Ansiedad y Estrés 31(3) (2025) 122-129

Ansiedad y Estrés

https://www.ansiedadyestres.es

Original

Videogames contain, gender and behavioural differences in early adolescence

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ARTICLE INFO

Article history:
Received 30 April 2025
Accepted 30 July 2025

Keywords:
Videogames
Adolescence
Aggressivity
Cooperation
Behavioural development

A B S T R A C T

Introduction: This study investigates the relationship between video game content and social behavior among Spanish adolescents aged 12 to 14. While previous research in Anglo-American and Asian contexts has linked violent video games to increased aggression and cooperative games to prosocial behavior, this study explores whether similar patterns exist in a Latin cultural context. The main aim is to assess how the type of video game and gender influence prosocial, antisocial, and asocial attitudes during early adolescence. *Methods:* The study involved 368 adolescents (212 boys and 156 girls) from 23 public schools in Barcelona. Participants were selected based on their exclusive use of either violent or cooperative video games on average of at least eight hours played in the last four weeks. The AECS questionnaire was used to measure prosocial, antisocial, and asocial attitudes. A cross-sectional design was employed, and data were analyzed using MANOVA and t-tests to compare groups by game type and gender. *Results:* Players of violent video games exhibited significantly higher antisocial and asocial attitudes, while those who played cooperative games showed higher prosocial attitudes. Gender differences were also observed: boys played more violent games and for longer durations, whereas girls preferred cooperative games. All differences were statistically significant with moderate effect sizes. *Discussion:* The findings support theories such as the General Aggression Model and social learning theory, indicating that video game content influences adolescent social behavior. Although causality cannot be established due to the cross-sectional design, the results suggest that cooperative games may foster prosocial development.

Contenido de los videojuegos, género y diferencias conductuales en la adolescencia temprana

Palabras clave:
Videojuegos
Adolescencia
Agresividad
Cooperación
Desarrollo conductual

R E S U M E N

Introducción: Este estudio investiga la relación entre el contenido de los videojuegos y el comportamiento social entre adolescentes españoles de 12 a 14 años. Aunque investigaciones previas en contextos angloamericanos y asiáticos han vinculado los videojuegos violentos con un aumento de la agresividad y los juegos cooperativos con comportamientos prosociales, este estudio explora si existen patrones similares en un contexto cultural latino. El objetivo principal es evaluar cómo el tipo de videojuego y el género influyen en las actitudes prosociales, antisociales y asociales durante la adolescencia temprana. *Método:* El estudio involucró a 368 adolescentes (212 chicos y 156 chicas) de 23 escuelas públicas de Barcelona. Los participantes fueron seleccionados en función del uso exclusivo de videojuegos violentos o cooperativos, con un promedio de al menos ocho horas jugadas en las últimas cuatro semanas. Se utilizó el cuestionario AECS para medir las actitudes prosociales, antisociales y asociales. Se empleó un diseño transversal y los datos se analizaron mediante MANOVA y pruebas t para comparar los grupos según el tipo de juego y el género. *Resultados:* Los jugadores de videojuegos violentos mostraron actitudes antisociales y asociales significativamente más altas, mientras que quienes jugaban a juegos cooperativos presentaron mayores actitudes prosociales. También se observaron diferencias de género: los chicos jugaban más a videojuegos violentos

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https://doi.org/10.5093/anyes2025a16

y durante más tiempo, mientras que las chicas preferían los juegos cooperativos. Todas las diferencias fueron estadísticamente significativas con tamaños de efecto moderados. *Discusión:* Los hallazgos respaldan teorías como el Modelo General de Agresión y la teoría del aprendizaje social, indicando que el contenido de los videojuegos influye en el comportamiento social de los adolescentes. Aunque no se puede establecer causalidad debido al diseño transversal, los resultados sugieren que los juegos cooperativos pueden fomentar el desarrollo prosocial.

