

# Adolescent cyberbullies and problematic internet use: The protective role of core self-evaluations

## Adolescentes ciberacosadores y uso problemático de Internet: el papel protector de las autovaloraciones centrales

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### Abstract:

Cyberbullying is a growing problem in contemporary society. Although the risk factors are widely studied, there has been little research focussed on the personal resources that might help prevent or reduce it. This study aimed to analyse whether core self-evaluations can moderate the relationship between problematic internet use and cyberbullying. The participants were 456 cyberbullies aged between 12 and 18 (mean age: 15.01;  $SD = 1.44$ ), extracted from an initial sample of 2085 young people. We used three self-report measures as measurement instruments (cyberbullying perpetration: ECIP-Q; problematic internet use: IAT; core self-evaluations: CSE).

The results show that cyberbullying perpetration relates positively to problematic internet use and negatively to CSE. The moderation analysis highlighted the protective role of CSE only when the level of problematic internet use was not very high. These results highlight the need to implement measures at early ages to prevent problematic internet use and cyberbullying in which working on positive personal resources is of key importance. It concludes that this problem requires comprehensive models that are broader than those currently existing, which in addition to risk factors take into consideration personal, familiar, and contextual factors that can provide protection.

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**Keywords:** cyberbullying, adolescence, risk factors, digital settings, protective factors, emotional education.

## Resumen:

La ciberperpetración es un problema creciente de la sociedad actual, pero, aunque los factores de riesgo son ampliamente estudiados, son pocas las investigaciones centradas en los recursos personales que podrían favorecer su prevención o reducción. El objetivo de este estudio fue analizar si las autovaloraciones centrales pueden moderar la relación entre uso problemático de Internet y ciberperpetración. Los participantes fueron 456 ciberacosadores de entre 12 y 18 años (edad media: 15.01;  $DT = 1.44$ ), extraídos de una muestra inicial de 2085 jóvenes. Como instrumentos de medida se utilizaron tres medidas de autoinforme (ciberperpetración: ECIP-Q; uso problemático de Internet: IAT; autovaloraciones centrales: CSE). Los

resultados revelan que la ciberperpetración se relacionó positivamente con el uso problemático de Internet y negativamente con las CSE. El análisis de moderación puso de manifiesto el papel protector de las CSE únicamente cuando el nivel de uso problemático de Internet no es muy elevado. Estos resultados apuntan a la necesidad de implementar actuaciones preventivas del uso problemático de Internet y ciberacoso en edades tempranas, en las que el trabajo sobre los recursos personales positivos sean la clave. Se concluye que esta problemática requiere de modelos comprensivos más amplios que los existentes hasta el momento en los que, junto a los factores de vulnerabilidad, se tomen en consideración factores personales, familiares y contextuales que puedan actuar como protectores.

**Descriptor:** ciberacoso, adolescencia, factores de riesgo, entornos digitales, factores protectores, educación emocional.

## 1. Introduction

From the field of positive psychology, there is a growing interest in identifying the variables that influence psychosocial well-being and mental health in adolescence (Bisquerra y Hernández, 2017), especially in situations of high emotional impact that jeopardise psychological adjustment during this stage, which is already conflictive or stressful in itself (Wray-Lake et al., 2016).

One adverse situation that adolescents now face is cyberbullying. This is defined

as aggression performed intentionally using information and communication technology (ICT) with the aim of causing harm to a peer who cannot easily defend him or herself (Kowalski et al., 2019; Smith, 2015). The greatest vulnerability is observed between the ages of 13 and 14 due to the importance that aspects such as online identity and reputation acquire (Garmendia et al., 2019). Although the conceptualisation of cyberbullying is constantly under construction owing to the rapid changes in the popularity of the

digital media and/or platforms through which it can be carried out (Barlett et al., 2020), the numerous forms it adopts can mainly be put into two groups owing to their frequency: verbal aggressions (e.g. posting and/or sending hostile, harmful, or threatening messages, provocation, black-mail, etc.) and relational aggressions (e.g. spreading rumours, lies, or compromising information about victims to humiliate, ridicule, or isolate them) (Herrera-López et al., 2017; Savage & Tokunaga, 2017). The way each episode of cyberbullying occurs and spreads online generates a significant psychological and social impact in the short and long term in all of those involved (Alonso & Romero, 2020; Estévez et al., 2019).

