



Bullying and cyberbullying, what do they have in common and what not? A latent class analysis

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Título: Acoso y ciberacoso, ¿qué es igual y qué es distinto? Un análisis de clases latentes.

Resumen: El acoso escolar y el ciberacoso se presentan como comportamientos de riesgo durante la adolescencia. Aunque se ha reconocido una importante relación entre ambos fenómenos, aspectos referidos a su prevalencia, la semejanza y diferencia entre uno y otro, la transferencia de roles, así como los aspectos emocionales, sociales y morales asociados aún están sin resolver. El objetivo fue explorar los perfiles de implicación en acoso y ciberacoso a través de un análisis de clases latentes y examinar su asociación con desconexión moral, ajuste social y normativo y rumiación de la ira. Se presenta un estudio longitudinal en dos tiempos con 3,006 escolares de secundaria ($M_{edad} = 13.53$; 51.9% chicas). Se utilizaron autoinformes ampliamente validados en la población de referencia. Los resultados mostraron cuatro clases latentes: no implicados, víctimas-cibervíctimas, agresores victimizados y totalmente implicados. Análisis de regresión logística identificaron un bajo ajuste social en los totalmente implicados, bajo ajuste normativo y alta desconexión moral en perfiles mixtos, y alta rumiación de la ira en todos los perfiles de implicación, principalmente en agresores victimizados. Se discuten estos resultados en términos de su valor para comprender los matices que distinguen el acoso y ciberacoso, de la existencia de roles puros y mixtos y de las variables emocionales, sociales y morales asociadas.

Palabras clave: Victimización. Cibervictimización. Agresión. Ciberagresión. Desconexión moral. Rumiación de la ira. Ajuste social y normativo.

Abstract: Bullying and cyberbullying are risky behaviours which normally occur during adolescence. Although an important relationship has been recognized between the two phenomena, issues related to their prevalence, the similarity and difference between them, the transfer of roles, as well as the emotional, social, and moral aspects associated with them, remain unresolved. The aim of this study was to explore the roles of involvement in bullying and cyberbullying through an analysis of latent classes, and examine their association with moral disengagement, social and normative adjustment, and anger rumination. The study had a two-stage longitudinal design, with 3,006 secondary school students ($M_{age} = 13.53$; 51.9% girls), using extensively validated self-reports in the reference population. The results showed four latent classes: uninvolved, victim-cybervictim, bully-victim and wholly involved. Logistic regression analyses identified a low social adjustment in those wholly involved, low normative adjustment and high moral disengagement in mixed profiles, and high anger rumination in all involvement profiles, mainly in bully-victim. These results are discussed in terms of their value in understanding the distinctions between bullying and cyberbullying, the existence of pure and mixed roles, and the associated emotional, social, and moral variables.

Keywords: Victimization. Cybervictimization. Aggression. Cyberaggression. Moral Disengagement. Anger Rumination. Social and Normative Adjustment.

Introduction

Bullying is a display of interpersonal violence which seriously impacts the well-being of schoolchildren (Ong et al., 2021). Despite being widely recognized and censured, both by schoolchildren and in educational systems in general (Menesini & Salmivalli, 2017), it still has a worryingly high level of incidence worldwide (Skrzypiec et al., 2018), with one in three schoolchildren having suffered some kind of bullying (UNESCO, 2019). Bullying involves intentional aggressive behaviour, repeated over time, in which there is a social imbalance of power between aggressor and victim (Olweus, 2007) and a clear moral transgression (Ortega-Ruiz, 2020). Involvement in bullying becomes more complex in cyberbullying, in which aggressive and hostile messages are sent intentionally and repeatedly through digital devices (Dennehy et al., 2020; Tokunaga, 2010). Even though there is considerable scientific debate about whether bullying and cyberbullying are two different phenomena (Antoniadou et al., 2019), or whether the latter is an indirect form of the former with its own characteristics (Betts et al., 2017), previous studies have recognised a certain degree of overlap in involvement

in the two (Dennehy et al., 2020; Hu et al., 2021; Wang et al., 2019).

The system of roles in bullying and cyberbullying, with the aggressor and victim to the forefront, also includes the role of the bystanders, who are schoolchildren who witness the aggression and who have a three-way choice: not to get involved (outsiders), to play an active role in defending the victim (defenders) or to support the behaviour of the aggressor (reinforcers of bullies) (Salmivalli, 2010). There are also the profiles of the aggressive victim or victimized aggressor, whose role may vary depending on the type of interaction, whether in cyberbullying or conventional bullying (Navas-Martínez & Cano-Lozano, 2022). These shared characteristics of bullying and cyberbullying support the hypothesis of a possible relationship between the two types of bullying and, therefore, of the existence of mixed roles between the two phenomena (Ding et al., 2020).