Introduction

Since the early 1950s, when the first videogames were developed (Stanton, 2015), the videogame ecosystem slowly grew, becoming an important source of entertainment and social life in the 1990s (Griffiths & Hunt, 1995). In 2024, the global games market generated $187.7 billion, representing more than a 2.1% year-on-year growth (Newzoo, 2024). Such an industry accelerated its expansion during the COVID-19 pandemic, increasing its use by 82% as one of the main sources of entertainment (Nielsen, 2021).

Among video gamers, adolescents between the ages of 12 and 17 are the most active (Lenhart et al., 2008) having an average amount of gaming-time around 8.1 hours per week (AEVI, 2021).

Despite this growth, society has looked at this sector with caution, showing many signs of alarm regarding its popularity and consumption. In 2018, the World Health Organization (WHO) added videogame addiction to the International Classification of Diseases (ICD-11) (WHO, 2018). This situation caused a great impact in the field of research, raising many debates that can be classified into two large blocks: those that support the benefits of videogames, and those concerned about the adverse effects of violent videogames on adolescents' behaviour (Anderson & Bushman, 2018). The scientific debate has revealed that the content of the videogame is a key factor that mediates on adverse effects, as well as the interaction with individual differences associated with personality and gender. According to the General Learning Model (Buckley & Anderson, 2006; Gentile et al., 2014), the effects of videogames on social behaviour largely depend on the content of the game being played.

Content-analysis shows that 85% of the top-selling videogames contain violence (Dill et al., 2005; Padilla-Walker et al., 2020) and most adolescents prefer this type of content when playing (Przybylski et al., 2009). This is a central concern for an optimal development from adolescence to adulthood. Different theories have argued that gamers exposed to videogames with violent content develop aggressive behaviours and attitudes, being one of the most pervasive the 'social learning theory' (Bandura, 2009) which states that exposure to violent videogames would increase aggression by means vicarious learning. However, there are also approaches in the opposite direction, like the 'catharsis hypothesis', which considers that violent videogames can let off steam, leading to a release of aggressive impulses (Greitemeyer & Osswald, 2010).

According to most of the theories that associate violent videogames with violent behaviour, playing this kind of games would be associated with a decrease in prosocial and altruistic behaviour, while playing cooperative videogames would be expected to have the opposite effect – decreasing aggressive behaviour (Bushman & Anderson, 2009; Gunter, 2016; Prescott et al., 2018) and increasing prosocial responses (Greitemeyer & Osswald, 2010). Furthermore, three meta-analyses carried out in the previous decade (Anderson et al., 2010; Greitemeyer & Mügge, 2014; Prescott et al., 2018), revealed that violent videogames increase aggressive thoughts and affects, arousing physiological and aggressive behaviour, and decrease empathy and helping behaviour.

It has also been stated that violent videogames like "League of Legends", which also contain collaborative parts, with more than half of the players cooperating and working for shared goals while playing (Lenhart et al., 2008), do increase prosocial behaviour and cooperative cognition (Gentile et al., 2009; Greitemeyer & Osswald, 2010; Saleem et al., 2012; Sestir & Bartholow, 2010) while decreasing aggression (Greitemeyer, 2014; Lee et al., 2021).

Compared to the violent videogames literature, research on the effects of prosocial videogames (where the goal is to support other game characters) has been relatively scarce. Thus, few studies (Zhang et al., 2021; DeLisi et al., 2013; Gentile et al., 2009; Li et al., 2025; Soshani et al., 2021) have shown how prosocial videogames have an impact on social outcomes.

The content of videogames not only has consequences on the behavior of the players, yet it has cognitive and affective consequences too. According to the 'social cognitive learning' theory, cognitive and affective variables, in turn, operate as the mediating mechanism between videogame playing and social behavior. Explicitly, the use of violent games is expected to produce increased aggressive cognition and to decrease prosocial cognition and affect, while the opposite effect is expected from prosocial videogames (Greitemeyer, 2022).