Accordingly, there is a need to know what leads an individual to become a cyberbully, with cyberbullying perpetration classed as the practice of these intimidatory, violent, and/or abusive behaviours against another person in the virtual space either synchronously or asynchronously (Astor y Benbenishty, 2018). Understanding cyberbullying perpetration involves jointly considering risk factors and protective factors, as in this way prevention and intervention actions when encountering this phenomenon can be effectively planned.

With regards to risk factors, many works have tried to identify the individual and personality factors that result in a predisposition towards developing cyberbullying perpetration behaviours. The results of these studies have been collected in a variety of meta-analyses

among which traditional bullying and prior cyberbullying, use of the internet, and beliefs about aggression stand out as the variables with the greatest predictive value (Chen et al., 2017; Guo, 2016; Kowalski et al., 2014). Other less prominent factors that also have significant explanatory force are self-esteem (Palermi et al., 2017), emotional stability and neuroticism (Xiao et al., 2019), and self-control (Peterson & Densley, 2017). Focussing on one of the most researched factors — internet use — academic literature shows that variables such as frequency and time of exposure, as well as problematic use of online resources, predict cyberbullying perpetration (Martínez-Ferrer et al., 2018; Yudes et al., 2020). An individual is considered to have problematic use when it is excessive, compulsive, or uncontrolled (Caplan, 2010), resulting in a strong negative impact on psychological well-being and adjustment (Machimbarrena et al., 2019). Problematic internet use can cause altered emotional states, internalising problems (e.g., anxiety, depression, low self-esteem), and can interfere in academic and family life (Casaló & Escario, 2019; Vila et al., 2018). All of this — the strong predictive relationship with cyberbullying and the consequences it creates — has resulted in study of personality traits that might influence the appropriate management of the use of ICT and/or problems deriving from it at early ages (Wilmer & Chein, 2016). It has been established that prior personal conditions such as negative affect (Müller et al., 2017), low self-esteem, and hostility (Fumero et al., 2018), or maladjustment

in the ability to manage stress and cognitive impulsiveness (De la Villa y Fernández, 2018) predispose people to problematic internet use (Rial et al., 2018), and with it, to worse mental health (Aznar et al., 2020). The data also show the relationship with interpersonal factors such as problems between peers, and inefficacy in the expression of communicative and relational skills (Pedrero et al., 2018). In general, problematic internet use relates to low subjective well-being (Casale et al., 2015) and less satisfaction with life (Arrivillaga et al., 2020).

With regards to protective factors, research has mainly concentrated on family and contextual variables that could prevent this problem and its consequences, with few studies focussing on understanding the psychological factors at play. In recent years, one personality construct that has been the centre of interest is core self-evaluations (CSE), widely studied in the area of work for their influence on life satisfaction (He et al., 2014). CSE represent the positive and negative valuations that people make of themselves, their competences, and their capacities. This higher order construct comprises four personality traits that are well-established in the academic literature and are closely related conceptually: self-esteem, general self-efficacy, locus of control, and emotional stability (neuroticism) (Judge et al., 2003). Positive CSE imply high self-esteem and generalised self-efficacy, low neuroticism, and internal locus of control. Consequently, we could say that people with higher CSE scores display a good psychological adjustment and emotional stability (Jud-

ge et al., 2003; Rey et al., 2012). In essence, and although studies with adolescents are still rare, this construct is regarded as being strongly related to resilience (Fínez & Morán, 2017), and young people with higher CSE scores are found to handle adverse situations better (Elliott et al., 2013), also experiencing lower levels of stress, extreme emotions, and physical exhaustion (Kammeyer-Mueller et al., 2009). Therefore, it is suggested that CSE are an important predictor of behaviour (Judge et al., 2003). Indeed, recent results have underlined the protective role they play with regards to problematic internet use. Although few studies provide direct evidence for this relationship, its mediating role has been explored through other personal or family variables. The literature shows that interpersonal relationships predict internet addiction, but CSE seem to be a very important mediating variable in this relationship (Xinyu, 2017). Similarly, their mediating role has been established in the relationship between shyness, which is a predictor variable of problematic internet use, and life satisfaction (Ye et al., 2019). In another related line of research, a greater tendency to develop pathological online gaming has been observed in young people who experience more rejection by their parents at an early age, and so in consequence have developed more negative CSE (Bussone et al., 2020).