In this context, previous research has pointed to the connection between bullying and cyberbullying, with overlapping roles taken on in face-to-face bullying and cyberbullying (Antoniadou et al., 2019; Estévez et al., 2020; Pichel et al., 2022; Zych et al., 2018). However, other studies have suggested a more fluid exchange of roles, with children who are victims of bullying developing aggressive behaviour online (Espino et al., 2022; Walters, 2021), following the role-reversal hypothesis (Baldry et al., 2017). In addition, several studies have shown that schoolchildren who act as

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aggressors in bullying in turn become victims of cyberbullying, and vice-versa, that schoolchildren who are victims of bullying are more likely to become aggressors online (Chu et al., 2018; Li et al., 2020; Navas-Martínez & Cano-Lozano, 2022).

Most studies use central measures, such as general means, to analyse specific types of bullying and roles to give us information on the frequency of involvement in aggression or victimization, without identifying which cut-off points should be used to create groups and classify schoolchildren into one category or another (Coyle et al., 2021). This type of categorical methodology has its limitations when classifying schoolchildren who are at the limits of the cut-off scores and who may be involved in different bullying profiles. For this reason, alternative methods need to be used to provide a better insight into the profiles of involvement in bullying and cyberbullying in schoolchildren and the possible overlap between them.

Latent Class Analysis (LCA) is one of the most highly recommended alternative systems to the traditional ways of identifying and characterizing the profiles of those involved in bullying and cyberbullying (Bradshaw et al., 2015; Nylund-Gibson & Choi, 2018). It is a person-centred analysis which allows us to identify subgroups within the same classification by associating similar behavioural patterns between subjects and comparing them with other subgroups with a differentiated profile (Collins & Lanza, 2009; Lanza & Rhoades, 2013). This method therefore avoids the limitations of dichotomized categorization systems based on cut-off points which, although justified, can be rather arbitrary and generate statistical errors (Coyle et al., 2021; Kubiszewski et al., 2015). The results obtained by the research using LCA show a wider variability when defining bullying and cyberbullying profiles, and wholly consider the complexity of the phenomenon, both in its form and its intensity. Most of the research (Coyle et al., 2021; Nylund-Gibson & Choi, 2018; Schultze-Krumbholz et al., 2015) agrees to identify four profiles in bullying and cyberbullying: victims, aggressive victims, aggressors and uninvolved. These studies explore the profiles involved in bullying and cyberbullying independently, disregarding the possible relationship between the two phenomena. However, other studies have shown that there seem to be more similarities than differences between them and that they often occur together (Baldry et al., 2017; Del Rey et al., 2012). Nevertheless, this bias could be attributed to the wide range of measurement instruments used, which sometimes differ in the behaviour measured and its dimension (Raskauskas & Stoltz, 2007). Indeed, some research has tried to overcome these limitations by configuring mixed profiles, although these studies are scarce, and the results obtained are inconclusive. Antoniadou et al. (2019) identified four latent classes: uninvolved, victims, aggressors, and bully/victims who perpetrate bullying but are, in turn, victims online. These findings are similar to those obtained by Hayes et al. (2021) with a sample of American high school students. However, Kim et al. (2020) found different profiles: unin-

involved, involved in bullying and cyberbullying, involved only in cyberbullying, and involved only in bullying. Jones et al. (2019) identified five different profiles: aggressors, physical victims, verbal victims, cyberbullies and uninvolved. These studies were carried out with American and Asian schoolchildren, showing that it is of scientific interest to explore the profiles in other cultures, as well as to create new profiles with person-centred methodologies with a large number of participants, which would enable us to clarify the possible mixed involvement in bullying and cyberbullying.

Risky behaviours associated with bullying roles

Many studies have identified the relevance of psychosocial, moral, and emotional variables in understanding involvement in the different roles in bullying and cyberbullying (Romera et al., 2019; Tintori et al., 2021). Here, research has shown that becoming a bully, victim or victimized aggressor may be associated with several factors that could account for their involvement (Ding et al., 2020; van Dijk et al., 2017).

