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FACTORS ASSOCIATED WITH CYBERBULLYING IN SCHOOL-AGED ADOLESCENTS

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Abstract
The purpose of this research is to analyse the dimensions of impersonalization, verbal, sexual and visual aggression in the field of cyber aggression in young people (CAY). In addition to verbal, visual cyber victimization, online exclusion or impersonation in cyber victimization in young people (CVY). The aim of the study was to find out sociodemographic factors and habits involved in cyber aggression and cyber victimization in young people in school aged 14-17 years. The research method was a quasi-experimental descriptive, correlational and predictive study based on a quantitative method. Data were obtained in 2022 through two validated questionnaires, one to measure CAY and the other CVY. A total of 472 young people participated in the sample, of whom 199 were boys and 273 girls, all of them from the autonomous city of Ceuta (Spain) aged between 14 and 17. The most relevant results of the study showed low predictive levels in relation to CVY dimensions, in relation to immigration background, number of siblings and grade repetition, and in relation to CAY in terms of grade repetition. These results, together with the discussion of the study, can contribute data to the educational and psychological field to implement intervention and prevention plans in relation to inappropriate use of the Internet by young people.

Keywords: cyberbullying; cyber aggression; cyber victimization; Internet; adolescents

Introduction

The continuous development of technological devices and applications for communication with Internet connection has changed the way young people socialize, becoming practically universal worldwide (Álvarez et al., 2016; Alhalafi & Veeraraghavan, 2022; Di Nicola, 2022). In Spain, in 2020, 97% of

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the youngest age group will use the Internet on a daily basis (Cava & Buelga, 2022). Moreover, current legislation in this country establishes that access to social platforms and networks can be made from the age of fourteen with their own consent (Aizenkot, 2021). Although after the COVID-19 pandemic period (Aizenkot, 2020; Cho, 2021; De los Reyes et al., 2021; Zhang et al., 2021) the use of the internet and social media increased (Jain et al., 2020) and, in turn, has benefited education. These practices are not without risks and problems (Álvarez et al., 2015) that lead to the emergence of new forms of bullying and crimes through electronic devices (NIEE, 2022).

In contrast to traditional assaults, cyber assaults can be perpetrated or received even from home (McLoughlin et al., 2022). This is because today's digital society is changing forms of crime using different models and can have negative consequences among victims (Chen et al., 2021; Organic Law 8/2021; Mvula et al., 2022), becoming a serious public health problem affecting adolescents (Zhu et al., 2021; Urra, 2022) and often extending into adulthood (Maurya et al., 2022). In recent times, cyber aggressions have had consequences leading to depressive symptoms and suicidal ideation in cyber victims (Donoso et al., 2017; Besschetnova et al., 2021; Pohoretskyi, 2022).

Save the Children therefore considers cyber aggressions, even in perpetrators, one of the most important risk factors for suicidal behaviour and multiplies the likelihood of suicide among children by 2.55 times (Aumaitre et al., 2021). Cyberbullying, bullying or mistreatment through digital devices connected to the Internet have found their way into our homes, into our most intimate areas, and are the biggest cause of suicide in adolescents (Kraft, 2006; Sánchez, 2022).

Factors involved in cyberbullying

Cyberbullying is a problem that is linked to various personal situations among (Zhu et al., 2021). It is obvious that this behavior is associated with the availability and use of digital devices connected to the Internet, but there are factors such as the time of use or the place where they are available that are associated with a higher level of risk (Pacheco, 2022). Among young people, social networks are a common space for leisure and entertainment, with little awareness of responsible use, although sometimes young people themselves do not consider them to be a source of risk (Cánovas et al., 2023).

Social networks occupy a space in the traditional media, influencing beauty stereotypes (Villar & Baile, 2023), provoking insults or laughter when the audiovisual images are not in line with a standardized body. This leads to mental health problems or a negative perspective of the young person's own physique, which leads to them not engaging in social activities such as extracurricular activities or sports due to embarrassment (Marrill & Hanson, 2016). The aggression suffered among adolescents in real-life environments can cause them to exclude themselves from social or sporting activities (Sánchez & Muñoz, 2021). However, it is important to know that engaging in sporting activity has benefits such as getting more and better sleep and adopting a healthy diet. These

actions are linked to reducing the risk of suicidal ideation due to cyberbullying (Rodelli et al., 2018).

It is important to note that cyberbullying can affect any child or adolescent, regardless of socioeconomic status, race or cultural ethnicity (Fuentes et al., 2019). Although some research suggests that cyberbullying is more common among young people from lower socioeconomic families (López et al., 2020), these adolescents from more disadvantaged backgrounds tend to commit more cybercrimes on others, regardless of whether the cyber victims are rich or poor (Uroko, 2021). The universalization of social networks and the internet require demographic understanding to avoid cyber victimization (Alhajji, 2019), for this reason, knowing factors such as racial discrimination can determine the risk of cyberbullying for some young people that sometimes start with humorous jokes, but with negative consequences on the victims (Alsawalqa, 2021).

