



Peer cybervictimization and cyberaggression as a function of developmental stage during adolescence: A preliminary study

Priscila Pérez-Rodríguez^a, Juan Manuel Machimbarrena^b, Jessica Ortega-Barón^{a,c}, Adoración Díaz-López^d, Vanessa Caba-Machado^d, Joaquín González-Cabrera^{d,*}

^a Faculty of Education, Universidad Internacional de La Rioja (UNIR), Avenida de la Paz, 137, 26006 Logroño, Spain

^b Faculty of Psychology, University of the Basque Country (UPV/EHU), Avenida de Tolosa, 70, 20018 Donostia, Spain

^c Faculty of Psychology, Universidad de Valencia. Av. de Blasco Ibáñez, 13, El Pla del Real, 46010 Valencia, Valencia (Spain)

^d Instituto de Transferencia e Investigación (ITEI), Universidad Internacional de La Rioja (UNIR), Avenida de la Paz, 137, 26006 Logroño, Spain

ARTICLE INFO

Keywords:

Cybervictimization
Cyberaggression
Cyberbullying
Adolescence
Stage
Roles

ABSTRACT

Peer cybervictimization and cyberaggression are educational and social concerns which have been extensively studied during adolescence but there is less research conducted specifically across all stages of adolescence (early, middle, late, and emerging adulthood). The objective was to analyse the prevalence of cybervictimization and cyberaggression, the roles, and the associated behaviors, depending on the stages of adolescence. The sample was composed of 7295 non-university Spanish adolescents, between 11 and 22 years old from 47 schools. The frequency of cybervictimization and cyberaggression was 22.5 % and 15 %, respectively. The highest frequencies are found in late adolescence and the lowest in emerging adulthood. Mainly, involvement increases from early to late adolescence and decreases in emerging adulthood. The magnitude of cybervictimization and cyberaggression behaviors for the roles of pure cybervictim and pure cyberaggressor is similar through all stages.

1. Introduction

Violence among peers is a very common problem in our society, which arouses great concern and is associated with physical, psycho-emotional, and academic problems in adolescents (Moore et al., 2017; Varela et al., 2022). The use of technologies has enabled peer violence, extending beyond the physical and temporal reality of educational centers to be carried out through screens at any time and place. Cyberbullying is a relational risk associated with the use of the Internet in which, through Information and Communication Technologies, one or more people perform violent behaviors against their peers (Tokunaga, 2010). It is characterized by a marked imbalance of power between the cyberaggressor and the cybervictim, a repetition of these behaviors over time, and a clear intention to harm the other (Smith et al., 2008). Although the key aspects of the definition of cyberbullying are well defined at the theoretical level, there are not many instrumental studies that use an adequate semantic definition of the construct and present adequate indicators of validity and reliability (Chun et al., 2020). Therefore, and to be more precise, the terms peer cybervictimization and

peer cyberaggression will be used to denote the behaviors of peer violence received or carried out, but without a manifest imbalance of power between those involved. It is also important to differentiate that not all peer-to-peer aggressive behaviors should be considered cyberbullying problems, for example online hate speech (Wachs et al., 2022) or cyber dating abuse in romantic partnerships (Ortega-Barón et al., 2022).

Different reviews report mixed prevalences for cybervictimization and cyberaggression. Modecki et al. (2014) reported average prevalences of cybervictimization and cyberaggression of 15 % and 16 %, respectively. Athanasiou et al. (2018) reported data for cybervictimization ranging from 13.3 % to 37.3 %, and Brochado et al. (2016) reported ranges between 1 % and 61 % in the last year, and between 1.6 % and 56.9 % in the last six months. On the other hand, other studies reported data of prevalences below 10 % for cybervictimization and cyberaggression (Jadambaa et al., 2019). Other data sources such as the WHO Regional Office for Europe's Health Behaviour in School-Aged Children (HBSC) transnational collaborative survey provide overall prevalence data for cyberbullying about 13–14 % in 2018 (WHO, 2020).

* Corresponding author at: Instituto de Transferencia e Innovación (ITEI), Universidad Internacional de la Rioja (UNIR), Avenida de la Paz, 137, 26006 Logroño, Spain.

E-mail address: joaquin.gonzalez@unir.net (J. González-Cabrera).

<https://doi.org/10.1016/j.actpsy.2024.104280>

Received 30 January 2024; Received in revised form 10 April 2024; Accepted 16 April 2024

Available online 22 April 2024

0001-6918/© 2024 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

The new HBSC report, with data from 2021/2022, shows that 15 % of teenagers reported being cyberbullied at least once or twice in the last two months (15 % of boys and 16 % of girls) so there is a slight increase in cyberbullying (Cosma et al., 2024). This data contrasts with those reported by EU KIDS which indicate a range of online victimization between 5 and 9 % (Smahel et al., 2020). There is wide diversity in prevalence ranges, which may be due to multiple definitions of cyberbullying, multiple instruments and different cut-off points, as each study is conducted in a particular context and with different criteria and assessment tools (Chun et al., 2020). In any case, regardless of prevalence, the problem is important because of its overlap with forms of offline peer victimization (Estévez et al., 2020).

In line with the international context, the Spanish reality presents the same problems of heterogeneity in the data. Hence, we find studies of prevalence of cybervictimization that vary from 30 % (Machimbarrena & Garaigordobil, 2018), to others with values below 10 % (González-Cabrera, Machimbarrena, et al., 2019). Something similar is observed in cyberaggression because, while some studies report cyberaggression prevalences higher than 30 % (Buelga et al., 2015), others place them around 15 % (Zych et al., 2018), or even at <10 % (Calmaestra et al., 2020; Machimbarrena & Garaigordobil, 2018). However, a recent study for UNICEF by Andrade et al. (2021) places the prevalence for the Spanish context of cybervictimization between 12.2 % and 22.5 %, and of cyberaggression between 11.4 % and 19.7 %.

Another reason for such diverse estimates has been the difference in the age of the samples analysed, ranging from Primary Education (twens, 10–12 years) to High School (just before university, 16–18 years) under the heading of adolescence. In this sense, it should be specified that, as the World Health Organization (WHO, 2006) points out, what is widely defined as adolescence is not a definite period of time, but a phase of development in the life of the individual. Thus, the WHO identifies three age groups: early adolescence (from 10 to 13 years to 14–15 years), middle adolescence (from 14 to 15 years to 17 years), and late adolescence (17–21 years). For its part, the American Academy of Pediatrics (AAP, 2021) also defines three age groups: early adolescence (11–14 years), middle adolescence (15–17 years), and late adolescence (18–21 years). Besides these approaches, we find the one made by Salmela-Aro (2011), which divides adolescence into four periods. This approach coincides at some point with those of the AAP (2021) and the WHO (2006) but it considers a greater development after the age of 18. According to Salmela-Aro (2011), adolescence is divided into 4 stages: early adolescence (11–13 years), middle adolescence (14–17 years), late adolescence (17–19 years), and emerging adulthood (18–25 years). This last stage is incorporated by Salmela-Aro from a suggestion of Arnett (2000) and focuses especially on the exploration of various areas of the individual's life, highlighting the areas of love and work.