The consensus in the scientific literature is that participation in processes of bullying is related to lower results in both social and normative adjustment (Romera et al., 2022a). Social adjustment is defined as the degree to which the person develops socially-competent behaviour and achieves positive results of acceptance from others, while normative adjustment involves the development of behaviour and attitudes of respect and tolerance towards the explicit norms that underpin coexistence in schools (Gómez et al., 2017). Previous research has identified that aggressors show higher rates of negative behaviour towards school and its norms of positive school climate and are more likely to have social difficulties and engage in inappropriate behaviour (Menéndez-Santurio et al., 2021). Other studies (Nylund-Gibson et al., 2014; O'Connor et al., 2019) have shown how low levels of social and normative adjustment of aggressors may be driven by a lack of academic success and the need for popularity, which they see as giving them a dominant position within the peer group. Victims of bullying often demonstrate problems of emotional regulation and control which lead to disorders involving depression, stress, and low self-esteem (Menéndez-Santurio et al., 2021; Suárez-García et al., 2020). Other research warns us of the difficulties of social adaptation experienced by victims who find it impossible to acquire the inter- and intrapersonal skills and competencies necessary to be wholly integrated, and who revert to processes of withdrawal and social isolation (Cross et al., 2015; Moya-Solís & Moreta-Herrera, 2022), which, in turn, increase the likelihood of them being bullied, both conventionally and online. Aggressive-victims usually show higher rates of social and normative adjustment problems because of difficulty in adapting (Gómez-Ortiz et al., 2017).

Moral disengagement is perhaps the most notable moral mechanism that impacts involvement in interpersonal violence and is defined as the ability to ignore the moral emotions associated with violent or harmful behaviour (Bandura,

2004). Moral disengagement strategies (which can be of four types: cognitive restructuring of the transgression, shifting agency for the transgression away from the self, distortion of the consequences and blaming the victim for their own suffering) allow the individual to perpetrate immoral behaviour with lower levels of remorse or guilt (Gini et al., 2022; Thornberg et al., 2021). Moral disengagement has been widely studied to try to understand antisocial, aggressive, and violent human behaviour, such as bullying, and shows that schoolchildren who employ these four mechanisms are more likely to engage in aggression (Gini et al., 2014). In fact, analysing the roles of involvement in bullying, bullies and their reinforcers show higher levels of moral disengagement than victims and defenders of bullying (Romera et al., 2021; Wachs, 2012). In addition, research has shown that moral disengagement plays a role not only in traditional bullying, but also in cyberbullying (Gini et al., 2014; Zhao & Yu, 2021). Nevertheless, although a significant relationship can be seen between moral disengagement and cyberbullying, the association seems to be weaker in traditional bullying, due to the special characteristics of the online environment (acting anonymously and without direct contact with the aggressor), which seems to reduce the levels of moral disengagement (Romera et al., 2021; Wachs, 2012).

Anger rumination is a strategy for coping with anxiety which involves a compulsive need to repeatedly recall the events that created that anxiety, its causes, and consequences. It results in even greater stress or distress and intensifies the negative emotions and problems of psychosocial adjustment (Parris et al., 2022). Previous research has showed that schoolchildren who are victims of bullying and cyberbullying show higher rates of anger rumination as a result of feeling defenceless in the face of aggression and the lack of social support from their classmates (Malamut & Salmivalli, 2021). Thus, anger rumination has been clearly linked to involvement in victimization (Malamut & Salmivalli, 2021), and according to recent research, it may be a prelude to both cyberaggression and cybervictimization (Camacho et al., 2021), due to maladjusted anger control, which can lead adolescents to develop maladaptive responses.

It is also important to consider the effects of gender and age, since important differences have been noted here. In general, boys tend to show higher levels of moral disengagement, social and normative maladjustment than girls (Bjärehed et al., 2020; Jiménez & Estévez, 2017; Longobardi et al., 2018); while the opposite occurs in the case of anger rumination (Zsila et al., 2019). In bullying and cyberbullying, significant differences have been found in terms of the gender and age of the adolescents involved. In fact, previous results show that involvement in bullying and cyberbullying tends to decrease as the adolescent gets older (Cho & Lee, 2020). Finally, although there is no consensus on gender differences in these studies, intercultural studies have pointed to a greater involvement of boys in bullying (Smith et al., 2019) and girls in cyberbullying (Thomas et al., 2015).

Furthermore, the identification of psychosocial, emotional, and moral adjustment problems as precursors to involvement in bullying and cyberbullying could vary depending on the type of involvement profile. A latent class analysis approach, with a longitudinal design, can help to overcome the limitations of cross-sectional studies in terms of establishing relationships of influence between the variables (Antoniadou et al., 2019; Moses & Williford, 2017). Understanding the influence of psychosocial, moral, and emotional variables on involvement in the different profiles of bullying and cyberbullying will help us to advance significantly in the prevention of a type of violence among schoolchildren, which occurs in the interconnected worlds of face-to-face and online communication.

The current study

This study aims to analyse the different profiles of involvement in bullying and cyberbullying and highlight the influence of social, emotional, and moral factors on them. Previous studies on the overlapping nature of the two phenomena have warned of the risk of transferring involvement roles in face-to-face contexts to online contexts. However, only a small number of studies have addressed the different profiles of peer victimization and aggression in face-to-face and online contexts simultaneously and their results have been inconclusive.

