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Cyberbullying in Adolescents: Resilience as a Protective Factor of Mental Health Outcomes

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Abstract

The present cross-sectional research examined the moderating role of resilience in the relationship between cyberbullying victimization and mental health outcomes, measured based on depression symptoms and life satisfaction. The sample consisted of 2,108 adolescents aged 12–17 who completed measures of cyberbullying victimization, resilience, depression, and life satisfaction. Structural equation models showed an appropriate fit of the moderation model of resilience in the relationship between cyberbullying victimization and mental health outcomes [$\chi^2(123) = 764.082$; root-mean-squared error of approximation = 0.050; comparative fit index = 0.953; Tucker–Lewis index = 0.942]. Regression analyses revealed significant interaction effects, indicating that among adolescents with high levels of resilience, cyberbullying victimization was associated with fewer symptoms of depression and a smaller reduction in life satisfaction. This study highlights the importance of working on resilience in adolescents as a mechanism to deal with cyberbullying victimization.

Keywords: cyberbullying, victimization, resilience, depression, life satisfaction, SEM

Introduction

CYBERBULLYING INVOLVES INTENTIONAL and repeated aggression in which adolescents use computers, mobile phones, and other technological devices to abuse, threaten, humiliate, or harass other youths who cannot defend themselves.[1,2] In an effort to combine results obtained in different studies, researchers concluded that prevalence rates of cyberbullying victimization varied considerably, between 10 percent and 40 percent according to the majority of studies.[3–5] Moreover, available empirical data indicated that cyberbullying has serious negative consequences for the victims.[4,6–8] Specifically, cyberbullying had been related with one of the most serious and frequent internalized disorders during adolescence: depression symptoms.[3,9]

Given that cyber-victimization can have negative consequences such as depression, it may be hypothesized that being a victim of cyberbullying can negatively affect life satisfaction. Life satisfaction had been studied as a component of subjective well-being[10] and involves a cognitive assessment of the quality of life itself. Accordingly, several studies had concluded that young people who had been victims of cyberbullying expressed less life satisfaction compared with young people who had not been victimized.[11] Therefore, it is necessary to examine moderator variables that can diminish the impact of cyberbullying to prevent negative outcomes during adolescence. Although understudied, one of the proposed variables that could ameliorate the consequences of different types of victimization is resilience.

Resilience

In an attempt to find ways to avoid the occurrence of the aforementioned negative consequences, researchers had identified protective factors, such as resilience.[12–16] Studies focused on resilience understood as a psychological construct to deal with adversity have gained relevance in the last decades.[15] Resilience is defined as a positive adaptation or recovery from adverse situations or experiences.[17] This implies the necessary presence of two elements, a significant threat and the occurrence of a positive adaptation. In this process, people's resources, their outlook on life, and their environment facilitate this capacity for adaptation and recovery in the face of adversity.[18–20] Indeed, previous research had shown that resilience is a protective factor against

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the negative outcomes of a wide range of medical diagnoses, such as cancer,[21] HIV,[22] psychopathologies,[23] and Internet addiction.[24]

In addition, other studies had indicated that resilience can be a modulating variable in the physical and mental health of adolescents.[25] For example, resilience is an important protective factor in preventing and facing different forms of victimization. Following this line of thought, previous studies had analyzed the moderating effect of resilience between victimization and psychological symptoms[26–29] and had found that high levels of resilience were related to better mental health status. For instance, Hamby et al.[30] found that victims of maltreatment and other forms of violence showed fewer mental health problems, such as depression and anxiety, the higher their level of resilience.

