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Relationship between the consumption of PEGI18 video games with explicit violence, bullying, and cyberbullying

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Keywords

PEGI
Bullying
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Abstract

Bullying is one of the most common victimizing experiences in childhood and adolescence, with important emotional correlates. The scientific literature has shown that exposure to violent content is associated with a greater predisposition to perpetrate and/or be a victim of bullying or cyberbullying. Different studies have highlighted the importance that the consumption of certain types of video games (with explicit violent content) can have at this level. The present study aimed to analyze the relationship between the consumption of violent video games (labeled as PEGI18) and the rates of bullying and cyberbullying. An exploratory study was carried out, accessing 15 educational centers and a total sample of 2,083 primary and secondary school students (10-17 years old). A self-administered questionnaire was used which included the *European Bullying Intervention Project Questionnaire* and the *European Cyberbullying Intervention Project Questionnaire*, along with items related to video games use. The results show the existence of a statistically significant relationship between the consumption of violent video games, bullying, and cyberbullying, especially at early ages. These findings highlight the need for a more effective regulation, which ensures an adjustment between the video games consumed and the age of the user.

Relación entre el consumo de videojuegos PEGI18 con violencia explícita, *bullying* y *cyberbullying*

Palabras clave

PEGI
Bullying
Cyberbullying
Violencia
Videojuegos
Adolescentes

Resumen

El acoso escolar conforma una de las experiencias victimizantes más comunes en la infancia y la adolescencia. La literatura científica ha evidenciado que la exposición a contenidos violentos se asocia a una mayor predisposición a la hora de perpetrar y/o ser víctima de acoso o de ciberacoso. En este sentido, diferentes estudios han destacado la importancia que el consumo de determinado tipo de videojuegos puede tener a este nivel. El presente trabajo tuvo como objetivo analizar la relación entre el consumo de videojuegos PEGI18 con contenidos de violencia explícita y las tasas de *bullying* y *cyberbullying*. Se llevó a cabo un estudio de carácter exploratorio, accediendo a una muestra total de 2,083 estudiantes de primaria y secundaria con edades comprendidas entre los 10 y los 17 años. Se empleó un cuestionario autoadministrado que incluía el *European Bullying Intervention Project Questionnaire* y el *European Cyberbullying Intervention Project Questionnaire*, junto a ítems relativos al consumo de videojuegos. Los resultados permiten constatar la existencia de una relación estadísticamente significativa entre el consumo de videojuegos violentos, el *bullying* y el *cyberbullying*, especialmente a edades tempranas. Los hallazgos remarcan la necesidad de una regulación más eficaz, que asegure un ajuste entre los videojuegos consumidos y la edad del usuario.

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School bullying is one of the most prevalent victimizing experiences in both childhood and adolescence worldwide, becoming considered a global public health problem (Moore et al., 2017; UNESCO, 2019). According to the study carried out by UNICEF-Spain with a sample of 50,000 secondary education students, the rate of victimization of bullying and cyberbullying in Spain would be 33.6% and 22.5% respectively (Andrade et al., 2021). These rates are consistent with the data provided by UNESCO itself (2019), indicating that one in three adolescents worldwide could suffer some form of school bullying. Although there are several definitions of bullying, one of the most accepted is the one proposed by Olweus (1993), who defines it as a repeated and deliberate form of aggression perpetrated by one or more people towards another who has a reduced ability to defend themselves. The same author, with the aim of identifying behaviors that constitute a pattern of bullying, proposed in 2012 the use of three fundamental criteria: (1) the behavior corresponds to negative (aggressive) and intentionally harmful behavior; (2) the behavior has been repeated over time; (3) occurs in a context of interpersonal relationships characterized by a power imbalance in favor of the perpetrator over the victim (Olweus, 2012). Although this behavior has traditionally been limited to the school context, since the massive rise of Relation, Information, and Communication Technologies (RICT) (Gabelas & Lazo, 2020), this dynamic has been generalized to other contexts, such as the communitary, the familiar, or even to virtual spaces such as social networks. Although RICT offer benefits at different levels, it is also known that they may entail certain risks that can affect emotional well-being and coexistence among equals (Martínez-Ferrer et al., 2018), constituting a context especially prone to the development of new dynamics of harassment, such as the phenomenon of cyberbullying itself.

