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# Unraveling the links among cybervictimization, core self-evaluations, and suicidal ideation: A multi-study investigation

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## ABSTRACT

Adolescents who experience cybervictimization are at increased risk for suicidal ideation. However, not all adolescents who suffer cybervictimization experience suicidal ideation, suggesting the importance of investigating protective factors that might potentially buffer and decrease these thoughts of death. The present study focused on examining the buffering effects of core self-evaluation (CSE) in the relationship between cybervictimization and suicidal ideation among Spanish adolescents. A moderated model was tested in two studies with two independent samples and designs. In Study 1 (cross-sectional design), a total of 858 students (53% female and 46.4% male;  $M_{age} = 15.75$ ,  $SD = 1.27$ ) completed the measures. In Study 2 (four-month prospective design), the sample consisted of 835 students (54.1% female and 45.9% male,  $M_{age} = 13.71$ ,  $SD = 1.31$ ). Main results showed that CSE might play a differential moderating role in the relationship between cybervictimization and suicidal ideation in both studies. Our findings suggest that adolescents who reported cybervictimization and lower rates of CSE tended to show higher levels of suicidal ideation. A focus on adolescents' evaluations of themselves and their worthiness and competence (i.e., on CSE) may contribute to intervention efforts targeting to prevent suicide after cybervictimization. The implications of these findings for adolescents, educators, and school counselling practitioners are considered.

## 1. Introduction

Recent cross-national research with adolescent samples has showed that electronic media communication are part of their daily lives (Eurostat, 2020; Inchley et al., 2020). However, some social uses can include online aggression against peers in the context of anonymity and power imbalance between the aggressor and the victim, and where the victim cannot easily defend him or herself (Smith, 2015; Tokunaga, 2010). This online social aggressive phenomenon, known as cyberbullying, has been widely negatively related to psychological adjustment for the victims (e.g., depressive symptoms, anxiety problems, and suicidal ideation among others; Kowalski et al., 2014). Prevalence rates in Spanish contexts have found a 16.8% of adolescents involved in cyberbullying, 8.8% reporting suffering cybervictimization (Rodríguez-Hidalgo et al., 2020). Among these adverse consequences of cyberbullying, suicide risk has attracted considerable research interest largely because of its pronounced prevalence in adolescence (Iranzo et al., 2019; Klomek

et al., 2010; Mitchell et al., 2018).

Apart from many other relevant factors (e.g., depressive symptomatology or loneliness), studies have found that being cybervictimized is a risk factor for suicide ideation (Bonanno & Hymel, 2013; Mitchell et al., 2018; van Geel et al., 2014). Therefore, it has been well established from numerous investigations that adolescents who have suffered from cybervictimization are more likely to present suicidal ideation compared to uninvolved counterparts (Peng et al., 2019; Quintana-Orts et al., 2020; van Geel et al., 2014). In fact, in a study with Spanish victims of cyberbullying, 3.1% reported suicidal ideation (Fundación ANAR & Fundación Mutua Madrileña, 2016). Nonetheless, the majority of the studies examining this association have been purely cross-sectional (Katsaras et al., 2018).

Gender and age differences regarding the link between cybervictimization and suicide ideation have also attracted research attention in recent times (van Geel et al., 2014). Regarding gender, the empirical findings have been mixed and inconsistent. Some studies have found no

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gender differences or moderating role of gender in the relationship between cybervictimization and suicide ideation (e.g., van Geel et al., 2014), while others reported that female adolescents tend to be the most involved in cybervictimization and suicide ideation compared to male counterparts (Bonanno & Hymel, 2013; Kim et al., 2019; Kowalski & Limber, 2013). With respect to age, research literature is scarce and mixed (Kowalski et al., 2019), with some studies suggesting that younger victims of cyberbullying are more prone to suffer suicidal thoughts than older adolescents (Reed et al., 2015).

Although research investigating the link between cybervictimization and suicidal risk in adolescence has advanced, there are still gaps in the knowledge of this relationship such as the identification of factors that may intensify or weaken the association and the call for prospective studies that may enhance prevention and intervention efforts (Fisher et al., 2016; Kowalski et al., 2014; Mitchell et al., 2018).

### 1.1. The buffering role of core self-evaluation

In recent years, there has been a proliferation of studies addressing protective factors of cyberbullying and its consequences (e.g., positive self-esteem, self-efficacy or social competence; Kowalski et al., 2019; Zych et al., 2019). Among the many protective variables, some researchers have proposed that individuals' evaluations of themselves play an important role in how effectively individuals deal with life and psychological distress (Zhao et al., 2018; Zuo et al., 2020). To assess the fundamental appraisals that individuals make about themselves and their worthiness, competence, and capabilities, the core self-evaluation (CSE) model (Judge et al., 1997) was developed. CSE is defined as a broad latent construct composed by, at least, four specific traits: Self-esteem, locus of control, generalized self-efficacy, and emotional stability (low neuroticism). CSE has been related with more effective coping (Chang et al., 2012; Li et al., 2014) and better psychological adjustment and well-being (Kong et al., 2014; Zhao et al., 2018; Zuo et al., 2020).