Education in the families themselves is another factor in this field; there are families that, depending on the country of origin or socio-economic level, exert different control over the digital devices of adolescents (Soriano et al., 2022). The complete structuring of a family has less risk of cyberbullying (Bazaga, 2022), that is, families that for different reasons are single parent, have higher risks because adolescents spend more time alone (Jansen et al., 2012). Another risk factor associated with the study of internet use in the family environment is the number of siblings, which causes disparity in the results for different reasons, for example, Soriano et al. (2022) notes that the more siblings there are, the greater the likelihood of cyberbullying. However, other studies consider that having siblings is a protection system (Chen et al., 2018) and the risk is lower.

In the scientific literature, cyberbullying can vary between cultures, healthy habits and socioeconomic environments (Alhajji, 2019), negatively affecting victims. Five factors were analysed in this article, relating online aggression or victimization among school adolescents, in order to adopt measures for prevention or, where appropriate, early detection (Suárez et al., 2020).

Objective

The COVID-19 pandemic has led to an increase in the use of digital tools and devices in schools and homes, which translates into more frequent use of the Internet by young people in school for different purposes, sometimes in a negative way (Vekiri, 2013; López et al., 2019; Romero et al., 2019; Gubbels et al., 2020). There are countries where bullying is not criminalized, but behaviors such as threats, insults or injuries are (Arce et al., 2014). These events have serious consequences for the health of young people, which is why this research has been carried out with the aim of finding out factors that influence the type and degree of aggression carried out or suffered among adolescents in school.

For this reason, the main objective of this study is to find out the socio-demographic factors and habits that intervene in cyber aggression (CAY) and cyber victimization (CVY) in young schoolchildren between 14 and 17 years of age. The specific objectives of this research, which derive from the main objective, are as follows:

- To analyze the prevalence of this problem in a sample of young schoolchildren in relation to the factors of family immigration history, the employment situation of the parents, the number of siblings, grade repetition, sports practice and Internet access.
- To obtain predictive values between the socio-demographic factors and habits studied in relation to the dimensions of cyber aggression and cyber victimization in young people in school.

Methods

Participants

The study involved 472 school-aged adolescents aged 14 to 17. This age was selected based on the Spanish data protection law (2018), which establishes 14 years as the minimum age to register on social networks without the authorization of a parent or guardian, and 17 years as the maximum age that a young person can be considered, as the age of majority is from 18 years of age. The selected sample belongs to the Autonomous City of Ceuta (Spain), which has characteristics of cultural diversity, with more than 40% of its inhabitants of Islamic religion (Fernández, 2020), due to its location in the north of the African continent and bordering the country of Morocco.

In this research, the variables of immigration background, family employment status, number of siblings in the family, repetition of school year, sports practice and form of access to the Internet have been selected as intervening factors in the CVY. Table 1 shows the sample data for each of the variables. Of the 12 Compulsory Secondary Education and Baccalaureate schools in the city of Ceuta, the young people in the sample belong to seven of them, five of which are public schools and two are subsidized schools.

Table 1. Distribution of the sample for each of the variables

Variables	
Immigration background	
No	208
Yes	264
Employment status of families	
Does not work (NW)	82
My mother works (MW)	48
My father works (FW)	167
Both work (BW)	175

Table 1. Distribution of the sample for each of the variables - *continued*

Variables	
Number of siblings in the family	
Only son (1)	51
Two siblings (2)	164
Three siblings (3)	136
Four or more siblings (+4)	121
Course repetition	
Has not repeated (NR)	324
Has repeated once (1)	110
Has repeated twice (2)	33
Has repeated more than twice (+2)	5
Sport practice	
Does not practice sports (NS)	162
Once a week (1W)	75
Several times a week (ST)	178
Every day (ED)	57
Internet access	
Prefer not to answer (NA)	3
I connect from my own device (OD)	458
I connect from a foreign device (FD)	11

Measures

Two validated questionnaires were used for this research, one on CAJ (Appendix A) and consists of 19 items distributed in 3 dimensions which are impersonalization (CA _ Impersonalization), visual-sexual (CA _ Visual _ sexual_aggression) and verbal cyber aggression and exclusion (CA _ Verbal_aggression) (Álvarez et al., 2016). The other questionnaire on CVJ (Appendix B), consists of 26 items distributed in 4 dimensions' verbal written (CV _ Verbal_written), visual (CV _ Visual), on-line exclusion (CV _ Exclusion_on-line) and impersonation (CV _ Impersonation) (Álvarez et al., 2015).