Cyberbullying can be defined as a behavior carried out through digital media by an individual or group, who repeatedly communicate hostile messages with the intention of causing harm or discomfort to third parties (Tokunaga, 2010). In this regard, although certain similarities between school bullying and cyberbullying have traditionally been raised, and sometimes, they develop concurrently (Pichel et al., 2022), one of the most relevant differential characteristics of the latter is the possibility of perpetrating it through technological means. Therefore, while bullying stops when the victim leaves the school, victims of cyberbullying do not have a safe place, extending beyond the school context and chasing them to their own homes (Álvarez-García et al., 2015; Tokunaga, 2010). This provides the aggressor with greater control over the victim, since the harassing behaviors stop only when the aggressor decides to do so (Estévez et al., 2020). On the other hand, while bullying takes place at a certain time and context, cyberbullying can extend indefinitely, and can even affect multiple people simultaneously (Vaillancourt et al., 2017). Different consequences associated with both cases have been highlighted in the literature, emphasizing their impact on mental health in general and on self-harming behaviors (actions carried out by a person with the aim of harming themselves, without constituting an explicit suicide attempt), in suicidal ideation, or even suicide (Hinduja & Patchin, 2019; Li et al., 2022).

It has been also observed that some behaviors produced in the context of RICT are associated with a greater predisposition to perpetrate and/or be a victim of bullying and cyberbullying. Recent studies have confirmed that problematic internet use constitutes a risk factor for victimization (Çevic et al., 2021), as does frequent, intensive, and unsupervised use of social networks themselves, which would increase both the risk of victimization and perpetration (Bauerová & Kopřivová, 2023; Feijóo et al., 2021a; Kaloeti et al., 2021). Other investigations specifically allude to the possible effect derived from the regular consumption of violent content and the desensitization that it can produce, in terms of behaviors contrary to coexistence (Bae, 2021; Zhou et al., 2023). For this reason, in recent years, growing concern has arisen in the scientific community about the possible implications associated with one of the vectors of access to this type of content: video games.

The video game industry constitutes a business sector of great expansion, reaching a turnover in Spain in 2022 of more than 2,012 million euros, more than double that of cinema, theater, and recorded music combined (Asociación Española de Videojuegos, 2023). The use of video games has been consolidated as the main source of leisure and entertainment in childhood and adolescence (Andrade et al., 2021; King & Potenza, 2019), concentrating the highest percentage of consumers in Spain on the age group between 11 and 14 years old followed by 6 to 11, with 84% and 79% of players respectively (Asociación Española de Videojuegos, 2023).

Concerning video game use, there is some controversy regarding the implications that the consumption of titles with explicit violence may have. Although some authors point to a non-significant relationship between the consumption of violent video games and the manifestation of violent behavior (Drummond et al., 2020; Ferguson et al., 2020), another part of the literature does refer to significant effects (Mathur & Vanderweele, 2019; Olejarnic & Romano, 2023; Prescott et al., 2018; Uçur & Dönmez, 2022). In particular, some studies have observed that children who regularly play video games with high violent content are more likely to internalize values contrary to coexistence (López-Gómez et al., 2022) and to perpetrate both bullying and cyberbullying behaviors (Teng et al., 2022). To address this issue and from a preventive perspective, the Pan European Game Information (PEGI) was developed, an European initiative whose main objective is to provide consumers, and especially parents, with a reference that allows them to choose the most suitable video games according to the age of the user, allowing consumers to limit exposure to inappropriate content (PEGI, 2015).

The PEGI system is composed, on the one hand, of labels relating to the minimum recommended age of the player (3, 7, 12, 16, and 18 years old) and, on the other hand, of icons describing the content present in the game itself (e.g., violence, foul language, fear…) (PEGI, 2017). The interaction between both categories is of special interest since the content descriptors acquire one nature or another depending on the age cat-

egory in which they are contained. For example, the content descriptor "violence" included in a video game labeled PEGI 7 (minimum recommended age of 7 years), indicates the presence of some not realistic violence or not detailed. However, the same violence descriptor in a video game labeled PEGI 18 refers, in this case, to explicit manifestations of violence of a realistic and brutal nature (PEGI, 2017). However, despite the existence of said video games "labeling", recent reports warn that in Spain almost half of the adolescents who regularly play video games do so with PEGI18 video games (Andrade et al., 2021).

