., 2008). This screening inventory assesses affective reactions such as fear and sadness, cognitive aspects of pessimism, behavioral patterns, and somatic

symptoms. Answers are presented on a Likert-type scale ranging from 0 to 2, with total scores ranging from 0 to 40. The cutoff score that indicates significance for depressive symptoms is above 14 for boys and 18 for girls. In its adaptation study, this instrument presented Cronbach's alpha values ranging from .82 to .91 (Coutinho et al., 2008; 2014).

The Resiliency Scale for Children and Adolescents (RSCA) (Barbosa, 2008) was used to assess resilience. This scale consists of three subscales: a sense of mastery (SM), which assesses aspects of optimism, self-efficacy, and adaptability; a sense of relatedness (SR), which assesses aspects of trust, support, comfort, and tolerance; and emotional reactivity (ER), with items covering sensitivity, recovery, and impairment. Responses are given on a Likert-type scale ranging from 1 to 4. Higher scores in the SM and SR subscales indicate higher levels of resilience, whereas higher scores in the ER subscale indicate greater difficulty in self-regulation and lower resilience. In its adaptation study, Cronbach's alpha values were .83 for the SM subscale, .90 for the SR subscale, and .87 for the ER subscale (Barbosa, 2008).

The Multidimensional Life Satisfaction Scale for Adolescents (MLSSA) (Segabinazi et al., 2010) was administered to assess life satisfaction. This scale assesses seven dimensions of life: family, which involves satisfaction with the family environment; self, which includes self-esteem, good humor, and ability to relate; school; compared self, which involves comparative assessments of oneself with the peer group; non-violence, which covers the intention not to get involved in fights and arguments; self-efficacy, which involves the achievement ability; and friendship, which involves satisfaction in relationships with peers. The answers are presented on a Likert-type scale ranging from 1 to 5, with the total score ranging from 52 to 260. Scores above the mean indicate good LS. The Cronbach's alpha value for this scale was .93 in its adaptation study (Segabinazi et al., 2010).

Procedures

The University's Research Ethics Committee approved the study (CAAE: 21478419.80000.0084). All participants and their parents or legal guardians signed a consent form.

Data collection took place electronically in two periods: May and June 2020 (n = 194; 112 females) and April and May 2021 (n = 84; 58 females). An additional 33 individuals answered the instruments at both data collection moments and were excluded to control for previous exposure to the items of the instruments.

Data analysis

The total CDI score for each participant was calculated using the sum of the item responses. Item 9 evaluated suicidal ideation and was excluded from the administration at the school's request. Each participant was categorized as with (1) or without signs of depression (0). This variable was used as the model outcome.

Multiple pearson correlation coefficients were calculated by cross-referencing the data obtained from the CDI, RSCA, and MLSSA, explicitly focusing on the scores, subscales, and dimensions of these scales to elucidate the interrelationships among the variables.

Considering the number of variables and the sample size, a two-step approach was employed. First, the life satisfaction and resilience instrument subscale scores were included in the least absolute shrinkage and selection operator (LASSO) regression to identify the subset of regressors that likely predict the outcome. Second, the variables selected in the first step were subjected to a generalized linear mixed-effects regression (GLMER) with a logit link function to test the significance of the predictors.

The data were randomly split into ~70% (n = 196) for the LASSO procedure and ~30% (n = 82) for the GLMER model. In the LASSO, a train/test was performed with ~75% of the data (n = 147) to find the best-penalizing parameter and ~25% (n = 49) to test the model with the lowest errors in the training data. In the GLMER, a random intercept for the data collection period and the respondent's sex was modeled to control for variability associated with each variable.
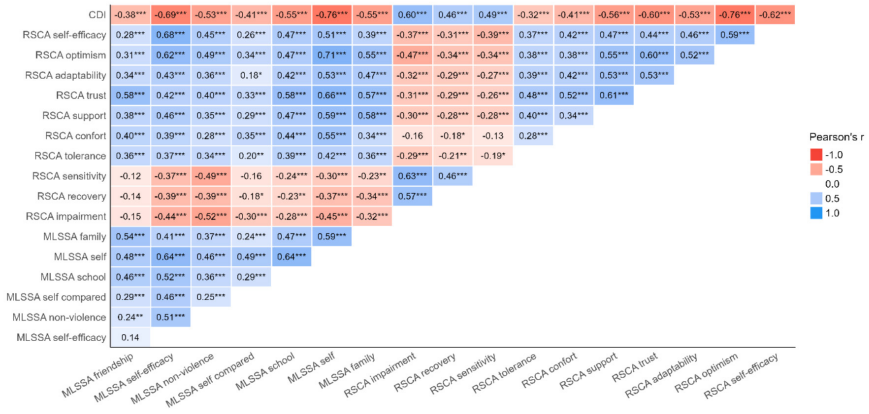
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Results