However, these relationships are not completely clear. Some studies failed in finding evidence that prosocial videogames increase cooperative attitudes (Rosenberg et al., 2013) or that violent videogames increase aggression (Jerabeck & Fergurson, 2013). This may be caused by research gaps, as many studies presented important methodological issues that prevent reaching firm conclusions (Padilla-Walker, 2020). It should also be considered that many of the measurements of aggression used in studies on attitudes towards videogames are not standardized (Fergurson, 2007). Other researchers found that the relationship between videogames content and aggression disappears when individual variables, such as the gender of the participant, are controlled (Fergurson & Rueda, 2010).

Personality

In personality terms, the self-choice hypothesis states that the individual characteristics of the users, and not the content of the videogame, causes adolescents to develop more violent behaviour (Breuer et al., 2015). This hypothesis is aligned with the 'differential theory of personality' (Eysenck, 1967; Zuckerman, 2005) which assumes that individual characteristics such as temperament or character determine decisions, preferences, and lifestyles, including the choice of videogames (Aluja et al., 2018; Horan et al., 2010).

Finally, the 'general model of aggression' (Anderson & Bushman, 2018; Zhang et al., 2021), suggests that the interaction between the situation and personal features is the factor that would explain how violent content affects a person, developing an aggressive cognition, hostile emotional states, and violent behaviour. These approaches stress that factors such as personality, moods, family violence or peer-related influences can have a greater effect on aggressive behaviour than videogames themselves (Gunter, 2016) or, at least, have an interaction with their content. Yet, several studies have found significant

associations between videogame violence and aggression, even when controlling the variables that are not related to the game-contents. For example, DeLisi et al (2013), showed that playing violent videogames was associated with greater crime and this relationship was sustained when the effects of time of exposure, number of years playing videogames, age, sex, race, delinquency background, and personality traits were controlled.

Age and gender

Willoughby et al. (2012) found that playing violent videogames along high school years predicted real aggression rates. Consequently, these authors suggested that, at ages between 12 and 16, videogames could work as a trigger for aggressive behaviour. Likewise, the relationship between violent content, age and aggressiveness of the user also seems to cause side-effects such as loss of social sensitivity and could hinder the social development of adolescents (Greitemeyer, 2018; Gunter, 2016; Messina et al., 2018). Thus, it is a reasonable expectation that prolonged exposure to violent videogames will have an impact on aggressive behaviour, particularly in adolescents (Buiza-Aguado et al., 2017; Chen et al., 2025; Prescott et al., 2018). This developmental stage is especially vulnerable to the influence of external factors of any kind, from drug use (Muro, 2015) to parenting (Casey et al., 2008; Matto, 2015) or addiction (Arain et al., 2013; Dayan et al., 2010), because adolescents' brain has not fully completed its maturation, so its plasticity and malleability is greater than in adulthood. For this reason, the age or, even better, the developmental stage should be considered as a central variable in studies on the use and effects of videogames.

Concerning gender, males seem to prefer more competitive and aggressive videogames genres, like action-shooters or sports-games. And females seem to prefer more casual nonviolent games, like puzzles or platform genres (Lemmens & Hendriks, 2016; Rehbein et al., 2010; Scharkow et al., 2015). This gender-related differences would imply that violent videogames should be expected to be played predominantly by men, while women would prevail as players of non-violent videogames.

Culture

Another variable to be considered, according to Prescott et al. (2018), is the cultural background, since culture seems to exert a moderating effect. Stronger association between aggression and videogame use has been shown in Caucasian-Western samples, while a mild association was observed in Asian participants, and a small, non-significant association was detected in the samples from Latin-America cultures. Although Buiza-Aguado et al. (2017), who evaluated Latin-American participants, suggested that results are unclear and more studies are needed before drawing firm conclusions about the effect of violent games according to cultural group, researchers like Aaker et al. (2001) and Gouveia et al. (2013) sustain that more collectivist cultures, which promote social responsibility and empathy, can exert a protective effect against the effect of violent games. The reason is that these cultures drive individuals to reach a psychological distance that permits the differentiation of virtual aggression from its implications for real-world attitudes and behaviour. On the contrary, cultures that promote individualism and a more aggressive and selfish mentality could lead adolescents to identify themselves with the role of aggressors, decreasing sympathy towards their virtual victims, and generalising this attitude beyond the videogame.