The primary objective of the study, in addition to updating the current prevalence of both phenomena, was to identify the different latent classes of involvement in bullying and cyberbullying, based on responses giving the frequency of involvement in victimization and aggression in a sample of adolescents. Starting from the results obtained in previous research (Ding et al., 2020; Gini et al., 2019; Kochel et al., 2015), which identified different profiles in bullying and cyberbullying, we hope to identify new, mixed profiles of schoolchildren involved in the two phenomena (Estévez et al., 2020; Hu et al., 2021; Wang et al., 2019). The first hypothesis is that we will be able to form new, mixed profiles of involvement in bullying and cyberbullying, made up of schoolchildren who are involved simultaneously in episodes of victimization and aggression both face-to-face and online.

The secondary objective was to analyse the influence of emotional variables (rumination of anger), moral variables (moral disengagement) and psychosocial variables (social and normative adjustment) (Time 1) in the different roles of involvement identified (Time 2). As a second study hypothesis, it was expected that higher levels of moral disengagement and less normative adjustment will account to a greater extent for the involvement in aggressive profiles (Cañas et al., 2019; Romera et al., 2022a), that high levels of anger rumination will be associated with mixed profiles of aggression and victimization (Camacho et al., 2021; Malamut & Salmivalli, 2021), and that lower social adjustment will influence victimization profiles (Ding et al., 2020 ; Jones et al., 2019).

Methods

Participants

The sample consisted of 3,006 schoolchildren from a total of 13 obligatory Secondary Schools in southern Spain. Non-probabilistic sampling for accessibility was used to select the participants, and all the children from each participating school were surveyed. As the study had a two-time longitudinal design, only the schoolchildren who had participated in both times were included in the study. The final sample consisted of 2,639 schoolchildren (51.9% girls) from the 2018/2019 academic year, whose ages ranged between 11 and 16 years ($M = 13.55$; $SD = 1.28$).

The selection of the sample was non-probabilistic, with phone calls being made to the different schools, all of which agreed to participate in the research. 85.45% of the schoolchildren belonged to state schools, and 14.55% to private or subsidized schools. 21.5% of the schoolchildren were from neighbourhoods with a low socioeconomic level, 54.8% from neighbourhoods with a medium socioeconomic level and 23.8% lived in areas with a high economic level. The population was distributed proportionally according to the size of their town of residence: 19.1% lived in small towns (under 10,000 inhabitants), 33% to medium/large towns (10,001-100,000 inhabitants) and the rest, 47.9%, to large towns/cities (over 100,000 inhabitants).

Instruments

The *European Bullying Intervention Project Questionnaire* (EBIPQ) scale (Ortega-Ruiz et al., 2016) measures the involvement of schoolchildren in bullying, with associated behaviour such as hitting, insulting, threatening, spreading rumours, or excluding someone from a group. The scale is composed of 14 Likert-type items on a scale of 0-4 (0 = *No*; 4 = *Yes, more than once a week*). The first seven items refer to behaviour related to victimization and the rest to aggression. The internal consistency coefficients for this study were good, both for the global scale and for its dimensions ($\omega_{\text{total}} = .86$, $\omega_{\text{victimization}} = .83$, $\omega_{\text{aggression}} = .80$). Example item: *I have insulted a classmate*.

The *European Cyberbullying Intervention Project Questionnaire* (ECIPQ) scale (Ortega-Ruiz et al., 2016) measures undesirable online behaviour, such as using swear words, excluding people or spreading rumours, identity theft, over the last three months. It is composed of 22 Likert-type items with a 0-4 scale (0 = *No*; 4 = *Yes, more than once a week*) structured in two dimensions: cybervictimization and cyberaggression, with good reliability coefficients ($\omega_{\text{total}} = .91$, $\omega_{\text{victimization}} = .85$, $\omega_{\text{aggression}} = .89$). Example item: *Someone has spread lies about me online*.

Social and normative adjustment was measured using the *Adolescent Multidimensional Social Competence Questionnaire* (AMSC-Q) (Gómez-Ortiz et al., 2017), which is composed of 22 Likert-type items on a 1-7 scale (1 = *Totally false*; 7 =

Totally true). The social adjustment scale is made up of 8 items which measure the integration of individuals in their class group, for example: *I join in with the activities done by others*. The normative adjustment scale was used to assess the schoolchildren's class norms, with 5 items, such as: *I let the others work without bothering them*. Both scales showed satisfactory internal consistency coefficients (social adjustment subscale: $\omega = .85$; normative adjustment subscale: $\omega = .81$).

