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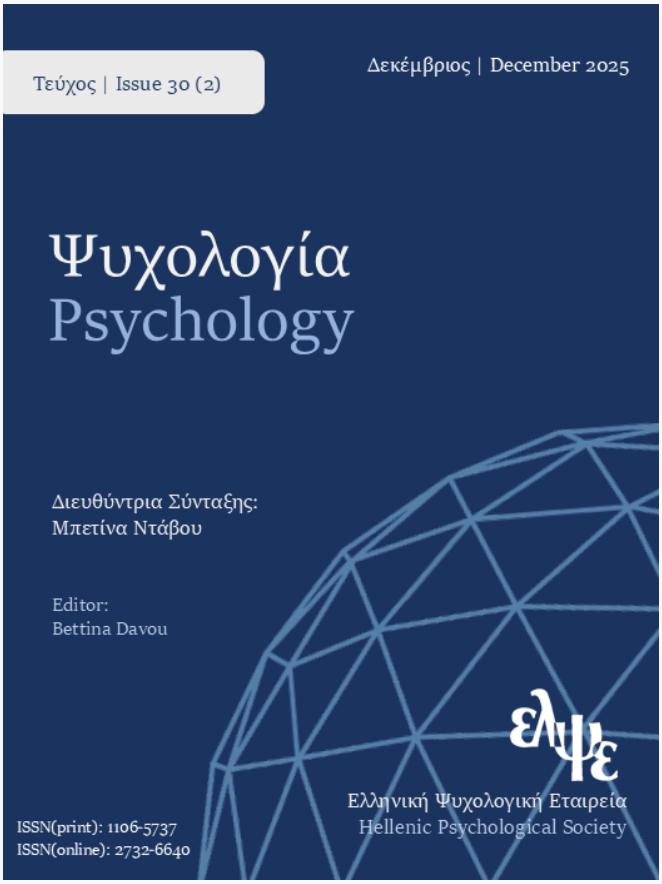

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ΕΜΠΕΙΡΙΚΗ ΕΡΓΑΣΙΑ | RESEARCH PAPER

The use of video games and issues of aggressive behavior among pre-adolescent students

Maria TZIVANI[1], Angeliki GAZI[1]

[1]Department of Communication, Media and Culture, Panteion University of Social and Political Sciences, Athens, Greece

KEYWORDS

Gaming Frequency
Videogame Addiction
Overt Aggression
Relational Aggression
Gender Differences

CORRESPONDENCE

Angeliki Gazi
Department of Communication, Media and Culture,
Panteion University of Social and Political Sciences
136 Syngrou Avenue, 17671 Athens, Greece
angelikigazi@gmail.com

ABSRACT

The aim of this research is to investigate the relationship between the use of video games and aggressive behavior among students of the fifth and the sixth grade of primary school. The sample consisted of 225 students. Data study were collected via an anonymous self-report questionnaire, which integrated questions regarding socio-demographic characteristics, gaming frequency, as well as the elements of the *Game Addiction Scale for Adolescents* (Lemmens et al., 2009) and the *Peer Conflict Scale* (PCS; Marsee & Frick, 2007). Based on frequencies and relative frequencies calculated, results revealed that, on average, students play video games eight hours per week. It was found that, depending on the cut-off point, a percentage of 0.9% to 11.1% is addicted to video games. In terms of gaming frequency, boys scored significantly higher than girls. Boys also scored significantly higher on every sub-factor of addiction scale, as well as on every aggression sub-factor. It was found that, for the total sample, the correlations of every individual factor of addiction and aggression were statistically significant. The pattern of results was similar for the correlations between gaming frequency and aggression, but with weaker correlation coefficients. Furthermore, when predicting both overt and relational aggression from the other variables, addiction emerged as the most consistent predictor. Finally, mediation analyses indicated that addiction (a) mediates the relationship between gaming frequency and aggression, and (b) mediates the relationship between gender and aggression.

Aggression and predictors of children's aggressive behavior

Since the 1980s, there has been an extensive research interest in aggressive behavior among children and adolescents at school. Aggressive and/or delinquent behavior may be manifested against school property, but also against classmates and teachers (López et al., 2008). The reason aggressive behavior issues have received significant research attention is that they are associated with maladjustment problems for both perpetrators and victims of aggressive behavior (Card et al., 2008).

Aggression constitutes an observable behavior; it is not just a thought or a feeling. That is, despite the fact that aggressive cognitive attitudes (e.g. hostile attitudes, beliefs, etc.) and aggressive emotions (anger, rage, etc.) are considered to be indications and predictive factors for the possible manifestation of aggressive behavior, neither of these traits constitutes aggression. In addition, the act must be intended to harm another person and not be accidental. In the light of this, an act that takes place and has a negative impact on a person cannot be considered aggression in the absence of intent. However, an action intended to cause harm to the target person that nevertheless fails to cause the intended harm constitutes aggression because of the existing intent, regardless

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of the outcome. Therefore, the condition of intent is a key point in determining aggression (Allen & Anderson, 2017).

With regard to the manifestation of aggressive behavior by children and adolescents, the landscape appears to be particularly complex, including interactions between biological, emotional, gender and developmental factors, as well as parameters related to family and the general social context of living, while the effect of various co-occurring disorders and/or deficits on cognitive and psychological processes cannot be ignored (Kaufmann, 1965).

Regarding the relationship between aggression and gender, boys in general show more physical aggression, while girls show higher levels of covert-relational aggression than boys (Björkqvist, 2018; Owens & MacMullin, 1995; Smith et al., 2010). Contributing to these differences may be peer group pressure to use forms of aggression that match gender stereotypes, as well as increased biological differences between the boys and girls during the transition to adolescence, along with increased competition for dominance (Card et al., 2008).

In short, physiological arousal alone cannot account for the manifestation of aggressive behavior (Kaufmann, 1965), and the more risk factors an individual has, especially when present from an early age, the more likely the individual is to exhibit aggression or violence (Anderson & Warburton, 2012).

Furthermore, research has shown that children and adolescents with both reactive and proactive aggression often display high levels of aggressive reactions, even when there is no provocation, as their aggression is goal-oriented. In contrast, adolescents who exhibit only reactive aggression tend to react aggressively in low-challenge situations. This sensitivity may result from deficits in socio-cognitive processes or from difficulties in emotion regulation (Muñoz et al., 2008).

Aggression and video games

It is widely known that one of the most discussed effects of video games, violent and/or non-violent, is their contribution to the manifestation of aggressive behavior by children and adolescents (Winkel et al., 1987). Video games have been clearly linked to aggression and violence, as well as to other negative effects on children and adolescents. This condition combined with the popularity of video games has led a significant part of the scientific community to study the role of video games in aggressive behavior (Winkel et al., 1987). Specifically, relevant meta-analyses (Anderson et al., 2010; Greitemeyer & Mügge, 2014) indicate that exposure to violent video games increases aggressive thoughts, emotions, and behaviors, potentially impacting social conduct outside the game environment (Greitemeyer, 2018). Experimental research further suggests violent games may serve as a risk factor for aggressive behavior (Anderson & Carnagey, 2009; Greitemeyer, 2014). Other studies link frequent engagement with these games to later aggression, even when controlling for prior aggression (Anderson et al., 2008; Möller & Krahé, 2009; Willoughby et al., 2012). However, some studies find no correlation between violent games and increased aggression or reduced prosocial behavior (Przybylski & Weinstein, 2019). Conversely, proponents of video games argue that they can be successfully used in therapeutic and educational contexts, but also as a means of social interaction and development (Winkel et al., 1987). For instance, video games have been associated with socio-emotional, cognitive, and physical development, including emotion regulation, social relationship building, problem-solving, creativity, fine and gross motor skills, and overall physical well-being (Salonius-Pasternak & Gelfond, 2005). Also, it has been argued that aggressive gaming differs from actual aggression in that it does not actually harm someone, therefore defenders of violent video games argue that it is a natural aspect of playing, especially for boys, that enables them to come to terms with various social phenomena (Bensley & Van Eenwyk, 2001).