Different studies showed that the prevalence data of cybervictimization and cyberaggression vary depending on the age and the different stages of adolescence, without there being a clear consensus about their tendency (Mohseny et al., 2020). Compared to studies such as those of Smahel et al. (2020), which indicated that there was no consistency in the results between cases of cybervictimization and cyberaggression and age, other studies, such as those of Schultze-Krumbholz et al. (2014), González-Cabrera, Machimbarrena, et al. (2019), Yudes et al. (2020), and Pichel et al. (2021), reported an increase in cyberaggression and cybervictimization as age increased. Specifically, Yudes et al. (2020) indicated that the older the individual, the higher the scores of cybervictimization and cyberaggression, even doubling the rate of cybervictimization between the ranges of 12–14 years and 15–18 years. Pichel et al. (2021) reported that cyberaggression behaviors were less prevalent in the 10–11 age group, reaching the highest values for cyberaggressors at 16–17 years, and at 14–15 years for cybervictims. In contrast, studies such as that of Wang et al. (2019) showed a considerable decrease in the rates of cybervictims and cyberbullies as age increased. In general, these studies include ages between 10 and 18 years that are

associated with non-university stages, but most of the research with samples of adults focuses almost exclusively on university students (Bashir et al., 2020; Watts et al., 2017), but it is relevant to study this phenomenon in adults (usually over 18 years of age) because of the implications for all stages of academic life (Betts et al., 2019). This change in the academic environment can influence many psychosocial variables related to cybervictimization and cyberaggression. Thus, there are very few studies with a wide range of non-university students at all stages of adolescence (including the years after the age of majority).

In terms of behavioral differences based on sex, research has also shown mixed results. Some reported higher prevalences of cyberaggression and/or cybervictimization in boys (Jung et al., 2014; Zych et al., 2018), and other research reported higher values in girls (Pabian & Vandebosch, 2014; Pichel et al., 2021; Tsitsika et al., 2015), whereas other studies find no significant differences between boys and girls (Cosma et al., 2024; De Paolis & Williford, 2015; Machimbarrena & Garaigordobil, 2018; Shin & Ahn, 2015). In the Spanish context, it has been suggested that the differences between boys and girls are so small and without a clear and distinct pattern that it is inadvisable to employ clearly differentiated preventive strategies for girls and boys (Feijóo et al., 2021).

As indicated above, there is no general consensus about the prevalence of cybervictimization and cyberaggression behaviors, nor about the stage of adolescence. Moreover, research on this problem in such a wide age range (from the age of 11, at the beginning of early adolescence, to the age of 25 at the end of emerging adulthood) has hardly been studied in non-university students. The objectives of this study are: 1) analyse the frequency of cyber-victimization and cyber-aggression in the stages of adolescence and their differences in total scores. 2) analyse the frequencies of the roles of pure cyberaggressor, pure cybervictim and cybervictim-cyberaggressor in the stages of adolescence and the differences in their total scores; 3) to compare the different behaviors related to cybervictimization and cyberaggression at each stage of adolescence. These analyses will take into account possible sex differences. Due to the lack of consensus in the literature and the few studies that cover all these ages in non-university students, different research questions are raised in this exploratory study: 1) At what stage of adolescence will there be a higher frequency of cybervictimization and cyberaggression?; 2) at what stage of adolescence will there be a greater frequency of pure cyberaggressors, pure cybervictims, and cyberaggressor-cybervictims?; 3) Will there be any differences in these frequencies depending on the stage of adolescence and sex?; and 4) at what stage of adolescence will there be more behaviors related to cybervictimization and cyberaggression?

2. Method

2.1. Design and participants

This cross-sectional and analytical study was conducted between January and March 2021. The sample consisted of 7295 participants aged between 11 and 22 years with an average age of 15.87 ± 2.79 , of whom 4473 were boys (61.3 %) and 2822 were girls (38.7 %).

The distribution according to the stages of adolescence (Salmela-Aro, 2011) was as follows: early adolescence -11–13 years- (n = 1925; boys = 946; girls = 979); middle adolescence -14–16 years- (n = 2258; boys = 1251; girls = 1007); late adolescence -17–19 years- (n = 2297; boys = 1662; girls = 635); emerging adulthood -20–22 years- (n = 815; boys = 614; girls = 201). The sample according to the educational stage was composed as follows (1.5 % were 6th grade of primary education students; 46.9 % students in compulsory secondary education; 9 % post secondary education students and 42.5 % in vocational training students). The sample was obtained from 47 non-university schools in 34 locations from nine Spanish regions (Aragon 0.8 %, Principality of Asturias 5.2 %, Cantabria 1 %, Castilla la Mancha 5.8 %, Castilla and Leon 6.4 %, Valencian Community 46.1 %, Autonomous Community of Madrid 25 %, Navarre 5.9 % and Basque Country 3.8 %). All schools

were financed by public funding (subsidized schools) and these were selected for reasons of timeliness. Regarding the geographical area, 75.2 % of the participants came from an urban setting and 24.8 % from a rural one. We conducted non-probabilistic, incidental sampling.

2.2. Assessment instruments

For the evaluation process, we asked the participants some socio-demographic questions: sex, age, grade, school, and training itinerary. The reduced version of the Cyberbullying Triangulation Questionnaire (CTQ; González-Cabrera, León-Mejía, et al., 2019) was used for the dimensions of cybervictimization and cyberaggression, which are based on the works of Calvete et al. (2010) and Gámez-Guadix et al. (2014). This questionnaire contains 9 items for each dimension. Each item is measured on a 5-point Likert scale ranging from 0 (*Never*) to 4 (*Almost every week*). The score ranges from 0 to 36 for each dimension. The CTQ has adequate indicators of reliability and internal validity, with a Cronbach alpha of 0.84 for cybervictimization and 0.85 for cyberaggression in this sample. Students stated whether they had suffered and/or perpetrated each cyberbullying behavior in the past 5–6 months.

2.3. Classification of participants

The criteria applied to identify cybervictimization or cyberaggressive behaviors are the same as applied in other previous studies (González-Cabrera et al., 2021; González-Cabrera, León-Mejía, et al., 2019). In this sense, any participant who scored on any item of cybervictimization or cyberaggression with a value of 2 or higher was considered as “involved” in these problems (either as pure cybervictim or as pure cyberaggressor, depending on the role). If they scored 2 (*between 2 and 4 times*) or higher on any item for both dimensions, they were considered as playing the role of “cybervictim-cyberaggressor”. If the participants scored <2 for all the items of cybervictimization or cyberaggression, they were considered as having the role of “no problem.”

As for the stages of adolescence, the participants were classified according to the indications of Arnett (2000) and Salmela-Aro (2011). Thus, students aged between 11 and 13 years were included within the “early adolescence” stage, students between 14 and 16 years old made up the group of “middle adolescence”, participants between 17 and 19 years old were assigned to the stage of “late adolescence” and, finally, those between 20 and 22 years belonged to the group of “emerging adulthood.” Each student could only belong to one stage group; therefore, “middle adolescence” was limited to 16 years, and 17-year-old participants were included in the “late adolescence” stage.

2.4. Procedure

Participants completed the instrument through the online Survey Monkey © platform. This process was carried out in the computer classrooms and in the school classrooms through mobile devices. In this process, coordinated by the guidance departments of each school, the teachers and tutors participated and were provided with specific instructions on the procedure in order to promote its standardisation in all centers. Researchers monitored online data collection with records from each school for all groups and classes. In addition, participant detection mechanisms were enabled such as those suggested by Niessen et al. (2016) such as maximum response time “longstring” and “person-fit statistics”. The time needed to complete the questionnaires ranged between 4 and 10 min, depending on students’ age and reading comprehension.