To assess moral disengagement, we used the *Moral Disengagement Scale-24* instrument (Bandura et al., 1996; validated in Spanish in Romera et al., 2022b), which is composed of 24 Likert-type items on a scale of 1-5 (1 = *Completely disagree*; 5 = *Wholly agree*). This questionnaire evaluates the moral behaviour of the schoolchildren in hypothetical situations. Sample item: *Some people deserve to be treated cruelly*. The scale had good internal consistency ($\omega = .89$).

Anger rumination was measured using the *Anger Rumination Scale* (Sukhodolsky et al., 2001; validated in Spanish by Toro et al., 2020), composed of 19 Likert-type items on a scale of 1-4 (1 = *Hardly ever*; 4 = *Nearly always*), to assess the tendency to think about situations that lead to anger, to remember past episodes of anger and to dwell on the causes and consequences of episodes of anger. Example item: *I dwell on my past experiences of anger*. The scale showed optimal internal consistency ($\omega = .92$).

Procedure

The research was conducted following a longitudinal design, in two time periods six months apart: October 2018 and May 2019. The schools involved approved the children's participation. Signed authorization was obtained from the families, together with the approval of the Bioethics and Biosafety Committee of the University of Córdoba. Data collection was carried out by completing a questionnaire in the classroom, supervised by a member of the research team. The voluntary, confidential, and anonymous nature of its performance was stressed and any questions that arose during the process were answered. The time taken to complete the questionnaire was no longer than forty minutes. The answers to the questionnaires were then encoded, using the statistical program SPSS 22.

Data Analysis

The LCA package (Linzer & Jeffrey, 2011) from the statistical program R was used to identify latent classes as regards involvement in bullying behaviour (aggression and victimization) and cyberbullying (cyberaggression and cybervictimization) at Time 2. The LCA enables us to classify individuals according to coincident experiences and behaviour. The latent class model with the best explanatory levels was selected using the three-step approach guidelines: first, the study variables are used to create the latent class model; secondly, the different latent class models are estimated by gradually varying the number of classes and, finally, the

model with the best fit indices is selected. Models with 3 to 5 classes were analysed by comparing the information criterion -2 Log Likelihood (-2LL), the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). The lowest values for these criteria represent a model with a good fit, after considering parsimony. We also checked that the population rate of each class was equal to or greater than 5% of the sample. Entropy, ranging from 0 to 1, was evaluated for greater accuracy in the classification, without being a determining factor. An entropy value close to 1 indicates a clear separation of the classes.

Once the model of latent classes of victimization had been identified, we analysed the relationship between the latent classes of the participants in Time 2, taking the psychosocial, moral, and emotional variables of Time 1 as covariates. To achieve this, we used multinomial logistic regression analyses. The results of the covariates were regrouped into three groups to avoid bias towards the central values (low, medium, and high) by calculating the mean deviation. The missing data rate was relatively small (0 to 5%).

Results

Preliminary analyses

Table 1 shows the descriptive statistics of the research variables. We also analysed the gender and age differences of all the study variables. As regards gender, boys showed a greater involvement in the phenomena of *aggression* and *cyberaggression*, with a low effect size. Girls showed higher levels of *normative adjustment*, with a moderate effect. The highest levels of *social, normative, and moral adjustment* were found in girls, with a moderate effect size, except in the variable of *rumination*. Two groups were established to explore the differences according to age: early adolescence (11 to 13 years old) and middle adolescence (14 to 16 years old). An increased occurrence of *cybervictimization* and *cyberaggression* was found between early and middle adolescence, as well as a worsening in the levels of *social adjustment, normative adjustment, moral disengagement, and rumination*, with a moderate effect size.

Table 1
Descriptive statistics and latent mean differences, according to gender and age.

	Total sample			Differences in gender						Differences in age					
				Boys		Girls		<i>t</i>	<i>df</i>	<i>d</i>	Early Adolescence		Middle Adolescence		<i>t</i>
	<i>A</i>	<i>C</i>	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)				<i>M</i> (<i>SD</i>)				
Victimization T2	1.99	4.79	1.51 (.63)	1.51 (.64)	1.52 (.62)	-.26	2898	.02	1.56 (.69)	1.46 (.56)	4.16***	2902	.16		
Aggression T2	3.20	15.70	1.25 (.40)	1.30 (.45)	1.21 (.33)	6.07***	2844	.23	1.25 (.41)	1.26 (.39)	-.48	2847	.03		
Cybervictimization T2	3.48	18.94	1.20 (.35)	1.20 (.37)	1.21 (.33)	-1.03	2782	.03	1.18 (.36)	1.22 (.34)	-3.02**	2786	.09		
Cyberaggression T2	5.28	4.90	1.13 (.30)	1.14 (.35)	1.11 (.24)	2.64**	2798	.07	1.11 (.31)	1.14 (.28)	-2.63**	2802	.10		
Social Adjustment T1	1.07	1.68	5.67 (.90)	5.57 (.90)	5.75 (.88)	-4.85***	2624	.20	5.69 (.94)	5.64 (.85)	1.63	2628	.06		
Normative Adjustment T1	1.13	1.28	5.89 (.97)	5.66 (1.01)	6.10 (.87)	-11.68***	2738	.47	5.96 (.98)	5.81 (.95)	3.90***	2742	.16		
Moral Disengagement T1	1.60	3.53	1.58 (.49)	1.68 (.54)	1.49 (.43)	9.75***	2529	.39	1.55 (.51)	1.61 (.48)	-2.88**	2533	.12		
Rumination T1	.64	-.18	2.02 (.65)	1.96 (.63)	2.07 (.65)	-4.28***	2480	.17	1.95 (.66)	2.08 (.62)	-4.78***	2484	.20		