These two instruments used were taken from a magazine aimed at secondary school students, so it was not necessary to translate or adapt them by any expert or translator. Therefore, these questionnaires are still suitable for the study sample of this research. The different items of the dimensions were measured through a Likert-type rating scale - 4 points (1=Never; 2=Almost never; 3=Almost always; 4=Always). As for the data on the variables of immigration background, family employment status, number of siblings in the family, repetition of school year, sports practice and form of Internet access, they were requested at the beginning of the questionnaire.

Procedure

The data processing in this study based on a quantitative method corresponds to a cross-sectional descriptive correlational study (Dúo et al., 2022; Moreno et al., 2021). It was approved by the Ethics Committee under code 3008/CEIH/2022 and complies with the recommendations of the Declaration of

Helsinki on good research practice. In addition, it has been authorized by the directors of the educational centres where it was carried out, as stated in the Spanish Education Law (2006) in force at the time on the autonomy of educational centers.

The first stage of the research began in January 2022. At first, authorization and appropriate permits were requested from the head of the Ministry of Education and Vocational Training in Ceuta, who replied that, due to the autonomy of educational centers, it is the educational centers themselves who must authorize their students to carry out the research. Therefore, permissions were requested from the directors of the 12 secondary and baccalaureate schools in Ceuta, of which seven did authorize the development of this study.

Then, in collaboration with the coordinator of educational digital competence of each center, the questionnaire was sent and carried out via corporate mail to students in the 3rd and 4th years of Compulsory Secondary Education (ESO) and 1st and 2nd years of Baccalaureate, guaranteeing the security of the data. These young schoolchildren, who receive and complete the questionnaire via Google Forms, do so anonymously and voluntarily, guaranteeing data protection, and are aged between 14 and 17 years old. This process was carried out under the supervision and presence of a teacher and a researcher of the present study to control possible biases. From the results obtained, 14 students from the baccalaureate stage were excluded because they were 18 years of age or older. Finally, after collecting the data, a database was generated in the Statistical Package for the Social Sciences (SPSS), version 28.

Data analysis

In the design of the study, different basic statistical data such as mean (M) and standard deviation (SD) were used, since these are parametric variables whose scores follow a homogeneous distribution, applying the Anova analysis. Also, special tests were carried out to determine the distribution, such as the objective factor (AF) and the Pearson's Asymmetric Coefficient (PAC). The association of variables was carried out using Pearson's chi-square test (χ^2), with Cramer's V (V) and the contingency coefficient (Cont) to determine the strength of association index (Dúo et al., 2022). Finally, a multiple linear regression model was performed to predict the effect of immigration background, family employment status, number of siblings, repetition of school year, sports practice and form of Internet access on cyber aggression and cyber victimization of adolescents in school.

Results

The results obtained for CAY and CVY and their dimensions using different statistical techniques are shown below, in relation to immigration background, employment status, number of siblings, repetition of school year,

sports practice and internet access. Generally speaking, the means achieved in all variables are below 2 points on a Likert-4 scale.

Table 2. Association between immigration background and the dimensions of CAY and CVY

	Immigration background		Parameters			
	No ($\bar{x}$)	Yes ($\bar{x}$)	χ^2(gl)	p	Cont	V
Cyber agression (CAY)	1.10	1.12	15.250(18)	.645	.177	.180
Cyber victimization (CVY)	1.24	1.23	39.863(37)	.344	.279	.291
CA_Impersonalization	1.05	1.05	1.876(6)	.931	.063	.063
CA_Visual_sexual_aggression	1.02	1.04	4.010(6)	.675	.092	.092
CA_Verbal_aggression	1.17	1.21	12.121(15)	.670	.158	.160
CV_Verbal_written	1.31	1.29	14.992(25)	.942	.175	.178
CV_Visual	1.10	1.11	7.021(10)	.723	.121	.122
CV_Exclusión_online	1.29	1.22	19.776(11)	.049	.201	.205
CV_Impersonation	1.15	1.22	14.284(12)	.283	.171	.174

Note: χ^2(gl)=Chi-square, p-value=degrees of freedom; Cont=Contingency coefficient; V= V Cramer.

Focusing on the sample of immigrant origin in Table 2, it can be seen that there are no considerable differences in the CAY and CVY variables. Within each of the dimensions the means are even, with some difference in CV_Exclusion_online, where students without an immigration background have a higher score of .07 than those with an immigration background, that is, they are not admitted or expelled in online games, in contact lists, chat or social networks, and have even been victims of false reports in forums, social networks or games, which cause them to be expelled. However, the CV_Impersonation is the other way around, with a score of young people with an immigration background, also higher than .07 over those without, in which those with an immigration background in their families are victims of impersonating them on the Internet, posting false comments in their name to make fun or mock third parties, even obtaining their passwords to impersonate them on social networks, also obtaining data and profile pictures.

