

Preventing cyberbullying in victims: What role do cognitive coping strategies play in boys and girls?

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ABSTRACT

The scientific literature shows that without an adaptive management of cyberbullying situations cybervictims may be more likely to become cyberaggressors. Therefore, numerous studies have examined potential factors that contribute to mitigating the strong association between cybervictimisation and cyberaggression, particularly focusing on how adolescents cope with the experience of cybervictimisation. However, clear results regarding gender differences in coping strategy utilisation have not been identified. Consequently, it is necessary to continue delving deeper into this field to further elucidate these prior findings. Thus, this study aimed to examine the possible moderating role of adaptive and maladaptive cognitive coping strategies in the relationship between cybervictimisation and cyberaggression, as well as to analyse gender differences within it. A sample of 2,525 adolescents (12–18 years) participated by completing self-report measures which assess cybervictimisation, cyberaggression and cognitive emotion regulation strategies. After performing several moderation analyses, the results showed that both adaptive and maladaptive strategies independently moderated the link between cybervictimisation and cyberaggression in girls, but not in boys. These findings have contributed to a deeper understanding of the role that coping strategies used by cybervictimised adolescents can play. They also show evidence of the potential benefits of developing various coping strategies that help cybervictims to better manage these adverse situations and reduce cyberaggression.

1. Introduction

The phenomenon of cyberbullying has become a serious health problem among adolescents. For this reason, in the last 10 years there has been an increase in the scientific community's interest in studying it, as evidenced by the growth in the number of publications, which has allowed greater knowledge acquisition on this topic (Barragán Martín et al., 2021; Sorrentino et al., 2023). This phenomenon has resulted from an increased development and use of digital technologies and applications and is one of the negative consequences of their misuse, constituting risk to the adolescent population (Henares-Montiel et al., 2022). Although there are different definitions of cyberbullying, when we refer to it in this study, we mean those aggressive and harmful actions and behaviours that an adolescent, or a group of adolescents, carry out on another peer (Vismara et al., 2022). These violent behaviours are performed via the use of electronic and digital applications and devices, such as smartphones and computers as well as the Internet and social networks (Henares-Montiel et al., 2022; Vismara et al., 2022). Due to the

virtual context in which these violent behaviours take place, cyberbullying presents a series of specific characteristics, such as the possibility of anonymity by the aggressor, the wide visualisation of the aggressive behaviour and its rapid dissemination, as well as the lack of space-time limits for carrying out or suffering cyberaggressive behaviour (Dennehy, Meaney, Walsh, et al., 2020; Henares-Montiel et al., 2022). This leads to a perception of lower level control on the part of the victims, as well as greater vulnerability and difficulty in defending themselves (Dennehy, Meaney, Cronin, et al., 2020; Dennehy, Meaney, Walsh, et al., 2020; Evangelio et al., 2022).

These situations of online violence occur in all countries of the world, although their prevalence differs among regions and cultures, due, among other reasons, to the different measurement instruments used (Henares-Montiel et al., 2022; N. Huang et al., 2023). Thus, for instance, in a recent meta-analysis of 26 international studies, an overall prevalence of 18% for cybervictimisation and 11% for cyberaggression were found (N. Huang et al., 2023).

Therefore, taking into account these levels of prevalence, numerous

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researchers have analysed and examined the consequences on the health and quality of life of adolescents involved in these situations (e.g., Strohmeier & Gradinger, 2022; Zhu et al., 2021). The findings throughout the scientific literature warn of the serious negative impact on the psychosocial adjustment, as well as the well-being, of these adolescents. Thus, cybervictims report a greater development of internalising symptomatology (e.g., depression or anxiety), somatic and psychological health complaints (e.g., nervousness, irritability, bad mood, headache, backache or abdominal pain), greater feelings of loneliness and stress, along with lower levels of life satisfaction and self-esteem (Fajardo-Bullón et al., 2021; Hasan et al., 2023; Ho & Gu, 2023; Strohmeier & Gradinger, 2022; Wang et al., 2023). Also, at the social and behavioural levels, these adolescents present difficulties that are reflected in more behavioural and peer problems (Fajardo-Bullón et al., 2021; Strohmeier & Gradinger, 2022; Wang et al., 2023).

If these situations of violence are not appropriately addressed, victims may not only develop poorer psychological adjustment leading to more severe negative health consequences (e.g., increased internalising symptomatology, more feelings of isolation, anger or desire for revenge, and more suicidal thoughts and suicide attempts) (den Hamer & Konijn, 2016; N. Huang et al., 2023; Lozano-Blasco et al., 2020; Quintana-Orts et al., 2020). It also increases the likelihood that these adolescents will eventually become cyberaggressors themselves (N. Huang et al., 2023; Lozano-Blasco et al., 2020; Marciano et al., 2020; Ramos Salazar, 2021). It seems that cybervictims may engage in aggressive behaviour as a way of coping with unpleasant situations and events (Lozano-Blasco et al., 2020). Thus, cybervictimisation seems to constitute an important risk factor for cyberaggression (N. Huang et al., 2023; Lozano-Blasco et al., 2020; Marciano et al., 2020; Ramos Salazar, 2021). In consequence, those victims who end up engaging in cyberaggressive behaviours report even more emotional and psychosomatic problems (e.g., sadness, headache, sleep problems, abdominal pain, and depression) than those who are only victims (Li et al., 2023; Lozano-Blasco et al., 2020).