The present study

In accordance with the introduced research background the present study is designed to (a) simultaneously include the two types of videogames (violent and cooperative) ensuring the comparability of results; and (b) to evaluate players that only use one of these two types, to

provide a clearer estimation of the effects on their attitudes.

The hypotheses of the present study are the following:

*H*1: Playing violent videogames will be associated with a significantly higher level of aggressive and antisocial attitudes.

*H*2: Playing cooperative videogames will be associated with a significantly higher level of prosocial attitudes.

*H*3: Boys will show a preference for violent games, while girls will be significantly more oriented to cooperative games.

Method

Participants

A random cluster sampling of 23 public educational centres in the province of Barcelona (Spain) was performed. A total of 1,324 adolescents (ages between 12 and 14) participated in the study. All participants were first and second year of Compulsory Secondary Education (ESO, in Spain) students.

Inclusion criteria: (1) playing on a computer platform. (2) Only those who during the last month had only played videogames with aggressive content or cooperative content. And (3) an average of at least eight hours played in the last four weeks, according to the results declared by AEVI, 2021.

Exclusion criteria: those that were not regular videogame players or, if they were, those that the last month had simultaneously played violent and prosocial videogames, or any other type of videogame different from the previous ones (n = 926) or not having parental permission to participate (n = 53). The exclusion of participants who simultaneously play both prosocial and violent video games is based on the need to isolate the specific effects of each type of content. Including players with mixed gaming habits would have introduced a source of variability that is difficult to control, potentially diluting or confounding the effects observed in each group. Although this decision may limit the generalizability of the results to the broader population, where mixed habits are common, it was considered necessary to ensure the internal validity of the study.

After the inclusion and exclusion criteria were applied, the resulting sample consisted of 212 men (57.61%) and 156 women (42.39%).

Instruments

To evaluate social behaviour, the Cognitive-Social Attitudes and Strategies Questionnaire (AECS; Moraleda et al.,1998) was administered. This questionnaire is divided into three factors: asocial, antisocial, and prosocial. In turn, each factor is made up of subfactors that measure different social attitudes: prosocial [social conformity (α = .62), social sensitivity (α = .78), help and collaboration (α = .77), security and firmness in interaction (α = .61), prosocial leadership (α = .66)]; antisocial [dominance (α = .62), aggressiveness-stubbornness (α = .64)]; and asocial [apathy-withdrawal (α = .65), and anxiety-shyness (α = .72)]. To express the level of agreement with the statement, the items of the scale have a Likert-type format that ranges from 1 (total disagreement) to 7 (total agreement).

Habits and interests regarding videogames, were evaluated by an ad-hoc questionnaire.

The variables considered in this study are:

Type of games: violent videogames understood as those that are aimed to killing or causing serious harm to other characters in the game according to ESRB (Entertainment Software Rating Board) or PEGI (Pan European Game Information) (e.g. Call of Duty, Resident Evil, God of War, et cetera) or cooperative videogames, where the goal is to support other game characters (like in Overcooked, Just Dance, Unravel, et cetera)

Scores of antisocial, asocial, and prosocial behaviour, which are obtained through the AECS test

Gender: boys and girls. Non-binary cases were not present in the sample.

Gaming time: the number of hours that participants played on average per week. To calculate the average, the number of hours they had been playing in the last four weeks was added and divided by four.

Procedure

Prior to the administration of the tests, several of the collaborators in the research explained the process and how to gather the information to some teachers at the schools participating in the study. The educational centres sent an email to the parents of the potential participants explaining the goals of the study, the variables that would be assessed, declaring the confidentiality of the data that would be gathered and requesting their permission for the participation of their children in the study.