In response to the interest generated by the consumption of video games and the controversy raised by the impact that certain content can generate in childhood and adolescence, the present study is proposed with the general objective of analyzing the relationship between the consumption of PEGI18 video games (with explicit violence), bullying, and cyberbullying. More concretely, two specific objectives are proposed: (1) analyze the relationship between the consumption of video games classified as PEGI18 (with content of explicit violence) and victimization or aggression due to bullying, and cyberbullying, and (2) study the possible modulating role of the age variable in said relationship. Finally, there are two underlying hypotheses that we intend to test: (H1) the existence of a statistically significant relationship between the consumption of PEGI18 video games, bullying, and cyberbullying (both in victimization and aggression), and (H2) the greatest magnitude of this relationship at early ages.

Method

Participants

To achieve the objectives set, a selective methodology was used. Through intentional sampling we accessed 15 primary and secondary educational centers in the autonomous community of Galicia, Spain, being 13 of them public and two of them private schools. After cleaning the data file, the final sample for analysis consisted of a total of 2,083 minors, aged between 10 and 17 years (M = 13.42; SD = 2.11). Regarding our sample, 50.4% identified with female gender.

Procedure

Prior to data collection, the collaboration of the educational centers and the informed consent of the parents or legal guardians were requested. The data was collected between September 2021 and June 2022 through a self-administered questionnaire in the classrooms of the centers themselves by members of the research team. The participants were informed of the objective of the study, and the voluntary nature of their participation was emphasized, also ensuring the anonymity and confidentiality of their responses. The approximate time to complete the questionnaire was 20 minutes.

Instruments

The questionnaire used consisted of three blocks. The first referred to sociodemographic variables, such as gender, grade, and age of the participants.

Secondly, a block related to bullying and cyberbullying was included. In the first case, the Spanish version of the *European Bullying Intervention Project Questionnaire* (EBIPQ) (Ortega-Ruiz et al., 2016) was used, which consists of 14 items arranged in two subscales of seven items each, one related to victimization and the other to the perpetration of behaviors that constitute bullying. Both subscales presented an optimal internal consistency, with Cronbach's α values of .82 and .79 respectively. In the case of cyberbullying, the Spanish version of the *European Cyberbullying Intervention Project Questionnaire* (ECIPQ) (Ortega-Ruiz et al., 2016) was used, which consists of 22 items also arranged in two subscales, one for victimization and the other for perpetration. The Cronbach's alpha obtained for the subscales was .83 and .80, respectively. In the case of both *EBIPQ* and *ECIPQ*, the items have a Likert-type response format, referring to the frequency with which different behaviors occur, with 5 options: 1 = *No*; 2 = *Yes, once or twice*; 3 = *Yes, once or twice a month*; 4 = *Yes, once a week*; 5 = *Yes, several times a week*.

Finally, in the third block video game consumption habits were explored, evaluating issues such as frequency and intensity or the type of video games consumed. The playing frequency was evaluated through a Likert-type item with 5 response alternatives: "How often do you usually play video games?" 1 = *Never,* 2 = *Almost never,* 3 = *Once a month,* 4 = *Once a week*, and 5 = *Every or almost every day.* The gaming intensity was collected through the item: "In general, how many hours do you usually spend weekly playing video games?", directly recording the numerical value in question. Finally, a list was drawn up with the 25 best-selling video games, according to the data published by the Asociación Española de Videojuegos (2023) and which each participant had to mark, based on their gaming habits. These were subsequently classified as PEGI18 or not, according to the criteria of PEGI (2015). This list is shown in Table 1. An important part of the titles included could be included under the genres Battle Royale (Fortnite, PlayerUnknown's Battlegrounds, or Apex Legends), MOBA (League of Legends or Dota 2), and Shooter (Counter-Strike or Call of Duty).

Data analysis

Data was analyzed using a classic uni and bivariate tabulation, with χ^2 contrasts for the comparison of percentages. In addition, Cramer's V coefficient was calculated to estimate effect sizes. Different binary logistic regression analyses were also carried out, adjusted for both gender and age with the intention of being able to statistically control the possible effect of both variables. The analyses were carried out using the IBM SPSS Statistics v.25 statistical package.