Based on the above, researchers highlight the importance of further study of protective and risk factors of cybervictims and cyberaggressors (e.g., Vismara et al., 2022). In particular, it is important that there be further studies of factors that can help prevent cybervictimised adolescents from engaging in cyberaggressive behaviours towards others (Wachs et al., 2022; Wachs & Wright, 2021; Wang & Ge, 2021; Wang et al., 2023). On the one hand, it is important because of the severe negative impacts that these cybervictims may suffer when they become cyberaggressors (Li et al., 2023; Lozano-Blasco et al., 2020). On the other hand, it is especially necessary since not all cybervictims become cyberaggressors (Wachs et al., 2022; Wachs & Wright, 2021; Wang & Ge, 2021; Wang et al., 2023). For instance, in recent studies, many authors have pointed out the importance of the ways in which victims handle these situations. Previous findings had suggested that victims who display lower levels of impulsivity and higher levels of self-control tend to display fewer behavioural problems and fewer aggressive behaviours (L. Huang et al., 2022; Wang & Ge, 2021). In line with this, several studies showed that the coping strategies used by victims may not only moderate the negative impacts on their health (e.g., Shaheen et al., 2023; Worsley et al., 2019), but also either mitigate or increase the likelihood that they will end up engaging in cyberaggressive behaviour towards peers (e.g., Uddin & Rahman, 2022; Wachs & Wright, 2021). Therefore, one of the factors that seems to have been shown to influence victims' psychological and social functioning are coping strategies (e.g., DiClemente & Richards, 2022; Doorley & Kashdan, 2021; Kraft et al., 2023; Uddin & Rahman, 2022).

1.1. Cognitive emotion regulation strategies as moderators

Cognitive emotion regulation (CER) strategies refer to the various cognitive methods and resources that people can use both during and after the experience of stressful, threatening or otherwise adverse situations. Garnefski and colleagues (2001) distinguished nine cognitive

strategies that people use to try to manage and handle the feelings and emotions they experience to avoid being overwhelmed by them. Moreover, these nine CER strategies can in turn be classified into adaptive (i.e., positive reappraisal, positive refocusing, putting into perspective, planning and acceptance) and maladaptive (i.e., blaming others, self-blame, catastrophising and rumination) strategies (Garnefski et al., 2001). Previous studies have provided evidence that the use of adaptive CER strategies, such as acceptance, positive refocusing or positive reappraisal, seem to attenuate negative emotions, such as anger, distress and internalising symptom in victims of adverse and violent experiences, such as cybervictimisation (e.g., Doorley & Kashdan, 2021; Duru & Balkis, 2022; Kalia & Knauff, 2020; Shaheen et al., 2023; Worsley et al., 2019). In contrast, the use of maladaptive CER strategies seems to bolster the development of psychological maladjustment in adolescents experiencing these adverse situations (e.g., Duru & Balkis, 2022; Shaheen et al., 2023).

Nevertheless, as pointed out by several authors, coping strategies are not always adaptive or maladaptive in themselves, but their effects may depend on personal and contextual factors or the combination of strategies used (e.g., DiClemente & Richards, 2022; Gresham et al., 2021; Van den Heuvel et al., 2020; Wang et al., 2023). Along these lines some studies suggest that rumination or avoidant strategies, such as blaming others, generally considered to be maladaptive strategies (e.g., Garnefski et al., 2001; Garnefski & Kraaij, 2014; Larionov & Mudlo-Glagolska, 2021), could have beneficial effects. Specifically, some previous research provides evidence that, in the face of certain stressful events and under certain conditions, the use of maladaptive strategies may help to prevent or reduce psychological maladjustment (e.g., Van den Heuvel et al., 2020).