Furthermore, there are data based on analysing the different components of CSE separately, and the severity of problematic internet use has been associated with lower self-esteem and self-control in young people aged between 11 and 20 (Mei

et al., 2016) and with greater neuroticism (Xiao et al., 2019). In contrast, greater self-efficacy has been observed in adolescents who display spontaneous remission of this problematic use (Wartberg & Lindenberg, 2020).

Taking the above into account, we designed this study to answer questions about the role of CSE in the development of risk behaviours strongly linked to cyberbullying perpetration behaviours. The aim was: a) to examine the relationship between CSE, problematic internet use, and cyberbullying perpetration in a sample of Spanish adolescent cyberbullies, and more specifically, b) to determine whether CSE moderate the influence of problematic internet use on cyberbullying perpetration.

Based on the existing evidence, we start from the hypothesis that problematic internet use will have a positive correlation with cyberbullying perpetration and a negative correlation with CSE, and so, higher CSE scores will be able to moderate the effect of problematic internet use on involvement in cyberbullying perpetration. So, just as we have seen that certain personality traits entail greater vulnerability to developing problematic internet use and with-it cyberbullying behaviour, we expect to find that the ability to feel in control of one's life and that one can manage one's surroundings, or having higher self-esteem could be key to protecting against this maladaptive development.

More knowledge of the factors that can determine the appearance of aggressive

behaviours in virtual settings will foster, on the one hand, the development of more effective coping strategies and, on the other hand, greater precision when setting objectives for educational programmes aimed at preventing the appearance of this problem that affects young people all over the world.

## 2. Method

### 2.1. Participants

In this study, 2085 adolescents aged between 12 and 18 participated. From this sample, we selected those cases that could be labelled with the role of cyberbully (Elipe et al., 2017). The final sample comprised 456 bullies (21.9% of the initial sample), with a mean age of 15.01 ( $SD = 1.44$ ), 51.1% of them being girls. At the time of the study, all of the participants were studying compulsory secondary education or the Spanish Baccalaureate at six schools in the province of Málaga (Spain).

### 2.2. Instruments

The instruments selected for the evaluation were self-report measures, with the necessary psychometric properties of reliability and validity.

- *European Cyberbullying Intervention Project Questionnaire (ECIP-Q)* (Del Rey et al., 2015; Ortega et al., 2016). This questionnaire comprises 22 items for evaluating cyberbullying. In this study, we only used the 11 items referring to cyberbullying perpetration. The participants respond to each item with how often they had participated in the behaviour mentioned in the last 2



months in accordance with a Likert-type scale (0 = never; 1 = once or twice; 2 = once or twice a month; 3 = about once a week; 4 = more than once a week) (sample item: “*I have posted compromising videos or photos of someone on the internet, social media or WhatsApp*”). According to the classification by Elipe et al. (2017), answering 0 and/or 1 to all of the items would place the participant in the role of non-aggressor or not involved in cyberbullying, while answering 4 on at least one of the items would classify that individual as a serious aggressor. The rest would be classed as occasional aggressors. The Cronbach’s alpha reliability index in this study was  $\alpha = 0.70$ .

- *Internet Addiction Test* (IAT) (Young, 1998). To evaluate the impact of internet use on social interactions and everyday life, we used the Spanish version (Puerta-Cortés et al., 2012), which comprises 20 items (sample item: “*How often do your grades or schoolwork suffer because of the amount of time you spend online?*”). This is evaluated using a Likert-type scale (0 = never/5 = always). Scores greater than 50 are indicative of problematic use. The internal consistency value in this study was satisfactory ( $\alpha = 0.83$ ).
- *Core Self-Evaluations Scale* (CSES) (Judge et al., 2003). This scale includes 12 items (6 of which were scored normally and 6 reverse scored; sample item: “*I am capable of coping with most of my problems*”), scored on a Likert-type scale (1 = strongly disa-

gree/5 = strongly agree). The sum of the items gives an overall score for this construct. The higher this score, the better or more positive the individual’s self-evaluation. This scale has good psychometric properties with a Spanish population (Rey et al., 2012; Rey et al., 2016). In our study, the Cronbach’s alpha value obtained was 0.71.