In addition, statistically significant differences are shown in the correlation established between immigration background and the dimensions in CV _ Exclusion _ online, being higher in young people without an immigration background than in those with an immigration background. The strength of the association is low and the rest of the variables do not show statistically significant signs.

With regard to the employment status of the families of the young people in Table 3, the average results are low. Within these results, higher mean values are shown in the CVY than in the CAY, especially in those young people in which both parents do not work, with a difference of 0.14 points. Among the different variables and dimensions, the scores are very similar, without finding statistically significant signs in any of the correlations established with those young people in which the parents do not work, only the mother works, only the father works or both work.

Table 3. Association between the employment situation of families and CAY and CVY

	Employment situation ($\bar{x}$)				Parameters			
	NW	MW	FW	BW	χ^2(gl)	p	Cont	V
Cyber agression (CAY)	1.12	1.12	1.11	1.10	51.213(54)	.583	.313	.190
Cyber victimization (CVY)	1.26	1.25	1.23	1.22	118.147(111)	.304	.447	.289
CA_Impersonalization	1.06	1.02	1.05	1.06	14.708(18)	.682	.174	.102
CA_Visualsexual_aggression	1.02	1.03	1.02	1.03	19.366(18)	.370	.199	.117
CA_Verbal_aggression	1.20	1.22	1.19	1.18	50.702(45)	.259	.311	.189
CV_Verbal_written	1.33	1.32	1.30	1.29	77.142(75)	.410	.375	.233
CV_Visual	1.15	1.12	1.10	1.10	32.530(30)	.343	.254	.152
CV_Exclusion_online	1.27	1.24	1.25	1.25	29.726(33)	.631	.243	.145
CV_Impersonation	1.22	1.22	1.19	1.17	41.493(36)	.244	.284	.171

Note: NW=Does not work; MW=My mother works; FW=My father works; BW=bot work; χ^2(gl)=Chi-Square, p-value=degrees of freedom; Cont=Contingency coefficient; V= V Cramer

As for the association between the number of siblings and the variables CAY and CVY, the mean results are low and similar between the different dimensions as shown in Table 4. Although, there is a difference of 0.13 points greater in the dimension CV_Impersonation between young people who have 4 or more siblings in the families than those who are only children. However, none of the established correlations show statistically significant differences.

Table 4. Association between the number of siblings and the dimensions of CAY and CVY

	Siblings number ($\bar{x}$)				Parameters			
	1	2	3	+4	χ^2(gl)	p	Cont	V
Cyber agression (CAY)	1.08	1.10	1.10	1.14	40.776(54)	.908	.282	.170
Cyber victimization (CVY)	1.19	1.25	1.24	1.23	112.925(111)	.431	.439	.282
CA_Impersonalization	1.01	1.06	1.04	1.07	19.824(18)	.343	.201	.118
CA_Visualsexual_aggression	1.01	1.02	1.03	1.06	13.041(18)	.789	.164	.096
CA_Verbal_aggression	1.16	1.18	1.19	1.23	28.057(45)	.977	.237	.141
CV_Verbal_written	1.25	1.32	1.31	1.28	69.114(75)	.670	.357	.221
CV_Visual	1.06	1.12	1.12	1.09	29.856(30)	.473	.244	.145
CV_Exclusion_online	1.25	1.28	1.23	1.24	30.159(33)	.609	.245	.146
CV_Impersonation	1.12	1.17	1.20	1.25	40.763(36)	.269	.282	.170

Note: χ^2(gl)=Chi-Square, p-value=degrees of freedom; Cont=Contingency coefficient; V= V Cramer

In relation to the number of repetitions of the young people, as can be seen in Table 5, the average results show mean values in the three dimensions of CAY in those young people who have repeated more than 2 times. Also, the correlation between the number of repetitions and all dimensions show statistically significant differences, with the exception of the dimensions CV _ Verbal _ written and CV _ Exclusion_online. In the scales, correlation is only observed with CAY, but not with CVY. In the correlations established in the cyber aggression dimensions, the higher the number of grade repetition, the higher the value of cyber aggression. In contrast, in the CVY dimensions where there is a significant correlation, the lower the number of repetitions, the higher

the level of cyber victimization. The strength of association is at a medium-low level.