2.5. Ethical considerations

This study received the consent of the participants and the school directors. A passive consent model was sent to the families of underage

students to inform them about the objectives and purposes of the study, its characteristics, those responsible for the study, and their right not to participate. The parents or legal guardians of minors who did not allow participation returned the signed consent. Less than 1 % of the sample declined to participate in the study. The adult students were informed about the study and explicitly provided their consent when answering the online questionnaire. Students could decide not to complete the questionnaire, as, after the presentation, they had to explicitly state that they agreed to participate (<1 % responded negatively). This study was approved by the Research Ethics Committee of the (masked for review). There were no exclusion criteria for the sample.

2.6. Data analysis

The statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS) version 25 (IBM Corp, 2017) software.

An analysis of the missing values was carried out to verify a low percentage of missing values in each of the variables and the randomness of those values. From the initial sample of 7.476 subjects, 181 were removed from the database because they had too many missing values in the questionnaire (>5 %). No missing values were imputed in the remaining sample.

To meet the main objectives of the research, the following analyses were carried out: 1) frequencies, measures of central tendency and dispersion of the measure; 2) chi-squared (χ^2) to contrast proportions and adjusted residuals (ASR); 3) analysis of variance with Games-Howell post-hoc comparisons; 4) for cases in which statistically significant differences were found, the eta square statistic (η^2) was used to calculate the effect size. In this study, a value of $p < .001$ was considered statistically significant.

3. Results

3.1. Frequency of peer cybervictims and cyberaggressors as a function of developmental stage and sex

A total of 1574 participants (22.5 %) reported cybervictimization. The number of participants reporting aggression was 1047 (15 %).

Table 1 shows significant differences in the frequency of cybervictims and cyberaggressors as a function of the developmental stage. The frequency of cybervictims and cyberaggressors increased progressively from early to late adolescence, the stage at which they reached their maximum scores, subsequently decreasing in emerging adulthood, where they had the lowest frequency. Significant differences between boys and girls were also observed at all stages of adolescence. Specifically, there was a higher frequency of boys, both cybervictims and cyberaggressors, in all stages of adolescence except for early adolescence, where it was higher in girls.

3.2. Differences in total cybervictimization and cyberaggression scores for the entire sample according to adolescence stage

Significant differences were found when comparing total cybervictimization scores in the four stages of adolescence, $F(3, 7005) = 14.17, p < .001, \eta^2 = 0.006$. However, in the post hoc comparisons, significant differences were only found between early adolescence and the rest of the stages (middle and late adolescence and emerging adulthood) ($p < .001$).

Furthermore, when comparing the total cyberaggression scores of the four stages of adolescence, we found significant differences, $F(3, 6996) = 7.175, p < .001, \eta^2 = 0.003$. However, in the post hoc comparisons, significant differences were only found between early adolescence and middle and late adolescence ($p < .001$).

Table 1

Frequency and percentage of cybervictims and cyberaggressors according to the stage of adolescence and comparisons as a function of sex.

Role	Stage of adolescence	Total f (%)	Males f (%)	Females f (%)	χ^2 (p)
Cybervictims (n = 1574)	EA	279 (17.7)	130 (46.6) ^b	149 (53.4) ^a	68.22 (<0.001)
	MA	480 (30.5)	277 (57.7) ^b	203 (42.3) ^a	
	LA	592 (37.6)	429 (72.5) ^a	163 (27.5) ^b	
	EmAd	223 (14.2)	160 (71.7) ^a	63 (28.3) ^b	
Cyberaggressors (n = 1047)	EA	186 (17.8)	86 (46.2) ^b	100 (53.8) ^a	82.24 (<0.001)
	MA	297 (28.4)	206 (69.4)	91 (30.6)	
	LA	416 (39.7)	333 (80) ^a	83 (20) ^b	
	EmAd	148 (14.1)	122 (82.4) ^a	26 (17.6) ^b	

Note: EA = Early adolescence; MA = Middle adolescence; LA = Late adolescence; EmAd = Emerging Adulthood; f = frequency; % = percentage; ; χ^2 = Chi-square; p = significance.

^a Adjusted standardized residuals >1.96.

^b Adjusted standardized residuals <-1.96.

3.3. Frequency of the different peer roles as a function of developmental stage and sex

Table 2 presents the frequency of the different roles (No problem, Pure cybervictim, Pure cyberaggressor, Cybervictim-cyberaggressor) as a function of the stages of adolescence and participants' sex.

There were significant differences in the frequency of the different roles depending on the developmental stage. Frequencies increased progressively from early adolescence to late adolescence, subsequently decreasing in emerging adulthood. Concerning sex, in general, the frequencies for the different roles increased as the evolutionary stage advanced in the case of boys, and decreased as the evolutionary stage advanced in the case of girls.

3.4. Differences in the total scores of the dimensions of cybervictimization and cyberaggression for the total sample according to participants' role and stage of adolescence

Table 3 shows that there were no significant differences between the total scores of cybervictimization and cyberaggression in the stages of adolescence for the roles of pure cybervictim and pure cyberaggressor, although there were significant differences in the cybervictim-cyberaggressor role. For this role, the stage with the highest score, both in cybervictimization and cyberaggression, was middle adolescence, and the one with the lowest score was emerging adulthood.

Table 2

Frequency of each role (No Problem, Pure cybervictim, Pure cyberaggressor, Cybervictim-cyberaggressor) according to the stage of adolescence and comparisons as a function of sex.

Role	Stage of adolescence	Total f (%)	Males f (%)	Females f (%)	χ^2 (p)
No problem (n = 5027)	EA	1409 (28.0)	691 (49.0) ^b	718 (51.0) ^a	239.17 (<0.001)
	MA	1568 (31.2)	845 (53.9) ^b	723 (46.1) ^a	
	LA	1502 (29.9)	1076 (71.6) ^a	426 (28.4) ^b	
	EmAd	548 (10.9)	417 (76.1) ^a	131 (23.9) ^b	
Pure cybervictim (n = 911)	EA	186 (20.4)	80 (43.0) ^b	106 (57.0) ^a	39.97 (<0.001)
	MA	275 (30.2)	130 (47.3) ^b	145 (52.7) ^a	
	LA	331 (36.3)	222 (67.1) ^a	109 (32.9) ^b	
	EmAd	119 (13.1)	75 (63.0)	44 (37.0)	
Pure cyberaggressor (n = 394)	EA	95 (24.1)	36 (37.9) ^b	59 (62.1) ^a	57.72 (<0.001)
	MA	98 (24.9)	61 (62.2)	37 (37.8)	
	LA	157 (39.8)	128 (81.5) ^a	29 (18.5) ^b	
	EmAd	44 (11.2)	37 (84.1) ^a	7 (15.9) ^b	
Cybervictim-cyberaggressor (n = 650)	EA	89 (13.7)	50 (56.2) ^b	39 (43.8) ^a	21.84 (<0.001)
	MA	198 (30.5)	144 (72.7)	54 (27.3)	
	LA	259 (39.8)	205 (79.2) ^a	54 (20.8) ^b	
	EmAd	104 (16.0)	85 (81.7) ^a	19 (18.3) ^b	

Note: EA = Early adolescence; MA = Middle adolescence; LA = Late adolescence; EmAd = Emerging Adulthood; f = frequency; % = percentage.

^a Adjusted standardized residuals >1.96.

^b Adjusted standardized residuals <-1.96.