Although the role of CSE has been examined extensively within the organizational context, there are only relatively recent attempts to expand the protective role of CSE in other human behavior contexts and developmental stages (Chang et al., 2012; Extremera & Rey, 2018; Zhao et al., 2018). There is a paucity of studies examining the correlates of CSE in adolescence (Zhao et al., 2018). Findings suggest that CSE is a protective factor on adolescents' psychological health and well-being (e.g., Dou et al., 2016; He et al., 2014). For example, CSE was related to more positive assessments of adolescents' capability to regulate their emotions and it was linked with better mental health (e.g., Dou et al., 2016; Zhao et al., 2018). Moreover, CSE could act as a predictor of cybervictimization as their specific traits (i.e., self-esteem, locus of control, emotional stability, and generalized self-efficacy) have shown links with reduced cybervictimization (Hong et al., 2015; Muller et al., 2017; Rodríguez-Enríquez et al., 2019; Trompeter et al., 2018). Nonetheless, Hong et al. (2015) have advised to test for the potential moderating factors in the relationship between victimization and suicide ideation.

Some previous studies suggest a moderating role of specific dimensions in CSE in the link between cybervictimization and suicidal ideation. For instance, Trompeter et al. (2018) suggest that adolescents experiencing cybervictimization, who report lower levels of coping self-efficacy, were more likely to show greater levels of emotion dysregulation, and, in turn, more internalizing difficulties. Recently, Kim et al. (2020) found self-esteem to be a moderator in the relationship between bullying victimization and suicidal ideation, with the effect of negative emotions on suicidal ideation decreasing when the victim presents greater levels of self-esteem. Although prior research has found strong relationships between specific traits underlying CSE and cybervictimization outcomes (e.g., Muller et al., 2017; Trompeter et al., 2018), there are few studies on the role of CSE as a higher-order trait representing altogether the primary evaluation of one's own capability and

worthiness. CSE is a global construct reflecting one's fundamental appraisals about the self which has been recently described to play a salient role in the development of psychological distress among adolescents (Zhao et al., 2018; Zuo et al., 2020). It is plausible to speculate that CSE may buffer the relationship between cybervictimization and suicide ideation. However, to date, there has been scarce research focusing on whether adolescents' CSE contributes to attenuate the short- and long-term longitudinal association between suffering from cyberbullying and reporting suicide ideation.

Considering the aforementioned literature, testing the potential role of CSE, as a complex construct composed by relevant core variables, in the cybervictimization–suicidal ideation relationship seems particularly relevant, and might substantially advance knowledge development and provide the basis for interventions with cybervictims to prevent suicidal ideation.

### 1.2. The present research

Despite growing literature on cyberbullying and suicide ideation, there remain substantial gaps in the knowledge (e.g., Hong et al., 2015). One of these gaps is the lack of research on the role of CSE in the link between cybervictimization and suicide ideation in adolescents. Further, another gap relates to the need for prospective designs that would help to expand our understanding of the relationship between protective factors, cybervictimization, and suicidal ideation. To fill in these gaps, the present research aims to explore whether CSE buffers the association between cybervictimization and suicide ideation by testing a moderated model with two independent samples and considering a four-month follow-up design. To fulfill the main purpose of the study, the following hypotheses were proposed:

**Hypothesis 1.** Cybervictimization will be positively associated with suicide ideation scores and negatively with CSE in both studies with cross-sectional (Hypothesis 1a; H1a) and short-term prospective designs (Hypothesis 1b; H1b).

**Hypothesis 2.** CSE will moderate the association between cybervictimization and suicide ideation in both studies with cross-sectional (Hypothesis 2a; H2a) and short-term prospective (Hypothesis 2b; H2b) designs, such that these associations will become stronger for adolescents with low CSE.

## 2. Study 1

In Study 1, using a cross-sectional design, we tested whether adolescents' CSE moderated the relationship between cybervictimization and suicide ideation.

### 2.1. Method

#### 2.1.1. Participants and procedure

A convenience sample of 858 adolescents (53% female, 46.4% male, and 0.6% non-reported) took part in this study. Participants were recruited from six secondary school centers in Southern Spain, that were selected using a convenience sampling method after being informed about the main objectives of the study. Adolescents' participation was voluntary and anonymous, and informed consent was obtained from their parents or legal tutors. Participants completed the questionnaires in the presence of experienced psychology post-graduate and doctorate students involved in the research group activities. Mean age was around 16 years ( $M_{age} = 15.75$ ;  $SD = 1.27$ ) and ranged from 13 to 19 years. The students involved in this study were from the 3rd year of compulsory secondary education to the 2nd year of post-compulsory education. The majority of participants (95.5%) were Spanish. Moreover, this study was conducted according to the Declaration of Helsinki (2013) and the Ethical Committee of the University of Malaga (62-2016-H).