** *p* < .01; *** *p* < .001

The correlations between the study variables show how involvement in victimization is positively related to aggression and cybervictimization. The correlation analyses revealed a moderate negative relationship between involve-

ment in bullying or cyberbullying and social and normative adjustment, and a positive relationship with the mechanisms of moral disengagement and rumination (see Table 2).

Table 2
Correlations between the study variables.

	1	2	3	4	5	6	7
1. Victimization T2	-						
2. Aggression T2	.50**	-					
3. Cybervictimization T2	.42**	.36**	-				
4. Cyberaggression T2	.22**	.48**	.70**	-			
5. Social Adjustment T1	-.26**	-.09**	-.11**	-.02	-		
6. Normative Adjustment T1	-.15**	-.37**	-.17**	-.23**	.20**	-	
7. Moral Disengagement T1	.09**	.28**	.16**	.26**	-.06**	-.35**	-
8. Rumination T1	.25**	.26**	.26**	.20**	-.08**	-.17**	.28**

***p* < .01

Latent class analysis

The analysis and comparison of the fit indices for the different latent class models tested showed that the four-class model provided the best fit for the data (Table 3). The four groups were well differentiated (entropy = .864), and the interpretation of the identified classes was significant and compatible with the theory. The five-class model we analysed did no more than to divide the classes of victims into smaller groups with more extreme scores, which deviated from the aims of our research.

Table 3
Fit indices for models with 3 to 5 latent classes.

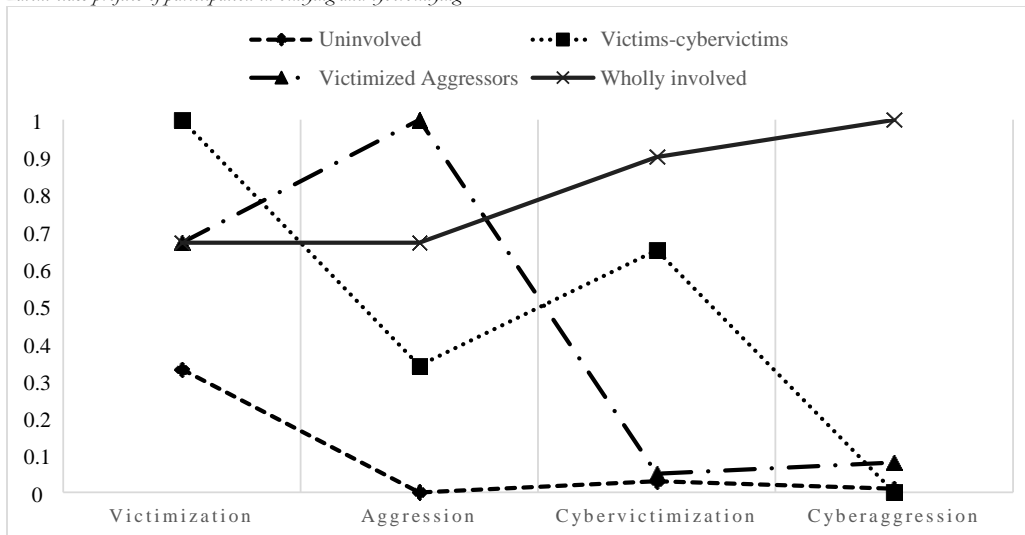
Class	-2LL	AIC	BIC	Entropy
3	-495.022	1000.04	10293.95	.877905
4	-4913.152	996.304	10354.14	.864081
5	-4898.179	9964.359	10458.12	.857927

-2LL: negative 2 log likelihood; AIC: Akaike Information Criteria; BIC: Bayesian Information Criteria

Table 4
Probability of the variables for each latent class according to involvement in bullying and cyberbullying.