Results

Firstly, as shown in Table 2, in relation to bullying the overall percentage of victims, bully-victims, and perpetrators was 25.2%, 14.3% and 4.4% respectively. The overall rates of victimization (adding pure victims and bully-victims) and perpetration (perpetrators and bully-victims) are also shown, which amount to 39.5% and 18.7%, respectively. No statistically significant differences have been observed by gender in terms of overall victimization rates (40% vs. 38.7%), but they appeared in the specific profiles of bullying, with a significantly higher percentage of pure victims being found in the case of the female gender ($\chi^2 = 9.57$; $p < .001$), while on males there were statistically significant higher rates of bully-victims ($\chi^2 = 9.29$; $p < .001$) and perpetrators ($\chi^2 = 7.49$; $p < .05$). A relatively similar pattern is found with respect to age, since, although no significant differences are observed with respect to overall victimization, a trend of increasing perpetration rates with age is observed. In any case, the observed differences reveal a small effect size.

Regarding the rates of cyberbullying, 9.3% of victims, 5.8% of bully-victims, and finally 4.3% of perpetrators were observed, which translates into 15.2% of overall victimization and 10.1% of perpetration. Again, gender does not imply a difference in terms of global victimization, but it does at the level of specific profiles, with higher rates of pure victims in the female gender ($\chi^2 = 12.01$; $p < .001$) and of bully-victims in the male gender ($\chi^2 = 9.26$; $p < .051$). No significant differences were observed in the case of pure perpetrators. Regarding age group, significant differences have been found both at a global

Table 1

List of video games used and PEGI classification

Videogame	PEGI	Videogame	PEGI
Animal Crossing	3	Clash Royale	7
Fall Guys	3	Fortnite	12
Just Dance	3	Dota 2	12
Fifa	3	World of Warcraft	12
PES	3	League of Legends	12
Rocket League	3	Valorant	16
Candy Crush	3	PlayerUnknown's Battlegrounds	16
Clash of Clans	7	Apex Legends	16
Among us	7	Counter-Strike	18
Minecraft	7	Call of Duty	18
Pokémon	7	Grand Theft Auto	18
Mario	7	Red Dead Redemption 2	18
Roblox	7		

Table 2

Bullying and cyberbullying rates (global, by gender, and by age)

		Gender				Age group				
	Global	Female	Male	χ^2	V	10-12	13-14	15-17	χ^2	V
Bullying										
Victims	25.2%	28.1%	22.1%	9.57**	.07	27.2%	26%	22.1%	5.51*	.05
Bully-victims	14.3%	11.9%	16.6%	9.29*	.07	11.4%	16.7%	15.2%	8.6*	.07
Perpetrators	4.4%	3.2%	5.7%	7.49*	.06	1.5%	4.6%	7.3%	29.73*	.06
Victimization	39.5%	40%	38.7%	0.3	---	38.6%	42.7%	37.3%	3.82	---
Perpetration	18.7%	15.1%	22.3%	17.31**	.09	12.9%	21.3%	22.5%	26.02**	.04
Cyberbullying										
Victims	9.3%	11.5%	7%	12.02**	.08	6.1%	11.6%	11.1%	15.23**	.09
Bully-victims	5.8%	4.2%	7.4%	9.26*	.07	2.8%	5.7%	9%	25.43**	.11
Perpetrators	4.3%	3.8%	4.8%	1.43	---	1.9%	5.1%	6.2%	17.49**	.09
Victimization	15.2%	15.9%	14.4%	0.79	---	8.9%	17.3%	20.1%	38.45**	.14
Perpetration	10.1%	8.1%	12.3%	9.94*	.07	4.7%	10.8%	15.2%	44.4**	.15

*$p < .05$; **$p < .001$.

level (victimization and aggression) and in the different cyberbullying profiles, with higher percentages found in the older age groups.