### 2.3. Procedure

This is a descriptive, cross-sectional study. Before collecting the data, we contacted the centres and gave a brief explanation of the objectives of the research. Once we had established which centres were participating, we administered the questionnaires in hard copy to the participants along with instructions and information about the anonymity and confidentiality of the data. Administering the questionnaires took one hour. The study met the required ethical criteria for research conducted with people (ethics committee of the Universidad de Málaga).

### 2.4. Data analysis

We carried out statistical analysis of the data using SPSS 25.0 (IBP Corp, 2010). Firstly, to examine the variables measured we performed descriptive analyses to obtain means, standard deviations, and Pearson correlation coefficients. We tested the difference in means (Student’s *t* for independent samples) to examine potential differences between occasional and severe cyberbullies. Next, we performed a moderation analysis to examine the role of CSE in the relationship between problematic internet use and cyberbullying perpetration. To do this, we used the PROCESS 3.4

(Hayes, 2018) extension for SPSS, using the bootstrapping process with 10,000 repetitions to determine whether the effect of the moderator is different from zero through the 95% confidence intervals.

### 3. Results

#### 3.1. Descriptive and correlation analyses

We first calculated the percentage of occasional and severe cyberbullies in the fi-

nal sample ( $n = 456$ ). Of the sample, 74.3% ( $n = 339$ ) were classified as occasional and 25.7% ( $n = 117$ ) as severe. Student's  $t$  test (see Table 1) showed significant differences in the overall cyberbullying perpetration score between the two groups, but there were no differences in the problematic internet use variables ( $t(454)=-1.194$ ;  $p = .618$ ) and CSE ( $t(442)=.112$ ;  $p = .278$ ). Therefore, in the rest of the analyses, we did not consider the level of severity.

TABLE 1. Mean differences between severe and occasional cyberbullies.

Variables	Occasional Aggressors <i>M (SD)</i>	Severe Aggressors <i>M (SD)</i>	<i>p</i>
Problematic Internet Use	48.67 (12.45)	50.26 (12.76)	n. s.
Core Self-Evaluations	3.21 (0.54)	3.20 (0.60)	n. s.
Cyberbullying Perpetration	0.51 (0.30)	1.06 (0.66)	.000

Note: problematic internet use [0-100]; core self-evaluations [1-5]; n.s.: not significant. Source: Own elaboration.

Table 2 shows the means, standard deviations, and Pearson  $r$  correlations between the study variables for the sample of cyberbullies. As was to be expected, there was a significant positive correlation between cyberbullying perpetration and problematic

internet use and a negative correlation with CSE. In turn, CSE had a significant negative correlation with problematic internet use. Nonetheless, the magnitudes of these correlations can be classed as low as they varied between .11 and .29.

TABLE 2. Means, standard deviations, and correlations between the variables evaluated.

Variables	Range	<i>M</i>	<i>SD</i>	<b>1</b>	<b>2</b>	<b>3</b>
1. Problematic Internet Use	[20-100]	49.08	12.53	---		
2. Core Self-Evaluations	[1.1-5]	3.20	0.55	-0.284**	--	
3. Cyberbullying Perpetration	[.18-3.1]	0.65	0.49	0.152**	-0.106*	

Note: \*  $p < .05$ ; \*\*  $p < .01$   
Source: Own elaboration



### 3.2. Moderation analysis

We analysed the possible moderating effect of CSE on the relationship between problematic internet use and cyberbullying perpetration in this sample of cyberbullies with the Preacher macro using model 1 (Hayes, 2018). In these analyses we included the overall cyberbullying perpetration score as the dependent variable

(DV), problematic internet use as the independent variable (IV), and CSE as the moderating variable. We controlled for the effect of age and gender by including them as covariables. We interpreted each regression analysis of the model using the values of the upper and lower limits of the confidence interval, which are shown in Table 3.