Besides, concerns have been raised that video games potentially encourage children to imitate the violence they witness in them, causing both physical and psychological effects on adolescents (Winkel et al., 1987). For example, violent video games have been considered to be a contributing factor in several incidents of severe and extreme school violence that have come to light from time to time, as, according to findings, violent video games

affect aggressive behavior, aggressive emotions, aggressive cognitive functions, and physiological arousal, activating networks of aggressive thoughts, feelings, memories and beliefs (Kirsh, 2003). More specifically, related meta-analyses (Anderson et al., 2010; Greitemeyer & Mügge, 2014) have shown that exposure to violent video games can significantly increase accessibility of aggressive thoughts, hostile emotions, and aggressive behaviors. Therefore, engaging in violent video games may affect the player's social behavior outside the virtual world (Greitemeyer, 2018). Thus, these studies show that the effect of violent video games is multifaceted and can be observed in various indicators of aggression (Kumarasuriar et al., 2011).

Longitudinal studies have found that frequent engagement in violent video games predicts later aggression, even after controlling for prior aggression (Anderson et al., 2008; Möller & Krahé, 2009; Willoughby et al., 2012), while experimental studies have led to similar conclusions, showing that violent video games may serve as a risk factor for the manifestation of aggressive behavior (Anderson & Carnagey, 2009; Greitemeyer, 2014; Hollingdale & Greitemeyer, 2013).

Besides violent video games, highly competitive video games have also been "incriminated" for promoting aggressive behaviors (Dowsett & Jackson, 2019), even in the absence of violent content, although violent video games are usually more competitive. However, the belief that all non-violent video games are not associated with aggression due to the absence of violent content is deemed to be wrong. In this light of consideration, a non-violent video game that is highly competitive, challenging and fast-paced may lead to more aggressive behavior than a violent video game presenting these features at a lower level (Adachi & Willoughby, 2011).

Regarding the form of aggression being adopted, in their research, Smith et al. (2010) found a significant correlation between relational and overt aggression. Möller and Krahé (2009) noted that studying covert-relational aggression from exposure to video games helps account for the influence of physical aggression often shown in these games on more hidden forms of aggressive behavior.

However, there is also research that has not found correlations between violent video games and an increase in aggression or a decrease in prosocial behavior (Przybylski & Weinstein, 2019). Therefore, it is clear that there is still ample opportunity for research on the relationship between gaming frequency, video game addiction, and aggression. This study aims to contribute to understanding these relationships.

Finally, as far as the effect of gender on gaming frequency is concerned, research literature converges that boys show more interest in video games (Markou, 2019), on average, and spend more time playing video games (Dickmeis & Roe, 2019; Kirsh, 2003; Salonius-Pasternak & Gelfond, 2005). Furthermore, boys have often been found to be more susceptible to the negative effects of extensive use of video games, such as video game addiction (Hauge & Gentile, 2003; Hazar, 2019; Lau et al., 2018).

Research questions

The aim of this research was to investigate the relationship between gaming frequency, video game addiction and aggressive behavior among students of the fifth and the sixth grade of primary school, as well as to investigate gender differences in these variables. The research questions were formulated as follows:

RQ1: Is there a gender difference in gaming frequency?

RQ2: Is there a gender difference in video game addiction?

RQ3: Is there a gender difference in the manifestation of aggression?

In contrast to gender, no research questions were posed regarding age and/or grade, due to the small age difference between fifth and sixth grade students.

RQ4: Is there a correlation between gaming frequency and video game addiction?

RQ5: Is there a correlation between gaming frequency and aggression?

RQ6: Is there a correlation between video game addiction and aggression?

Method

The forementioned research questions were answered using quantitative research and specifically through the completion of a self-report questionnaire by the students. This method was chosen because a larger sample size could be reached through the self-report questionnaire, as it is a less time-consuming process compared to qualitative or mixed research; this method has been systematically used to invstigate the relationship between gaming and aggression (e.g., Anderson & Dill, 2000; Ferguson et al., 2015; Ferguson & Wang, 2019).

Sample of the present research

A total of 225 male and female students of the fifth and sixth grade of primary school took part in the study. Selection of participants was based on the principles of accessibility and availability in five public primary schools of the Region of Attica. The sample was drawn from these grades for practical reasons, as this made it easier and quicker to collect the data within the time constraints for completing the study. It was assumed that students in these two grades are already in the pre-adolescent phase, and their age difference is minimal, making them well-suited for participation in the study.

In more detail, participants were composed of 50.67% males (n = 114) and 49.33% females (n = 111). The children attend the 5th (n = 109, 48.4%) and 6th (n = 116, 51.6%) grade of primary school. The mean age of the children ($\bar{x}$) is 10.73 years with a standard deviation (SD) of 0.66 years. No significant difference was found in the gender distribution of students per school grade (χ^2 = 0.107, p = .743), since boys corresponded to the 49.50% and girls to the 50.50% of the student sample attending the 5th grade, and similar percentages were observed in the 6th grade, with 51.70% boys and 48.30% girls (Table 1).

Table 1. *Sample distribution by gender and school grade*

Gender		**School Grade**		Total
		5th	6th	
Boys	*n*	54	60	114
	% School Grade	49.50%	51.70%	50.70%
Girls	*n*	55	56	111
	% School Grade	50.50%	48.30%	49.30%
Total	*n*	109	116	225
	% School Grade	100%	100%	100%

Regarding the selection criteria, the only prerequisite was that the students attended the two last grades of primary school and did not have any official diagnosis from the Interdisciplinary Assessment, Counselling and Support Center (KE.D.A.S.Y.) for behavioral difficulties, since a population of that kind could distort the research data. However, no questionnaire needed to be excluded in the end, as none of the participating students had such a diagnosis.

Research tools

Questionnaire. Data of the present study were collected via an anonymous questionnaire. The questionnaire integrated questions regarding the socio-demographic characteristics of the sample (part a), questions regarding the gaming frequency (part b), the *Game Addiction Scale for Adolescents* (Lemmens et al., 2009) (part c) and the *Peer Conflict Scale* (PCS; Marsee & Frick, 2007) (part d).

Socio-demographic data. In the first part of the questionnaire, students were asked to indicate (1) their gender, (2) their age and (3) their school grade.