After being instructed, each teacher had four weeks to conveniently apply the questionnaire on habits and interests related to videogames and record the type of videogames and the number of hours played to the students that were authorised to respond by their parents.

Once the four weeks elapsed, those participants who met the inclusion criteria were selected and responded the AECS test.

Statistical analysis

To contrast the first two hypotheses, a comparison of independent samples' means was carried out, considering the AECS questionnaire scores as the dependent variable and the type of games as the grouping factor. To test the third hypothesis, a multivariate analysis of variance (MANOVA) was carried with the number of hours of videogames as the dependent variable and two factors – type of videogames and gender. In addition, the chi square was calculated through a contingency table of the two factors – type of videogames and gender. The data were analysed with the SPSS (version 21) statistical package.

Results

The distribution of participants according to the type of game was: 52.45% played aggressive games and 47.55% played cooperative games.

Table 1.
Number of participants and average play time by videogame type

Kind of videogame	N	Hours per week
Aggressive	193	14.03 ± 3.12
Cooperative	175	10.89 ± 2.08
Total	368	

H1: Playing violent videogames has been associated with higher levels of aggressive and/or antisocial attitudes.

H2: Playing cooperative videogames has been associated with higher levels of prosocial attitudes.

Table 2.
Descriptive (mean plus, minus standard deviation, Student t and statistical significance) of each kind of of videogame by the type of behaviour (prosocial, antisocial and asocial).

	Kind of videogames			
Kind of behaviour	Aggressive (n=193)	Cooperative (n=175)	*t*	*p*
Prosocial	208.71 ± 23.34	224.90 ± 28.93	5.93	.000*
Antisocial	55.42 ± 13.24	44.45 ± 7.75	9.58	.000*
Asocial	46.35 ± 15.10	40.97 ± 11.95	3.76	.000*

Note. *$p < .001$.

Results displayed in Table 2 show significant differences in the three types of behaviour. Playing cooperative videogames produces a higher score in prosocial behaviour and a lower score in antisocial and asocial behaviour. On the contrary, playing videogames with aggressive content is associated with a lower prosocial behaviour score and a higher antisocial and asocial behaviour scores.

Table 2 also shows more variability in the scores of the asocial and antisocial factors among participants who play violent videogames; while we observed more variability in the scores of the prosocial factor among those who play cooperative videogames. As an example, in the antisocial dimension, the sum of the mean plus two deviations almost reaches the maximum score of 98 (55,42+26.48) = 81.9 .

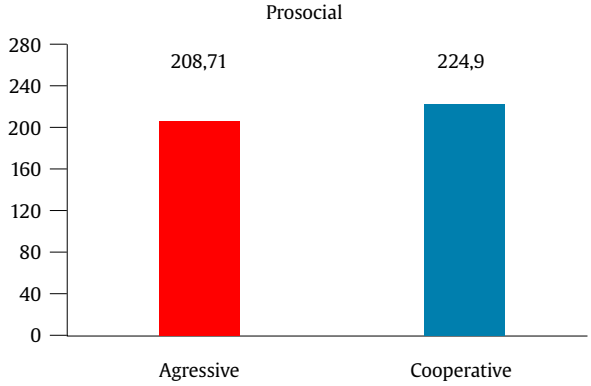

Figure 1. Particpants' scores on the prosocial dimension.

Considering that 280 is the maximum value that can be reached in the prosocial dimension, the percentual difference between the scores obtained by participants in cooperative games with those achieved by those who play violent games is 5.79% of the maximum score. The agressive-games players' mean-score reach the 74.54% of the maximum and the cooperative-games players' mean-score is the 80.32% of the maximum score.