Regarding video game consumption, 66.1% of the adolescents indicated that they play video games at least once a month, while 52.8% played every week (Table 3), with an average of 8.64 hours per week (*SD* = 10.45). It should also be noted that 3.2% could be considered "intensive gamers" since they usually spend more than 30 hours each week playing video games. On the other hand, 32.1% of the global sample reported playing PEGI18 video games with content of explicit violence (47% of players). Considering gender, significant differences have been observed in terms of frequency of play, intensity, and consumption of PEGI18 video games, with higher rates always found in the male gender. In relation to the age group, despite not finding significant differences in the percentage of regular players, they were found both in the percentage of intensive players and in the percentage of PEGI18 video game consumption.

As shown in Table 4, the analyses carried out confirm a significant association between the consumption of PEGI18 video games and the overall rates of bullying and cyberbullying. In the first case, significant differences were found only at the level of global perpetration ($\chi^2 = 42.39$; $p < .05$), but in the second both in perpetration ($\chi^2 = 29.41$; $p < .001$), and in victimization ($\chi^2 = 17.94$; $p < .001$). These results partially confirm the first working hypothesis, since in the case of bullying the differences found were limited only to perpetration.

Analyses considering gender (Table 5) and age group (Table 6) were carried out. In relation to gender, it has been observed that for females the differences are notable in the case of victimization (especially in cyberbullying), while for in males rates

Table 3

Descriptives of video game consumption (frequency, intensity, and PEGI18)

		Gender				Age group				
	Global	Female	Male	χ^2	V	10-12	13-14	15-17	χ^2	V
Regular players[1] (%)	52.8%	24.7%	81.9%	668.16**	.57	56%	52.3%	49.9%	5.65	---
Intensive players[2] (%)	3.2%	0.8%	6.6%	35.21**	.15	2.3%	5.6%	4.7%	8.95*	.07
PEGI18 (%)	47%	31.4%	55.5%	75.27**	.23	31.3%	54.6%	58.5%	87.62**	.25

Note. [1]They play every week; [2]More than 30 hours per week (Andrade et al., 2021).
*$p < .05$; **$p < .001$.

Table 4

PEGI18 video game consumption and rates of bullying and cyberbullying (victimization and perpetration)

		PEGI18			
	Global	No	Yes	χ^2	V
Bullying					
Victimization	39.4%	38.4%	42.4%	2.56	---
Perpetration	18.7%	15.4%	28.3%	42.39**	.15
Cyberbullying					
Victimization	15.3%	13.3%	21.1%	17.94**	.09
Perpetration	10.2%	8%	16.4%	29.41**	.12

*$p < .05$; **$p < .001$.

Table 5

Levels of victimization and perpetration according to the consumption of PEGI 18 video games by gender

	Gender							
	Female				Male			
	Not PEGI18	PEGI18	χ^2	V	Not PEGI18	PEGI18	χ^2	V
Bullying								
Victimization	41.3%	57.7%	11.49**	.15	36.6%	41%	1.78	---
Perpetration	15.8%	23.7%	4.46*	.1	17.3%	27.4%	12.73**	.12
Cyberbullying								
Victimization	15.1%	37.4%	30.77**	.25	10.6%	18.3%	10.16**	.11
Perpetration	9.8%	14.8%	2.71	---	7.6%	16.2%	15.16**	.13

*$p < .05$; **$p < .001$.

are greater in perpetration (both in bullying and cyberbullying). Regarding age, the differences are significant and more intense in the youngest group (10-12 years), both for victimization and perpetration and in both bullying and cyberbullying. These differences reduce with age, even disappearing in the 15-17-year-old group, which allows us to confirm the second hypothesis of this work.

Finally, a binary logistic regression was carried out, using victimization and perpetration of bullying and cyberbullying as criterion variables and the consumption of PEGI18 video games as a predictor, adjusting the analysis by gender and by age. For the latter, the original quantitative data were used, without grouping. Table 7 shows the Nagelkerke R^2 obtained for each model and the β coefficients associated with each variable. As can be seen in the Table 8, in all cases PEGI18 presents a statistically significant weight, both for bullying and cyberbullying. According to the Odd Ratio (OR) obtained, the weight of the PEGI is lower in bullying (1.49 and 1.57) than in cyberbullying (2.16 and 1.73). On the other hand, in relation to the gender variable, a significant weight has only been found with respect to victimization (both on bullying and cyberbullying), not with respect to perpetration. Male gender showed lower probabilities of victimization in both cases (OR = 0.67 and 0.49). Finally, age is a significant predictor except in bullying victimization,