Gaming frequency. Also, in the same part of the questionnaire, students were asked to indicate the days of the week and the hours per day they engage in video games. More specifically, in order to indicate how often they

play during the week they had to choose between the statements (1) *never*; (2) *only on weekends*; (3) *1-2 days a week*; (4) *3-4 days a week*; and (5) *every day*, while in order to indicate the hours they spend on them, the statements available to them consisted of (1) *not at all*; (2) *1 hour per day*; (3) *2 hours per day*; (4) *3-4 hours per day*; and (5) *more than 4 hours per day*.

Video game addiction. In the third part of the questionnaire, students were administered the Game Addiction Scale for Adolescents (Lemmens et al., 2009), in order to measure both the degree of engagement of the research sample in video games, as well as the extent of the consequences they experience due to their use. The scale in question is a self-report scale of 21 questions, which are grouped into 7 subscales of 3 questions each. More specifically, these subscales are Salience (e.g., *Did you think about playing a game all day long?*), (questions 1, 2, 3), Tolerance (e.g., *Did you play longer than intended?*), (questions 4, 5, 6), Mood Modification (e.g., *Did you play games to forget about real life?*), (questions 7, 8, 9), Relapse (e.g., *Were you unable to reduce your game time?*), (questions 10, 11, 12), Withdrawal (e.g., *Have you felt bad when you were unable to play?*), (questions 13, 14, 15), Conflict (e.g., *Did you have fights with others (e.g., family, friends) over your time spent on games?*), (questions 16, 17, 18), and Problems (e.g., *Have you neglected other important activities (e.g., school, work, sports) to play games?*), (questions 19, 20, 21). Each question is answered on a five-point Likert scale ranging from 1 = Never to 5 = Very often, and the score of each subscale is calculated from the sum of its individual items. Also, the present research tool has presented a fairly high Cronbach's alpha (.92 to .94) (Lemmens et al., 2009).

In order to investigate the structure of the addiction scale, an exploratory factor analysis (EFA)[1] was performed with Oblimin rotation method (KMO = 0.90, χ^2 = 1980, $p < .001$). The solution resulting from this analysis (Table 2) includes 4 factors with items 11 and 13 removed because both of them are loading on two factors. The Confirmatory Factor Analysis (CFA) for the 4-factor solution with 19 items (except questions 11 and 13) showed a good fit to the data ($\chi^2(143) = 225.91$, $\chi^2/df = 1.57$, $p < 0.01$, $CFI = 0.95$, $TLI = 0.94$, $RMSEA = 0.05$).

The four factors emerging from the exploratory and confirmatory analysis are presented in Table 3 together with the Cronbach's alpha reliability index.

Aggression. In order to measure the extent to which children manifested aggression, the statements of the *Peer Conflict Scale* (PCS; Marsee & Frick, 2007) were used in the fourth part of the questionnaire. The PCS is a 40-statement self-report measure specifically designed to assess individual forms and functions of aggression. The 40 statements of the PCS are grouped into two subscales of 20 statements that assess *Reactive* and *Proactive* aggression respectively. The 20 statements measuring reactive aggression are sorted by 10 into two further subscales, *Reactive Overt aggression* (e.g., *When I am teased, I will hurt someone or break something*), (statements 3, 8, 11, 14, 16, 20, 25, 30, 36, 37), and *Reactive Relational Aggression* (e.g., *When someone upsets me, I tell my friends to stop liking that person*), (statements 4, 7, 10, 15, 17, 22, 31, 34, 38, 40). Similarly, the 20 items of proactive aggression are grouped into two 10-item dimensions, *Proactive Overt Aggression* (e.g., *I am deliberately cruel to others, even if they haven't done anything to me*), (statements 1, 5, 12, 18, 21, 24, 27, 28, 33, 35), and *Proactive Relational Aggression* (e.g., *I ignore or stop talking to others in order to get them to do what I want*), (statements 2, 6, 9, 13, 19, 23, 26, 29, 32, 39). Each item is answered on a four-point Likert-type scale from *0 = Not at all true* to *3 = Definitely true*, while the score of each subscale is calculated by summing its individual items (value range from 0 to 30). Regarding the reliability of the scale, we should note that according to previous research (Kimonis, Fanti, Goldweber, Marsee, Frick, & Cauffman, 2014; Marsee, Frick, Barry, Kimonis, Centifanti, 2014) a high Cronbach's alpha was found for the overall scale and individual subscales (α=76-89).

[1] Because the scale is not weighted in Greek language, exploratory factor analysis was initially performed in order to investigate its structure, followed by confirmatory factor analysis.

Table 2. *Extraction of four factors with 21 and 19 items and item loadings on the factors*

Items	4-factor solution (21 items)				4-factor solution (19 items)			
	1	2	3	4	1	2	3	4
1. Did you think about playing a game all day long?	0.51				0.51			
2. Did you spend much free time on games?	0.5				0.58			
3. Have you felt addicted to a game?	0.46				0.48			
4. Did you play longer than intended?	0.59				0.59			
5. Did you spend increasing amounts of time on games?	0.86				0.82			
6. Were you unable to stop once you started playing?	0.55				0.57			
7. Did you play games to forget about real life?			0.38			0.35		
8. Have you played games to release stress?			0.78			0.85		
9. Have you played games to feel better?			0.92			0.86		
10. Were you unable to reduce your game time?	0.72				0.74			
11. Have others unsuccessfully tried to reduce your game use?	0.33			0.51				
12. Have you failed when trying to reduce game time?				0.38				0.42
13. Have you felt bad when you were unable to play?		0.35	0.31					
14. Have you become angry when unable to play?		0.58					0.55	
15. Have you become stressed when unable to play?		0.38					0.37	
16. Did you have fights with others (e.g., family, friends) over your time spent on games?		0.65		0.35			0.70	
17. Have you neglected others (e.g., family, friends) because you were playing games?		0.55					0.61	
18. Have you lied about time spent on games?		0.71					0.75	
19. Has your time on games caused sleep deprivation?		0.69					0.68	
20. Have you neglected other important activities (e.g., school, work, sports) to play games?		0.48					0.46	
21. Did you feel bad after playing for a long time?				0.44				0.73

To examine the structure of the aggression scale, an exploratory factor analysis (EFA)[2] was also performed. Nevertheless, due to the arithmetically limited sample, we opted for the investigation and confirmation of the univariate solution of each factor separately. Therefore, four exploratory factor analyses and four confirmatory analyses were successively conducted for each one of the dimensions of the aggression questionnaire. The results

[2] Because the scale is not weighted in Greek language, exploratory factor analysis was initially performed in order to investigate its structure, followed by confirmatory factor analysis.

regarding the loadings of the items on the factors are presented in Table 4 and we can see that all loadings are greater than 0.30. Table 5 presents the indexes on sample adequacy for each analysis.