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The study sample included 278 high school students. Among this group, 43.2% (n = 120) were enrolled in their third year of high school, 30.6% (n = 85) in the second year, and 26.3% (n = 73) in the first year. Regarding the assessment of depressive symptoms, 22.3% (n = 62) of the participants surpassed the predefined cutoff point indicative of significant depressive symptoms. The mean score in the Children's Depression Inventory (CDI) for the entire sample was 11.34 (SD = 7.06). Notably, the subgroup exhibiting depressive symptoms beyond the cutoff point had a mean CDI score of 21.52 (SD = 5.02), while those below the threshold demonstrated a mean score of 8.42 (SD = 4.30). In terms of resiliency, evaluated using the RSCA, the participants' mean scores were 49.85 (SD = 13.06) for a sense of mastery, 67.51 (SD = 14.60) for a sense of relatedness, and 33.91 (SD = 13.48) for emotional reactivity. The measure of life satisfaction, quantified by the MLSSA, yielded an overall sample mean of 190.90 (SD = 26.78).

Pearson's correlations between the CDI and the resilience and life satisfaction subscales presented high to moderate magnitudes and were in the direction expected (Figure 1).

Figure 1

Correlations coefficients and significance levels between the CDI, RSCA, and MLSSA subscales

	MLSSA friendship	MLSSA self-efficacy	MLSSA non-violence	MLSSA self compared	MLSSA school	MLSSA self	MLSSA family	RSCA impairment	RSCA recovery	RSCA sensitivity	RSCA tolerance	RSCA confort	RSCA support	RSCA trust	RSCA adaptability	RSCA optimism	RSCA self-efficacy
CDI	-0.38***	-0.69***	-0.53***	-0.41***	-0.55***	-0.76***	-0.55***	0.60***	0.46***	0.49***	-0.32***	-0.41***	-0.56***	-0.60***	-0.53***	-0.76***	-0.62***
RSCA self-efficacy	0.28***	0.68***	0.45***	0.26***	0.47***	0.51***	0.39***	-0.37***	-0.31***	-0.39***	0.37***	0.42***	0.47***	0.44***	0.46***	0.59***	
RSCA optimism	0.31***	0.62***	0.49***	0.34***	0.47***	0.71***	0.55***	-0.47***	-0.34***	-0.34***	0.38***	0.38***	0.55***	0.60***	0.52***		
RSCA adaptability	0.34***	0.43***	0.36***	0.18*	0.42***	0.53***	0.47***	-0.32***	-0.29***	-0.27***	0.39***	0.42***	0.53***	0.53***			
RSCA trust	0.58***	0.42***	0.40***	0.33***	0.58***	0.66***	0.57***	-0.31***	-0.29***	-0.26***	0.48***	0.52***	0.61***				
RSCA support	0.38***	0.46***	0.35***	0.29***	0.47***	0.59***	0.58***	-0.30***	-0.28***	-0.28***	0.40***	0.34***					
RSCA confort	0.40***	0.39***	0.28***	0.35***	0.44***	0.55***	0.34***	-0.16	-0.18*	-0.13	0.28***						
RSCA tolerance	0.36***	0.37***	0.34***	0.20*	0.39***	0.42***	0.36***	-0.29***	-0.21**	-0.19*							
RSCA sensitivity	-0.12	-0.37***	-0.49***	-0.16	-0.24***	-0.30***	-0.23***	0.63***	0.46***								
RSCA recovery	-0.14	-0.39***	-0.39***	-0.18*	-0.23***	-0.37***	-0.34***	0.57***									
RSCA impairment	-0.15	-0.44***	-0.52***	-0.30***	-0.28***	-0.45***	-0.32***										
MLSSA family	0.54***	0.41***	0.37***	0.24***	0.47***	0.59***											
MLSSA self	0.48***	0.64***	0.46***	0.49***	0.64***												
MLSSA school	0.46***	0.52***	0.36***	0.29***													
MLSSA self compared	0.29***	0.46***	0.25***														
MLSSA non-violence	0.24**	0.51***															
MLSSA self-efficacy	0.14																