## 2.1.2. Measures

**2.1.2.1. Cybervictimization.** The Spanish version of the European Cyberbullying Intervention Project Questionnaire (ECIPQ; Del Rey et al., 2015; Ortega-Ruiz et al., 2016) was utilized to assess cybervictimization. This questionnaire comprises two subscales (i.e., cyberaggression and cybervictimization). In this study, we used the cybervictimization subscale comprised of 11 items assessing the frequency of cybervictimization behaviors suffered in the last two months. Respondents are asked to rate each item on a 5-point Likert scale ranging from 0 (no) to 4 (yes, more than once a week). An example item is "Someone spread rumours about me on the internet". This scale has demonstrated adequate reliability in Spanish adolescent samples (Ortega-Ruiz et al., 2016). In this study, Cronbach's alpha was 0.83.

**2.1.2.2. Suicide ideation.** The Frequency of Suicidal Ideation Inventory (FSII; Chang & Chang, 2016) was used to assess frequency of suicidal thoughts over the past year. It consists of 5 items with a 5-point Likert scale, from 1 (never) to 5 (every day). An example item is "Over the past year, how often have you believed that your life was not worth living?". In this study, we used the Spanish version of FSII because of the high internal consistency and reliability in Spanish samples (Sánchez-Álvarez et al., 2020). In this study, Cronbach's alpha was 0.91.

**2.1.2.3. Core self-evaluations.** The Core Self-Evaluations Scale (CSES; Judge et al., 2003) was used to measure the underlying self-evaluative factor comprising the four more specific traits of self-esteem, generalized self-efficacy, neuroticism, and locus of control. This 12-item scale has shown adequate reliability and validity in Spanish populations (Beléndez et al., 2018). Each item is answered using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). An example item is "I complete tasks successfully". In this study, Cronbach's alpha was 0.77.

## 2.1.3. Control variables

In line with earlier research showing age and gender differences in cybervictimization and suicide ideation (Craig et al., 2009; Klomek et al., 2007; Kokkinos & Antoniadou, 2019), these variables were included as covariates aiming at controlling for the potential confounding effects of these sociodemographic factors in the moderation analysis. This procedure was in line with prior research (Kokkinos & Antoniadou, 2019; Palermi et al., 2017). Gender was coded 1 for boys and 2 for girls. Finally, grade was also included as a covariate in the statistical analyses.

## 2.1.4. Plan of analyses

After conducting descriptive and correlation analyses, we tested whether adolescents' CSE moderated the association between cybervictimization and suicide ideation while controlling for gender, age, and grade. For this purpose, the SPSS macro PROCESS (Model 1; Hayes, 2018) was used. Following standard procedures, all continuous predictors are centered to reduce potential multicollinearity problems. Similarly, 5000 bootstrapped samples with 95% CI were used (Hayes, 2018). Finally, effect size statistics ( $f^2$ ) were calculated to determine the effect size of the interaction terms, that is, the unique variance explained by the interaction term (Aguinis et al., 2005). Kenny's (2016) criteria were followed to determine whether the interaction product accounted for small ( $f^2 = 0.005$ ), medium ( $f^2 = 0.01$ ), and large moderator effects ( $f^2 = 0.025$ ).

## 2.2. Results

### 2.2.1. Descriptive results

Regarding descriptive analyses, independent *t*-tests were conducted to test whether boys and girls reported different scores in CSE,

cybervictimization, and suicide ideation. Results revealed that boys scored significantly higher in CSE than girls ( $t(851) = 5.46, p < 0.001$ ;  $M = 3.38, SD = 0.57$  for boys and  $M = 3.16, SD = 0.62$  for girls). In contrast, girls scored higher in suicide ideation than boys ( $t(850.69) = -5.02, p < 0.001$ ;  $M = 1.53, SD = 0.77$  for boys and  $M = 1.82, SD = 0.89$  for girls). No gender differences were found for cybervictimization scores ( $t(851) = 0.29, p = 0.74$ ;  $M = 0.34, SD = 0.44$  for boys and  $M = 0.33, SD = 0.45$  for girls). Finally, no age-related differences were found regarding the study variables.

Regarding correlation analyses among the main variables, results are displayed in Table 1. As shown, CSE was negatively related to both cybervictimization and suicide ideation. Moreover, cybervictimization and suicide ideation were positively and significantly associated.

### 2.2.2. Moderation analysis

In H1a, we expected cybervictimization to be positively associated with suicide ideation. Results are shown in Table 2. With respect to control variables, gender was the sole significant predictor of suicide ideation ( $\beta = 0.16, p < 0.01$ ). Regarding the main effects of the study variables, it was found that both cybervictimization ( $\beta = 0.30, p < 0.001$ ) and CSE ( $\beta = -0.63, p < 0.001$ ) were associated with suicide ideation after controlling for the effects of the covariates. Thus, the data supported H1a.