Table 3. *Final structure of the addiction scale and reliability of the emerging factors*

	4-factor solution (19 items)			
	Salience-Tolerance	Mood Modification	Withdrawal-Conflict	Problems
1. Did you think about playing a game all day long?	0.51			
2. Did you spend much free time on games?	0.58			
3. Have you felt addicted to a game?	0.48			
4. Did you play longer than intended?	0.59			
5. Did you spend increasing amounts of time on games?	0.82			
6. Were you unable to stop once you started playing?	0.57			
10. Were you unable to reduce your game time?	0.74			
7. Did you play games to forget about real life?		0.35		
8. Have you played games to release stress?		0.85		
9. Have you played games to feel better?		0.86		
14. Have you become angry when unable to play?			0.55	
15. Have you become stressed when unable to play?			0.37	
16. Did you have fights with others (e.g., family, friends) over your time spent on games?			0.70	
17. Have you neglected others (e.g., family, friends) because you were playing games?			0.61	
18. Have you lied about time spent on games?			0.75	
19. Has your time on games caused sleep deprivation?			0.68	
20. Have you neglected other important activities (e.g., school, work, sports) to play games?			0.46	
21. Did you feel bad after playing for a long time?				0.73
12. Have you failed when trying to reduce game time?				0.42
Cronbach's alpha	0.86	0.75	0.82	0.55

Confirmatory factor analysis (CFA) for the 10-item *Proactive Overt Aggression* (POA) scale showed a good fit to the data ($\chi^2(35) = 48.77$, $\chi^2/df = 1.39$, $p = 0.06$, *CFI* = 0.99, *TLI* = 0.99, *RMSEA* = 0.04). Confirmatory factor analysis for the 10-item *Proactive Relational Aggression* (PRA) scale showed a good fit to the data (χ^2 (35) = 22.39, χ^2/df = 0.63, p = .951, *CFI* = 1.00, *TLI* = 1.00, *RMSEA* = 0.08). Confirmatory factor analysis for the 10-item *Reactive Overt Aggression* (ROA) scale showed a good fit to the data (χ^2 (35) = 54.99, χ^2/df = 1.57, p = .017, *CFI* = 0.99, *TLI* = 0.99, *RMSEA* = 0.05). Finally, confirmatory factor analysis for the 10-item *Reactive Relational Aggression* (RRA) scale showed a good fit to the data (χ^2 (35) = 33.98, χ^2/df = 0.97, p = .517, *CFI* = 1.00, *TLI* = 1.00, *RMSEA* = 0.05).

Data collection procedure

In June 2021, permission was requested and obtained from the Ministry of Education, Religious Affairs and Sports to conduct this research in public primary schools of the Region of Attica, and specifically in fifth and sixth grade students. Also, the research proposal was previously submitted to and approved by the Research Ethics Committee of Panteion University.

Research was conducted in October 2021, following consultation with school principals and class teachers to ensure that the school schedule and the regular functioning of the institution unit would not be disrupted. The teacher of each class decided which hour of the week could be allocated to filling in the questionnaire. Before actually visiting the schools, the parent/guardian information and signed consent form was distributed to the students, since in order for the students to participate in the research, the consent of their guardians was prerequisite according to the current legislation. In addition, the students had the right to withdraw from the research procedure at any stage, something they were aware of from the outset, since it was explicitly stated in the parent/guardian consent form, as well as in the questionnaire.

Results

The statistical software IBM SPSS v.20 and JAMOVI was used for the statistical analysis of the data collected.

The control of the normality of the distributions for the variables/factors of addiction and aggression was performed with the Shapiro-Wilk test and with a parallel study of the histograms and the indexes of skewness and kurtosis of the distributions. Regarding the factors as well as the total score for the addiction scale as well as for the aggression scale, it was found that they could not be considered as normal distributions, therefore non-parametric tests were used for further analysis.

Descriptive results for gaming frequency and video game addiction

The participating children were asked to answer when and how many hours they play video games (Table 6).

From the above two measured variables and multiplying the scores (Days of Gaming during the Week * Hours of Gaming per Day), we calculated the index of frequency with which children play video games. This index takes values from 1 to 25, where a score of 1 corresponds to children who do not play video games at all, a score of 12 corresponds to children who play 1-2 days a week for 3-4 hours a day or 3-4 days a week for 2 hours per day, and a score of 25 corresponds to children who play more than 4 hours every day of the week. Regarding the gaming frequency in the total sample, it emerges that only one child (0.40%) does not play video games, while 64% of children play video games up to 8 hours per week (score ≤ 12). Also, 35.60% of the children participating in the sample say they play video games more than 8 hours a week (scores greater than 12) and actually, 9.30% of them say they play more than 28 hours a week. The gaming frequency index obtains a mean ($\bar{x}$) of 11.61 (*SD*=6.46), indicating that on average children participating in the research play video games approximately 8 hours per week.

Table 4. *Item loadings on each factor for the aggression scale*

	POA	PRA	ROA	RRA
POA1	0.41			
POA5	0.59			
POA12	0.42			
POA18	0.43			
POA21	0.56			
POA24	0.60			
POA27	0.54			
POA28	0.76			
POA33	0.72			
POA35	0.68			
PRA2		0.30		
PRA6		0.48		
PRA9		0.61		
PRA13		0.52		
PRA19		0.85		
PRA23		0.60		
PRA26		0.75		
PRA29		0.75		
PRA32		0.60		
PRA39		0.63		
ROA3			0.53	
ROA8			0.70	
ROA11			0.49	
ROA14			0.72	
ROA16			0.57	
ROA20			0.57	
ROA25			0.35	
ROA30			0.45	
ROA36			0.56	
ROA37			0.64	
RRA4				0.40
RRA7				0.67
RRA10				0.50
RRA15				0.45
RRA17				0.36
RRA22				0.55
RRA31				0.65
RRA34				0.52
RRA38				0.57
RRA40				0.69

Note. POA = Proactive Overt Aggression; PRA = Proactive Relational Aggression; ROA = Reactive Overt Aggression; RRA = Reactive Relational Aggression.

Table 5. *Adequacy and reliability indexes of the factors of the aggression scale*

	POA	PRA	ROA	RRA
KMO test	0.79	0.86	0.83	0.80
Bartlett's test	750 ($p < .001$)	866 ($p < .001$)	617 ($p < .001$)	557 ($p < .001$)
Variance %	40.22	44.76	38.57	36.45
Cronbach's alpha	0.81	0.84	0.82	0.79

Note. POA = Proactive Overt Aggression; PRA = Proactive Relational Aggression; ROA = Reactive Overt Aggression; RRA = Reactive Relational Aggression.

Table 6. *Frequencies and relative frequencies for days of the week and number of hours per week children play video games*

Gaming Frequency		*N*	%
Days of Gaming during the Week	Never	1	0.40
	Only on Weekends	70	31.00
	1-2 Days a Week	27	12.00
	3-4 Days a Week	57	25.00
	Every Day	70	31.00
Hours of Gaming per Day	Not at all	1	0.40
	1 hour per day	68	30.20
	2 hours per day	84	37.30
	3-4 hours per day	44	19.60
	More than 4 hours per day	28	12.40

Regarding addiction, it is noteworthy at this point that using the total score of the addiction scale and making the assumption that values greater than or equal to 3 indicate addiction, then 11.10% of the children who participated in the sample are addicted to video games. If the threshold is set to 4 (values greater than or equal to 4 indicate addiction) then 0.90% are addicted to video games. If the criterion is set that only half of the subscales of the questionnaire should be covered (i.e. 2 of the 4 factors that emerged during the factor analysis) in order to infer addiction, with a threshold of 3, then it is ensued that 22.70% of children are addicted to video games, and with a threshold of 4 to 8.00% of them are addicted to video games.