TABLE 3. Moderator analysis of self-evaluations of problematic internet use.

	$\beta$	SE $\beta$	$R^2$	$rR^2$	95 % IC
Cyberbullying Perpetration			0.069**		
Constant	1.728**	0.517			.712 a 2.745
Age	0.004	0.015			-.025 a .034
Gender	-0.146**	0.045			-.230 a -.052
Problematic Internet Use (IAT)	-0.270	0.174			-.613 a .070
Self-Evaluations (CSE)	-0.396*	0.140			-.672 a -.121
IAT * CSE	0.128*	0.054		0.0119*	.021 a .235

Note:  $\beta$  = unstandardised regression coefficient; SE  $\beta$  = standard error of the  $\beta$  coefficient;  $R^2$  = r-squared;  $rR^2$  = incremental r-squared; 95% CI = Confidence Interval. \*  $p < .05$ ; \*\*  $p < .01$ .

Source: Own elaboration.

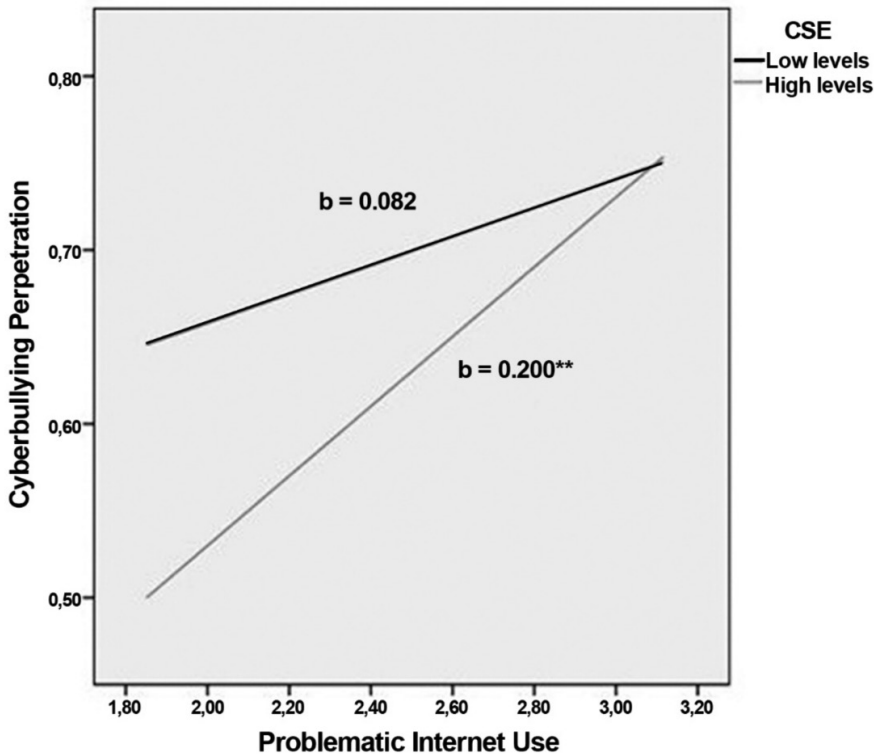
The model obtained was significant, albeit weak, as it explained 7% of the variance observed in cyberbullying perpetration ( $R^2 = .069$ ;  $F(5.438) = 6.56$ ;  $p < .01$ ). As Table 3 shows, the “age” covariable had no effect on the final model ( $p = .771$ ), but the “gender” covariable did ( $p = .001$ ). The principal effect of problematic internet use was not significant when explaining the variance in cyberbullying perpetration ( $b = -.270$ ;  $p = .121$ ). The results revealed a significant effect of CSE ( $b = -.396$ ;  $p = .004$ ), as well as of problematic internet use  $\times$  CSE interaction ( $rR^2 = .011$ ;  $F(1.438) = 5.58$ ;  $p = .018$ ). The re-

lationship between variables can be seen in Graph 1, which shows the relationship between problematic internet use and cyberbullying perpetration according to the CSE level.