With regards to H2a, we expected CSE to moderate the direct association between cybervictimization and suicide ideation. Results showed the interaction between cybervictimization and CSE was found to explain a small ( $f^2 = 0.007$ ) additional amount of variance in suicide ideation after accounting for the effects of the covariates (i.e., age, gender, and grade) and the main effects of the predictors ( $\beta = -0.27, p < 0.01$ ). Thus, results supported H2a. The full model explained 29% of the variance in suicide ideation ( $R^2 = 0.29, F(6,851) = 57.28, p < 0.001$ ).

Furthermore, the regression was plotted in order to examine the manner in which the association between cybervictimization and suicide ideation was moderated by CSE. Following standard procedure by Hayes (2018), CSE was divided into categories of low (the mean minus 1 SD), medium (the mean), and high (the mean plus 1 SD). The plot of the interaction is depicted in Fig. 1. As shown, there was a significant positive association between cybervictimization and suicide ideation at low levels of CSE ( $\beta = 0.46, t(851) = 6.29, p < 0.001$ ) which was weaker at mean levels of CSE ( $\beta = 0.30, t(851) = 5.10, p < 0.001$ ). At high levels of CSE, the relationship between cybervictimization and suicide ideation was not significant ( $\beta = 0.13, t(851) = 1.53, p = 0.13$ ).

## 2.3. Discussion

Using cross-sectional data with Spanish adolescents, results from Study 1 provided preliminary support on positive associations between cybervictimization and suicide ideation. Moreover, these results casted new light on the personal protective determinants (i.e. CSE) of suicide ideation in the context of cyberbullying victimization.

**Table 1**  
Descriptive statistics and bivariate correlations.

Variables	Mean (SD)	Range	1	2	3
1. Cybervictimization	0.34 (0.44)	0.00–3.55	–		
2. CSE	3.26 (0.60)	1.17–5.00	–0.19**	–	
3. Suicide ideation	1.69 (0.85)	1.00–5.00	0.26**	–0.49**	–

Note. CSE = Core self-evaluations. SD = Standard deviation.  $N = 858$ .

\*\*  $p < 0.01$ .

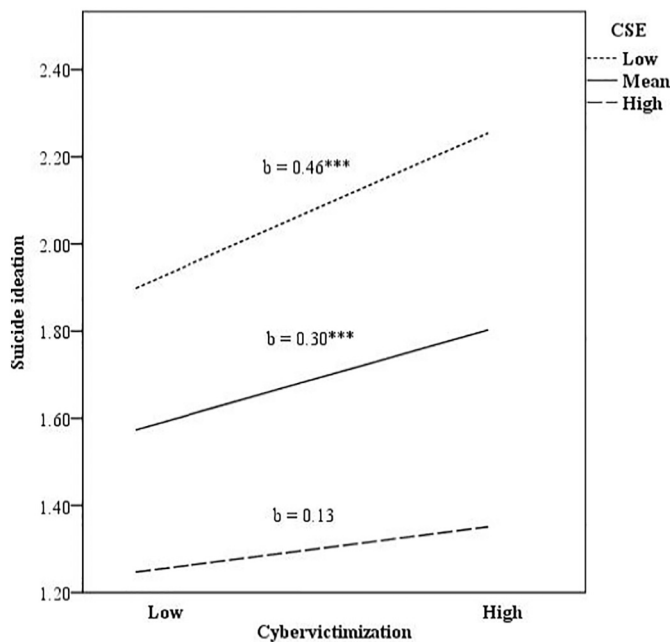
**Table 2**  
Moderation analysis for predicting suicide ideation.

Predictors	$\beta$	SE b	t	95% CI
Constant	1.98**	0.44	4.52	[1.12, 2.84]
Gender	0.16**	0.05	3.20	[0.06, 0.25]
Age	-0.04	0.03	-1.17	[-0.10, 0.02]
Grade	0.01	0.03	0.15	[-0.06, 0.07]
Cybervictimization	0.30***	0.06	5.10	[0.18, 0.41]
CSE	-0.63***	0.04	-14.90	[-0.71, -0.55]
Cybervictimization x CSE	-0.27**	0.09	-2.90	[-0.45, -0.09]
R <sup>2</sup>	0.29			
F	57.28***			

Note.  $\beta$  = Unstandardized beta. SE b = Standard error of beta. CI = Confidence Intervals. CSE = Core self-evaluations

\*\*\*  $p < 0.001$ .

\*\*  $p < 0.01$ .



**Fig. 1.** Relationship of cybervictimization and core self-evaluations (CSE) for explaining suicide ideation. \*\*\* $p < 0.001$ .

### 3. Study 2

#### 3.1. Method

##### 3.1.1. Participants and procedure

A convenience sample of 1001 adolescents (54.1% female and 45.9% male) participated in this study completing the same questionnaires of the predictors variables assessed in Study 1 (i.e., cybervictimization and CSE). Four months later at Time 2 (T2) a questionnaire assessing suicide ideation was administered to the same sample. Responses were collected from a total of 835 participants (55.3%), yielding a response rate of 83.42%.