Gender differences in gaming frequency

RQ1: Is there a gender difference in gaming frequency?

The median for gaming frequency index is *Mdn* = 10,00 (*IQR* = 9.00). Since the distribution of the gaming frequency index cannot be assumed to be normal, the Mann-Whitney U independent samples statistical test was implemented to detect the effect of gender. Indeed, a statistically significant difference was found between boys and girls in terms of gaming frequency ($z = 3.67$, $p < .001$), with boys playing video games more often (*Mdn* = 12.00, *IQR* = 12.50) compared to girls (*Mdn* = 8.00, *IQR* = 9.00).

Gender differences in video game addiction

RQ2: Is there a gender difference in video game addiction?

Gender differences were then estimated for all addiction variables using the Mann-Whitney U test for independent samples (Table 7). This analysis showed that boys present a statistically significant higher score ($z = 4.665$, $p < .001$) overall on the addiction scale (*Mdn* = 2.16, *IQR* = 0.93) compared to girls (*Mdn* = 1.68, *IQR* = 0.84), but also on all the individual factors of addiction.

Table 7. *Results of the Mann-Whitney U test for differences between gender groups in the addiction factors*

	Salience-Tolerance		Mood Modification		Withdrawal-Conflict		Problems		Addiction (total)	
Gender	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl
Median	2.29	1.86	2.33	2.00	1.50	1.29	2.00	1.50	2.16	1.68
IQR	1.29	0.93	2.00	1.67	1.00	0.50	1.75	1.00	0.93	0.84
z(p)	4.01 (p < .001)		3.56 (p < .001)		3.62 (p < .001)		3.2 (p = .001)		4.67 (p < .001)	

Gender differences in aggression

RQ3: Is there a gender difference in the manifestation of aggression?

Furthermore, differences between groups were calculated for all aggression variables with the Mann-Whitney U test and gender as an independent variable. As illustrated in Table 8, boys show a statistically significant higher score on all aggression variables. For example, in overt aggression (z = 4.18, p < .001) boys (*Mdn* = 5.50, *IQR* = 7.00) show higher medians compared to girls (*Mdn* = 2.00, *IQR* = 5.00) and the same applies to relational aggression (Boys: *Mdn* = 2.00, *IQR* = 6.00; Girls: *Mdn* = 1.00, *IQR* = 3.00, z = 2.39, p < .017).

Table 8. *Results of the Mann-Whitney U test examining differences in aggression factors between gender groups*

	POA		PRA		RRA		ROA		OA		RA	
Gender	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl
Median	1.00	0.00	0.00	0.00	2.00	1.00	4.5	2.00	5.50	2.00	2.00	1.00
IQR	2.00	1.00	2,00	1.00	4.25	3.00	7.00	4.00	7.00	5.00	6.00	3.00
z(p)	3.67 (< .001)		3.65 (< .001)		1.87 (.062)		3.91 (< .001)		4.18 (< .001)		2.39 (.017)	

Note. POA = Proactive Overt Aggression; PRA = Proactive Relational Aggression; ROA = Reactive Overt Aggression; RRA = Reactive Relational Aggression.

Relations between gaming frequency, video game addiction and aggression

RQ4: Is there a correlation between gaming frequency and video game addiction?

Initially, correlations between gaming frequency and addiction were tested, as shown in Table 9. All correlations between individual variables were found to be positive and statistically significant.

Next, we tested the fourth and fifth research questions concerning the relationship between gaming frequency and aggression and the relationship between video game addiction and aggression respectively.

RQ5: Is there a correlation between gaming frequency and aggression?

As summarized in Table 10, the gaming frequency index shows weak, but statistically significant, correlations with all the variables of the aggression scale.

RQ6: Is there a correlation between video game addiction and aggression?

In addition, correlations between addiction and aggression factors are presented in Table 11. It is observed that all correlations between the individual factors of addiction and aggression are positive and statistically significant.

Table 9. *Spearman correlations between gaming frequency index and addiction scale variables*

	1	2	3	4	5	6
1. Gaming Frequency Index	-					
2. Salience-Tolerance	.59**	-				
3. Mood Modification	.40**	.53**	-			
4. Withdrawal-Conflict	.43**	.65**	.44**	-		
5. Problems	.23**	.37**	.29**	.33**	-	
6. Addiction (total)	.58**	.91**	.72**	.81**	.50**	-

Note. **p <0.01.

Table 10. *Spearman correlations between gaming frequency index and the variables of the aggression scale*

		1	2	3	4	5	6	7
1.	Gaming Frequency Index	-						
2.	Proactive Overt Aggression	.25**	-					
3.	Proactive Relational Aggression	.25**	.57**	-				
4.	Reactive Relational Aggression	.22**	.58**	.65**	-			
5.	Reactive Overt Aggression	.25**	.54**	.49**	.58**	-		
6.	Overt Aggression	.28**	.69**	.54**	.64**	.97**	-	
7.	Relational Aggression	.27**	.60**	.80**	.95**	.60**	.67**	-

Note. **p <0.01.

Table 11. *Spearman correlations between addiction and aggression factors*

		1	2	3	4	5	6	7	8	9	10	11
1.	Proactive Overt Aggression	-										
2.	Proactive Relational Aggression	.57**	-									
3.	Reactive Relational Aggression	.58**	.65**	-								
4.	Reactive Overt Aggression	.54**	.49**	.58**	-							
5.	Overt Aggression	.69**	.55**	.64**	.97**	-						
6.	Relational Aggression	.60**	.80**	.95**	.60**	.67**	-					
7.	Salience-Tolerance	.35**	.39**	.36**	.35**	.38**	.42**	-				
8.	Mood Modification	.30**	.30**	.33**	.33**	.35**	.36**	.53**	-			
9.	Withdrawal-Conflict	.39**	.47**	.46**	.53**	.54**	.52**	.65**	.44**	-		
10.	Problems	.23**	.24**	.29**	.22**	.24**	.29**	.37**	.29**	.33**	-	
11.	Addiction (total)	.44**	.48**	.46**	.47**	.50**	.53**	.91**	.72**	.81**	.50**	-

Note. **p < 0.01.

Predicting aggression from the other variables[3]

Based on the above results, two multiple regression models were implemented for overt aggression (dependent variable). In the first model, the total score of addiction, gender and gaming frequency were set as independent variables. In the second model, independent variables included the subscales of addiction (Salience-Tolerance, Mood Modification, Withdrawal-Conflict, Problems), gender and gaming frequency. The results for both models are presented in Table 12. The first model explains 24.40% of the variance in overt aggression, with the only significant variable being the total addiction score ($\beta = 0.51$, $p < .001$). The second model explains 33.80% of the variance in overt aggression. In this model, the Withdrawal-Conflict factor of addiction is the only significant variable related to addiction ($\beta = 0.56$, $p < .001$), while gender also has a significant impact on overt aggression ($\beta = 0.14$, $p < .048$). This means that being a boy is an independent predictor of increased overt aggression.