3.5. Comparison of cybervictimization and cyberaggression behaviors according to the developmental stage

Table 4 compares the items of cybervictimization and cyberaggression as a function of the stages of adolescence. For cybervictimization, significant differences were found in 7 of the 9 items, with Item 1 presenting the largest effect size: "Sending me threatening or insulting messages." In general, the stage that presented the lowest scores in cybervictimization was early adolescence, and the one that received the highest scores was middle adolescence. For cyberaggression, significant differences were found in 3 of the 9 items, with Item 3 being the one with the largest effect size: "Writing embarrassing jokes, rumors, gossip, or comments about a classmate." In 2 of the 3 items, the behaviors were significantly lower in early adolescence than in other stages of adolescence.

4. Discussion

This study provides evidence of cybervictimization and cyberaggression in the four stages of adolescence for students aged 11 to 22 who are not studying a university degree. Currently, there is a scarcity of studies that approach these problematic with such a wide age range, which adds value to the field of study by analysing differences between the four stages of psycho-evolutionary development.

Concerning the first objective, to analyse the frequencies and differences in the scores of cybervictimization and cyberaggression in the stages of adolescence, we note that the data reported in this study are

Table 3
Differences in the total scores of cybervictimization and cyberaggression for the total sample according to the role and stage of adolescence.

Role	Stage of adolescence	M (SD) CBV	F (p) CBV	Post hoc CBV	M (SD) CBA	F (p) CBA	Post hoc CBA
Pure cybervictim (n = 911)	EA ^a (n = 186)	5.19 (3.01)	1.273 (0.282)				
	MA ^b (n = 275)	5.32 (3.91)					
	LA ^c (n = 331)	4.80 (3.36)					
	EmAd ^d (n = 119)	5.20 (3.44)					
Pure cyberaggressor (n = 394)	EA ^a (n = 95)				4.58 (3.60)	1.034 (0.378)	
	MA ^b (n = 98)				5.20 (5.34)		
	LA ^c (n = 157)				4.47 (4.29)		
	EmAd ^d (n = 44)				5.70 (7.43)		
Cybervictim - cyberaggressor (n = 650)	EA ^a (n = 89)	7.94 (6.29)	9.383 (<0.001)	b > d	7.07 (6.17)	9.775 (<0.001)	a > d b > d
	MA ^b (n = 198)	8.52 (7.47)			8.15 (7.31)		
	LA ^c (n = 259)	6.59 (4.67)			6.10 (4.98)		
	EmAd ^d (n = 104)	5.15 (3.11)			4.63 (2.82)		

Note: CBV = Cybervictimization; CBA = Cyberaggression; EA = Early adolescence; MA = Middle adolescence; LA = Late adolescence; EmAd = Emerging Adulthood; M = arithmetic mean; SD = standard deviation; F = Fisher's F; p = significance; Post hoc: Games Howell post-hoc test. a–d are, respectively, the stages of adolescence.

related to those found by Schultze-Krumbholz et al. (2014), Yudes et al. (2020), and Pichel et al. (2021). In these studies, an increase in cyberbullying was reported as age increases, although none of them contemplated the stage of emerging adulthood, nor did they present a homogeneous distribution of stages. The data obtained can be considered to be in line with other studies reporting a higher frequency of the problem between 16 and 18 years (González-Cabrera, Machimbarrena, et al., 2019; Morin et al., 2018; Tsitsika et al., 2015). However, these results are contrary to those found by Wang et al. (2019), which indicated a decrease in the rates of cybervictims and cyberbullies as adolescents grow older, and they also differ from other studies such as those of Garaigordobil (2015), which reported a higher prevalence of cyberaggression in middle adolescence and found no differences in cybervictimization between ages 12 and 18 years. Responding to the first research question, late adolescence was the stage in which the highest frequency of both cybervictimization and cyberaggression was found.

A possible explanation for this increase in cyberaggression and cybervictimization between early and late adolescence may be adolescents' greater access to technologies (Andrade et al., 2021), through which they interact with their peers (Calmaestra et al., 2016). Likewise, low parental control over children's use of technologies and the gradual decrease of this control as children grow older (Díaz-López et al., 2020) may be risk factors associated with the appearance and increase of these violent behaviors (Andrade et al., 2021). It is important to add that from the age of 13 it is legal to have a profile on most social networks, which is also a legal aspect that can add to the explanation (as many of the cyber-aggressive behaviors are carried out on these media) (Chan et al., 2021).

Nonetheless, there was also a decrease in the frequency of these problems in emerging adulthood that we cannot compare with other similar studies. This could be explained, at least in part, by adolescents' psychosocial development during the transition to adulthood, as they develop more complex abstract thinking and greater empathy and control over their impulses (Meeus, 2016). This decline could also be explained in emerging adulthood by the progressive acquisition of coping and resilience strategies (Alessandri et al., 2016). Similarly, young people at this stage focus more on the development of other areas of their life, such as training aimed at a professional future and social and loving relationships (Salmela-Aro, 2011; Shulman et al., 2014). Emerging adulthood also represents a considerable change at the social level because this stage entails a period of learning about mutual support, the intensification of existing friendships, and the creation of new bonds (Hochberg & Konner, 2020). The above-mentioned psychosocial changes can be considered as precedents and may explain, at least in part, the reduction in violence observed in this study.

Concerning the second objective, to analyse the frequencies and differences in the total scores of the roles of pure cyberaggressor, pure cybervictims, and cybervictim-cyberaggressor in the stages of adolescence, in general, we observed that the frequencies increased both for

pure and mixed roles as adolescence progressed (until late adolescence) and they decreased in emerging adulthood. Although there are no studies that cover such broad age ranges, these data partially coincide with the investigations of González-Cabrera, Machimbarrena, et al. (2019) and Zych et al. (2018) in which being older was related to higher pure cyberaggression and cybervictimization-cyberaggression. Concerning the frequencies of each of the roles, the results partially coincide with those found by González-Cabrera, Machimbarrena, et al. (2019), with the same instrument and cut-off points, in which almost 20 % were involved in the mixed role. On the other hand, Schultze-Krumbholz et al. (2014) also reported a prevalence of >26 % for the role of cybervictim-cyberaggressor. However, other investigations such as those of Zych et al. (2018) reported lower prevalences for pure cybervictims (13 %), pure cyberaggressors (4 %), and cybervictim-cyberaggressors (11 %) in students aged 11 to 19 years. Regarding the average scores of cybervictimization and cyberaggression, the results indicated that there are no differences between the stages of adolescence for pure cybervictims and pure cyberaggressors, although there are differences for the hybrid role of cybervictim-cyberaggressor, as in the studies of González-Cabrera, Machimbarrena, et al. (2019) or Smith (2019). The joint analysis of Tables 2 and 3 is of special interest in the analysis of this problem. Whereas the frequency of cybervictimization and cyberaggression was higher in late adolescence, the average scores of cybervictimization and cyberaggression were not statistically different for pure cybervictims and pure cyberaggressors. This suggests that, although more participants are involved in late adolescence, the magnitude of the problem is similar at all stages, including emerging adulthood. It could also indicate that in stages with a lower frequency of problems (such as early adolescence or emerging adulthood), the problems found are more severe (i.e., fewer cybervictims, but more severe).