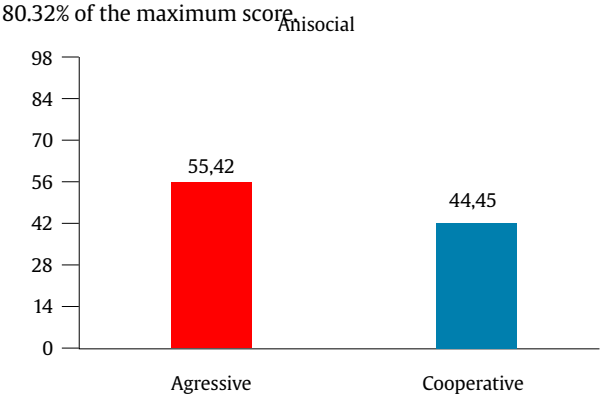

Figure 2. Particpants' scores on the antisocial dimension.

In the case of the antisocial dimension, 98 is the maximum value that can be obtained, so the percentual difference between the two groups is 11.20% of the maximum score. Agressive-games players'mean-score is 56.55% of the maximum score, and cooperative-games players' mean-score is 45.36% of the maximum.

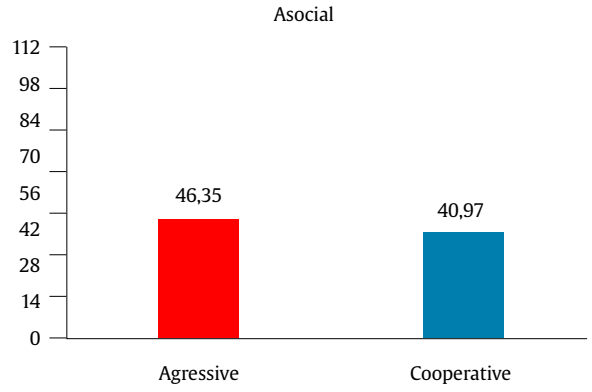

Figure 3. Particpants' scores on the asocial dimension

And finally, for the asocial dimension, which maximum value is 112, the difference between the two groups is 4.8%. Aggressive-games players' mean-score is 41.38% and cooperative-games players' mean-score is 36.58% of the maximum score.

H3: Boys are expected to prefer violent games, while girls will prefer cooperative games.

This hypothesis was contrasted by means of two different tests. Firstly, a multivariate analysis of variance (MANOVA) taking the genre and type of videogame as factors and the number of hours played as the dependent variable.

Table 3.
Number of players and number of hours playing by genre and type of videogames.

	Gender			
	Boys		Girls	
Kind of videogame	N	Hours per week	N	Hours per week
Aggressive	128	14.77± 2.89	65	12.60 ± 3.09
Cooperative	84	10.54 ± 1.93	91	11.21 ± 2.17
Total	212	13.09 ± 3.29	156	11.79 ± 2.67

Significant differences were observed concerning the gender variable (F=7.32; p=.007), showing that boys play on average more hours than girls, and in the type of videogames (F=103.78; P=.000), indicating that videogames with aggressive content are played longer than videogames with cooperative content. A further significant difference was observed, concerning the interaction type of videogame-gender (F=26.47; p=.000). Boys played significantly more hours than girls in videogames with violent themes; while there were no significant differences in the hours devoted to cooperative games. Anyway, girls played more time than boys did with cooperative videogames (see figure 4).

A second test consisting of a contingency table and a Chi-square index, was applied to check the effect of two qualitative variables (gender and type of videogames) on the number of players.

Figures displayed in Table 4 show significant differences (Chi square = 12.61; p=.000), being many more boys than girls that play videogames with violent content, while the number of girls that play cooperative videogames is greater.