In relation to aggression, there are fewer studies that have analysed the possible moderating role of coping strategies used by victims. Furthermore, there are differential findings regarding the effects of adaptive and maladaptive strategies on these behaviours. Thus, some studies show how the use of adaptive strategies (e.g., reevaluating the situation) could help buffer the relationship between victimisation and aggressive behaviour, while the use of maladaptive strategies (e.g., considering others as the cause of the suffered situation) would strengthen this relationship (e.g., Gong et al., 2021; Uddin & Rahman, 2022). In contrast, other research provides evidence that in the face of certain chronic stressors and violent contexts, the use of maladaptive strategies (e.g., rumination or other-blame) might help to prevent or reduce conflicts, externalising problems and aggressive behaviours (e.g., DiClemente & Richards, 2022; Gresham et al., 2021; Leone et al., 2021; Li et al., 2019; Van den Heuvel et al., 2020). Therefore, more research is still needed to clarify the moderating effects of these strategies. This is especially necessary in specific adverse situations, such as cyberbullying, where little research has been done on the moderating role of these strategies, and even less on the relationship between cybervictimisation and cyberaggression.

1.2. Gender differences in CER strategies

Regarding the use of CER strategies, throughout the scientific literature many studies have examined possible gender differences in the use of coping strategies. In general, most of the research shows that there are gender differences in their use. For instance, previous findings suggest that boys tend to use more direct and active strategies in coping with stressful situations (Theodoratou et al., 2023; Uddin & Rahman, 2022). In contrast, girls seem to use a greater range of coping strategies, as well as more passive strategies to manage these situations (Theodoratou et al., 2023). Particularly in relation to CER strategies, previous findings suggest that, in general, boys tend to use adaptive CER strategies (e.g., acceptance, planning, and positive reappraisal) more often than girls do (e.g., Chamizo-Nieto & Rey, 2022; Esmaeilinasab et al., 2016; Mumtaz et al., 2017; Potard et al., 2021). Instead, girls seem to make greater use of maladaptive coping strategies (e.g., rumination and self-blame) to

deal with negative experiences (e.g., Mumtaz et al., 2017; Potard et al., 2021; Zagaria et al., 2023). Some explanations for these gender differences could be related to the distinct educational patterns that boys and girls receive, the social roles they play, and the differential social context in which they grow up (Sigmon et al., 1995; Theodoratou et al., 2023).

Therefore, given these differences, some researchers have examined whether, there might be gender differences in the effectiveness of coping strategies to manage more specific adverse situations. Specifically, the potential moderating role of coping strategies was analysed in the relationship between being a victim and performing aggressive behaviours, finding differential results (e.g., DiClemente & Richards, 2022; Espino et al., 2023; Gong et al., 2021; Uddin & Rahman, 2022). Some results suggest that girls may benefit more from the use of coping strategies compared to boys, reducing the likelihood that girls will engage in aggressive behaviours (e.g., DiClemente & Richards, 2022; Uddin & Rahman, 2022). Nevertheless, other research did not find this moderating effect in girls (Gong et al., 2021). In relation to boys, there are also several findings on the effectiveness of coping strategies. Some studies did not find any interaction effect (e.g., DiClemente & Richards, 2022), while others provide evidence that some specific strategies may have a moderating effect in reducing the performance of aggressive behaviours in boys (e.g., Gong et al., 2021; Uddin & Rahman, 2022). Particularly in the cyberbullying context, there is little research on the moderating role of coping strategies. However, the few studies that have been performed indicated, on the one hand, that strategies, such as cognitive appraisal, had a moderate effect on the relationship between cybervictimisation and cyberaggression for both boys and girls (Uddin & Rahman, 2022). On the other hand, findings by Espino and colleagues (2023) suggest gender differences in responses to cyberbullying experiences. In this regard, it seems that when boys are cybervictimised they tend to react aggressively, while cybervictim girls use socio-emotional strategies more often to manage these situations (Espino et al., 2023).

Therefore, given the variety of findings in relation to gender differences and the use of coping strategies, as well as the need for further research in cyberbullying contexts, it would be important to clarify and analyse these issues. Specifically, to examine whether, in the relationship between cybervictimisation and cyberaggression, CER strategies may also have different moderating effects in boys and girls.

1.3. The current study

This study aims to explore some of the knowledge gaps surrounding cognitive coping strategies in cyberbullying contexts, as well as to shed some light on the mixed results regarding the effects of these strategies and the gender differences found therein (e.g., DiClemente & Richards, 2022; Gresham et al., 2021; Leone et al., 2021; Shaheen et al., 2023; Uddin & Rahman, 2022). To this end, this study has two objectives. On the one hand, we want to explore the possible moderating role of the combination of adaptive and maladaptive coping strategies in the relationship between cybervictimisation and cyberaggression. Total scores for each group of strategies have been considered because people use different coping strategies, not just one, and because, depending on how they are combined, they appear to have different effects on the consequences for victims (e.g., Leone et al., 2021; Van den Heuvel et al., 2020). On the other hand, we want to examine whether the same or different interaction effects of adaptive and maladaptive CER strategies with cybervictimisation on cyberaggression were found in boys and girls. Given the scarcity of studies conducted in the context of cyberbullying and given the mixed results found in the literature regarding the effects of strategies in adverse situations and the gender variable, this study is exploratory in nature.