Table 5. Association between grade repetition and CAY and CVY dimensions

	Number of repetitions ($\bar{x}$)				Parameters			
	NR	1	2	+2	χ^2(gl)	p	Cont	V
Cyber agression (CAY)	1.08	1.15	1.17	1.81	198.226(54)	.000	.544	.374
Cyber victimization (CVY)	1.21	1.32	1.27	1.11	87.365(111)	.953	.395	.248
CA_Impersonalization	1.02	1.10	1.13	1.80	77.630(18)	.000	.376	.234
CA_Visualsexual_aggression	1.00	1.05	1.11	1.73	103.854(18)	.000	.425	.271
CA_Verbal_aggression	1.16	1.26	1.23	1.93	186.227(45)	.000	.532	.363
CV_Verbal_written	1.27	1.38	1.33	1.15	59.302(75)	.908	.334	.205
CV_Visual	1.08	1.19	1.16	1.04	60.941(30)	.001	.338	.207
CV_Exclusion_online	1.23	1.32	1.20	1.10	46.032(33)	.065	.298	.180
CV_Impersonation	1.15	1.29	1.30	1.12	66.141(36)	.002	.351	.216

Note: NR=has not repeated; χ^2(gl)=Chi-Square, p-value= degrees of freedom; Cont=Contingency coefficient; V=V Cramer

As for the association between young people's access to the Internet and the dimensions of CAY and CVY, correlation can be seen in Table 6 for all the scales and dimensions analyzed. Preferring not to answer if they use digital devices with an Internet connection implies a higher level of cyber victimization and cyber aggression. The strength of the association is medium-high.

Table 6. Association between Internet access and the dimensions of CAY and CVY

	Internet access			Parameters			
	NA	OD	FD	χ^2(gl)	p	Cont	V
Cyber agression (CAY)	2.54	1.10	1.18	290.689(36)	.000	.617	.555
Cyber victimization (CVY)	2.52	1.12	1.32	271.263(74)	.000	.604	.536
CA_Impersonalization	2.55	1.04	1.15	222.608(12)	.000	.266	.486
CA_Visualsexual_aggression	2.44	1.02	1.06	255.160(12)	.000	.592	.520
CA_Verbal_aggression	2.62	1.18	1.32	263.702(30)	.000	.599	.529
CV_Verbal_written	2.55	1.29	1.41	269.391(50)	.000	.603	.534
CV_Visual	2.53	1.10	1.05	315.237(20)	.000	.633	.578
CV_Exclusion_online	2.75	1.24	1.43	244.417(22)	.000	.584	.509
CV_Impersonation	2.26	1.18	1.29	169.503(24)	.000	.514	.424

Note: NA=Prefer not to answer; OD=I connect from my own device; FD=I connect from foraing device; χ^2(gl)=Chi-Square, p-value= degrees of freedom; Cont=Contingency coefficient; V= V Cramer.

Taking as a reference the sport practice of young people in relation to CAY and CVY in Table 7, no statistically significant signs are shown in any of the correlations established between those who practice sport, once, several times or every day, and those who do not practice sport. Even the mean values are similar for all four variables.

Table 7. Association between sports practice and CAY and CVY dimensions

	Sports practice ($\bar{x}$)				Parameters			
	NS	1W	STW	ED	χ^2(gl)	p	Cont	V
Cyber agression (CAY)	1.13	1.08	1.11	1.10	46.519(54)	.755	.300	.181
Cyber victimization (CVY)	1.26	1.22	1.23	1.21	108.835(111)	.540	.433	.277
CA_Impersonalization	1.07	1.02	1.06	1.01	13.937(18)	.752	.168	.098
CAVisualsexual_aggression	1.05	1.01	1.03	1.01	9.697(18)	.941	.142	.083
CA_Verbal_aggression	1.12	1.16	1.20	1.21	36.814(45)	.802	.269	.161
CV_Verbal_written	1.33	1.29	1.29	1.27	70.717(75)	.619	.361	.223
CV_Visual	1.13	1.09	1.10	1.10	16.715(30)	.976	.185	.109
CV_Exclusion_online	1.27	1.23	1.25	1.21	23.843(33)	.879	.219	.130
CV_Impersonation	1.21	1.18	1.19	1.18	14.178(36)	.999	.171	.100

Note: NS= Does not practice sport; 1W=Once a week; STW=Several times a week; ED=Every day; χ^2(gl)=Chi-Square, p-value= degrees of freedom; Cont=Contingency coefficient; V= V Cramer

To obtain all the multiple linear regression models, the stepwise model was applied (Table 8). In the applied analysis, 2 significant models were obtained for immigration background, 2 significant models were obtained for number of siblings, 1 significant model was obtained for grade repetition, and 1 significant model was obtained for Internet access. However, no significant models were obtained for employment status and participation in sports.