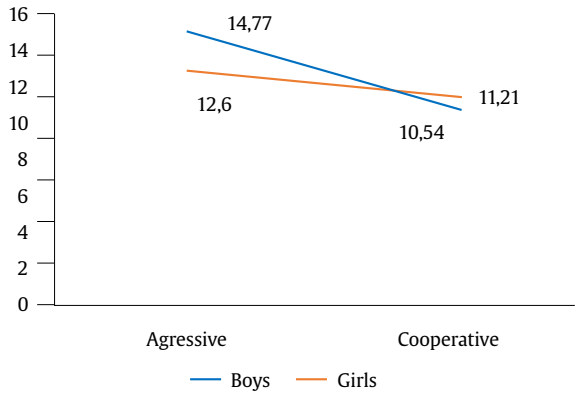

Figure 4. Hours of videogames for boys and girls depending on the type of videogame

Discussion

The goal of the study was to verify whether (H1) adolescents who play violent videogames would present higher levels of aggressive attitudes, whether (H2) those who play cooperative videogames would present higher levels of prosocial attitudes and whether (H3) boys would show a preference for violent games, and girls would prefer cooperative games. Results were consistent with the three hypotheses, although alternative explanations cannot be ruled out.

In line with most previous studies, the results suggest that, in the sample of Spanish adolescents that has been evaluated, playing videogames with violent content is associated with aggressive attitudes, while playing cooperative videogames is significantly connected to prosocial and cooperative attitudes (Bushman & Anderson, 2009; Gunter, 2016; Prescott et al., 2018). Like research performed in other cultures, it also seems that there is a differential effect associated to gender in Spanish adolescents, coinciding with the tendency among boys to play violent videogames, roughly doubling the number of female players, and some two hours per week more. Although no statistically significant differences

Table 4.

Number and percentage of players by kind of videogame and gender

		Kind of videogame				
		Aggressive	Cooperative	Total	χ^2	*p*
Gender	Boy	128 (34.8%)	84 (22.8%)	212 (57.6%)		
	Girl	65 (17.7%)	91 (24.7%)	156 (42.4%)	12.61	.000
	Total	193 (52.4%)	175 (47.6%)	368 (100%)		

were observed, the number of hours that girls play collaborative videogames is slightly grater than the time spent by boys in this kind of games (almost one more hour per week).

These results add evidence and cross-cultural validity to the studies carried out during the last decade in Asian and Anglo-Saxon samples (Prescott et al., 2018; Anderson et al., 2010; Greitemeyer & Mügge, 2014). Although causal relationships cannot be stated, due to the correlational design of the study, there is no contradiction with the theory of 'cognitive-social learning' (Bandura, 2009), which states that exposure to violent videogames may have an influence on the genesis of aggressive attitudes, mediated by vicarious learning. And although personality has not been assessed as an individual factor in choosing the type of videogames (Aluja et al., 2018; Horan et al., 2010), the formation of the identity, and adolescents' attitudes could be closely related to behavioural patterns, including the use and preference for videogames, as considered in the 'general model of aggression' (Anderson & Bushman, 2018; Zhang et al., 2021), suggesting that the interaction between situation and personal factors would foster the development of aggressive behaviours among the youngest and most vulnerable in this developmental stage for the construction of identity and attitudes (Arain et al., 2013; Dayan et al., 2010).

Moreover, a greater variability has been observed between the scores of participants in aggressive videogames in the antisocial and asocial factors, as well as a greater variability in the scores of the prosocial factor among players of cooperative videogames. This suggests that, in addition to the content of the videogame, factors related to the personality of the participants are also involved. Extreme scores would probably combine personality tendencies and videogames effects, though it must be empirically verified.

With all this, the results suggest that there appears to be a relationship between the type of content that Spanish adolescents consume, their attitudes and personal factors, although causality cannot be established, suggesting that videogames may influence both aggressive and collaborative behaviours, but further research is needed to clarify the direction and strength of these effects, as well as the consolidation of antisocial or prosocial attitudes. Despite being statistically significant, the moderate intensity of the differences, surprised our expectations. On the one hand, both kinds of gamers score much higher in prosocial dimensions, their mean values ranging from 74.5% to 80.3%, than in antisocial or asocial dimensions, that had mean values ranging from 36.6% to 56.5%. On the other hand, differences between groups were of moderate intensity, being the highest the one involving antisocial attitudes, as it has been widely described in the literature. However, at the age of participants (12 to 14), pure violent videogames players displayed some 11% more antisocial attitudes, some 5% more of asocial attitudes, and some 6% less prosocial attitudes. These differences, combined with the mean values high in prosocial attitudes and mild in antisocial and asocial attitudes do not seem to expose a grave situation. But the sample was made of participants in their early adolescence, and their contact with the videogames was relatively recent.