2. Material and methods

2.1. Participants

The sample comprised 2,525 adolescents from 15 high schools in the province of Malaga. Most participants were girls (53.4%) and the age ranged from 12 to 18 years ($M = 14.10$, $SD = 1.41$). Most of the respondents were born in Spain (87.8%) but there were several other nationalities as well. Regarding their educational levels, 22% attended classes in the 1st year of compulsory secondary education, 21.8% attended classes in their 2nd year, 28.3% attended 3rd year and 25% 4th year. Another 1.9% attended 1st year of their baccalaureate and 1.1% the 2nd year.

2.2. Procedures

This study is part of a larger project. The principals of the educational centres were informed of the study, and they provided written informed consent to participate in the study. Parents or legal guardians were notified and informed by principals about the study's purpose. In eight of these centres, families provided written informed consent, but in the remaining seven centres, the families exercised passive consent, signifying their implicit approval of their adolescents' participation. The data collection process was conducted class by class, with adolescents dedicating up to two hours to completing the questionnaire battery. This always took place in the presence of one researcher and at least one high school teacher to ensure anonymity. The study followed the Declaration of Helsinki (2013) and was approved by the Ethical Committee of the University of Malaga (169-2023-H).

2.3. Measures

2.3.1. Cyberbullying

The European Cyberbullying Intervention Project Questionnaire (ECIPQ; Del Rey et al., 2015) was used to assess cybervictimisation and cyberaggression. This study used the validated Spanish version (Cronbach's alphas for cybervictimisation and cyberaggression of 0.80 and 0.88, respectively; Ortega-Ruiz et al., 2016). The scale consists of 22 items with a 5-point Likert ranging from 0 (never) to 4 (more than once a week). Each dimension assesses the frequency of either cybervictimisation or cyberaggression behaviours in the last two months. The range of behaviours toward the respondent includes threats, theft of private information, spreading rumours and exposure of private information. One item example of cybervictimisation is "Someone threatened me through texts or online messages". For cyberaggression an item example is "I posted embarrassing videos or pictures of someone online". In this study, adequate reliability indices (Cronbach's alpha and McDonald's omega) were obtained both for cybervictimisation ($\alpha = 0.78$ and $\omega = 0.80$) and cyberaggression ($\alpha = 0.79$ and $\omega = 0.80$).

2.3.2. Cognitive emotion regulation strategies

The Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2002) was used to assess adaptive and maladaptive cognitive emotion regulation strategies in response to challenging or stressful life events. This study used the validated Spanish version for adolescents because of its good psychometric properties (a range of Cronbach's alphas for the subscales from 0.62 to 0.83; Chamizo-Nieto et al., 2020). The scale consists of 36 items with a 5-point Likert ranging from 1 (almost never) to 5 (almost always). The scale evaluates two dimensions called adaptive and maladaptive cognitive emotion regulation strategies. The adaptive dimension includes five strategies: putting into perspective; acceptance; positive refocusing; refocus on planning; and positive reappraisal. The maladaptive subscales include four strategies: self-blame; blaming others; catastrophising; and rumination. In this study, also adequate reliability indices (Cronbach's alpha and McDonald's omega) were obtained both for adaptive ($\alpha = 0.87$ and $\omega = 0.87$)

and maladaptive dimensions ($\alpha = 0.81$ and $\omega = 0.80$).

2.4. Data analyses

The data was analysed using the package program IBM SPSS 25 and JASP (version 0.18.3). First, reliability analyses (Cronbach’s alpha and McDonald’s omega) were conducted by SPSS and JASP programmes respectively. Considering previous research and findings on possible gender differences in the study variables (e.g., Uddin & Rahman, 2022), we conducted Student’s *t*-test to examine whether such differences were present in our study. To measure the effect size of the significant gender differences found in the variables, Cohen’s *d* was calculated. Following the criteria of Cohen (1988) the effect size was considered as small (*d* between 0.20 and 0.30), medium (*d* around 0.50) or large (*d* around 0.80). Due to the gender differences found in some variables and according to the procedure followed in previous research analysing gender differences, we conducted the rest of the analyses (i.e., Pearson correlations and moderations) separating the sample of boys and girls. To analysis the moderating effect of CER strategies, we used model 1 of the PROCESS macro, version 3.5 (Hayes, 2018). In these analyses age was considered as a covariable. Moreover, adaptive CER strategies were the moderator of the model 1 in the link between cybervictimisation (independent variable) and cyberaggression (dependent variable), while maladaptive CER strategies were the moderator of the model 2. We performed bootstrapped bias-corrected 95% confidence intervals using 5,000 bootstrapped samples (Hayes, 2018).

3. Results

Table 1 presents the descriptive statistics in the study variables in the total sample and separated by gender, as well as *t*-test comparisons and Cohen’s *d*. As shown, boys had significantly higher scores on cyberaggression than girls, while girls reported greater use of maladaptive CER strategies than boys. In both significant differences the effect sizes found were small. The remaining comparisons were not statistically significant.