Table 6

Levels of victimization and perpetration according to the consumption of PEGI18 video games by age group

	Age group											
	10-12				13-14				15-17			
	Not PEGI18	PEGI18	χ^2	V	Not PEGI18	PEGI18	χ^2	V	Not PEGI18	PEGI18	χ^2	V
Bullying												
Victimization	37.5%	51.5%	9.95**	.14	41.1%	46.7%	1.35	---	40.3%	38.9%	0.1	---
Perpetration	11.7%	23%	11.38**	.15	18.4%	26.6%	3.97*	.1	24.6%	28.3%	0.77	---
Cyberbullying												
Victimization	7.4%	17.5%	12.27**	.15	14.9%	24.4%	5.81*	.12	21.6%	24.7%	0.61	---
Perpetration	3.3%	11.4%	13.82**	.16	11.12%	14.7%	1.1	---	15.8%	20.2%	1.46	---

*$p < .05$; **$p < .001$.

Table 7

Equations of the Nagelkerke models and R^2

	Model equation				Nagelkerke R^2
	Constant	β_1 (PEGI)	β_2 (Gender)	β_3 (Age)	
Bullying					
Victimization	0.46	0.4	-0.4	---	.02
Perpetration	-3.12	0.49	---	0.12	.04
Cyberbullying					
Victimization	-3.49	0.77	-0.71	0.15	.07
Perpetration	4.83	0.54	---	0.19	.05

Table 8

Binary logistic regression adjusted for gender and age

		PEGI		Gender		Age	
	n (%)	OR[1]	IC[2] (95%)	OR[1]	IC[2] (95%)	OR[1]	IC[2] (95%)
Bullying							
Victimization	808 (39.4)	1.49**	(1.18,1.87)	0.67**	(0.53, 0.84)	0.95	(0.9, 1)
Perpetration	383 (18.7)	1.57**	(1.19, 2.1)	1.18	(0.89, 1.58)	1.12**	(1.05, 1.2)
Cyberbullying							
Victimization	311 (15.3)	2.16**	(1.59, 2.93)	0.49**	(0.36, 0.66)	1.15**	(1.08, 1.24)
Perpetration	207 (10.2)	1.73**	(1.21, 2.46)	0.95	(0.66, 1.36)	1.2*	(1.11, 1.31)

Note. [1]OR = Odds ratio; [2]IC = Confidence Interval.
*$p < .05$; **$p < .001$.

observing that the older the age, the greater the probability of victimization and perpetration tends to be, especially in the case of cyberbullying.

Discussion

This work was proposed with the fundamental objective of analyzing the relationship between the consumption of video games classified as PEGI18 (with content of explicit violence), bullying, and cyberbullying.

Despite not being an objective of the study itself, the data collected have made it possible to verify, first, high rates of bullying and cyberbullying (both victimization and perpetration), which serves to emphasize the warnings that institutions such as UNESCO (2019) or UNICEF (Andrade et al., 2021) have been making, which indicate that around one in three adolescents in the world could be a victim of bullying. Different authors insist on this same idea, both in Spain (Pichel et al., 2022) and internationally (Jadambaa et al., 2019). The differences found by gender and age are also consistent with the literature (Feijóo et al., 2021a; Feijóo et al., 2021b; Walters, 2021), which justifies the need to definitively adopt a gender approach.

As far as the consumption of video games is concerned, it has been confirmed that these constitute one of the main leisure channels for adolescents today, both in terms of frequency of use (two out of every three adolescents play video games at least once a month) and intensity (8.64 hours per week on average). Both data are similar to those offered by both Asociación Española de Videojuegos itself (2023) and Andrade et al. (2021). Significant differences have been found based on gender, with higher rates in both frequency and intensity in the case of the male gender. These results are again consistent with previous research (Andrade et al., 2021), and can be partially explained by the original fact that traditional video games would be designed by and for men, reflecting these rates the historical trajectory of the video game industry (Kuss & Griffiths, 2012). On the other hand, recent studies confirm a greater presence of male characters than female characters, being the latter notably sexualized and generally adopting secondary roles (Leonhardt & Overå, 2021; Skowronsky et al., 2021).