[3] Although the data in this study did not conform to a normal distribution, we opted to employ parametric analyses (linear regression, mediation) based on the Central Limit Theorem (CLT). According to the CLT, relatively large research samples, such as the 225 students in this study, permit the use of parametric statistical methods, as the distributions of the indices are likely to approximate normality (Field, 2018). Additionally, parametric methods offer greater robustness and statistical power (Field, 2018), which further justifies their selection over non-parametric alternatives. However, it is important to note that this represents a limitation of the study, which will be discussed in the appropriate section of the article.

Table 12. *Results of two multiple linear regression models for overt aggression*

					95% C.I.	
		B	β	*p*	Lower	Upper
Model 1	(Constant)	-2.29		.072	-4.78	0.21
	Addiction (total)	3.92	0.51	.000	2.79	5.06
	Boys vs Girls	1.27	0.11	.122	-0.34	2.88
	Videogame Frequency Index	-0.11	-0.12	.096	-0.23	0.02
Model 2	(Constant)	-2.73		.025	-5.11	-0.35
	Salience-Tolerance	-0.35	-0.06	.489	-1.33	0.64
	Mood Modification	0.59	0.12	.073	-0.06	1.24
	Withdrawal-Conflict	4.28	0.56	.000	3.17	5.39
	Problems	-0.08	-0.02	.812	-0.73	0.57
	Boys vs Girls	1.55	0.14	.048	0.02	3.08
	Videogame Frequency Index	-0.07	-0.08	.286	-0.19	0.06

Note. Model 1: R^2 = 0.24, *adjusted* R^2 = 0.23, Model 2: R^2 = 0.34, *adjusted* R^2 = 0.32.

Similarly, two multiple regression models were conducted for relational aggression (the dependent variable), with the results presented in Table 13. In the first model, the independent variables were the total score of addiction, gender, and gaming frequency. In the second model, the independent variables included the subscales of addiction (Salience-Tolerance, Mood Modification, Withdrawal-Conflict, Problems), as well as gender and gaming frequency. The first model accounts for 24.30% of the variance in relational aggression, with the only significant variable being the total addiction score ($\beta = 0.55$, $p < .001$). The second model explains 33.00% of the variance in relational aggression, where only the Withdrawal-Conflict factor ($\beta = 0.56$, $p < .001$) is a statistically significant variable related to addiction.

Table 13. *Results of two multiple linear regression models for relational aggression*

					95% C.I.	
		B	β	*p*	Lower	Upper
Model 1	(Constant)	-3.64		.000	-5.46	-1.81
	Addiction (total)	4.04	0.55	.000	2.96	5.11
	Boys vs Girls	0.14	0.01	.834	-1.15	1.42
	Videogame Frequency Index	-0.10	-0.12	.088	-0.22	0.02
Model 2	(Constant)	-3.58		.000	-5.34	-1.82
	Salience-Tolerance	-0.23	-0.04	.630	-1.16	0.71
	Mood Modification	0.36	0.08	.251	-0.26	0.97
	Withdrawal-Conflict	4.08	0.56	.000	3.04	5.11
	Problems	0.35	0.07	.262	-0.27	0.97
	Boys vs Girls	0.04	0.00	.952	-1.18	1.26
	Videogame Frequency Index	-0.05	-0.06	.393	-0.17	0.07

Note. Model 1: R^2 = 0.24, *adjusted* R^2 = 0.23, Model 2: R^2 = 0.33, *adjusted* R^2 = 0.31.

Mediation relationships between variables

Given that previous regression analyses showed that only addiction has a direct relationship with aggression, its potential mediating effect on the relationship between aggression and gaming frequency, on the one hand, and on the relationship between gender and aggression, on the other hand, was also examined.

More specifically, in the first case, the gaming frequency index was defined as the independent variable and aggression as the dependent variable. The results of this analysis (Table 14) indicate a statistically significant

indirect effect of gaming frequency on aggression via addiction (β = 0.32, $p < .001$), and the same effect is observed in the case of relational aggression (β = 0.33, $p < .001$) (Table 15). We conclude, therefore, that the more children play video games, the more addiction increases, and via addiction both dimensions of aggression increase too.

Table 14. *Mediation analysis of addiction in the relationship between gaming frequency index and overt aggression*

				95% C.I.				
Type	Effect	Estimate	*SE*	Lower	Upper	β	*z*	*p*
Indirect	Videogame Frequency Index ⇒ Addiction ⇒ Overt Aggression	0.27	0.04	0.19	0.36	0.32	6.16	< .001
Component	Videogame Frequency Index ⇒ Addiction	0.07	0.01	0.05	0.08	0.59	10.93	< .001
	Addiction⇒ Overt Aggression	4.17	0.56	3.07	5.26	0.54	7.46	< .001
Direct	Videogame Frequency Index ⇒ Overt Aggression	-0.10	0.06	-0.22	0.02	-0.11	-1.56	.118
Total	Videogame Frequency Index ⇒ Overt Aggression	0.18	0.06	0.07	0.29	0.21	3.13	.002

Table 15. *Mediation analysis of addiction in the relationship between gaming frequency index and relational aggression*

				95% C.I.				
Type	Effect	Estimate	*SE*	Lower	Upper	β	*z*	*p*
Indirect	Videogame Frequency Index ⇒ Addiction ⇒ Relational Aggression	0.27	0.04	0.18	0.35	0.33	6.31	< .001
Component	Videogame Frequency Index ⇒ Addiction	0.07	0.01	0.05	0.08	0.59	10.93	< .001
	Addiction ⇒ Relational Aggression	4.06	0.53	3.03	5.09	0.56	7.73	< .001
Direct	Videogame Frequency Index ⇒ Relational Aggression	-0.10	0.06	-0.22	0.01	-0.12	-1.72	.086
Total	Videogame Frequency Index ⇒ Relational Aggression	0.17	0.05	0.06	0.27	0.20	3.11	.002

Subsequently, the mediation of addiction in the relationship between gender and overt aggression was tested (Table 16) and a statistically significant positive indirect effect was found (β = 0.14, $p < 0.01$), meaning that for boys increased overt aggression is explained via higher addiction.

Respectively, mediation of addiction in the relationship between gender and relational aggression was tested (Table 17) and a statistically significant positive indirect effect was found (β = 0.15, $p < .001$), meaning that for boys increased relational aggression is explained via higher addiction.