Resilience and cyberbullying

Previous research had shown that adolescents who suffered from bullying but could cope with it were characterized as resilient.[31] However, little is known about the potential protective factor of resilience for victims of cyberbullying. In fact, to date we only know of one study that had examined the relationship between resilience and cyberbullying. Hinduja and Patchin[1] found that students with higher levels of resilience were less likely to report online victimization, and among those who did report being victimized, resilience acted as a buffer, hindering detrimental effects at school (e.g., ability to learn or feel secure at school). Despite this, we are unaware of any study that has analyzed whether resilience has a moderating effect on mental health outcomes, such as depressive symptomatology or lower life satisfaction, after being a victim of cyberbullying.

The present study

The aim of this study was to examine the moderating role of resilience in the relationship of cyberbullying victimization with depression symptoms and life satisfaction among adolescents. We hypothesized that higher levels of resilience will weaken the relationship between being a victim of cyberbullying and more depression symptoms. In this regard, we expected that victims of cyberbullying with higher resilience would report depression symptoms to a lesser extent that victims with lower resilience. In addition, we hypothesized that the relationship between cyberbullying victimization and life satisfaction would be moderated by resilience. Thus, cyberbullying victimization would have less of an impact on life satisfaction among those victims with higher levels of resilience.

Methods

Participants

The sample consisted of 2,108 participants. The participants were students from 11 secondary schools in central Spain. The schools were randomly selected and included both public and private schools. The participants' ages ranged from 12 to 17 (average age = 13.60, standard deviation [*SD*] = 0.97; 51.9 percent girls, 48.1 percent boys). Within the sample, 94.4 percent were heterosexual, 4.2 percent bisexual, and 0.3 percent did not indicate sexual orientation. Most of the participants were born in Spain (87.2 percent), while 8.3 percent were born in Latin America, 1.52 percent in other European countries, 0.76 percent in Asian countries, 0.52 percent in African countries, 0.19 percent in North America, and 1.5 percent in unspecified locations.

Measures

Cyberbullying. We used a short version of the victimization subscale of the Cyberbullying Questionnaire.[32,33] This scale is composed of five items on how often minors have been victims of cyberbullying during the previous year (e.g., ''Sent me threatening or insulting messages''). The response scale used was 0 (never), 1 (one or two times), 2 (three or four times), and 3 (five or more times). This scale had shown good psychometric properties in a sample consisting of Spanish adolescents.[32] The internal consistency in this sample was 0.704.

Resilience. We used the Resilience Scale for Adolescents.[34] Previously adapted into Spanish by Ruvalcaba-Romero et al.,[35] this scale consists of 22 items coded on a Likert-type scale ranging from 0 (strongly disagree) to 5 (strongly agree). Some examples of items are ''Self-confidence helps me overcome difficult moments'' and ''I have some friends and relatives who really care about me.'' Item factor loadings for this sample were all above 0.73, except for item 1 (0.24). The internal consistency in this sample was 0.975.

Depression symptoms. We used the depression subscale of the Spanish version of the Brief Symptom Inventory.[36–38] This subscale comprised six items. Participants had to indicate how much each problem has bothered or distressed them during the past 2 weeks using a 5-point scale ranging from 0 (not at all) to 4 (extremely). One of the sample items is ''feelings of worthlessness.'' The Spanish version of the scale had shown appropriate psychometric properties.[37] The internal consistency in this sample was 0.868.

Life satisfaction. The Spanish version of the Satisfaction with Life Scale was used.[39–41] This scale assesses perceived life satisfaction with a 5-point scale ranging from 0 (''not at all'') to 4 (''extremely'') and comprised five items. Examples of items are ''In most ways my life is close to my ideal'' and ''The conditions of my life are excellent.'' The internal consistency in this sample was 0.864.

Control variables. The questionnaire also included sociodemographic variables, such as sex, age, sexual orientation, and type of school (i.e., public or private), that were entered in the analysis as statistical controls.