As Graph 1 shows, with low CSE levels, the positive relationship between problematic internet use and cyberbullying perpetration was not significant ( $\beta = .082$ ;  $t(438) = 1.95$ ;  $p = .05$ ), while it was significant with high levels of CSE ( $\beta = .200$ ;  $t(438) = 4.30$ ;  $p = .000$ ). In other words, when the level of problematic internet use was low, there was greater



GRAPH 1. Relationship between problematic internet use and CSE as predictor of cyberbullying perpetration.



\*\*  $p < .01$

Source: Own elaboration.

involvement in cyberbullying perpetration by those participants who also had low CSE scores. However, when the level of problematic internet use was high, participants with high and low CSE scores alike were involved in cyberbullying behaviour to the same extent.

#### 4. Discussion

Cyberbullying in adolescence is a growing social problem (Patchin, 2019). There have been notable advances in research on this subject in recent years, and interest in improving understanding of

this phenomenon and providing the tools to facilitate its prevention from the earliest ages is apparent (Arnaiz et al., 2016). Nonetheless, research into cyberbullying perpetration principally focusses on studying the personal, contextual, and/or familial factors that might predispose people to become involved in these aggressive behaviours towards their peers (Chen et al., 2017; Resett & Gámez-Guadix, 2017). Accordingly, we have identified gaps in the explanations provided, as in addition to risk factors, there are protective factors that could minimise the likelihood of becoming a cyberbully. Taking as a starting

point the relationship between problematic internet use and cyberbullying perpetration found in previous research (Martínez-Ferrer et al., 2018; Yudes et al., 2020), in this study we examined whether core self-evaluations could be one of these protective factors.

The results obtained from a sample of adolescents aged between 12 and 18 with high scores on the cyberbullying scale confirm the proposed hypotheses regarding the relationship between the variables studied. We observed a greater level of cyberbullying perpetration as problematic internet use increased and a lower level as CSE scores increased. Similarly, we confirmed a significant relationship between more negative self-evaluations and higher levels of problematic internet use. The results on problematic internet use and cyberbullying perpetration are in line with previous research (Bussone et al., 2020; Gámez-Guadix et al., 2016), and although, to date, the relationship between these variables and CSE has not been studied directly, personality factors that predispose to these risk behaviours have been highlighted. Focussing on some of the dimensions that comprise CSE, we see that external locus of control is related with a preference for online social relations (Ye & Lin, 2015), and also with low self-esteem (Brewer & Kerslake, 2015). Similarly, displaying greater indices of neuroticism increases the likelihood of participating in cyberbullying behaviour (Garaigordobil, 2019). It does this directly and indirectly through other mechanisms such as depression (Zhang et al., 2020).

With regards to the analysis of the effects of interaction between problematic internet use and CSE on cyberbullying perpetration, the results reveal a significant and complex relationship. Accordingly, among cyberbullies with more negative (or lower) CSE, this variable does not affect the relationship between problematic internet use and cyberbullying perpetration. In addition, the effect obtained is weak and so the scores for problematic internet use and cyberbullying perpetration in these adolescents reach high levels. Consequently, as the former rises, we do not observe strong increases in the latter. In contrast, among cyberbullies with higher CSE, the interaction observed reflects the influence of CSE on the relationship between the two variables. So, among these participants, a higher CSE score minimises involvement in cyberbullying perpetration but only with a low level of problematic internet use. In other words, if this level is high, there is also high involvement in cyberbullying. In contrast, if the level of problematic internet use is low, this involvement in online aggressions is considerably lower. These results suggest that in those adolescents who have acted as cyberbullies but who have better psychological adjustment, there is a lower likelihood of aggravating problematic internet use and with it the experiences of cyberbullying. Accordingly, most research shows that exposure to problematic content online increased the likelihood of being a cyberbully (Mishna et al., 2012; Xin et al., 2018). These adolescents could therefore use virtual settings more safely by limiting exposure to certain content (violent or hate content), controlling their

style of online communication so they do not provoke new conflicts, or reducing the frequency, diversity, or severity of aggressive behaviours, among others. These findings highlight very relevant practical implications, as they show that personal resources stop having a protective effect if a high level of problematic internet use is reached, and so early prevention and intervention efforts become especially important.