Table 8. Stepwise multiple linear regression model

Models	R	R2	R2C	SEE	CR2	CF	SCF
Immigration background							
1	.097	.009	.007	.495	.009	4.489	.035
2	.170	.029	.025	.491	.019	9.408	.002
Work situation							
-	-	-	-	-	-	-	-
Siblings number							
1	.113	.013	.011	.966	.013	6.072	.014
2	.167	.028	.024	.960	.015	7.251	.007
Repetition of course							
1	.231	.054	.052	.650	.054	26.605	.000
Sport practice							
-	-	-	-	-	-	-	-
Internet access							
1	.232	.054	.052	.167	.054	26.669	.000

Note: SEE: standard error of estimate; CR^2: Changes in R^2, CF: Changes in F; SCF: Meaning change in F.

The main linear regression results are shown in Table 9. In relation to immigration background, the dimensions that make up model 1 are CV _S uplantation and CV _ Exclusion_online. In relation to the number of siblings, the dimensions that make up model 2 are also CV _ Suplantation and CV _V erbal_written. Regarding grade repetition, the dimensions that make up model 3 are CA _ Visual_sexual_aggression. Finally, with respect to internet access, the dimensions that make up model 4 is CV _ Visual. In all the dimensions described earlier in this paragraph, the significant values are less than .05, therefore, all the dimensions show a low predictive ability.

Table 9. Linear regression coefficients

Models	B	Typical error	Beta	t	p
Immigration background					
2(Constant)	1.503	.086		17.529	.000
CV_Impersonation	.237	.071	.171	3.326	.001
CV_Exclusion_online	-.181	.059	-.158	-3.067	.002
Siblings number					
2(Constant)	2.472	.163		15.173	.000
CV_Impersonation	.635	.174	.235	3.658	.001
CV_Verbal_written	-.414	.154	-.173	-2.693	.007
Repetition of course					
1(Constant)	.766	.127		6.016	.000
CA_Visual_sexual_aggression	.618	.120	.231	5.158	.000
Internet access					
1(Constant)	2.186	.034		65.044	.000
CV_Visual	-.152	.029	-.232	-5.164	.000

Discussion

Social exclusions, conflicts and verbal aggression have always existed in person, preferably outside the home. However, with the emergence of platforms, games or social networks, new avenues of delinquency arise among young minors, such as online exclusion or impersonation, with the handicap that it can occur within the home and the school itself, as McLoughlin et al. (2022) point out. The authors agree with González (2020) on the possibility that young people do not feel responsible for their negative acts as they are not identified online, leading to attitudes of toxic disinhibition.

Taking as a reference the statistics published by the National Institute for Educational Evaluation (2022), almost all young people access the Internet and own devices with online connection, both at school and at home, these data are supported by other scientific studies such as Álvarez et al. (2016), Jain et al. (2020), and Alhalafi and Veeraraghavan (2022). Therefore, the authors of this article agree that this phenomenon should be studied because it can prevent health problems among young people in school, supported by the studies of Zhu et al. (2021), Maurya et al. (2022), Mvula et al. (2022), and Urra (2022). Because from younger and younger ages, adolescents own their own smartphones, even without control according to Di Nicola (2022). Therefore, the authors proceed to discuss the results of this study with reference to the two objectives of the study.

Comparison with other works

According to other findings such as Fuentes et al. (2019) cyberbullying among immigrant youth is a growing problem worldwide. These young people often face double discrimination, both because of their immigrant status and because of language or cultural barriers that make them more vulnerable to cyberbullying according to Alhajji et al. (2019). Consistent with the current study young people with an immigrant background have the highest level of

experiencing impersonation, where third parties post false comments using their names for the purpose of mockery or ridicule.

It is important to note that cyberbullying is not exclusive to young immigrants, but is a problem that affects all young people regardless of their origin from the point of view of Uroko (2021). In this line, the results of this research show that young people who do not have an immigrant background are more likely to suffer online exclusion, being not admitted or expelled in games, chats or social networks or victims of false reports in forums, social networks or games in contrast to the study conducted by Pacheco (2022).

In relation to cyberbullying of young people and family situation, those whose parents or parents have an unstable or difficult employment situation, such as unemployment or low income, are more likely to be victims of cyberbullying according to Kraft (2006), in line with the results of this study which show that young people whose parents have a workload are slightly less likely to be cyber aggressors or cyber victims, with slightly lower average data than parents who do not work or at least one of the two of them does. In contrast, according to Bazaga (2022), results, levels of cyber victimization through social networks are higher for adolescents who spend more time alone or unsupervised than working adults. Young people whose parents are busy or preoccupied with their jobs may have less time and energy to supervise and support their children when they are surfing the Internet according to Jansen et al. (2012).