Procedure

The study was approved by the ethics committee of Autonomous University of Madrid. Based on the proportion of the distribution of the type of institution (public or private), a total of 11 educational institutions participated in the study; six were public and five were private. Parents were informed and were offered the option of refusing to let their children participate by sending a signed letter to the school. Eighty-five parents declined to allow their children to participate. Participation was voluntary, and the answers were anonymous to promote sincerity. No

minors refused to participate in the study. Once the questionnaires were completed, all participants received information sheets that listed community psychological resources and e-mail addresses for contacting the researchers if necessary.

Statistical analysis

Structural equation models (SEMs) were conducted using the lavaan package[42] from the free statistical software program R.[43] The comparative fit index (CFI), the Tucker–Lewis index (TLI), and the root-mean-squared error of approximation (RMSEA) were used to assess the goodness-of-fit of the models according to the cutoff points established in the literature[44,45] (CFI >0.90, TLI >0.90, and RMSEA <0.08). Akaike information criterion[46] values were also reported. The rest of the analysis was carried out using SPSS.[47]

Results

Descriptive statistics

Frequency analysis and descriptive statistics were conducted to describe the characteristics of the sample. To compute prevalence, variables were dichotomized to reflect whether the minor had been victim of cyberbullying three or more times during the past year. The prevalence of cyberbullying was 10.83 percent, with no significant differences as a function of sex [10.41 percent of girls and 10.13 percent of boys, $\chi^2(1) = 0.31$, $p = 0.56$]. For depression symptoms, items were dichotomized so that 0 reflected the absence of the symptom and 1 reflected the presence of the symptom (not at all = 0, a little bit, moderately, quite a bit, and extremely = 1). Ten percent of the adolescents displayed no symptoms, 24.4 percent displayed one or two symptoms, 31.6 percent displayed three or four symptoms, and 34 percent displayed more than five symptoms.

We then calculated the Spearman bivariate correlations between the variables of interest due to the non-normal distribution (Table 1). The mean score of the items on each scale was used for correlations and subsequent analyses. All correlations between the interest variables in the study (i.e., cyberbullying, resilience, depression, and life satisfaction) were significant and in the expected direction. Sex, age, sexual orientation, and type of school showed a significant correlation with both depression and life satisfaction; therefore, these variables were included as control variables in the models.

Confirmatory factor analysis

To determine the model fit of the different models, a number of confirmatory factor analyses (CFAs) were conducted on the final sample controlling for sex and age, type of school, and sexual orientation. These analyses were applied using maximum likelihood estimation with robust (Huber-White) standard errors. This estimation method is appropriate when data are non-normal.[48] As shown in Table 2, the CFA models displayed an adequate fit for (a) cyberbullying: $\chi^2(65) = 169.983$; RMSEA = 0.040; CFI = 0.919; TLI = 0.902; (b) resilience: $\chi^2(290) = 3{,}643.739$; RMSEA = 0.074; CFI = 0.909; TLI = 0.898; (c) depression symptoms: $\chi^2(33) = 340.635$; RMSEA = 0.070; CFI = 0.946; TLI = 0.926; and (d) life satisfaction: $\chi^2(27) = 224.265$; RMSEA = 0.061; CFI = 0.958; TLI = 0.945. We also estimated a measurement model that included all the variables (without structural relationships), which served as a baseline to compare the final model. This model displayed adequate fit, $\chi^2(111) = 721.030$; RMSEA = 0.055; CFI = 0.957; TLI = 0.948.

Relationship among cyberbullying, resilience, and mental health outcomes

Once the measurement model was established, we estimated one final structural model for depression symptoms and life satisfaction as criterion variables. We included resilience and cyberbullying as predictor variables. To test the moderating role of resilience on the relationship between cyberbullying and the two criteria (i.e., depression symptoms and life satisfaction), we also included the interaction term (resilience × cyberbullying) as a predictor in the SEM. We followed the procedures advocated by Foldnes and Hagtvet[49] to compute the interaction term between factor scores. First, the factor scores for resilience and cyberbullying were calculated. Second, the product of the factor scores for resilience and cyberbullying was computed. This product (resilience × cyberbullying) was entered as a predictor in the model. The proposed model for depression symptoms and life satisfaction had adequate fit: $\chi^2(149) = 1{,}270.368$; RMSEA = 0.066; CFI = 0.923; TLI = 0.907 (Fig. 1).