Variable	Uninvolved (76.6 %)	Victims-cybervictims (9.7 %)	Victimized Aggressors (9.2 %)	Wholly Involved (4.5 %)
Victimization	.33	1.00	.7	.7
Aggression	.00	.34	1.00	.7
Cybervictimization	.03	.5	.05	.90
Cyberaggression	.01	.00	.08	1.00

Figure 1
Latent class profiles of participation in bullying and cyberbullying



Logistic regression analysis

As regards the predictor variables (Table 5), *social adjustment* was associated with a lower probability of being in the 'victim-cybervictims' group ($b = -.79, SE = .13, p < .001$) and 'wholly involved' ($b = -1.35, SE = .27, p = .009$) compared to the 'uninvolved' class. *Normative adjustment* was relat-

ed to a lower probability of belonging to the classes wholly involved' ($b = -1.30, SE = .20, p < .001$) and, to a greater extent, 'victims-cybervictims' ($b = -1.53, SE = .19, p < .001$) compared to the 'uninvolved' class. *Moral disengagement* was associated with a higher probability of belonging to the 'victim-cybervictim' ($b = 1.36, SE = .18, p < .001$) and 'wholly involved' ($b = 1.48, SE = .22, p < .001$) groups. *Anger*

rumination was more closely associated with 'victimized aggressors' ($b = 1.59$, $SE = .20$, $p < .001$) and 'wholly involved' ($b = 1.48$, $SE = .23$, $p < .001$), compared with the 'uninvolved' group.

Table 5

Estimates, standard errors, and odds ratios of the associations of T1 covariates with each latent class.

Variables	Victims-cybervictims		Victimized Aggressors		Wholly involved	
	b (SE)	OR	b (SE)	OR	b (SE)	OR
Social Adjustment	-.79***(.13)	-6.07	-.57**(.22)	-2.63	-1.35***(.27)	-5.01
Normative Adjustment	-1.53***(.19)	-7.87	-.30(.21)	-1.43	-1.30***(.20)	-6.56
Moral Disengagement	1.36***(.18)	7.57	.41(.22)	1.83	1.48***(.22)	6.68
Rumination	1.21***(.17)	7.07	1.59***(.20)	7.91	1.48***(.23)	6.48

Reference class: 'Uninvolved'.

** $p < .01$; *** $p < .001$

Discussion

This aim of this work was to explore the different involvement profiles in bullying and cyberbullying among schoolchildren, as well as to analyse its prevalence and the emotional, psychosocial, and moral differences. Based on a longitudinal study and a latent class analysis design, we identified mixed involvement profiles in bullying and cyberbullying, and looked at the similarities and differences in the influence of the variables explored in the different roles.

Most previous research has focused on the study of the roles of bullying and cyberbullying independently, regardless of the possible interdependence between the two (Coyle et al., 2021; Nylund-Gibson & Choi, 2018; Schultze-Krumbholz et al., 2015). The primary aim of our study was to identify the different latent classes of involvement in the two phenomena. The model showed four classes: 'uninvolved' schoolchildren, the class with the most representative weight, represented over 70% of the schoolchildren who participated in the study. For those who participated, three clearly differentiated classes were found. The group we labelled victims-cybervictims were schoolchildren who showed high rates of victimization and cybervictimization, in other words, that their involvement in both phenomena was always in the role of victim. Approximately 10% of the schoolchildren were in this group, which implies that one in ten schoolchildren was a victim of both bullying and cyberbullying. 'Victimized aggressors', schoolchildren with high rates of aggression and victimization but only in direct or traditional bullying, also accounted for one in ten of the children. Finally, the 'wholly involved' class included schoolchildren who were actively involved in all forms of bullying and cyberbullying: aggression, victimization, cyberaggression and cybervictimization. In this way, we can confirm hypothesis 1, in which we expected there to be schoolchildren who played mixed roles, either as victims and cybervictims, or who were involved in both phenomena in all roles. However, this latent class has less weight in the prevalence of the schoolchildren studied. Our results are consistent with those obtained in other countries (Antoniadou et al., 2019; Hayes et al., 2021; Kim et al., 2020), but they show up the profiles more clearly and differentially and highlight a profile which up to now has been rather imprecise: schoolchildren who are

'wholly involved' in both phenomena, consisting of children with high scores in both victimization and aggression in bullying and cyberbullying. While previous studies did enable us to identify aggressors and victims who transferred their role of involvement in traditional bullying to online contexts, their results were not conclusive when it came to defining the kind of behaviour in which this overlap existed. Our study has allowed us to further clarify this interdependence in the phenomena of bullying and cyberbullying and their concurrence over time. However, we have also observed the profile of children exclusively involved in traditional bullying, which leads us to conclude that bullying and cyberbullying are two phenomena that, although connected, are also independent and clearly differentiated by adolescents. At the same time, other children were involved in both types of phenomena, which suggests the need to consider the phenomena of bullying and cyberbullying as two processes that sometimes concur over time, with increasingly negative consequences deriving from their involvement in such mixed profiles (Espino et al., 2022; Li et al., 2020; Navas-Martínez & Cano-Lozano, 2022).