The participants were recruited from five secondary school centers in Southern Spain. Schools were selected by convenience sampling and head teachers were informed of the main objectives of the study and asked to participate. Only those adolescents, whose parents gave their informed consent (four education centers) or did not refuse to allow the adolescent to participate (one education center), completed the questionnaires. Questionnaires were administered by a doctorate student. As in Study 1, participation was anonymous and voluntary, the Declaration of Helsinki (2013) was followed, and the process was according to the Ethical Committee of University of Malaga (62-2016-H). Mean age was

around 14 years ( $M_{ageT1} = 13.77$ ;  $SD_{T1} = 1.34$ ;  $M_{ageT2} = 13.71$ ;  $SD_{T2} = 1.31$ ) and ranged from 12 to 18 years for both times. The participants involved in this study were adolescents from the 1st year to the 4th year of compulsory secondary education. The majority of adolescents were Spanish (96.9% in T1 and 97.9% in T2).

#### 3.1.2. Measures

The same measures as in Study 1 were used. Cybervictimization was evaluated using the Spanish version of the ECIPQ (see description in Study 1), with a Cronbach's alpha of 0.85. CSE was evaluated with the Spanish version of the CSES (see description in Study 1), and the Cronbach's alpha value was 0.74. Suicide ideation was measured with the Spanish version of the FSII (see description in Study 1). Cronbach's alpha was 0.92.

#### 3.1.3. Plan of analyses

After conducting descriptive and correlation analyses, we tested whether adolescents' CSE moderated the association between cybervictimization and T2 suicide ideation while controlling for gender, age, and grade. The SPSS macro PROCESS was used (Model 1; Hayes, 2018). Standard procedures were followed (see description in Study 1).

### 3.2. Results

#### 3.2.1. Descriptive results

As in Study 1, gender, age, and grade were included as covariates aiming at controlling for the potential confounding effects of these sociodemographic factors in the following moderation analysis. Regarding descriptive analyses, independent *t*-tests were conducted to test whether boys and girls reported different scores in CSE, cybervictimization, and T2 suicide ideation. Results revealed that boys scored significantly higher in CSE than girls ( $t(999) = 6.42$ ,  $p < 0.001$ ;  $M = 3.52$ ,  $SD = 0.56$  for boys and  $M = 3.29$ ,  $SD = 0.59$  for girls). In contrast, girls scored higher in suicide ideation than boys in T2 ( $t(831.09) = -5.30$ ,  $p < 0.001$ ;  $M = 1.46$ ,  $SD = 0.76$  for boys and  $M = 1.78$ ,  $SD = 0.99$  for girls). No gender differences were found for cybervictimization scores ( $t(902.01) = 0.23$ ,  $p = 0.82$ ;  $M = 0.27$ ,  $SD = 0.46$  for boys and  $M = 0.26$ ,  $SD = 0.39$  for girls). Age was positively related to cybervictimization scores ( $r = 0.21$ ,  $p < 0.01$ ) and suicide ideation in T2 ( $r = 0.09$ ,  $p < 0.01$ ), and it was negatively related to CSE ( $r = -0.12$ ,  $p < 0.01$ ).

With regards to correlation analyses, results are displayed in Table 3. As shown, CSE was negatively related to cybervictimization and T2 suicide ideation. Moreover, cybervictimization scores were positively and significantly associated with T2 suicide ideation.

#### 3.2.2. Moderation analysis

In H1b, we expected cybervictimization to be positively associated with T2 suicide ideation. Results are shown in Table 4. With respect to the control variables, gender significantly predicted T2 suicide ideation ( $\beta = 0.19$ ,  $p < 0.001$ ). Results showed significant main effects of cybervictimization ( $\beta = 0.38$ ,  $p < 0.001$ ) and CSE ( $\beta = -0.62$ ,  $p < 0.001$ ) to predict T2 suicide ideation after controlling for the covariates. Thus, the data supported H1b.

Regarding H2b, we expected CSE to moderate the direct association

**Table 3**  
Descriptive statistics and bivariate correlations.

Variables	Mean (SD)	Range	1	2
1. Cybervictimization (T1)	0.27 (0.43)	0.00–3.00	–	
2. CSE (T1)	3.39 (0.59)	1.33–5.00	-0.24**	–
3. Suicide ideation (T2)	1.63 (0.91)	1.00–5.00	0.31**	-0.47**

Note. CSE = Core self-evaluations. T1 = Time 1. T2 = Time 2.  $N = 1001$  for T1 variables.  $N = 835$  for T2 suicide ideation.

\*\*  $p < 0.01$ .