Table 1. Spearman Bivariate Correlations and Descriptive Statistics of the Study Variables

	Resilience	*Cyberbullying*	*Depression*	*Life satisfaction*	*Age*	*Sex*	*Type of school*
Cyberbullying	–0.151***						
Depression	–0.376***	0.322***					
Life satisfaction	0.424***	–0.252***	–0.498***				
Age	–0.088***	0.125***	0.186***	–0.181***			
Sex	0.072	–0.007	–0.215***	0.107***	0.021		
Type of school	0.267***	–0.004	0.044*	–0.086***	0.161***	–0.026	
Sexual orientation	0.101***	–0.076**	–0.137***	0.126***	–0.058**	0.130***	–0.072*
Mean (*SD*)	2.67 (1.07)	0.19 (0.28)	1.12 (0.91)	2.75 (0.89)	13.60 (0.97)		

Note: the average score of each scale (mean score of the total number of items) was used for the analyses. Type of school (0 = private school; 1 = public school); sexual orientation (0 = nonheterosexual; 1 = heterosexual); sex (1 = females; 2 = males).

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

SD, standard deviation.

Table 2. Goodness-of-Fit Indices for the Different Models

	No. of parameters	*RMSEA (90 percent CI)*	*SRMR*	*AIC*	*CFI*	*TLI*
Model resilience	61	0.074 (0.072 to 0.076)	0.044	121,628.918	0.909	0.898
Model cyberbullying	26	0.040 (0.032 to 0.047)	0.038	28,090.185	0.919	0.902
Model depression symptoms	22	0.070 (0.063 to 0.076)	0.042	45,040.800	0.946	0.926
Model life satisfaction	18	0.061 (0.054 to 0.069)	0.037	38,293.435	0.958	0.945
Measurement model (including all the variables)	42	0.055 (0.051 to 0.059)	0.033	111,595.593	0.957	0.948
Final model depression symptoms—life satisfaction	46	0.066 (0.062 to 0.069)	0.062	102,601.213	0.923	0.907

AIC, Akaike information criterion; CFI, comparative fit index; CI, confidence interval; RMSEA, root-mean-squared error of approximation; SRMR, standardized root mean of the residual; TLI, Tucker–Lewis index.

To plot the interaction and to test the simple slopes of the moderation model, we used the PROCESS add-on for SPSS[50] (Model 1). The observed variables of resilience, cyberbullying, and the interaction term (resilience × cyberbullying) were entered as predictors. The continuous variables (resilience and cyberbullying) were mean-centered to reduce multicollinearity concerns when computing interaction terms. Following the suggestion of Cohen and Cohen,[51] all main effects and interactions were interpreted in the first block in which they appeared in the regression analyses.

The regression analysis revealed a main effect of cyberbullying on depression symptoms, unstandardized coefficient (B) = 0.629, $t(2101) = 14.878$, $p < 0.001$, 95 percent confidence interval (CI) = (0.546 to 0.712), indicating that adolescents who experienced more (vs. less) cyberbullying victimization have more depression symptoms. A main effect of resilience also emerged, $B = -0.058$, $t(2101) = -11.690$, $p < 0.001$, 95 percent CI = (−0.068 to −0.048), indicating that adolescents with higher levels of resilience have fewer depression symptoms.