Moreover, positive correlations between cybervictimisation and cyberaggression were found for boys and girls (see Table 2). In addition, cybervictimisation and cyberaggression positively correlated with maladaptive CER strategies in both genders. There was also a positive correlation between adaptive and maladaptive CER strategies for boys and girls.

The results of the moderation analyses for boys are shown in Table 3. As presented, model 1 analysed the association between cybervictimisation and cyberaggression moderated by the set of adaptive CER strategies, while in model 2 the moderator was the set of maladaptive CER strategies. In both models, age was added as a covariate. In addition, cybervictimisation significantly predicted greater cyberaggression in both models. However, although model 1 explained 51% and model 2 accounted for 50% of the variance in cyberaggression and both models were statistically significant, the interaction terms between cybervictimisation and adaptive and maladaptive strategies, respectively, were not significant. Thus, no moderating effect from either set of strategies was found for boys.

Table 4, on the other hand, presents the results of the moderation

Table 1
Descriptive statistics in total sample and comparisons by gender.

Variables	Min – Max	Total sample (N = 2525)		Girls (n = 1348)		Boys (n = 1147)		t	p	d
		M	SD	M	SD	M	SD			
Cybervictimisation	0 – 4	0.42	0.45	0.40	0.43	0.43	0.47	1.80	0.07	–
Cyberaggression	0 – 4	0.31	0.41	0.26	0.34	0.37	0.48	6.53	<0.001	0.27
Adaptive CER strategies	1 – 5	3.19	0.68	3.18	0.68	3.20	0.68	0.47	0.64	–
Maladaptive CER strategies	1 – 5	2.81	0.64	2.86	0.65	2.74	0.61	–4.82	<0.001	–0.19

Table 2
Pearson correlations by gender.

Variables	1	2	3	4
1. Cybervictimisation	–	0.71***	0.01	0.23***
2. Cyberaggression	0.55***	–	< 0.01	0.19***
3. Adaptive CER strategies	0.02	–0.04	–	0.51***
4. Maladaptive CER strategies	0.26***	0.11***	0.38***	–

Note. Boys (n = 1147) and girls (n = 1348). Correlations are presented in the upper diagonal for boys and in the lower diagonal for girls. *** p < 0.001.

Table 3
Moderation analyses for boys.

	b	SE	t	p	LLCI	ULCI
Model 1: Adaptive strategies $R^2 = 0.51; F_{(4,1133)} = 292.46; p < 0.001$						
Constant	0.19	0.10	1.89	0.058	–0.007	0.394
Cybervictimisation (CV)	0.71	0.02	33.76	< 0.001	0.670	0.752
Adaptive strategies (AS)	–0.00	0.01	–0.17	0.860	–0.031	0.026
CV x AS	–0.00	0.03	–0.20	0.835	–0.075	0.060
Age (cov)	0.01	0.00	1.74	0.081	–0.001	0.026
Model 2: Maladaptive strategies $R^2 = 0.50; F_{(4,1133)} = 293.92; p < 0.001$						
Constant	0.19	0.10	1.89	0.058	–0.007	0.393
Cybervictimisation (CV)	0.71	0.02	30.38	< 0.001	0.667	0.759
Maladaptive strategies (MS)	0.02	0.01	1.35	0.174	–0.010	0.055
CV x MS	–0.03	0.03	–0.98	0.325	–0.099	0.033
Age (cov)	0.01	0.00	1.76	0.077	–0.001	0.027

Note. Outcome variable = cyberaggression. b = unstandardized coefficients. LLCI/ULCI = Lower/upper limit 95% confidence interval. CV = Cybervictimisation. AS/MS = Adaptive/maladaptive CER strategies. cov = covariate.

analyses for girls. As mentioned, both models analysed the association between cybervictimisation and cyberaggression, controlling for the effect of age, but in model 1 the moderator was the set of adaptive CER strategies, and in model 2 the moderator was the set of maladaptive CER strategies. Model 1 explained 30% of the variance in cyberaggression, while model 2 accounted for 31% of the variance in the outcome variable. In both models, higher cybervictimisation was related to greater cyberaggression. Moreover, a decreased use of adaptive strategies was associated with greater cyberaggression (model 1), but no relationship was found for the use of maladaptive strategies (model 2). Nonetheless, the interaction terms of both models (i.e., model 1: cybervictimisation x adaptive strategies, model 2: cybervictimisation x maladaptive strategies) were statistically significant. Thus, a moderating effect of both sets of strategies in the association between cybervictimisation and cyberaggression was found among girls.