As a function of sex, the frequencies differed between boys and girls because, although we observed that boys are more frequently cybervictims and cyberaggressors as they advance in the stages of adolescence, in girls, the trend is the opposite, and the frequency decreases as they advance in adolescence. The percentages of male cybervictims and cyberaggressors were higher than those of females at all stages of adolescence except for early adolescence. These data are similar to those of other studies reporting a higher rate of these behaviors in boys (Jung et al., 2014; Li et al., 2019) but they differ from studies reporting a higher prevalence of cybervictimization in girls (González-Cabrera, Machimbarrena, et al., 2019; Pabian & Vandebosch, 2014) or those that do not find significant differences between boys and girls (Cosma et al., 2024; Feijóo et al., 2021; Machimbarrena & Garaigordobil, 2018). Concerning roles, there were higher levels of pure cybervictimization, pure cyberaggression, and cybervictimization-cyberaggression in boys than in girls. This partially coincides with investigations such as those of Schultze-Krumbholz et al. (2014), who reported higher prevalences of pure cyberaggressors in boys, but higher prevalences of cybervictim-

Table 4
Comparison of each cybervictimization and cyberaggression item according to the stage of adolescence.

	Cybervictimization					Cyberaggression								
	EA ^a (n = 1786) M (SD)	MA ^b (n = 2150) M (SD)	LA ^c (n = 2253) M (SD)	EmAd ^d (n = 815) M (SD)	F (p)	Eta ²	Post hoc	EA ^a (n = 1786) M (SD)	MA ^b (n = 2150) M (SD)	LA ^c (n = 2253) M (SD)	EmAd ^d (n = 815) M (SD)	F (p)	η ²	Post hoc
Item 1	0.28 (0.68)	0.41 (0.83)	0.53 (0.93)	0.49 (0.91)	29.28 (<0.001)	0.12	[a < b,c,d/b < c]	0.22 (0.62)	0.29 (0.73)	0.38 (0.85)	0.30 (0.79)	14.92 (<0.001)	0.06	[a < c]
Item 2	0.13 (0.48)	0.21 (0.63)	0.16 (0.54)	0.17 (0.53)	6.10 (<0.001)	0.03	[a < b]	0.10 (0.42)	0.14 (0.52)	0.14 (0.52)	0.13 (0.50)	2.10 (0.50)	0.01	-
Item 3	0.23 (0.64)	0.32 (0.77)	0.37 (0.83)	0.40 (0.81)	15.39 (<0.001)	0.07	[a < b,c,d]	0.14 (0.46)	0.23 (0.64)	0.29 (0.76)	0.31 (0.77)	21.86 (<0.001)	0.09	[a < b,c,d]
Item 4	0.09 (0.39)	0.14 (0.53)	0.12 (0.43)	0.13 (0.45)	4.44 (0.004)	0.02	-	0.08 (0.38)	0.11 (0.50)	0.07 (0.38)	0.05 (0.33)	6.22 (<0.001)	0.03	[b > d]
Item 5	0.08 (0.40)	0.10 (0.48)	0.06 (0.33)	0.04 (0.25)	6.84 (<0.001)	0.03	[b > d]	0.04 (0.31)	0.08 (0.45)	0.05 (0.36)	0.05 (0.38)	2.95 (0.031)	0.01	-
Item 6	0.04 (0.31)	0.07 (0.43)	0.04 (0.31)	0.01 (0.16)	7.30 (<0.001)	0.03	[b > d]	0.04 (0.34)	0.07 (0.41)	0.05 (0.34)	0.03 (0.27)	2.99 (0.030)	0.01	-
Item 7	0.13 (0.47)	0.18 (0.56)	0.15 (0.51)	0.15 (0.52)	2.88 (0.035)	0.01	-	0.10 (0.42)	0.12 (0.50)	0.08 (0.39)	0.08 (0.40)	3.57 (0.014)	0.02	-
Item 8	0.23 (0.62)	0.34 (0.76)	0.34 (0.75)	0.33 (0.73)	9.47 (<0.001)	0.04	[a < b,c]	0.14 (0.46)	0.18 (0.56)	0.16 (0.50)	0.17 (0.56)	2.09 (0.099)	0.01	-
Item 9	0.04 (0.29)	0.09 (0.47)	0.06 (0.38)	0.05 (0.37)	5.61 (<0.001)	0.02	[a < b]	0.03 (0.24)	0.07 (0.43)	0.04 (0.31)	0.03 (0.30)	6.15 (0.002)	0.03	-

Note: EA = Early adolescence; MA = Middle adolescence; LA = Late adolescence; EmAd = Emerging Adulthood. M = arithmetic mean; SD = standard deviation; F = Fisher's F; p = significance; Post hoc: Games Howell post-hoc test. a-d are, respectively, the stages of adolescence; Cybervictimization/Cyberaggression: Item 1 = Sending me/Sending threatening or insulting messages; Item 2 = Putting out or sending humiliating images of me/of an acquaintance; Item 3 = Writing or spreading embarrassing jokes, rumors, gossip or comments about me or a classmate; Item 4 = Getting my/someone's password to access social networks (nicknames, passwords, etc.) and sending messages on my behalf/their behalf that could make me/them look bad to others or cause problems with my/their acquaintances; Item 5 = Recording me/Video recording or taking pictures with my mobile while a group laughs and forces me/forces another person to do something humiliating or ridiculous and hanging it on the internet; Item 6 = Recording me/Video recording or taking pictures of me/taking pictures of someone with a mobile phone while someone hits or hurts me/hits or hurts a person to send or hang the recording on the internet; Item 7 = Spreading secrets, information or compromising images about me / someone on the internet; Item 8 = Intentionally separating me/someone from a group on a social network (chats, friends' lists, thematic forums, etc.); Item 9 = Recording me/Recording someone on video or taking pictures of me/a classmate performing some kind of sexual behavior and disseminating them on the internet.

cyberaggressors girls. However, the differences found do not seem to justify, as in other studies, that differentiated strategies should be addressed for boys and girls (Feijóo et al., 2021), but that all behaviors should be prevented equally.

Responding to the third research question, there were differences in the frequencies of pure cyberaggressors, pure cybervictims, and cyberaggressor-cybervictims depending on the stage of adolescence and sex. We note that these frequencies increased progressively from early adolescence to late adolescence, and decreased in emerging adulthood. Significant differences were also found regarding sex. In the case of cybervictimization and cyberaggression, there was a higher frequency both of cybervictims and cyberaggressors. Concerning roles, in boys, the frequencies increased as the stages of adolescence progressed, whereas, in girls, the frequencies decreased as the stages of adolescence progressed.

Regarding the third objective, to compare the different behaviors related to cybervictimization and cyberaggression in each stage of adolescence, the most frequent behaviors in the different stages corresponded to verbal violence ("Sending threatening or insulting messages"). These data coincide with the research of Garaigordobil (2015) and González-Cabrera, León-Mejía, et al. (2019) in which this behavior was the most prevalent both for cybervictimization and cyberaggression. In the same vein, the next most prevalent behavior for cybervictimization and cyberaggression was related to "writing or spreading embarrassing jokes, rumors, gossip or comments" and "intentionally removing someone from a group on a social network." In this last item, we note the importance for adolescents to belong to a peer group and feel part of it. This process is increasingly important in adolescence and may reveal why some behaviors are significantly more frequent in middle adolescence to emerging adulthood stages than in early adolescence (Salmela-Aro, 2011). Answering the fourth research question, the most prevalent behaviors both for cybervictimization and cyberaggression in the four stages of adolescence were related to verbal and social violence. In general, middle adolescence is the stage that presents a higher number of behaviors related to cybervictimization and cyberaggression.