Effects on their future development cannot be estimated by the available data, although the literature in the field suggests that the effects will increase as gaming persists. On any event, only a longitudinal approach can shed light on this point.

Although some studies indicate that the original culture of the users could exert a moderating effect on the user's real behaviour (Prescott et al., 2018; Buiza-Aguado, 2017), our results do not reflect sensitive differences in the Spanish sample when comparing it with other cultural groups such as Anglo-Saxon or Asian samples of the same age. That could suggest that adolescents' attitudes would be more conditioned by the specific habits of the individual, rather than by cultural or macro-factors, considering that gamers' culture is a global and common phenomenon in both collectivist and individualist cultures (Aaker et al., 2001; Calvete et al., 2013).

A few words should also be devoted to gaming time, since violent games seem to be more addictive than cooperative games in general, and boys seem to be more prone to be addicted to them. Thus, Agarwal & Kumar (2025) found a significant positive correlation between gaming addiction and both verbal aggression and hostility. Despite the underlying reasons may be complex to determine, this situation suggests that gaming time may increase alongside with addiction, thus operating in a circular interaction. According to the literature, that would cause a sensitive increment in antisocial and asocial attitudes or behaviours. Thence, the prospect of future development of violent videogame users raises concerns, although individual differences and contextual factors may moderate these effects.

This study presents some limitations. The results do not allow us to establish in which direction the relationship occurs. Thus, we only know that a statistical association exists, but without being able to determine the cause and the effect. While we can affirm that a certain gender shows a predilection for a certain type of videogame, the results do not allow us to know whether people with antisocial behaviour, not only attitudes, play more violent games or if playing violent videogames entails an increase in antisocial behaviours. The same would happen with the other types of videogames.

Another limitation is that, although personality appears to be an important variable, it could not be included in the current cross-sectional design, as it needs to be assessed by a longitudinal design where personality differences are measured before any contact with videogames (of any kind).

In future research, a much more complex and extensive study should be considered, particularly including the evaluation of the personality of the participants.

What is the cause and what is the effect is not so easy to be distinguished, but the design can be refined with a longitudinal approach that assesses violent behaviour and attitudes before and after having access to videogames.

Conclusions

The results of this study suggest a relationship between the content of videogames and certain antisocial or prosocial behaviours. While is not possible to determine whether individuals with antisocial tendencies prefer violent games, or whether it is the exposure to such games that enhances these behaviors, the observed associations highlight the importance of further research to clarify the directionality of this relationship.

This study is distinguished from all those existing until now in the proposed methodology, because unlike other studies, the sample has been limited to two clearly differentiated groups according to the typology of the videogame. Thus, only regular players or gamers in a single type of videogame have been considered. In this way the results obtained do not risk being contaminated by partial practice of other types of videogames.

Furthermore, and unlike other studies, the participants were in the first stage of adolescence, a transcendental moment in life, in which behaviors can have consequences, whether negative or positive on the development of the personality of these young people. Being exposed to violent behaviour at the time of incomplete biological maturity may cause mental health disorders. However, game consumption does not have to be only negative – cooperative videogames can be used in interventions to improve social relationships.

It is important to take into consideration the results obtained and promote educational policies in favor of good use of videogames among adolescents. It is a crucial point that parents and educators monitor videogame content and play time and encourage balancing gaming with other healthy and educational activities. Moreover, cooperative video games could be used as therapeutic or psychoeducational tools to improve social skills in adolescents with integration difficulties, low empathy, or disruptive behaviour.

Funding

This research received no external funding

Conflicts of Interest

The authors declare no conflicts of interest

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