Pearson's r: -1.0, -0.5, 0.0, 0.5, 1.0

Note. *p < .05, **p < .01, ***p < .001

The LASSO regression produced a model that fit the testing data well. The selected variables, coefficients, and fit measures are presented in Table 1.

Table 1

Coefficients and measures of the LASSO model predicting the CDI category

Measures	Coefficients
Predictor coefficients [a]	
MLSSA	
Family	−.39
Self	−.32
Compared self	−.01
Self-efficacy	−.81
RSCA	
SM Optimism	−.24
SR Trust	−.56
ER Sensitivity	.12
ER Impairment	.16
Performance estimates	
Accuracy	.898
Sensitivity	.974
Specificity	.636
ROC-AUC	.805

Note. [a] Only showing the predictors selected by the LASSO model. MLSSA: Multidimensional Life Satisfaction Scale for Adolescents. RSCA: Resiliency Scale for Children and Adolescents.

The selected variables were applied to the GLMER model. The results of this model are presented in Table 2. Only the Optimism subscale of the RSCA was statistically significant as a predictor of the category "with signs of depression," with an OR = 0.63. No random effects were found, indicating that no variability was associated with the year of data collection or being male or female. Optimism could be considered a protective factor because high scores indicate lower odds of reporting symptoms of depression in the CDI. The R^2 of the model was high, indicating that the predictors explained a large portion of the data variability.

Table 2

Odds Ratio, model fit measures, and intraclass correlation of the generalized linear mixed-effects regression predicting the CDI categories

Measures	Odds Ratio (SE)
Predictors	
MLSSA	
Family	1.06 (0.06)
Self	0.87 (0.09)
Compared self	0.90 (0.13)
Self-efficacy	0.90 (0.15)
RSCA	
SM Optimism	0.63* (0.19)
SR Trust	0.93 (0.14)
ER Sensitivity	1.05 (0.10)
ER Impairment	1.13 (0.14)
Random effects	
ICCYear	.00
ICCSex	.00
Observations	82.00
Marginal R^2 / Conditional R^2	.81 / .81
AIC	56.75
BIC	83.22

Note. * p < .05.

Discussion

The prevalence of depressive symptoms among participants did not differ from 2020 to 2021. This could indicate that resilience processes could have occurred among the participants and supports findings from other studies that similarly did not find differences in mental health outcomes among individuals during the COVID-19 pandemic (Choi et al., 2021; Hamza et al., 2021). As argued by Choi et al. (2021), such findings indicate that protective factors, such as high-quality social relationships despite social distancing, and academic engagement may have buffered the negative impacts of the pandemic and demonstrate how processes of resilience may

occur during stressful times (Choi et al., 2021). In addition, it should be highlighted that, unlike other studies, no differences were found according to age or sex (Hawes et al., 2021; Kirsch et al., 2020; Nearchou et al., 2020; Racine et al., 2021).

Some studies have shown a negative correlation between overall LS and depression (Konaszewski et al., 2021; Tamarit et al., 2022; Vasconcelos et al., 2020). Family satisfaction and self-satisfaction seem to be especially relevant to overall LS, which indicates the importance of relationships in people's lives (Hu et al., 2023; Orban et al., 2023; Vasconcelos et al., 2020). Hu et al. (2023) found evidence that social adjustment partially mediated LS during the COVID-19 pandemic among college students, highlighting the importance of social connection as a protective factor (Hu et al., 2023). These findings are similar to the results found in the present study, as the LS dimensions of optimism, self, and self-efficacy showed an inverse correlation with depressive symptoms. This could indicate that adolescents who are more optimistic and satisfied with themselves and their self-achievement abilities are less likely to be affected by depressive symptoms. In line with the present results, Hu et al. (2023) state that individuals with higher learning abilities, who are more independent and have better interpersonal relationships, tend to be more effective in dealing with problems and have a higher sense of self-efficacy, which relieves perceived stress in adverse times and environments, as well as improves LS (Hu et al., 2023).