Another circumstance for families is the number of siblings of young people. In this study, adolescents belonging to large families have higher levels of CVY, specifically in impersonation through emails, social networks or obtaining their password to impersonate someone else, in line with Soriano et al. (2022). The fact that adolescents have electronic devices is a normalized fact as pointed out by Cava and Buelga (2022) and their supervision by adults or families in this research is not relevant, but it is relevant for those young people who decide to hide in affirming whether or not they use their own or other people's devices, obtaining a higher level of aggression and victimization through the network, despite the fact that only 3 young people responded in this way.

Although, Alonso and Romero (2020) point out that there is no conclusive research suggesting a direct relationship between the number of times an adolescent repeats a grade and his or her risk of being a victim of cyberbullying, in this study a correlation can be seen between grade repetition and CAY at average levels, especially with these young people admitting to engaging in verbal aggression online. In addition, there may be factors related to academic performance that may increase the risk of being a victim of cyberbullying such as having difficulties keeping up with school work, feeling insecure or excluded at school, especially among younger adolescents as raised by Chen et al. (2018) and in line with the CVY results of this study.

Participation in sports activities can provide a sense of community among peers, as well as improve self-esteem and emotional well-being, which can help protect adolescents from being victims of cyberbullying. Alsawalqa (2021) notes

that adolescents who participate in sports activities are less likely to be victims of cyberbullying compared to those who do not participate in sports. The authors of this study, despite not obtaining significant differences between sport and CAY or CVY, agree with these statements and also with Suárez et al. (2020) that certain beauty patterns can influence CVY by being laughed at or teased as stated by Rodelli et al. (2018).

Conclusions

Internet use is a field of great concern worldwide for its negative consequences and health risks among young people, however, cyberbullying remains a poorly understood area in terms of predictors and possible consequences. In this study, low predictive values are found for four of the six factors investigated in relation to cyberbullying and young people. This allows us to take measures to prevent and address cyberbullying in young people in order to protect their mental health and well-being.

In relation to the CVY the conclusions are that variables related to immigration background in families have predictive levels on the dimensions of supplanting and online exclusion. In relation to the number of siblings of young people who are cyber victims, predictors of identity theft also appear. With regard to Internet access, there are predictor levels for being visual victims, that is, posting compromising photos or videos of the young people themselves without consent, even appearing in a humiliating way.

In relation to CAY, the conclusions of this study are that there is a low predictive level in relation to the number of siblings with visual and sexual aggression, *i.e.* taking photos, videos with sexual, suggestive or humiliating content without consent to other young people and sharing them via mobile phone or Internet, or even hitting someone, recording it and sharing it.

Therefore, the authors conclude that this research provides insight into the association between different socio-demographic factors with CAY and CVY, where violent activities carried out or received by Spanish adolescents are analyzed with predictor levels.

Theoretical implications

The models for measuring cyber aggression and cyber victimization in young people proposed by (Álvarez et al., 2015; Álvarez et al., 2016), have been used in different research and varied contexts with interesting results. Therefore, this study, along with others, provides significant evidence to understand that cyberbullying is a global problem derived from the use of technologies and Internet access and affects the health of young people.

Practical implications and importance of the findings

The findings of this study may be relevant for the educational and psychological fields, since knowing the factors associated with cyberbullying in adolescents is essential for developing effective interventions to prevent and treat this phenomenon in different settings.

In the field of prevention, these results make it possible to identify adolescents at risk of being victims or aggressors. In the field of treatment, they allow the design of personalized interventions for victims and perpetrators. On the other hand, intervention with adolescents involved in cyberbullying offers the support and individualized attention necessary to overcome the difficulties that are leading them to become involved in cyberbullying.

In turn, the identification of cyberbullying aggressors can pose challenges for the design of programs based on the development of empathy, learning peaceful conflict resolution and modifying their aggressive behaviors.

Limitations and future research directions

As a limitation in determining the results of the study, the sample collected was exclusively of adolescents in school. In Spain, school attendance is compulsory until the age of 15, while from the age of 16 it is no longer compulsory, therefore, the sample is conditioned by the fact that 16 and 17 year olds are in school because they have chosen to do so, leaving out of our study a large part of the population of that age, who may have other socio-demographic profiles. Another limitation, in relation to physical activity, is that the study has focused on the frequency of physical activity, and not on the type of activity.

In short, this research is a novel study that fulfils the general objective of finding out the socio-demographic factors and habits involved in cyber aggression and cyber victimization in young people aged between 14 and 17 at school. These suggestive results about the socio-demographic and cultural factors of CAYs and CVYs allow the corresponding administrations to design more effective prevention and intervention strategies and programs in the face of a problem of growing presence in our society and of great educational, clinical and social relevance. It is necessary to inform and train students, educators and families about the behavior of aggressors and the main routes of aggression in victims, in order to prevent these pathologies from being transferred to adult life or to health risks.