Because the interaction terms were significant, the conditional effects of the sets of adaptive and maladaptive CER strategies were tested at low (i.e., one standard deviation below the mean) and high (i.e., one standard deviation above the mean) levels. These results may be found in Figs. 1 and 2. As shown in Fig. 1, the positive association between cybervictimisation and cyberaggression was stronger for girls with a decreased use of adaptive CER strategies compared to those with a

Table 4
Moderation analyses for girls.

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Model 1: Adaptive strategies $R^2 = 0.30; F_{(4,1337)} = 148.79; p < 0.001$						
Constant	0.07	0.07	1.01	0.311	-0.074	0.232
Cybervictimisation (CV)	0.43	0.01	23.81	< 0.001	0.398	0.469
Adaptive strategies (AS)	-0.03	0.01	-2.64	0.008	-0.053	-0.007
CV x AS	-0.06	0.02	-2.33	0.019	-0.122	-0.010
Age (cov)	0.01	0.00	2.33	0.019	0.002	0.023
Model 2: Maladaptive strategies $R^2 = 0.31; F_{(4,1337)} = 150.67; p < 0.001$						
Constant	0.11	0.07	1.42	0.155	-0.042	0.262
Cybervictimisation (CV)	0.46	0.01	23.18	< 0.001	0.422	0.500
Maladaptive strategies (MS)	-0.01	0.01	-1.48	0.137	-0.042	0.005
CV x MS	-0.11	0.02	-3.89	< 0.001	-0.171	-0.056
Age (cov)	0.01	0.00	2.03	0.041	0.000	0.021

Note. Outcome variable = cyberaggression. *B* = unstandardized coefficients. *LLCI/ULCI* = Lower/upper limit 95% confidence interval. CV = Cybervictimisation. AS/MS = Adaptive/maladaptive CER strategies. cov = covariate.

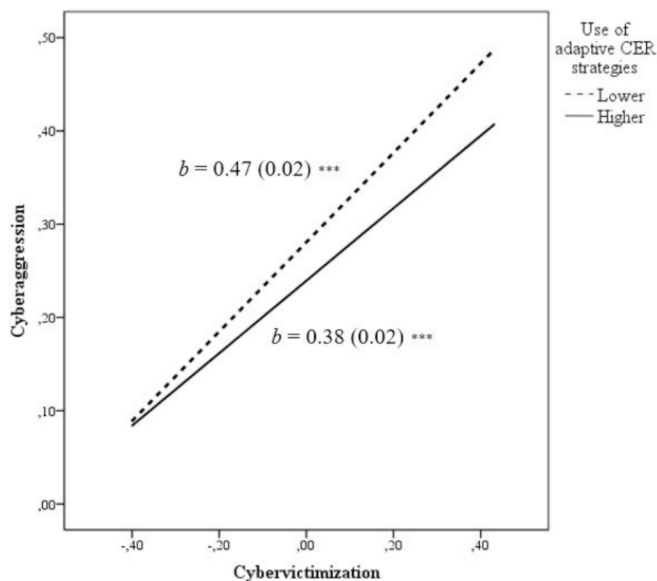


Fig. 1. Conditional Effect of Adaptive Strategies in the Link Between Cybervictimisation and Cyberaggression Among Girls.

higher use of these strategies. Post hoc analyses indicated that this difference was statistically significant ($t_{(2680)} = 3.18, p < 0.001$). A similar effect is represented in Fig. 2, such that in girls who reported using fewer maladaptive CER strategies, the effect of cybervictimisation on cyberaggression was stronger than in girls who tended to use more maladaptive strategies. Post hoc tests indicated that this difference was also statistically significant ($t_{(2680)} = 4.16, p < 0.001$). In summary, higher use of either adaptive or maladaptive CER strategies buffered the link between cybervictimisation and cyberaggression but did so only among girls.

4. Discussion

This study aimed to contribute to a better understanding of the association between cybervictimisation and cyberaggression and of the possible factors that may influence it. Specifically, this study wanted to explore the potential moderating role of adaptive and maladaptive CER

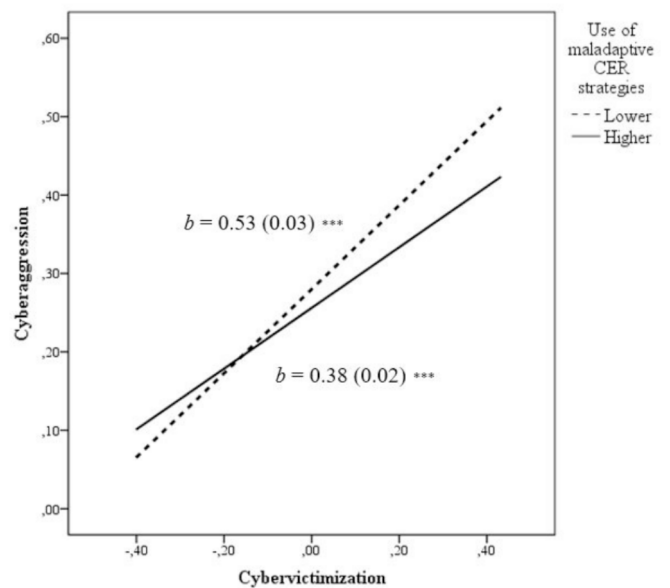


Fig. 2. Conditional Effect of Maladaptive Strategies in the Link Between Cybervictimisation and Cyberaggression Among Girls.