The data from this study have potential practical implications, as it is clear that problems related to cybervictimization and cyberaggression are prevalent at all stages of adolescence. It is, therefore, necessary to propose primary preventive strategies in early adolescence (or even before Secondary Education) such as the Safety.net Program (Ortega-Barón et al., 2021; Ortega-Barón et al., 2024) or to carry out primary/secondary prevention in the first years of Secondary Education (Calvete et al., 2021; Garaigordobil & Martínez-Valderrey, 2014). In any case, it seems evident that specific intervention actions will also be necessary in later stages, which should be included in the coexistence plans of schools, as the problem transcends a specific stage or moment in the non-university training itinerary (as this is a general problem at all stages). Likewise, it is important to understand that cyberbullying may be related to other relational problems of the Internet, such as sexting, online grooming, or online partner abuse, and should be addressed comprehensively in schools (Machimbarrena & Garaigordobil, 2018), and should also use a multi-stage approach because there are relevant problems in all the stages. Differences in the sex variable do not seem to justify, in line with other studies (Feijóo et al., 2021), differentiated guidelines for boys and girls, as the prevention of all types of behavior is essential. Knowing the situation of schools in relation to cybervictimization/cyber-aggression is key, which is why it is urged, as international authorities do (Cosma et al., 2024), to carry out general and periodic evaluations in each of the Spanish regions. This would be useful in order to carry out concrete evidence-based actions in the last years. On the other hand, it is conceivable that in the future, mechanisms based on natural language processing could also be implemented and how artificial intelligence could help us in the early detection of problems related to peer violence (Nikitha et al., 2024; Pericherla & Ilavarasan, 2024).

This study presents some limitations. First, the measuring instruments employed are self-reporting, so there may be social desirability bias. Secondly, the role of the participants was not triangulated by incorporating the bystander. Thirdly, although it is a large sample and from different Spanish regions, incidental non-probabilistic sampling was carried out. In addition, as this is a cross-sectional study, real causal relationships cannot be established, and the conclusions that can be drawn are limited. Finally, there was a larger number of boys than of girls, but this represents the reality in Vocational Training in Spain, where there is a predominance of males according to the official statistics, especially in many training itineraries (Ministry of Education and Vocational Training, 2020). In future lines of research, the following could be taken into account: 1) studies triangulating the roles of cybervictims-cyberaggressors-cyberbystander; as well as analysing the role of the bystander and its relation to cyberaggression (Orue et al., 2021); 2) longitudinal studies that allow conclusions to be made about the evolution of violent cyberbehavior and its transition across the stages of adolescence; 3) frequencies studies for ages prior to early adolescence; 4) identifying personal, school, and family variables that help design prevention and intervention strategies according to the stage of adolescence incorporating them into prevention and intervention plans.

4.1. Conclusions

This study should be considered a first approach to peer cybervictimization and cyberaggression in a broad age range between 11 and 22 years that includes four stages of adolescence. The frequency of these problems increases from early adolescence to late adolescence and decreases at the stage of greater maturity (emerging adulthood). However, the magnitude of the problems of cybervictimization and cyberaggression for the roles of pure cybervictims and cyberaggressors is similar at all stages, suggesting that it is a relevant problem in all of them.

Ethics approval statement

The study was conducted with the authorization of all the participants in the investigation and with the consent of the school directors, students and families' collaboration was voluntary, anonymous, and disinterested. The project was approved by the Research Ethics Committee of International University of La Rioja (Spain) (PI007–2020 y PI001/2021) and the Juvenile Prosecutor's Office was informed.

Funding statement

This study was funded by Universidad Internacional de La Rioja [UNIR Research Plan (2020–2022 and 2022–2024)] and ITEI-UNIR B23-006 & B24-001. Ministerio de Ciencia, Innovación y Universidades (RTI2018-094212-B-I00).

CRedit authorship contribution statement

Priscila Pérez-Rodríguez: Writing – original draft, Software, Methodology, Investigation, Conceptualization. **Juan Manuel Machimbarrena:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization. **Jessica Ortega-Barón:** Writing – review & editing, Methodology, Investigation. **Adoración Díaz-López:** Writing – review & editing. **Vanessa Caba-Machado:** Writing – review & editing. **Joaquín González-Cabrera:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors report there are no competing interests to declare.

Data availability

Data will be made available on request.

References

- Alessandri, G., Eisenberg, N., Vecchione, M., Caprara, G. V., & Milioni, M. (2016). Ego-resiliency development from late adolescence to emerging adulthood: A ten-year longitudinal study. *Journal of Adolescence*, 50, 91–102. <https://doi.org/10.1016/j.adolescence.2016>
- American Academic Pediatrics. (2021). Stages of adolescent development. <https://www.healthychildren.org/English/ages-stages/teen/Pages/Stages-of-Adolescence.aspx>.
- Andrade, B., Guadix, I., Rial, A., & Suárez, F. (2021). Impact of technology on adolescence. Relationships, risks and opportunities. UNICEF. <https://www.unicef.es/sites/unicef.es/files/comunicacion/Informe%20Impacto%20de%20la%20tecnologia%20en%20la%20adolescencia.pdf>.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469–480. <https://doi.org/10.1037/0003-066x.55.5.469>
- Athanasou, K., Melegkovi, E., Andrie, E. K., Magoulas, C., Tzavara, C. K., Richardson, C., ... Tsitsika, A. K. (2018). Cross-national aspects of cyberbullying victimization among 14–17-year-old adolescents across seven European countries. *BMC Public Health*, 18(1). <https://doi.org/10.1186/s12889-018-5682-4>
- Bashir, M., Rehman, M., & Amin, A. (2020). Cyberbullying: A systematic literature review to identify the factors impelling university students towards cyberbullying. *IEEE*, 8, 148031–148051, 2020 <https://doi.org/10.1109/ACCESS.2020.3015669>.
- Betts, L. R., Baguley, T., & Gardner, S. E. (2019). Examining adults' participant roles in cyberbullying. *Journal of Social and Personal Relationships*, 36(11–12), 3362–3370.
- Brochado, S., Soares, S., & Fraga, S. (2016). A scoping review on studies of cyberbullying prevalence among adolescents. *Trauma, Violence & Abuse*, 18(5), 523–531. <https://doi.org/10.1177/1524838016641668>
- Buelga, S., Cava, M. J., Musitu, G., & Torralba, E. (2015). Cyberbullying aggressors among Spanish secondary education students: An exploratory study. *Interactive Technology and Smart Education*, 12(2), 100–115. <https://doi.org/10.1108/itse-08-2014-0025>
- Calmaestra, J., Escorial, A., García, P., Del Moral, C., Perazzo, C., & Ubrich, T. (2016). I will not play that game. Bullying and cyberbullying in childhood. Save the Children. https://www.savethechildren.es/sites/default/files/imce/docs/yo_a_eso_no_juego.pdf.
- Calmaestra, J., Rodríguez-Hidalgo, A. J., Mero-Delgado, O., & Solera, E. (2020). Cyberbullying in adolescents from Ecuador and Spain: Prevalence and differences in gender, school year and ethnic-cultural background. *Sustainability*, 12(11), 4597. <https://doi.org/10.3390/su12114597>
- Calvete, E., Cortazar, N., Fernández-González, L., Echezarraga, A., Beranuy, M., León, A., González-Cabrera, J., & Orue, I. (2021). Effects of a brief preventive intervention in cyberbullying and grooming in adolescents. *Psychosocial Intervention*, 30(2), 75–84. <https://doi.org/10.5093/pi2020a22>
- Calvete, E., Orue, I., Estévez, A., Villardón, L., & Padilla, P. (2010). Cyberbullying in adolescents: Modalities and aggressors' profile. *Computers in Human Behavior*, 26(5), 1128–1135. <https://doi.org/10.1016/j.chb.2010.03.017>
- Chan, T., Cheung, C., & Lee, Z. (2021). Cyberbullying on social networking sites: A literature review and future research directions. *Information & Management*, 58(2). <https://doi.org/10.1016/j.im.2020.103411>
- Chun, J., Lee, J., Kim, J., & Lee, S. (2020). An international systematic review of cyberbullying measurements. *Computers in Human Behavior*, Article 106485. <https://doi.org/10.1016/j.chb.2020.106485>
- Cosma, A., Molcho, M., & Pickett, W. (2024). A focus on adolescent peer violence and bullying in Europe, central Asia and Canada. In , Vol. 2. *Health behaviour in school-aged children international report from the 2021/2022 survey*. Copenhagen: WHO Regional Office for Europe. <https://iris.who.int/handle/10665/376323>.
- De Paolis, K., & Williford, A. (2015). The nature and prevalence of cyber victimization among elementary school children. *Child & Youth Care Forum*, 44(3), 377–393. <https://doi.org/10.1007/s10566-014-9292-8>
- Díaz-López, A., Maquillón-Sánchez, J., & Mirete-Ruiz, A. (2020). Maladaptive use of ICT in adolescence: Profiles, supervision and technological stress. *Comunicar*, 28(64), 29–38. <https://doi.org/10.3916/c64-2020-03>
- Estévez, E., Cañas, E., Estévez, J., & Povedano, A. (2020). Continuity and overlap of roles in victims and aggressors of bullying and cyberbullying in adolescence: A systematic review. *International Journal of Environmental Research and Public Health*, 17(20), 7452. <https://doi.org/10.3390/ijerph17207452>
- Feijóo, S., O'Higgins-Norman, J., Foody, M., Pichel, R., Braña, T., Varela, J., & Rial, A. (2021). Sex differences in adolescent bullying behaviours. *Psychosocial Intervention*, 30(2), 95–100. <https://doi.org/10.5093/pi2021a1>
- Gámez-Guadix, M., Villa-George, F., & Calvete, E. (2014). Psychometric properties of the Cyberbullying Questionnaire (CBQ) among Mexican adolescents. *Violence and Victims*, 29, 232–247. <https://doi.org/10.1891/0886-6708.VV-D-12-00163R1>
- Garaigordobil, M. (2015). Cyberbullying in adolescents and young people in the Basque Country: Changes with age. *Anales de Psicología*, 31(3), 1069. <https://doi.org/10.6018/analesps.31.3.179>