**Table 4**  
Moderation analysis for predicting suicide ideation at T2.

Predictors	$\beta$	SE b	t	95% CI
Constant	1.40**	0.47	2.96	[0.47, 2.33]
Gender	0.19**	0.06	3.37	[0.08, 0.29]
Age	-0.00	0.03	-0.14	[-0.06, 0.06]
Grade	-0.01	0.02	-0.31	[-0.04, 0.03]
Cybervictimization	0.38***	0.08	4.82	[0.22, 0.53]
CSE	-0.62***	0.05	-12.77	[-0.72, -0.53]
Cybervictimization x CSE	-0.39***	0.11	-3.66	[-0.60, -0.18]
R <sup>2</sup>	0.28			
F	53.79***			

Note. CSE = Core self-evaluations.  $\beta$  = Unstandardized beta. SE b = Standard error of beta. CI = Confidence Intervals.

\*\*  $p < 0.01$ .

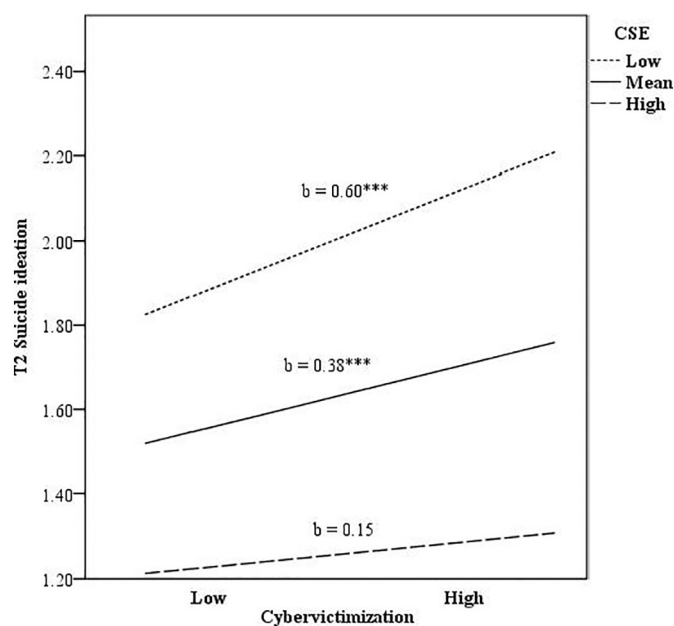
\*\*\*  $p < 0.001$ .

between cybervictimization and T2 suicide ideation. Results showed that the interaction between cybervictimization and CSE explained a medium ( $f^2 = 0.012$ ) additional amount of variance in T2 suicide ideation after accounting for the variance attributed to the effects of the covariates and the main study variables ( $\beta = -0.39, p < 0.001$ ). Thus, the results provided support for H2b; 29% of the variance was explained by the full model ( $R^2 = 0.28, F(6,828) = 53.79, p < 0.001$ ).

The regression was plotted to depict the association between cybervictimization and T2 suicide ideation in relation with low, medium, and high CSE scores. As shown in Fig. 2, there was a significant positive association between cybervictimization and suicide ideation at low levels of CSE ( $\beta = 0.60, t(828) = 7.70, p < 0.001$ ), which was weaker at mean levels of CSE ( $\beta = 0.38, t(851) = 4.82, p < 0.001$ ). At high levels of CSE, the relationship between cybervictimization and suicide ideation was not significant ( $\beta = 0.15, t(851) = 1.29, p = 0.20$ ).

### 3.3. Discussion

The results of this follow-up study replicated the findings of Study 1, in which CSE moderated the association between cybervictimization and suicide ideation evaluated four months later. More importantly, the results on CSE added value to current knowledge on correlates of adolescent cybervictimization since they provided evidence of CSE as a



**Fig. 2.** Relationship of cybervictimization and core self-evaluations (CSE) for explaining Time 2 (T2) suicide ideation. \*\*\*  $p < 0.001$ .

moderator in the prospective relationship between cybervictimization and suicide ideation at T2. Specifically, the prospective effects of cybervictimization on suicide ideation were stronger when adolescents' scores in CSE were either low or mean rather than high. Indeed, the relationship between cybervictimization and T2 suicide ideation was non-significant among adolescents scoring high in CSE.

## 4. General discussion

In the present research, two studies were conducted to test the moderating role of CSE in the proposed negative cross-sectional and short-term prospective relationship between cybervictimization and suicide ideation in adolescence. Using cross-sectional data from a relatively large sample of adolescents, Study 1 showed cybervictimization and suicide ideation to be positively associated, in accordance with past studies (Extremera et al., 2018; Iranzo et al., 2019; Kim et al., 2020). Using a four-month prospective design with a different and relatively large sample of adolescents, Study 2 first replicated the moderating effects of CSE in the relationship between cybervictimization and subsequent suicide ideation. It thus expands current knowledge on adolescents' individual protective factors that may attenuate the links between cybervictimization and suicidal ideation (e.g., Hong et al., 2015; Zych et al., 2019).