Table 16. *Addiction's mediation in the relationship between gender and overt aggression*

				95% C.I.				
Type	Effect	Estimate	*SE*	Lower	Upper	β	*z*	*p*
Indirect	Gender (Boys) ⇒ Addiction ⇒ Overt Aggression	1.54	0.38	0.80	2.28	0.14	4.09	< .001
Component	Gender (Boys) ⇒ Addiction	0.46	0.09	0.28	0.63	0.32	4.99	< .001
	Addiction ⇒ Overt Aggression	3.39	0.47	2.45	4.32	0.44	7.13	< .001
Direct	Gender (Boys) ⇒ Overt Aggression	1.22	0.68	-0.12	2.56	0.11	1.79	.074
Total	Gender (Boys) ⇒ Overt Aggression	2.76	0.72	1.35	4.18	0.25	3.84	< .001

Table 17. *Addiction's mediation in the relationship between gender and relational aggression*

				95% C.I.				
Type	Effect	Estimate	*SE*	Lower	Upper	β	*z*	*p*
Indirect	Gender (Boys) ⇒ Addiction ⇒ Relational Aggression	1.60	0.38	0.86	2.35	0.15	4.21	< .001
Component	Gender (Boys) ⇒ Addiction	0.46	0.09	0.28	0.63	0.32	4.99	< .001
	Addiction ⇒ Relational Aggression	3.52	0.45	2.63	4.40	0.48	7.81	< .001
Direct	Gender (Boys) ⇒ Relational Aggression	0.06	0.65	-1.21	1.33	0.01	0.09	.928
Total	Gender (Boys) ⇒ Relational Aggression	1.66	0.70	0.30	3.02	0.16	2.38	.017

Discussion

Results revealed that, on average, students play video games 8 hours per week. It was found that, depending on the cut-off point, a percentage of 0.9% to 11.1% is addicted to video games. In terms of gaming frequency, boys scored higher on the overall addiction scale and this finding was statistically significant. Boys, also, scored higher on every sub-factor of addiction scale, as well as on every aggression sub-factor and this finding was also statistically significant. Moreover, it was found that, for the total sample, the gaming frequency showed weak, but statistically significant, correlations with all the variables of the aggression scale. Furthermore, the correlations of every individual factor of addiction and aggression were statistically significant. The pattern of results was similar for the correlations between gaming frequency and aggression, but with weaker correlation coefficients. Finally, when predicting both overt and relational aggression from the other variables, addiction emerged as the most consistent predictor. In the following subsections we discuss the central findings of the present research.

Gender differences in gaming frequency, video game addiction and in the manifestation of aggression

According to RQ1, a statistically significant difference in gaming frequency was found between boys and girls, indicating that boys play video games more often than girls. Indeed, the literature data agree that gender is the main significant difference in terms of time spent on video games (Dickmeis & Roe, 2019; Greenberg et al., 2010), converging on boys being the ones who make a more extensive use of these games. A study that took place in Greece in 2020 found that 17% of students of all school grades played video games and 70% of them were boys, while only 30% were girls, the latter being mainly interested in social media (Daskalaki et al., 2020).

Subsequently, in line with RQ2, a similar pattern was detected for gender differences in addiction to video games. More specifically, boys scored statistically significantly higher overall on the addiction scale compared to girls, but also on all individual addiction factors.

Indeed, based on the available literature, boys typically score higher in video game addiction than girls and are generally more susceptible to the negative consequences of video games (Hauge & Gentile, 2003; Hazar, 2019; Lau et al., 2018).

Then, regarding the effect of gender on aggression, in agreement with RQ3, it was found that boys present a statistically significant higher score in all individual, but also overall variables of aggression.

The research data concerning gender differences in overt aggression are relatively clear, describing it as a more typical choice among boys. However, this is not the case for relational aggression, as some studies also mention a predominance of boys (e.g. Card et al., 2008; Lindeman et al., 1997; Prinstein et al., 2001; Salmivalli & Kaukiainen, 2004), as observed in the present research, while others report that girls opt for it more often. Certainly, there are also data indicating no differences in relational aggression based on gender.

Correlations between gaming frequency, video game addiction and aggression

The analysis of the correlations revealed several significant findings. First, in accordance with RQ4, all correlations between gaming frequency and the individual variables of video game addiction were positive and statistically significant. RQ5 then examined the relationship between gaming frequency and aggression, finding that the gaming frequency index showed weak but statistically significant correlations with all variables of the aggression scale. Finally, according to RQ6, all correlations between the individual factors of addiction and aggression were also statistically significant. Notably, both overt aggression and relational aggression demonstrated strong correlations with the Withdrawal-Conflict factor and the total addiction score.

As far as the relationship between gaming frequency and video game addiction, it is deemed to be a reasonable one and can be justified by the fact that the factor of gaming frequency is one of those used to establish pathological use (Lau et al., 2018).

Furthermore, over the past two decades, numerous studies have identified a significant association between gaming frequency and the onset of behavioral problems, particularly aggressive behavior (Anderson & Dill, 2000; Barlett et al., 2009; Gentile et al., 2004; She et al., 2022). Additionally, research has shown that increased gaming frequency may hinder the ability to regulate emotional reactions (Lin et al., 2020; Yen et al., 2018).

On the other hand, when it comes to addiction in relation to aggression, excessive use of video games is associated with aggression in much of the available literature. Video games can be quite addictive, leading to social isolation and violent behavior. In addition, concerns have been raised that video games potentially encourage children to imitate the violence they witness in them, causing both physical and psychological effects on adolescents (Desai et al., 2010; Gentile et al., 2011; Kuss et al., 2018; Lemmens et al., 2011; Winkel et al., 1987).

Prediction of overt and relational aggression

Regarding the prediction of overt aggression, two multiple regression models were implemented. The first model explained 24.40% of the variance of overt aggression, and the only statistically significant variable was the addiction total score. On the other hand, the second model appeared to explain 33.80% of the variance of overt aggression, and only the Withdrawal-Conflict factor was a statistically significant addiction variable, while it was observed that gender also had a statistically significant effect on overt aggression. That is, being a boy is an independent predictor of increased overt aggression.

Likewise, two multiple regression models were also implemented for relational aggression, in order to identify potential predictors. The first model explained 24.30% of the variance of relational aggression, and the only statistically significant variable was the total addiction score, while the second model explained 33% of the variance of relational aggression, and the only statistically significant addiction variable was the Withdrawal-Conflict factor.

According to previous research findings, indeed, higher levels of pathological gaming, whether with a violent or non-violent content, predicted an increase in physical aggression among boys, a finding that makes sense as adolescent boys are generally more frequent and systematic players of violent video games and more vulnerable to becoming pathological users (Lemmens et al., 2011) and thus the finding that male gender predicts the manifestation of overt aggression is consistent with the abundance of research data describing overt aggression as a typical "male" choice (e.g. Lee, 2009).

Mediation analyses

Given that former regression analyses had shown that only addiction is directly related to overt aggression and relational aggression, the mediating effect of addiction on the relationship between gaming frequency index (independent variable) and aggression (dependent variable) was tested. The result of this analysis showed that there is an indirect effect of gaming frequency on overt aggression via addiction, which is statistically significant, and the same applies to relational aggression. In simpler terms, the more children play video games, the more their addiction increases, and via addiction both dimensions of aggression increase too.

As mentioned above, gaming frequency is positively and statistically significantly related to addiction to video games, but also to aggression. However, gaming frepuency is only one of the conditions consistent with pathological use of video games (Lau et al., 2018). Therefore, the finding that gaming frequency is associated with aggression via video game addiction sounds reasonable. That is, the frequency of engaging in video games, as a single factor, seems less likely to be related to the manifestation of aggressive behavior, in the absence of other alarming signs of pathology. On the contrary, the existence of a direct relationship between video game addiction and aggression finds sufficient support from prior related findings (Hauge & Gentile, 2003; Qureshi et al., 2013). Therefore, it is considered that the present finding better outlines the positive and statistically significant correlations found, and discussed above, between the gaming frequency index, addiction and aggression.

Furthermore, the mediation of addiction in the relationship between gender and direct and relational aggression was tested, and a statistically significant positive indirect effect was found, meaning that for boys increased overt aggression, but also increased relational aggression, is explained by higher addiction.