Our results make it possible to develop a more comprehensive vision of the appearance and maintenance of cyberbullying behaviour in the school setting. In particular, they could be useful for establishing the basis for educational programmes to prevent and raise awareness of the risks deriving from irresponsible internet use and the impact of cyberbullying in adolescence. For example, some studies underline the fact that adolescents are conscious of problematic internet use in friends and schoolmates, but do not identify it in themselves (Díaz-Vicario et al., 2019). Therefore, preventative actions should be directed both at awareness raising and at the development or reinforcement of the intra- and interpersonal factors that can prevent an increase in the severity of this problem. In this way, they can be directed at educating in self-control in the use of online resources (for example, managing time, frequency, intensity, and context) (Soto et al., 2018), at social and communicative skills in virtual settings (Muñoz-Rodríguez et al., 2020), and at resources for confronting and solving problems (Shubnikova et al., 2017). All of this has a dual

objective of, on the one hand, learning to use technology competently and avoiding using it as a means to offload or escape from everyday problems (Tomczyk et al., 2020) and, on the other hand, of boosting the personal resources that act as factors that protect against and prevent violence (Garaigordobil, 2019; Zych et al., 2019).

Similarly, early detection can minimise the impact of some already present risk behaviours as our results show. Therefore, teachers and counselling teams alike should play an active role in preventative actions. Screening methods become a basic tool for detecting students who have a risk profile, for example, displaying negative self-evaluations, that is to say, lower self-esteem and self-efficacy, external locus of control, or a higher tendency to experience negative emotions. Interventions aimed at strengthening some of these components could also help guarantee positive development and psychosocial well-being inside and outside class. Emotional management is decisive in this development in adolescence (Reina & Oliva, 2015). Less emotionally intelligent adolescents display more behavioural aggression, with social interactions becoming more conflictive as their emotional regulation skills reduce (Larraz et al., 2020). On the basis of this, one way to work on CSE is through emotional education owing to the benefits this contributes to the development of psychological adjustment and levels of life satisfaction.

This study has a series of limitations, most notably the following: 1) although

the study population was large, the final sample of cyberbullies with which we performed the analyses is limited, and so the results could be difficult to generalise; 2) we used self-report measures to collect the information, something that could affect the results owing to social desirability and because responding to some of the items was complex depending on age; and 3) we cannot forget that it is a cross-sectional study that collects measurements on a specific period in the life of the person. Finally, although our findings underline the moderating role of CSE in the link between problematic internet use and cyberbullying behaviour, we should note that the percentage variance explained by our model and, specifically, by the interaction between CSE and problematic internet use is very modest ( $rR^2 = .01$ ). These results suggest that other psycho-educational and personal dimensions could be influencing levels of cyberbullying perpetration and so should be the subject of future research in more comprehensive focuses. Nonetheless, small interaction effects, such as those in this study, should not be dismissed, especially when the academic or personal aspects examined are important for the group and, furthermore, are explained by different dimensions, their principal effects and their interactions (Meyer et al., 2001). Given that the estimation of these significant interactions is generally low, even an additional contribution of 1% to the total variance is regarded as being worth noting and worth studying for its contribution to the final explanation of the phenomenon in question (McClelland & Judd, 1993).

## 5. Conclusions

The results of this study support the previous evidence concerning the association between risk factors or vulnerability and involvement in cyberbullying perpetration behaviour, but they also build on this by providing new data about the protective role that personal resources play. The findings obtained reveal the benefits of certain personality traits when reducing problematic internet use in adolescents who have already acted as cyberbullies. In this sense, as has been shown, protective factors cease to have an effect as problematic internet use in cyberbullies reaches high levels. It is worth noting the importance of promoting preventative actions that prevent the establishment of maladaptive or risk behaviours deriving from new forms of communication. Only in this way, with prevention, management, and intervention measures in the initial phases of these problems, can their effects be minimised. The ultimate objective regarding these problems, which start in childhood and adolescence, is to prevent them appearing or at least prevent certain events that might occur occasionally from becoming chronic, and so ensure psychosocial well-being and life satisfaction, not only in this developmental stage, but also in subsequent ones.

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