- Garaigordobil, M., & Martínez-Valderrey, V. (2014). Effect of Cyberprogram 2.0 on reducing victimization and improving social competence in adolescence. *Revista de Psicodidáctica*, 19, 289–305. <https://doi.org/10.1387/RevPsicodidact.10239>
- González-Cabrera, J., Machimbarrena, J. M., Ortega-Barón, J., & Álvarez-Bardón, A. (2019). Joint association of bullying and cyberbullying in health-related quality of life in a sample of adolescents. *Quality of Life Research*. <https://doi.org/10.1007/s11136-019-02353-z>
- González-Cabrera, J., Montiel, I., Ortega-Barón, J., Calvete, E., Orue, I., & Machimbarrena, J. M. (2021). Epidemiology of peer victimization and its impact on health-related quality of life in adolescents: A longitudinal study. *School Mental Health*, 13(2), 338–346. <https://doi.org/10.1007/s12310-021-09421-1>
- González-Cabrera, J. M., León-Mejía, A., Machimbarrena, J. M., Balea, A., & Calvete, E. (2019). Psychometric properties of the Cyberbullying Triangulation Questionnaire: A prevalence analysis through seven roles. *Scandinavian Journal of Psychology*, 60(2), 160–168. <https://doi.org/10.1111/sjop.12518>
- Hochberg, Z., & Konner, M. (2020). Emerging adulthood, a pre-adult life-history stage. *Frontiers in Endocrinology*, 10. <https://doi.org/10.3389/fendo.2019.00918>
- Jadambaa, A., Thomas, H. J., Scott, J. G., Graves, N., Brain, D., & Pacella, R. (2019). Prevalence of traditional bullying and cyberbullying among children and adolescents in Australia: A systematic review and meta-analysis. *Australian and New Zealand Journal of Psychiatry*. , Article 000486741984639. <https://doi.org/10.1177/0004867419846393>
- Jung, Y.-E., Leventhal, B., Kim, Y. S., Park, T. W., Lee, S.-H., Lee, M., ... Park, J.-I. (2014). Cyberbullying, problematic internet use, and psychopathologic symptoms among Korean youth. *Yonsei Medical Journal*, 55(3), 826. <https://doi.org/10.3349/ymj.2014.55.3.826>
- IBM Corp. (2017). *Statistical Package for the social Sciences for windows (versión 25) [computer software]*. IBM Corp.
- Li, J., Sidibe, A. M., Shen, X., & Hesketh, T. (2019). Incidence, risk factors and psychosomatic symptoms for traditional bullying and cyberbullying in Chinese adolescents. *Children and Youth Services Review*. , Article 104511. <https://doi.org/10.1016/j.chilcyouth.2019>
- Machimbarrena, J. M., & Garaigordobil, M. (2018). Bullying and cyberbullying: Differences in sex in fifth and sixth grade students of Primary Education. *Suma Psicológica*, 25, 102–112. <https://doi.org/10.14349/sumapsi.2018.v25.n2.2>
- Meeus, W. (2016). Adolescent psychosocial development: A review of longitudinal models and research. *Developmental Psychology*, 52(12), 1969–1993. <https://doi.org/10.1037/dev0000243>
- Ministry of Education and Vocational Training. (2020). Equality in MEFP figures 2020. Classrooms for equality. In *Spanish Report*. Ministerio de Educación. <https://sede.educacion.gob.es/publiva/igualdad-en-cifras-mefp-2020-aulas-por-la-igualdad/discriminacion-social-y-desigualdad/23563>
- Modecki, K. L., Minchin, J., Harbaugh, A. G., Guerra, N. G., & Runions, K. C. (2014). Bullying prevalence across contexts: A meta-analysis measuring cyber and traditional bullying. *Journal of Adolescent Health*, 55(5), 602–611. <https://doi.org/10.1016/j.jadohealth.2014.06>
- Mohseny, M., Zamani, Z., Akhondzadeh Basti, S., Sohrabi, M., Najafi, A., & Tajdini, F. (2020). Exposure to cyberbullying, cybervictimization, and related factors among junior high school students. *Iranian Journal of Psychiatry and Behavioral Sciences*, 14(4). <https://doi.org/10.5812/ijpbs.99357>
- Moore, S. E., Norman, R. E., Suetani, S., Thomas, H. J., Sly, P. D., & Scott, J. G. (2017). Consequences of bullying victimization in childhood and adolescence: A systematic review and meta-analysis. *World Journal of Psychiatry*, 7(1), 60–76. <https://doi.org/10.5498/wjpv.v7.i1.60>
- Morin, H. K., Bradshaw, C. P., & Kusch, J. M. (2018). Adjustment outcomes of victims of cyberbullying: The role of personal and contextual factors. *Journal of School Psychology*, 70, 74–88. <https://doi.org/10.1016/j.jsp.2018.07.002>
- Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2016). Detecting careless respondents in web-based questionnaires: Which method to use? *Journal of Research in Personality*, 63, 1–11. <https://doi.org/10.1016/j.jrp.2016.04.010>
- Nikitha, G. S., Shenoy, A., Chaturaya, K., & Latha, J. C. (2024). Detection of cyberbullying using NLP and machine learning in social networks for bi-language. *International Journal of Scientific Research & Engineering Trends*, 10(1). https://ijsret.com/wp-content/uploads/2024/01/IJSRET_V10_issue1_128.pdf
- Ortega-Barón, J., González-Cabrera, J., Machimbarrena, J. M., & Montiel, I. (2021). Safety.Net: A pilot study on a multi-risk internet prevention program. *International Journal of Environmental Research and Public Health*, 18(8), 4249. <https://doi.org/10.3390/ijerph18084249>
- Ortega-Barón, J., Montiel, I., Machimbarrena, J. M., Fernández-González, L., Calvete, E., & González-Cabrera, J. (2022). Epidemiology of cyber dating abuse victimization in adolescence and its relationship with health-related quality of life: A longitudinal study. *Youth & Society*, 54(5), 711–729. <https://doi.org/10.1177/0044118X20980025>
- Ortega-Barón, J., Machimbarrena, J. M., Díaz-López, A., Caba-Machado, V., Tejero-Clave, B., & González-Cabrera, J. (2024). Efficacy of a multi-risk Internet prevention program: Safety.net. *Revista de Psicodidáctica*. <https://doi.org/10.1016/j.psicoe.2024.02.001>