With regard to the first hypothesis, our results support the notion that cybervictimization was positively associated with suicide ideation and negatively with CSE in both studies with cross-sectional (H1a) and short-term prospective (H1b) designs. It is well established in literature that cybervictimization is associated to increased levels of suicide ideation (e.g., Fisher et al., 2016; Peng et al., 2019; Quintana-Orts et al., 2020). However, the majority of research has focused solely on cross-sectional data, and little attention has been devoted to examining the personal resources that potentially might reduce or amplify this relationship in adolescence (Hong et al., 2015). Thus, the results of the two studies have further corroborated, both cross-sectionally and across time, prior findings on the direct link between cybervictimization and suicidal ideation. Moreover, the negative relationships between CSE and cybervictimization, as well as between CSE and suicidal ideation found in both studies also suggest that CSE might be a useful factor in identifying individual differences in dealing with life stressors and their negative outcomes. This is in line with prior studies where CSE in adolescence was positively associated with better mental health indicators including lower depression and higher positive affect (Dou et al., 2016; He et al., 2014; Zhao et al., 2018). Earlier research indicated that individuals with high CSE are more likely to experience positive emotions and expectations in response to stressful events because they tend to approach the difficult situations with confidence, feeling worthy and capable, and perceive themselves more in control over their lives (Chang et al., 2012; Extremera & Rey, 2018).

Regarding the second hypotheses, results in Study 1 showed CSE as a moderator in the cross-sectional link between cybervictimization and suicidal ideation, supporting H2a. This finding was replicated in Study 2 considering a four-month prospective design (H2b). Taken together, the association between cybervictimization and suicidal ideation become strongly negative for adolescents with lower scores in CSE when compared to their counterparts with high levels of CSE. In line with previous studies (Kim et al., 2020; Trompeter et al., 2018), individuals who report lower self-esteem, reduced self-efficacy, and emotional dysregulation, show a tendency for being vulnerable, and suffer from more negative outcomes. A plausible explanation for this association may be that individuals with low CSE experience more negative emotions and perceive themselves as having a lower ability to regulate them (Zhao et al., 2018). Interestingly, both cross-sectional and prospective studies showed similar effects, which might indicate that the study variables are relatively stable across time. Therefore, findings suggest that individuals high in CSE evaluate themselves in a consistently positive way across time which seems to prevent them from suicidal

thoughts after experiencing cyberbullying behaviors. By contrast, individuals low in CSE may be prone to suffer from suicidal ideation after cybervictimization experiences.

It is suggested that when individuals experience a more favorable self-evaluation (i.e., positive appraisals of their fundamental capabilities and self-worth), they might also develop more positive moods and evaluations of their lives (Chang et al., 2012; Sun et al., 2014), and may also think that they are more able to regulate their negative emotions (i.e., more positive self-evaluation in their emotional regulation domain) (Dou et al., 2016). By contrast, a loss of belief in their ability to express positive emotion and the lack of positive self-efficacy in regulating emotions are highlighted as an important determinant for the development of depressive symptoms (Dou et al., 2016). These lower levels of coping self-efficacy among cybervictims have been associated with higher levels of emotion dysregulation and, in turn, with higher levels of internalizing symptoms (Trompeter et al., 2018).

It is plausible that when adolescents report low evaluations of themselves, and their worthiness and competence, the occurrence of suicidal ideation could be attributable not only to the negative affect, but also to the loss of belief in positive personal resources and strengths (Dou et al., 2016; Seligman, 2008). Thus, our results suggest that prevention and intervention efforts directed toward the adverse consequences of cyberbullying should focus on the different ways adolescents perceive themselves as capable, deserving, and in control of their lives (i.e., CSE). These findings are in line with previous work that emphasizes that adolescents' beliefs in their ability to disengage from the victim role, and to avoid aggressive behavior, together with their emotion regulation strategies, are key to preventing or reducing internalizing problems (Trompeter et al., 2018). Therefore, these authors suggest intervention programs should focus on strengthening these skills. Although more research is required, targeting adolescents' abilities to handle evaluations of themselves, and their worthiness and competence, may be important for decreasing suicidal ideation and other possible negative consequences after being subject to cybervictimization. Undoubtedly, these approaches focused on CSE should be developed into more integrative models considering other relevant specific individual factors such as the rejection of their characteristics (e.g., sexual or gender orientation...) together with contextual factors associated with the family and school (e.g., mistreatment or family abuse situations, social support or relationship with teachers; Zhao et al., 2018).

#### 4.1. Theoretical and practical implications

The findings from the current study present a number of implications for adolescents, school professionals, parents, and researchers. Despite the increasing attention to cyberbullying, frequent intervention efforts focus on online safety and reducing the aggressive behavior of the cyberbullies (e.g., Gaffney et al., 2019; Kowalski et al., 2019). However, fewer studies have reported on prevention programs enhancing personal resources and skills to effectively deal with cybervictimization experiences. Our results emphasize the need to place greater focus on the promotion of CSE to attenuate the frequency of suicidal thoughts once cybervictimization has occurred. Our findings suggest that adolescents experiencing cybervictimization that report a negative view of self and the world may be prone to present negative appraisals of their self-worth and abilities, which might lead them to experience more suicidal thoughts. Thus, greater awareness and education to prevent suicidal ideation needs to be provided to adolescents, not only in relation to how to prevent or reduce cybervictimization, but also with reference to how adolescents perceive themselves as worthy, competent, capable, and in control of their lives (i.e., CSE), and how these key components of CSE could be enhanced to design more effective intervention.