Focusing on the main objective of this work, it has been observed that there is a relatively high usage of PEGI 18 video games (featuring explicit violence content) among adolescents. Specifically, 32.1% of the global sample reported playing PEGI 18 video games, with this figure rising to 47% among those who play video games at least once a month. These percentages are, again, higher in male gender, which coincides with the data provided by Andrade et al. (2021). A partial explanation of this phenomenon could be that this type of video games offers players the opportunity to satisfy needs and motivations associated with dominant roles or with a greater interest in sexual activity, elements that according to Denson et al. (2022) have traditionally been associated with males.

The possible implications of the consumption of PEGI18 video games on victimization and perpetration due to both bullying and cyberbullying were also analyzed. In the case of cyberbullying, the results found at the bivariate level show a significant relationship both regarding victimization and perpetration, limited to the latter in the case of bullying. However, the results obtained at a multivariate level (by performing a logistic regression) reveal that although this effect is smaller, it is equally significant. Considering these results, it would be possible to affirm that the consumption of PEGI18 video games in childhood and adolescence is associated with higher rates of bullying and cyberbullying. While in bullying the observed differences are more noticeable in the case of perpetration than in victimization, in cyberbullying very similar differences have been found in both cases, but comparatively larger. This association between the use of video games with explicit violence content is consistent with the findings of previous works, in which it is confirmed that the consumption of violent video games has implications for the social behavior of the individual and on aggressive behaviors (Burkhardt & Lenhard, 2022; Greitmeyer, 2022). This relationship could be explained through the *General Affective Aggression Model*, which establishes that the consumption of violent video games could, in a certain way, "teach" and "reward" aggressive behavior towards peers, thereby reinforcing the belief that aggressive solutions are functional (Anderson & Dill, 2000). This interpretation could underlie the possible normalization of aggressive behavior in normal interaction patterns, which would translate into higher rates of bullying and cyberbullying.

Finally, the results obtained reveal a more intense effect of PEGI18 video game use at early ages, with larger effect sizes in the 10-12 age group. As age increases, this effect seems to dilute. These results are consistent with the work of Burkhardt and Lenhard (2022) carried out in the field of prevention and which insist on greater vulnerability in these vital stages. On the other hand, the results also show the need to adapt the contents of the different video games to the age of their users, ensuring compliance with the PEGI regulations (Pan European Game Information, 2015).

In conclusion, this work has allowed us to empirically verify that the use of PEGI18 video games with explicit violence is a relatively frequent behavior from early adolescence, which denotes a manifest non-compliance with international recommendations. It has been found that the consumption of this type of content is a factor that can dangerously contribute to the normalization of violence between equals, as well as attitudes and behaviors contrary to coexistence. Especially in early adolescence, the consumption of violent content through video games is associated with levels of victimization that double and perpetration that triples, especially in the case of cyberbullying. If we take into account that, according to data from the Asociación Española de Videojuegos (2023), the age group between 6 and 14 years concentrates the main segment of video game consumers in Spain, it is urgent to establish measures at the preventive level. Firstly, more determined

work is necessary at the level of family prevention. Parents must have stricter control in the selection of video game titles and/or formats that their children consume, as well as greater supervision and support regarding their leisure activities. With respect to the use of the internet and social networks, it has been observed that adequate supervision and control by parents constitutes an important protective factor, in order to prevent both problematic use and different online risk behaviors (Gómez et al., 2017; Gómez-Ortiz et al., 2018). Secondly, the work with parents must be completed with specific actions at the school prevention level, considering the educational potential that has traditionally been attributed to the video game (López-Gómez et al., 2022). Finally, from the point of view of environmental prevention, it is no less important to urge institutions and the video game industry itself to play a more active role in promoting responsible consumption and, in particular, in dissemination and compliance of the PEGI regulations.

Regarding the limitations of this work, it should be noted that, despite the size of the available sample ($N = 2{,}083$), the fact that non-probabilistic sampling was used means that the results must be interpreted with caution. On the other hand, this is a cross-sectional study, so cause-effect relationships cannot be established. Only the use of a longitudinal design would allow us to reliably report the effects of consuming PEGI18 video games on bullying and cyberbullying.

Author contributions

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Declaration of interests

The authors declare that there is no conflict of interest.

Data availability statement

Research data are not shared.

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