More importantly, the predicted resilience × cyberbullying interaction was significant, $B = -0.004$, $t(2101) = -2.557$, $p = 0.011$, 95 percent CI = (−0.008 to −0.001). As illustrated in Figure 2, among those with lower levels of resilience (analyzed at 1 *SD* below the mean), cyberbullying victimization was positively associated with more depression symptoms, $B = 0.714$, $t(2101) = 13.302$, $p < 0.001$, 95 percent CI = (0.609 to 0.819). For those with higher levels of resilience (analyzed

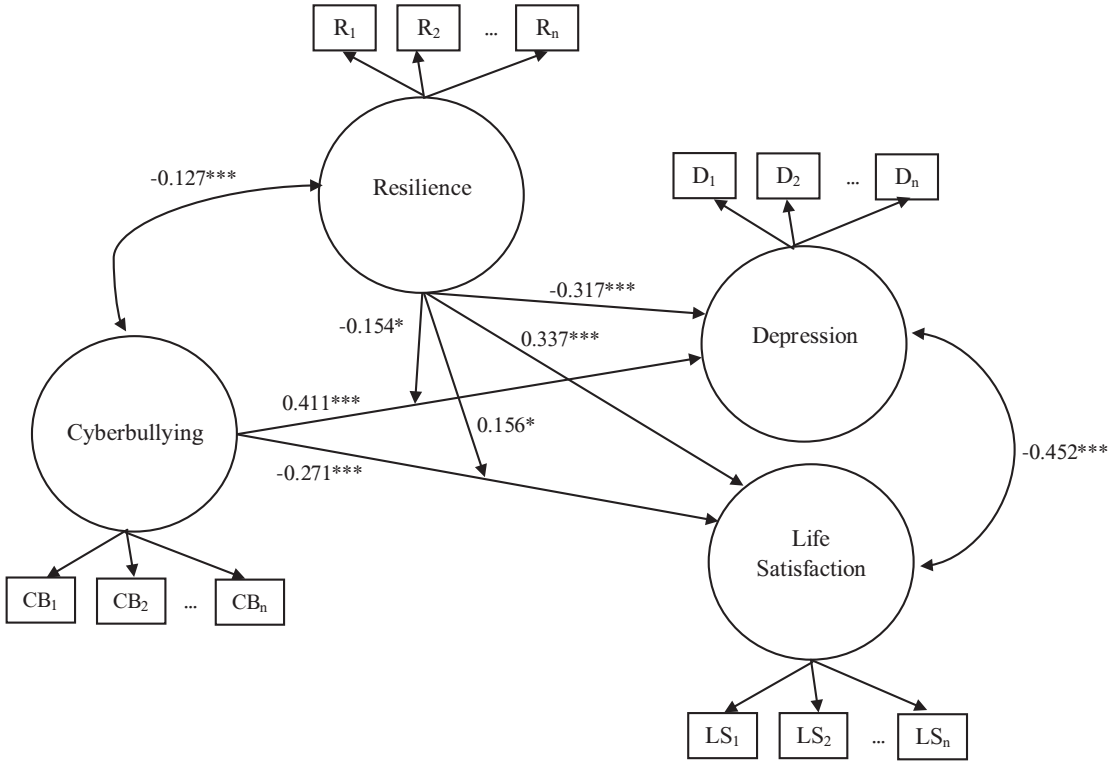

FIG. 1. Hypothesized SEM for depression symptoms and life satisfaction Note: sex, age, sexual orientation, and type of school were included as control variables in the model. Model fit: $\chi^2(149) = 1{,}270.368$; RMSEA = 0.066; CFI = 0.923; TLI = 0.907; $^*p < 0.05$, $^{***}p < 0.001$. CFI, comparative fit index; RMSEA, root-mean-squared error of approximation; SEM, structural equation model; TLI, Tucker–Lewis index.