According to positive psychology, developing personal strength and the individual's specific positive self-views have been shown to reduce psychological distress and increase life satisfaction (e.g., Ochoa-Arnedo et al., 2020; Wood & Johnson, 2016). Our findings suggest that

intervention programs should target the components of CSE to attenuate its impact in both the short and long-term once cybervictimization has occurred. One of the many ways that adolescents can decrease suicidal thoughts is to strengthen self-efficacy in expressing and regulating negative emotions (Asgari & Almasi, 2013; Dou et al., 2016). School professionals and parents could focus on effective personal resources and skills contextualized to cybervictimization that can enhance adolescents' coping and emotion regulation self-efficacy experiences. For example, educators and other professionals who work with adolescents can help them by developing adaptive cognitive emotion regulation strategies (e.g., positive refocusing and reappraisal, refocusing on planning, acceptance, and putting into perspective) and training emotional intelligence (interpretation of emotional states, strategies for regulating negative emotions, etc.). Similarly, families can work with their child and adolescents by including activities in their everyday life that promote the frequency of positive experiences, and increase sustained joyful mood (Extremera & Rey, 2018).

In brief, the present results can provide some valuable notes for the prevention and intervention of suicidal ideation of adolescents, especially after suffering cybervictimization. Therefore, counselling psychologists and schools should pay more attention to early identification of deficits in adolescents' CSE and related vulnerable profiles that may be more likely to present suicidal ideation. This approach may help mental health professionals and clinical psychologists to implement more tailored strategies to protect adolescents from the damaging effects of cybervictimization.

#### 4.2. Limitations and future directions

The present research has several strengths, such as the relatively large size of the two independent samples and the cross-sectional and short-term prospective design. Moreover, this work contributes to expanding the analysis of CSE, a relatively understudied factor among adolescents, and the inclusion of well-known covariates (i.e., gender and age). However, several limitations also require consideration. Firstly, the reliance on self-report measures is a limitation, resulting in potential biases from common method variance. Similarly, both samples were obtained by convenience sampling depending on the availability of educational centres, which makes it difficult to generalize the results obtained. Future studies should examine the conceptual model using alternative methods (e.g., multiple informants' reports) including larger and more diverse samples that also allow for exploring age in more detail to confirm and possibly extend the differential findings reported. Secondly, despite Study 2 using a short-term longitudinal design, the time between data point collection was only 4 months. So, future studies may benefit from including longer follow-up periods and cross-lagged panel models in order to better identify causal effects. Such designs would also allow scholars to analyse the potential medium and long-term protective effects of CSE on suicide risk taking into consideration the effects of risk factors such as previous suicide ideation or stressful life events. Thirdly, as we only measured suicidal ideation, it is also relevant to compare how CSE is linked to other negative outcomes after cybervictimization experiences (e.g., depressive symptomatology, life satisfaction, suicide behaviors, etc.). In the same vein, investigating underlying mechanisms (e.g., the role of negative emotions, resiliency, or psychological capital) in the relation between cybervictimization–CSE–suicide would be useful to design more tailored interventions. Finally, in accordance with the main aim of the present study, CSE was assessed as an overall domain rather than separate domains. Future studies could benefit from providing more insight into which specific domains might be especially relevant to target in intervention efforts focused on reducing suicide ideation.

#### 5. Conclusions

In conclusion, the current research presents novel and relevant

findings regarding the relationship between cybervictimization, suicidal ideation, and CSE among adolescents. Additionally, this study was the first to investigate the presence of a moderating role of CSE concerning the empirical links, both cross-sectionally and prospectively, between cybervictimization and suicidal ideation. The results have underlined that prevention and intervention efforts aimed at the adverse consequences of cyberbullying should focus on fostering adolescents' CSE which would help them to appraise themselves in a more positive manner across situations (i.e., as capable, deserving, and in control of their lives). These results may highlight the need for prevention and education to focus on CSE during childhood and adolescence to decrease mental health concerns such as suicidal ideation.

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### CRediT authorship contribution statement

**Cirenia Quintana-Orts:** Conceptualization, Investigation, Writing – original draft, Writing – review & editing. **Sergio Mérida-López:** Methodology, Formal analysis, Supervision, Visualization. **María Teresa Chamizo-Nieto:** Methodology, Investigation, Writing – review & editing. **Natalio Extremera:** Conceptualization, Formal analysis, Investigation, Supervision, Funding acquisition. **Lourdes Rey:** Methodology, Investigation, Supervision, Funding acquisition.

### Declaration of competing interest

None.

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