In the LASSO regression, the main predictors that appeared as protectors against depressive symptoms were the optimism, trust, sensitivity, and impairment factors of the RSCA. In contrast, the primary protectors were the family, self, compared self, and self-efficacy factors of LS. The confirmatory analysis indicated significance only for optimism. As resilience could minimize the focus on negative emotions and the belief that problems should be dealt with without help from other people, it could also contribute to more positive mental health outcomes and protect against depressive symptoms (Konaszewski et al., 2021). Hu et al. (2023) verified that resilience moderated the effect on LS among college students during the COVID-19 pandemic. The authors reported that students with higher resilience levels probably reversed the pandemic's negative impacts by adjusting their emotional states and reshaping their cognitive processes better than those with lower levels of resilience, facilitating a positive adaptation (Hu et al., 2023). Although Tamarit et al. (2022) also found evidence that resilience and LS were inversely correlated to psychopathological symptoms, they reported that the relation of resilience with these symptoms was lower than the association of LS. The authors explained this might be because LS tends to be more stable than resilience, a dynamic process (Tamarit et al., 2022). Despite being similar, these slightly different findings may be due to differences in sample sizes, ages, and the particular characteristics of the participants.

Notably, components of trust, sensitivity, impairment, and especially optimism were found to be protective against depressive symptoms. This indicates that individuals with fewer depressive symptoms tend to trust others, feel safe in relationships, feel safe to be themselves,

react less in uncomfortable situations, and remain calm when stressed. These results are similar and support findings from other recent studies (Choi et al., 2021; Magson et al., 2020).

As optimism was the primary protector against depressive symptoms, this could indicate that adolescents who had higher levels of optimism and maintained brighter perspectives of the world, themselves, and their capabilities to deal with situations in the present moment and the future were also less likely to develop depression during the pandemic. This finding aligns with the results found in other studies (Cevera-Torres et al., 2021; Uribe et al., 2021). The study by Cevera-Torres et al. (2021) investigated the influence of resilience and optimism on emotional distress among adults during the pandemic and found that resilience and optimism were protective against distress (Cevera-Torres et al., 2021). Additionally, the systematic review by Uribe et al. (2021) found significant evidence of a negative association between optimism and depression among the young population aged from 10 to 25 years of age; therefore, the authors concluded that interventions focused on promoting optimistic tendencies, especially among adolescents, could prevent depressive symptoms or episodes (Uribe et al., 2021).

Based on the present study's findings, it can be understood that interventions focusing on improving resilience and LS, especially optimism during difficult times, can be recommended to protect against depressive symptoms. School-based interventions implemented by psychologists or teachers might help avoid depression among adolescents (Bernaras et al., 2019). In April 2021, the school staff who conducted the data collection developed some activities with the students, such as conversations to identify the technical, emotional, and psychological difficulties they faced during the pandemic. These activities were collectively implemented with all students during school hours in presential classes. Additionally, it is relevant to report that the first wave of assessment took place between May and June 2020, when the classes were still completely remote, while the second wave of assessment took place between April and May 2021, when presential classes at school were allowed with a small number of students per class. Accordingly, the intervention performed by the school staff with the students and the return of presential classes and closer daily contact with friends may have improved the participants' optimism, life satisfaction, and resilience.

Some limitations of the present study should be highlighted, such as the cross-sectional design, the sole use of self-report instruments to assess results, and the fact that the participants attended the same school. Therefore, results may not be broadly generalizable. However, the findings provide relevant insight into LF and resilience factors that may be beneficial to encourage and improve among young people to minimize adverse effects during challenging times, such as the COVID-19 pandemic.

Final Considerations

The study showed that factors related to LS and resilience could have worked as protective factors against depressive symptoms for adolescents during the COVID-19 pandemic. The main LS factors identified were family, self, compared self, and self-efficacy, and the main resilience factors identified were optimism, trust, and sensitivity. However, significance was found only for optimism, with the scientific literature widely supporting this result. Therefore, the present study confirms that optimism is an essential factor that could protect against depressive symptoms. Finally, the findings could help guide future interventions promoting optimistic tendencies and minimizing or preventing depressive symptoms.

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