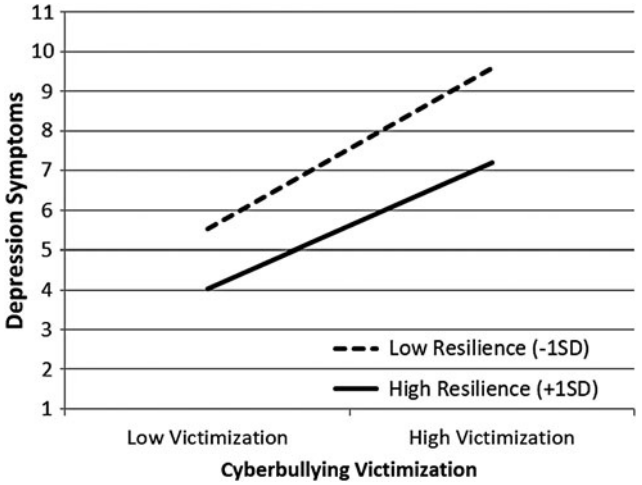

FIG. 2. Relationship between cyberbullying and depression symptoms as a function of resilience Note: $B = 0.508$*** at high resilience (+1 *SD*); $B = 0.714$*** at low resilience (−1 *SD*); ***$p < 0.001$. *SD*, standard deviation.

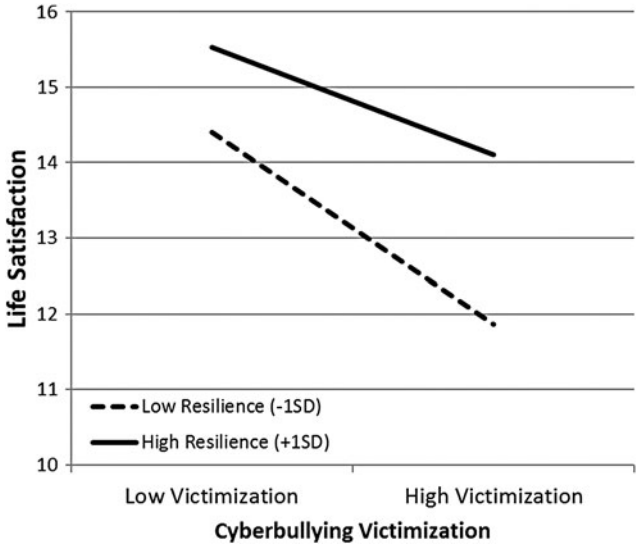

FIG. 3. Relationship between cyberbullying and life satisfaction as a function of resilience Note: $B = -0.270$*** at high resilience (+1 *SD*); $B = -0.423$*** at low resilience (−1 *SD*); ***$p < 0.001$.

at 1 *SD* above the mean), a significant relationship also emerged between cyberbullying victimization and depression symptoms, $B = 0.508$, $t(2101) = 7.981$, $p < 0.001$, 95 percent CI = (0.383 to 0.632), but the interaction indicates that this association weakens as resilience increases.

When life satisfaction was included as the dependent variable, the regression analysis revealed a main effect of cyberbullying on life satisfaction, $B = -0.360$, $t(2101) = -9.966$, $p < 0.001$, 95 percent CI = (−0.431 to −0.289), indicating that adolescents who experienced more (vs. less) cyberbullying victimization have lower levels of life satisfaction. A main effect of resilience also emerged, $B = 0.052$, $t(2101) = 12.406$, $p < 0.001$, 95 percent CI = (0.044 to 0.061), indicating that adolescents with higher levels of resilience have higher levels of life satisfaction.

More importantly, the predicted resilience × cyberbullying interaction was significant, $B = 0.003$, $t(2101) = 2.227$, $p = 0.026$, 95 percent CI = (0.0004 to 0.006). As illustrated in Figure 3, among those with lower levels of resilience (analyzed at 1 *SD* below the mean), cyberbullying victimization was negatively associated with higher levels of life satisfaction, $B = -0.423$, $t(2011) = -9.225$, $p < 0.001$, 95 percent CI = (−0.513 to −0.333). For those with higher levels of resilience (analyzed at 1 *SD* above the mean), a significantly negative association also emerged between cyberbullying victimization and life satisfaction, $B = -0.270$, $t(2101) = -4.959$, $p < 0.001$, 95 percent CI = (−0.376 to −0.163), but the interaction indicates that this association was attenuated as resilience increased.