The secondary objective of the study was to examine the emotional, social, and moral variables that seem to influence involvement in both phenomena from the different roles identified. Regression analyses confirmed hypothesis 2, with some adolescents involved in mixed profiles ('victims-cybervictims' and 'wholly involved') who revealed greater social and normative adjustment problems than their uninvolved peers. This adjustment deficit covers involvement in processes of social isolation and behaviour which are contrary to established norms, thus increasing their probability of being victims and aggressors both in face-to-face and online settings. These results emphasize how important it is that adolescents grow up in an atmosphere of equality and respect, which allows them to learn effective social strategies. The lack of such an atmosphere can be associated with real problems in coping with interpersonal relationships and the risks associated with poor management of social life (Cross et al., 2015; Gómez-Ortiz et al., 2017; O'Connor et al., 2019), thus increasing the probability of being bullied, both traditionally and online (Parris et al., 2022).

Moral disengagement was associated with a higher probability of belonging to the groups that could be considered

more homogeneous in terms of roles: 'victims-cybervictims' (that is, schoolchildren who always play the role of victims in either of the two phenomena) and 'wholly involved' (schoolchildren who are involved in all kinds of bullying: victimization, aggression, cybervictimization and cyberaggression). In the former group, adolescents involved in victimization processes (traditional or cybernetic) were those who showed the highest rates of moral disengagement. This result confirms the idea that the mechanisms of lack of moral commitment and disengagement from the evaluation of bullying and cyberbullying as immoral and never justifiable acts is a cognitive-moral process that also significantly affects the schoolchildren who are victims. According to our results, these types of cognitive mechanisms are not only used by aggressors, but also by schoolchildren involved in victimization episodes, who can activate them to justify acts of violence (Zych et al., 2019). This supports the hypothesis that bullying, and cyberbullying affect the processes of sensitivity and moral criteria, as has been shown in previous works (Falla et al., 2022; Wachs, 2012). These findings also seem to indicate that victims of bullying and cyberbullying could disassociate themselves from sound moral judgment, triggering inappropriate feelings of guilt and using false reasoning to support their own submissive position (Killer et al., 2019). Moral disengagement could lead to the victims playing down the importance of the bullying they have been subjected to, thus avoiding feelings of shame or guilt (Cañas et al., 2019; Fernández-Antelo & Cuadrado-Gordillo, 2019).

Anger rumination was significant mainly for the profiles of 'victimized aggressor' and 'wholly involved'. Schoolchildren with higher levels of anger rumination tend to express even greater negative feelings after stressful situations due to their inability to face a problem, which leads to increased anger and frustration (Izadpanah et al., 2017). This means that anger rumination can be identified as an important predictor of involvement in both aggressive behaviour and victimization (Camacho et al., 2021; Wright & Wachs, 2019), perhaps because schoolchildren who ruminate are more likely to become victimized aggressors since they act on impulse and, therefore, are more prone to engaging in risky behaviour, which in turn may annoy or provoke others.

Limitations and future lines of research

This study has certain limitations which should be considered for future research. First, a sample from only one re-

gion of a country makes it impossible to generalise the results obtained. Future research could replicate these results with a more geographically diverse sample to capture the cultural differences associated with involvement in the different profiles of bullying and cyberbullying. Additionally, the use of self-report tests may increase rates of subjectivity and social desirability. In addition, the definition of the 'wholly involved' (4.5%) class has certain limitations, since, although its results are close to the recommended values ($\leq 5\%$), new records are needed to confirm the adjustment of this value. Finally, further studies are needed to follow the evolution of the adolescents' behaviour, using longitudinal designs which allow us to register any changes that occur in the different profiles over time.

Conclusions

This study has enabled us to expand our information on the profiles of combined involvement in bullying and cyberbullying. The findings obtained suggest that the two phenomena can concur in parallel, either with the same role, as in episodes of victimization, or interchanging the roles of aggressor and victim in face-to-face and online contexts (Antoniadou et al., 2019). However, we have also clearly seen profiles that exist with no connection to the online context, which highlights the differences between the two phenomena. The results show that the profiles we have identified may share a series of psychosocial characteristics, such as low social and normative adjustment, high levels of moral disengagement and anger rumination, mainly in the mixed profiles (Cross et al., 2015).

As a result, educational programs should focus their work on the socio-emotional and moral variables related to the different profiles identified, which act as precursors in involvement in bullying. Addressing these could help to prevent and reduce the incidence levels of bullying in traditional and online contexts and allow all those involved to improve their psychological and social well-being (Chen et al., 2022).

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