strategies in this relationship. First, our results confirm those obtained in previous studies (e.g., N. Huang et al., 2023; Lozano-Blasco et al., 2020; Marciano et al., 2020; Ramos Salazar, 2021; Uddin & Rahman, 2022), showing evidence that cybervictimisation is associated with cyberaggression in both girls and boys. Therefore, these findings suggest that adolescents who have been victims of an adverse and stressful situation such as cyberbullying tend to be more likely to end up cyberaggressing against their peers in consequence.

Regarding moderation analysis, although cybervictimisation was related to cyberaggression in both genders, neither adaptive nor maladaptive strategies moderated this relationship in boys; it did so only in girls. These findings are in line with previous studies (e.g., DiClemente & Richards, 2022; Uddin & Rahman, 2022). One possible explanation for these gender differences is that because girls, because they develop and mature earlier than boys, they may have a greater capacity to use coping strategies than boys do (DiClemente & Richards, 2022). Nevertheless, in this regard, it should be noted that several studies have shown evidence that boys use coping strategies (e.g., Uddin & Rahman, 2022) and that they make greater use of adaptive coping strategies compared to girls (e.g., Esmailinasab et al., 2016; Mumtaz et al., 2017; Potard et al., 2021). Despite this, in specific adverse situations, such as cyberbullying, previous research suggests that, for boys, the use of cognitive strategies is not sufficient to help them manage their negative emotions and reduce their tendency to act aggressively in these situations (Espino et al., 2023; Uddin & Rahman, 2022).

Other possible explanations have been suggested – for example, that boys may need more resources to complement the effect of these coping strategies (e.g., social support) (e.g., DiClemente & Richards, 2022). Considering that cyberbullying has specific characteristics (e.g., the virtual context, which can lead to decreased control and increased vulnerability in victims) (Dennehy, Meaney, Cronin, et al., 2020; Dennehy, Meaney, Walsh, et al., 2020; Evangelio et al., 2022), a tentative explanation may be that, in these contexts, cognitive strategies may not be sufficient for cybervictimised boys to mitigate the possibilities of cyberaggressive behaviour.

Therefore, as suggested by other researchers (e.g., Espino et al., 2023; Theodoratou et al., 2023) it seems that other social and cultural aspects, such as educational patterns and social context, would need to be taken into account in order to try to understand why it seems that girls tend to use a greater range of strategies and benefit more from their

use, while other factors and resources seem to have more beneficial effects for boys coping with this adverse context (e.g., Espino et al., 2023; Theodoratou et al., 2023; Uddin & Rahman, 2022). Nevertheless, as some authors have pointed out (e.g., DiClemente & Richards, 2022; Uddin & Rahman, 2022), further research will have to be carried out to corroborate and confirm these conjectures.

In relation to the findings obtained in girls, according to several studies (e.g., DiClemente & Richards, 2022; Leone et al., 2021; Uddin & Rahman, 2022) the results suggest that both adaptive and maladaptive CER strategies moderate the relationship between cybervictimisation and cyberaggression. On the one hand, these findings suggest that a higher use of adaptive CER strategies seems to buffer the impact of cybervictimisation in girls and thus helps them reduce the likelihood of cyberaggression against others because of the harm they have suffered. This may be the case because the use of adaptive strategies, such as positive reappraisal, planning or putting into perspective, buffers the negative mental health consequences of suffering adverse situations (e.g., Duru & Balkis, 2022; Ferraz de Camargo & Rice, 2020; Van den Heuvel et al., 2020), thereby preventing the risk factors of cyberaggression (e.g., Camerini et al., 2020; Marciano et al., 2020). Additionally, these coping strategies can help girls reflect on the situation they have experienced, to consider various options for action (beyond revenge and aggression) and to buffer the resulting negative emotions (e.g. hatred or anger), and through all of this to reduce the likelihood that they will end up cyberaggressing against their peers (den Hamer & Konijn, 2016; Uddin & Rahman, 2022).