Discussion

A considerable number of studies in the last two decades had shown the high prevalence and negative consequences of cyberbullying among adolescents.[3,4] Therefore, it is of great importance to determine the factors that can help reduce the deleterious consequences that electronic aggression can have for the mental health of victims. Resilience had emerged as an important process that can buffer the effects of different trauma and victimization experiences.[26] In this regard, the main objective of this study was to examine whether individual resilience helped reduce the negative effects of cyberbullying on the depression symptoms and life satisfaction of adolescents.

The first relevant result was related to the prevalence of cyberbullying. Almost 11 percent of adolescents in this study were victims of some type of cyberbullying in the last year. Although prevalence estimates have varied considerably between studies,[5] the prevalence in this study is consistent with the results of other research previously carried out in Spain.[52] These data indicate that cyberbullying is a significant problem of considerable prevalence among adolescents.

The results also showed a significant relationship of cyberbullying with both depression symptoms and satisfaction with life. Therefore, being a victim of cyberbullying increased the probability of reporting depression symptoms while reducing satisfaction with life.[9] It is possible that victimization in cyberspace, including being on the receiving end of insulting or threatening messages, degrading comments, or rumors that make the victim appear ridiculous, progressively deteriorate the victim's self-esteem and generate feelings of loneliness and maladjustment, which could ultimately be related to greater depression and less life satisfaction. In fact, cyberbullying had been associated with a higher probability of suicidal ideation.[53]

In addition, higher levels of resilience were related to fewer depression symptoms and greater satisfaction with life. These results indicate that typical components of resilience, such as social competence, family cohesion, and goal orientation, are associated with better psychosocial adjustment.[52] More importantly, resilience was shown to be a buffering variable in the relationship of cyberbullying with depression symptoms and life satisfaction. In line with our hypotheses, the relationship between being a victim of cyberbullying and depression was weaker among adolescents

with a higher level of resilience. Even so, the relationship between cyberbullying and depression was still significant in both adolescents with low and high levels of resilience. Similar results were observed regarding life satisfaction. The relationship between being a victim of cyberbullying and reduced satisfaction with life was weaker among adolescents with higher levels of resilience. In other words, although cyberbullying was associated with less satisfaction with life, high levels of resilience weakened this relationship. Taken together, these results indicate that resilience is an important protective factor against the potential negative consequences of cyberbullying, including more depression symptoms and less satisfaction with life.

This study has several limitations that must be considered. First, although the sample is large, it is not representative of all adolescents. Therefore, caution is recommended in generalizing the results. Future studies with additional samples of adolescents in other cultural contexts should be undertaken to replicate the findings. Second, this study was based on participant self-report measures. Future studies should include other assessment methods (e.g., interviews) and other sources of information (e.g., parent and peer reports). Finally, the cross-sectional nature of the study prevents establishing temporal relationships between the variables. It is important that future longitudinal studies examine the temporal relationships between cyberbullying, resilience, and potential negative consequences.

This study is one of the first to analyze resilience as a protective factor against the development of depression symptoms and decreased satisfaction with life among victims of cyberbullying. The results have important applied implications. For instance, cyberbullying prevention efforts should focus on enhancing the components of individual resilience, such as social support, family cohesion, and a sense of personal competence. The promotion of these factors can play an important role in preventing negative consequences in the case of victimization. Furthermore, once victimization has occurred, strengthening the resilience factors could play an important role in recovery. Therefore, mental health professionals, educators, and parents should pay special attention to resilience factors as a way to help victims after experiencing electronic aggression. In short, this study focused on the importance of victim protection through resilience, an aspect that constitutes a fundamental factor in the fight against cyberbullying.

Author Disclosure Statement

No competing financial interests exist.

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