As a future line of research, the authors recommend assessing the types of social networks or aspects associated with sporting activity.

Ethics statement

This study was carried out in accordance with the recommendations of the University of Granada (UGR), Spain. The protocol was approved by the Ethics Committee for Research, 3008/CEIH/2022 of the International Graduate School of the UGR, in accordance with the Declaration of Helsinki.

Conflicts of interest

The authors declare no conflict of interest and it is part of the doctoral thesis of the first author of the study.

Author contributions

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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Appendix A

Cyber aggression Questionnaire

Impersonalization
1. I have passed myself off as someone else on the Internet, posting comments under his/her name as if I were him/her
2. I have passed myself off as someone else on Twitter, Instagram, . . ., creating a false profile of the user (photo, personal information, . . .) with which I have insulted or ridiculed him/her
3. I have obtained another person's password, and I have sent upsetting messages to an acquaintance as if they were from him/her to get him/her into trouble
Visual sexual aggression
4. I have taken photos or video recordings of sexual or suggestive content (for example, at the beach, in a dressing room. . .) without consent, and I have shared them using a mobile phone or the Internet
5. Using a mobile phone or the Internet, I have shared compromising images or videos of another person that he/she took himself/herself of a sexual, suggestive, or provocative nature without his/her permission
6. I have pushed another person to do things that he/she did not want to do (whether or not he/she finally agreed to do it) by threatening to share intimate conversations or images of him/her
7. I have posted doctored (modified) photos on the Internet of other people to hurt them or ridicule them
8. I have posted real compromising photos or videos of a person on the Internet without his/her permission to hurt him/her or laugh at him/her
9. I have hit someone, I have recorded it, and then I have shared it
10. I have forced someone to do something humiliating, I have recorded it, and then I have shared it to tease him/her
Verbal cyber aggression and exclusion
11. I have removed or refused another person on a contact list for a chat, social network, or instant messaging program, without him/her doing anything and only for being who he/she was
12. To annoy someone, I have called a mobile phone and deliberately did not respond when it was answered
13. I have made calls to insult or tease someone
14. I have teased someone with offensive or insulting comments on social networks
15. I have insulted someone using text messages (SMS) or instant messaging programs (*Table*., WhatsApp)
16. I have made a false complaint about someone on a forum, social network, or online game that has led to his/her expulsion
17. I have plotted with other people to ignore someone on social networks
18. I have made anonymous calls to threaten or frighten someone
19. I have posted rumours about someone on a social network

Appendix B

Cyber victimization Questionnaire

Verbal written
1. They have copied my private conversations and sent them to others, to harm me
2. I have received calls to my mobile, which are not answered, I suppose to annoy
3. Information that I had given in secret has been published on the Internet, so that they would not tell anyone, and that harms me
4. I have received calls to insult or make fun of me
5. I have been mocked with offensive or insulting comments on social media
6. I have received insults through short text messages (SMS) or instant messaging programs (*e.g.*, WhatsApp).
7. I have received anonymous messages (SMS, WhatsApp...), in which I was threatened or frightened
8. They have forwarded to other people, to harm me, emails or private messages that I had sent
9. They have threatened me publicly, through social networks (Instagram, Twitter, Facebook...)
10. I have received anonymous calls to threaten or scare me
11. I have received unwanted sexual comments on the Internet
12. False rumours have been published about me on some social network
Visual
13. They have posted tricked (modified) photos of me on the Internet, to hurt me or laugh at me
14. I have been sent "strong" photos or videos, unpleasant for me
15. Real compromising photos or videos have been posted on the Internet, without my permission, to hurt me or make fun of me
16. They have hit me, they have recorded it and then they have spread it
17. They have forced me to do something humiliating, they have recorded it and then they have spread it to make fun of me
Exclusion online
18. Some person has not admitted me or has expelled me from their team in online games, without having done anything wrong that justifies it
19. I have been kicked out or not accepted in the contact list of some chat, social network (*e.g.*, Instagram) or instant messaging program (*e.g.*, Messenger, WhatsApp), without having done anything, just because to be me
20. False complaints have been made about me in any forum, social network or online game, which have caused me to be expelled
21. They agree to ignore me (ignore me) on social networks
Impersonation
22. They have pretended to be me on the Internet by posting comments in my name, as if it were me
23. Someone has pretended to be another person, to laugh at me through the Internet or mobile phone
24. I have been blocked from accessing my email, a social network (*e.g.*, Instagram or Facebook) or an instant messaging program (Messenger, WhatsApp), changing my password

25. They have pretended to be me on Twitter, Facebook…, creating a false user profile (photo, personal data) with which I have been insulted or ridiculed
26. Someone who has obtained my password has sent annoying messages to someone I know, as if it had been me, to get me into trouble