With regard to this finding, it has already been mentioned that a significant body of literature supports that boys usually show higher levels of video game addiction than girls and are more vulnerable to the negative consequences of video games (Björkqvist, 2018; Hauge & Gentile, 2003; Hazar, 2019; Lau et al., 2018).

Limitations, future studies and practical implications

This subsection highlights the limitations of the current research concerning sample selection, measurement tools, statistical analyses, and the overall generalizability of the findings.

The sample of 225 students was selected based on availability and accessibility, making it opportunistic rather than representative of the broader student population. Consequently, the conclusions drawn apply specifically to this group of Greek students in the Attica region enrolled in the last two grades of elementary school (5th and 6th grades). Thus, these limitations restrict the generalization of findings to other regions or age groups, and the sample size may not be sufficient for robust conclusions.

The research relied entirely on self-report questionnaires to measure video game usage and aggression. This method carries the risk of biased responses, including random or socially desirable answers. Incorporating a mix of measurement methods (self-report and peer-report questionnaires, observation) could yield more representative results and reduce randomness in responses. Additionally, the Game Addiction Scale for Adolescents and the Peer Conflict Scale have not been validated for the Greek population and were translated by the researchers, which introduces additional limitations.

As a cross-sectional correlational study, this research identifies associations between video game usage and aggression without establishing causation. The cross-sectional design captures data at a single point in time, potentially influenced by various external and internal factors, leading to less reliable responses.

Finally, it is important to note that, although the data did not conform to a normal distribution, we still utilized certain parametric analyses (linear regression and mediation) based on the Central Limit Theorem (CLT). However, this approach represents a limitation of the present study, as it relies on assumptions that may not have been fully met.

Future studies should involve larger and more representative samples and consider multiple research methods or sources of information (e.g., peers, teachers, parents) to validate these findings. Furthermore, employing a wider range of appropriate statistical analyses may enhance the robustness and generalizability of the results. Additionally, future research should incorporate more mediating and moderating variables in their design, such as the specific type of video game or other psychosocial and cultural factors, which could influence video game usage and aggression differently. Consequently, these studies will provide more precise and nuanced results.

Ultimately, the current findings hold significant implications for both school and community contexts. Within schools, the established link between extensive video game usage and aggressive behavior can inform programs that promote responsible gaming and digital literacy. These initiatives should emphasize peaceful conflict resolution strategies, enabling students to recognize and mitigate dysfunctional behaviors, particularly aggression among peers. Effective collaboration among educators, school psychologists, and parents is crucial for successful implementation.

In the broader community, the findings can inform local initiatives designed to educate the public about video game addiction and its correlation with negative outcomes. Enhancing digital literacy and raising awareness will facilitate preventive measures. As noted by Blummer (2008), understanding the multifaceted role of digital media for youth highlights the need for comprehensive insights into its implications.

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ΕΜΠΕΙΡΙΚΗ ΕΡΓΑΣΙΑ | RESEARCH PAPER

Χρήση βιντεοπαιχνιδιών από προέφηβους μαθητές και ζητήματα επιθετικής συμπεριφοράς

Μαρία ΤΖΙΒΑΝΗ[1], Αγγελική ΓΑΖΗ[1]

[1] Τμήμα Επικοινωνίας, Μέσων και Πολιτισμού, Πάντειο Πανεπιστήμιο Κοινωνικών και Πολιτικών Επιστημών, Αθήνα, Ελλάδα

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Διαφυλικές Διαφορές

CORRESPONDENCE

Αγγελική Γαζή
Τμήμα Μέσων, Επικοινωνίας και Πολιτισμού
Πάντειο Πανεπιστήμιο Κοινωνικών και Πολιτικών Επιστημών
Λεωφόρος Συγγρού 136, 17671, Αθήνα, Ελλάδα
angelikigazi@gmail.com

ABSTRACT IN GREEK

Η παρούσα έρευνα αποσκοπεί στη διερεύνηση της σχέσης μεταξύ της χρήσης των βιντεοπαιχνιδιών και της επιθετικότητας σε προέφηβους μαθητές. Το δείγμα αποτέλεσαν 225 μαθητές και μαθήτριες της Ε΄ και ΣΤ΄ τάξης Δημοτικού Σχολείου, οι οποίοι συμπλήρωσαν ένα ανώνυμο ερωτηματολόγιο αυτοαναφοράς, που περιελάμβανε ερωτήσεις σχετικά με τα κοινωνικο-δημογραφικά χαρακτηριστικά και τη συχνότητα ενασχόλησης με τα βιντεοπαιχνίδια, καθώς επίσης και τα στοιχεία της *Κλίμακας Εθισμού στα Βιντεοπαιχνίδια για Εφήβους* (Lemmens et al., 2009) και της *Κλίμακας Συγκρούσεων με Συνομηλίκους* (Marsee & Frick, 2007). Με βάση τις συχνότητες και τις σχετικές συχνότητες που υπολογίστηκαν, βρέθηκε ότι, κατά μέσο όρο, οι μαθητές παίζουν βιντεοπαιχνίδια οκτώ ώρες εβδομαδιαίως. Επιπλέον, προέκυψε ότι, ανάλογα με το στατιστικό κατώφλι, ένα ποσοστό από 0,9% έως 11,1% είναι εθισμένο στα βιντεοπαιχνίδια. Ακολούθως, βρέθηκε ότι τα αγόρια σημείωσαν στατιστικά σημαντική υψηλότερη βαθμολογία σε σχέση με τα κορίτσια τόσο στη συχνότητα ενασχόλησης με τα βιντεοπαιχνίδια όσο και στην κλίμακα του εθισμού συνολικά, αλλά και σε όλους τους επιμέρους παράγοντές του. Ανάλογα ήταν τα αποτελέσματα και για την επιθετικότητα, αφού τα αγόρια επέδειξαν στατιστικά σημαντική υψηλότερη βαθμολογία σε όλες τις υποκλίμακές της. Επιπροσθέτως, βρέθηκε πως όλες οι συσχετίσεις των επιμέρους παραγόντων του εθισμού και της επιθετικότητας ήταν στατιστικά σημαντικές. Το μοτίβο των αποτελεσμάτων ήταν παρόμοιο και για τις συσχετίσεις μεταξύ της συχνότητας ενασχόλησης με τα παιχνίδια και της επιθετικότητας, αλλά με ασθενέστερους συντελεστές συσχέτισης. Αναφορικά με την πρόβλεψη της συνολικής άμεσης επιθετικότητας και της συνολικής επιθετικότητας σχέσεων από τις υπόλοιπες μεταβλητές, βρέθηκε ότι και οι δύο μορφές επιθετικότητας προβλέπονται κυρίως από το συνολικό σκορ του εθισμού. Τέλος, από τις αναλύσεις διαμεσολάβησης που εφαρμόστηκαν, προέκυψε ότι ο εθισμός: (α) διαμεσολαβεί τη σχέση ανάμεσα στη συχνότητα ενασχόλησης με τα βιντεοπαιχνίδια και την επιθετικότητα και (β) διαμεσολαβεί τη σχέση μεταξύ φύλου και επιθετικότητας.

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