On the other hand, in line with several studies (e.g., DiClemente & Richards, 2022; Gresham et al., 2021; Leone et al., 2021; Li et al., 2019; Van den Heuvel et al., 2020), our findings provide evidence that girls who experience cybervictimisation and use more maladaptive CER strategies exhibit less cyberaggressive behaviour. Some authors have suggested that this may be because strategies such as rumination may help reduce the aggressive impulses that may follow the adverse experience (e.g., Li et al., 2019). In this regard, previous studies have pointed out that victims who showed greater impulsivity were more likely to engage in cyberaggression in response to the behaviours they experienced (e.g., L. Huang et al., 2022). Therefore, it is tempting to think that, although these strategies are considered less adaptive, they are still resources that people can use to manage their emotions and feelings in these situations. In this way, they may be able to help girls initially to reduce the impulses to respond aggressively and feelings of anger and revenge. It should also be considered that people do not use a single strategy to manage adverse situations (e.g., Doorley & Kashdan, 2021; Leone et al., 2021; Van den Heuvel et al., 2020). Thus, some researchers have observed that a combination of high use of adaptive and maladaptive strategies were most helpful to adolescents for preventing psychological maladjustment (Van den Heuvel et al., 2020), which is an important risk factor for cyberaggression (e.g., Camerini et al., 2020; Marciano et al., 2020). All this suggests that it seems more important to have a variety of coping resources (adaptive and less adaptive) rather than just a few in order to cope more successfully with cybervictimisation, since strategies do not all have the same effects on all people or in the same situations. Nevertheless, it would be necessary for future studies to examine the role of CER strategies further before we are able to confirm these approaches. For instance, it would be productive to be able to conduct profile analyses of the effects of combined adaptive and maladaptive strategies used by victims. This would contribute to a better understanding of our results, so that they could be used in measures and interventions currently being taken with adolescents to prevent cyberbullying.

4.1. Limitations

The present study is not without limitations. First, our data were cross-sectional, which means that causality between the study variables could not be inferred. Future studies should aim to use prospective or

experimental designs to address this shortcoming. Second, the sample was collected from a specific region in the south of Spain; thus, these results may not be generalisable to other populations. Future research might opt to include participants from other locations or analyse this model in a different sample to explore the replication of these findings. Third, some of the variables in the present study were addresses sensitive issues (i.e., experiences of cyberbullying), and all of them were self-reported. Despite this, it should be noted that the two questionnaires used were validated for the Spanish adolescent population and good psychometric properties were shown. Furthermore, both in the validated versions and in the current study, the reliability indices obtained were adequate. Nevertheless, social desirability and/or recall biases might be present. Therefore, researchers might use other measures, such as third-party reports (e.g., teachers' or parents') or experience sampling methods to reduce these biases. Finally, the sample used here was a community sample; therefore, extreme levels of cyberbullying are not present. In the future, studies should explore these models in adolescents who have suffered from these experiences to help determine if these results are also applicable in extreme cases.

4.2. Implications

Despite these limitations, this study has important implications. Research suggests that all individuals involved in bullying situations suffer from greater psychological problems than non-involved peers, but bully-victims tend to experience the worst consequences (Garaigordobil & Machimbarrena, 2019; Maji et al., 2016). Moreover, our results indicated that cybervictimisation and cyberaggression are closely linked. Consequently, to reduce the probability that cyberbullied adolescents become cyberaggressors, action must be taken. The present study provides a path for targeted prevention since it was found that the use of CER strategies, whether adaptive or maladaptive, might help adolescent girls who have been victims of cyberbullying not to perpetuate such aggressive behaviour. In addition, prior research has found that adaptive CER strategies are related to increased well-being and maladaptive strategies are associated with increased stress, anxiety, and depression (Chamizo-Nieto et al., 2020). Furthermore, recent research has found that group interventions are effective in promoting the use of adaptive CER strategies (Mehrabani & Tavakoli, 2022; Turan, 2022). Therefore, even though both types of emotion regulation strategies might diminish the probability of cyberaggression, researchers, clinicians, counsellors, and other professionals with close contact with teenagers should aim to teach girls about these adaptive strategies, which might not only reduce the possibility of becoming a bully-victim but might also benefit their general well-being.

5. Conclusion

This study has aimed to contribute to the ongoing debate regarding the role of cognitive coping strategies for victims of cyberbullying based on gender, fostering a more comprehensive understanding of the phenomenon. The findings provide evidence that girls seem to benefit most from the use of coping strategies in these situations, helping to prevent them from becoming cyberbullies themselves. Furthermore, these findings also suggest the importance of training and developing different strategies (both adaptive and less adaptive) in adolescents, so that they can use the benefits of each one according to the needs they have to face and manage in each situation. On the other hand, they point out the relevance of considering and adapting current preventive measures and actions according to gender differences, so that each adolescent can obtain the maximum benefit and cope more adaptively with these situations.

Ethics approval

This study was approved by the Ethics Committee of University of

Málaga (169-2023-H) and was performed in accordance with the principles of the Declaration of Helsinki.

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Consent to participate

In eight education centres, written informed consent was obtained from the parents. In seven education centres, a passive consent was obtained from the parents (they did not clearly refuse adolescent's participation in the study).

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data will be available in a public repository of the corresponding author's university.

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