- Orue, I., Fernández-González, L., Machimbarrena, J. M., González-Cabrera, J., & Calvete, E. (2021). Bidirectional relationships between cyberbystanders' roles, cyberbullying perpetration, and justification of violence. *Youth & Society*. <https://doi.org/10.1177/0044118X211053356>
- Pabian, S., & Vandebosch, H. (2014). Developmental trajectories of (cyber)bullying perpetration and social intelligence during early adolescence. *The Journal of Early Adolescence*, 36(2), 145–170. <https://doi.org/10.1177/0272431614556891>
- Pericherla, S., & Ilavarasan, E. (2024). Transformer network-based word embeddings approach for autonomous cyberbullying detection. *International Journal of Intelligent Unmanned Systems*, 12(1), 154–166.
- Pichel, R., Foody, M., O'Higgins Norman, J., Feijóo, S., Varela, J., & Rial, A. (2021). Bullying, cyberbullying and the overlap: What does age have to do with it? *Sustainability*, 13(15), 8527. <https://doi.org/10.3390/su13158527>
- Salmela-Aro, K. (2011). Stages of adolescence. *Encyclopedia of Adolescence*, 360–368. <https://doi.org/10.1016/B978-0-12-373951-3.00043-0>
- Schultze-Krumbholz, A., Göbel, K., Scheithauer, H., Brighi, A., Guarini, A., Tsorbatzoudis, H., ... Smith, P. K. (2014). A comparison of classification approaches for cyberbullying and traditional bullying using data from six European countries. *Journal of School Violence*, 14(1), 47–65. <https://doi.org/10.1080/15388220.2014.9610>
- Shin, N., & Ahn, H. (2015). Factors affecting adolescents' involvement in cyberbullying: What divides the 20% from the 80%? *Cyberpsychology, Behavior, and Social Networking*, 18(7), 393–399. <https://doi.org/10.1089/cyber.2014.0362>
- Shulman, S., Vasalampi, K., Barr, T., Livne, Y., Nurmi, J.-E., & Pratt, M. W. (2014). Typologies and precursors of career adaptability patterns among emerging adults: A seven-year longitudinal study. *Journal of Adolescence*, 37(8), 1505–1515. <https://doi.org/10.1016/j.adolescence.2014.06.003>
- Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Livingstone, S., & Hasebrink, U. (2020). *EU Kids Online 2020: Survey results from 19 countries*. <https://doi.org/10.21953/lse.47fdeqj010fo>
- Smith, P. K. (2019). Narratives in research and interventions on cyberbullying among young people. In H. Vandebosch, & L. Green (Eds.), *Narratives in research and interventions on cyberbullying among young people* (pp. 9–27). <https://doi.org/10.1007/978-3-030-04960-7>
- Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry*, 49(4), 376–385. <https://doi.org/10.1111/j.1469-7610.2007.01846.x>
- Tokunaga, R. S. (2010). Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior*, 26(3), 227–287. <https://doi.org/10.1016/j.chb.2009.11.014>
- Tsitsika, A., Janikian, M., Wójcik, S., Makaruk, K., Tzavela, E., Tzavara, C., ... Richardson, C. (2015). Cyberbullying victimization prevalence and associations with internalizing and externalizing problems among adolescents in six European countries. *Computers in Human Behavior*, 51, 1–7. <https://doi.org/10.1016/j.chb.2015.04.048>
- Varela, J. J., González, C., Sánchez, P. A., Guzmán, P. M., & Olaya-Torres, A. (2022). Cyberbullying as a new form of aggression: A theoretical review and implications for adolescent well-being. In H. Tilioune, D. Benatui, & M. K. W. Lau (Eds.), *Handbook of children's risk, vulnerability and quality of life*. Cham: International Handbooks of Quality-of-Life. Springer. https://doi.org/10.1007/978-3-031-01783-4_13
- Wachs, S., Gámez-Guadix, M., & Wright, M. F. (2022). Online hate speech victimization and depressive symptoms among adolescents: The protective role of resilience. *Cyberpsychology, Behavior and Social Networking*, 25(7), 416–423. <https://doi.org/10.1089/cyber.2022.0009>
- Wang, C.-W., Musumari, P. M., Techasrivichien, T., Sugimoto, S. P., Tateyama, Y., Chan, C.-C., ... Nakayama, T. (2019). Overlap of traditional bullying and cyberbullying and correlates of bullying among Taiwanese adolescents: A cross-sectional study. *BMC Public Health*, 19(1). <https://doi.org/10.1186/s12889-019-8116-z>
- Watts, R., Day, C., Krzanowski, J., Nutt, D., & Carhart-Harris, R. (2017). Patients' accounts of increased "connectedness" and "acceptance" after Psilocybin for treatment-resistant depression. *Journal of Humanistic Psychology*, 57(5), 520–564. <https://doi.org/10.1177/0022167817709585>
- World Health Organization (WHO). (2006). Orientation program on adolescent health for health care providers. Department of Child and Adolescent Health and Development. https://www.who.int/maternal_child_adolescent/documents/pdfs/9241591269_op_handout.pdf
- World Health Organization (WHO). Regional Office for Europe. (2020). Spotlight on adolescent health and well-being. Findings from the 2017/2018 Health Behaviour in School-aged Children (HBSC) survey in Europe and Canada. International report. Volume 2. Key data. World Health Organization. Regional Office for Europe. <https://apps.who.int/iris/handle/10665/332104>
- Yudes, C., Rey, L., & Extremera, N. (2020). Predictive factors of cyberbullying perpetration amongst Spanish adolescents. *International Journal of Environmental Research and Public Health*, 17(11), 3967. <https://doi.org/10.3390/ijerph17113967>
- Zych, I., Beltrán-Catalán, M., Ortega-Ruiz, R., & Llorent, V. J. (2018). Social and emotional competencies of adolescents involved in different roles of bullying and cyberbullying. *Revista de Psicodidáctica*, 23(2), 86–93. <https://doi.org/10.1016/j.psicod.2017.12.0>