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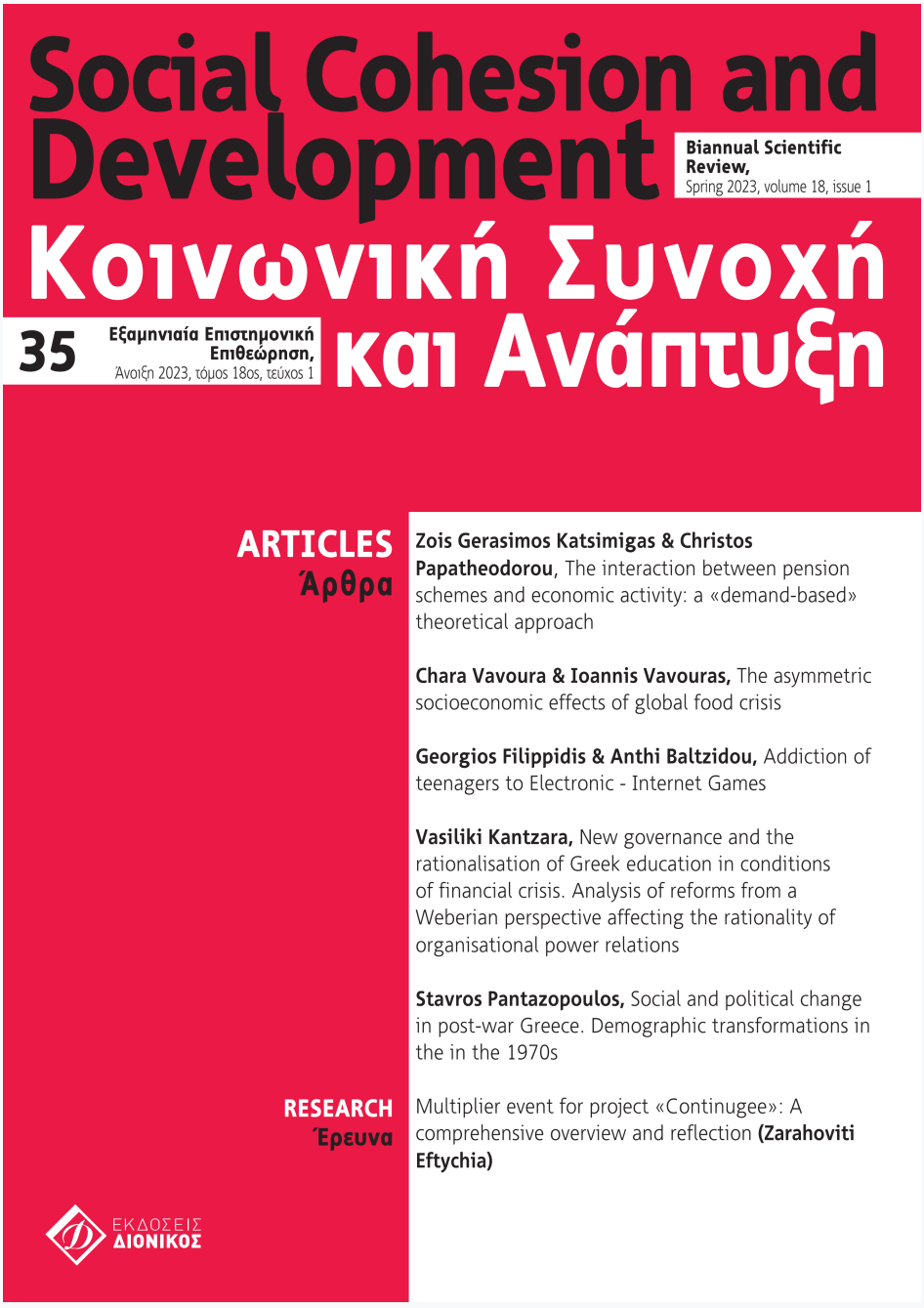

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Addiction of teenagers to electronic - internet games. Research on students of primary education

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Εθισμός ανηλίκων στα ηλεκτρονικά – διαδικτυακά παιχνίδια. Έρευνα σε μαθητές πρωτοβάθμιας εκπαίδευσης

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ABSTRACT

The computer and the Internet are now an everyday and integral part of the lives of children and teenagers. An extension of these are electronic games, a basic type of entertainment and communication for young people with their peers. Their content is entertaining, however their unrestricted use can be a cause for the manifestation of addictive behaviors and have a negative effect on the sensitive personality of minors. This article, therefore, deals with the content of electronic- online games and investigates when their role becomes harmful for the physical, social and mental health of children.

KEY WORDS: Electronic Games, Internet, Addiction, Minors.

ΠΕΡΙΛΗΨΗ

Ο ηλεκτρονικός υπολογιστής και το Διαδίκτυο αποτελούν πλέον καθημερινό και αναπόσπαστο πλαίσιο της ζωής των παιδιών και των εφήβων. Προέκταση αυτών είναι τα ηλεκτρονικά παιχνίδια, βασικό είδος ψυχαγωγίας και επικοινωνίας των νέων με τους συνομηλίκους τους. Το περιεχόμενό τους είναι διασκεδαστικό, ωστόσο η μη οριοθετημένη χρήση τους δύναται να αποτελέσει αιτία για την εκδήλωση εξαρτητικών συμπεριφορών και να επιδράσει αρνητικά στην ευαίσθητη προσωπικότητα των ανηλίκων. Το παρόν άρθρο, λοιπόν, πραγματεύεται το περιεχόμενο των ηλεκτρονικών - διαδικτυακών παιχνιδιών και ερευνά πότε ο ρόλος τους καθίσταται επιβλαβής για τη σωματική, κοινωνική και ψυχική υγεία των παιδιών.

ΛΕΞΕΙΣ-ΚΛΕΙΔΙΑ: Ηλεκτρονικά Παιχνίδια, Διαδίκτυο, Εξάρτηση, Ανήλικοι.

1. Introduction

A quite large part of the global population nowadays uses the Internet and the new technologies in the everyday life. Our relationship with other people has become to a great extent electronic, replacing the physical appearance for our interactions, and this fact has so far unknown results in our mental, social and physical health on the long term. Correspondence, social relations, transactions and entertainment are only a few domains that now almost exclusively happen electronically.

This means that of course the games, that are an ancient type of interaction and socialization of young –and not only- people, have evolved in electronic forms, with quite many possibilities for remote touch. This fact has both positive and negative sides, resulting during all these years in a long conversation between the political scientists about the boundaries that need to be set for the minors, due to the fact that they spend many hours in front of the screen.

The term electronic games includes all the games that are played in front of a screen with the help of the new technologies (console, television, computer, tablet, smartphones etc.), whilst the term internet electronic games includes the games for which except for the above, an Internet connection is required (online). According to clinical researches, the way that the brain responds to the excessive use of electronic games is the same as the one to addictive chemical substances, this leading the term "addiction" to obtain the proper sense of the word (Ko, 2009). The addiction to electronic games consists of spending an excessive amount of time using them, and this appears to have negative results on the mental and social health of the people.

The addiction to electronic/internet games is a problem that affects the overall health of the children and teenagers for at least three decades, and this is the main reason why the manual of the American Psychiatric Association DSM-5 has now recognized this addiction as a separate psychiatric disorder under the naming "Internet Gaming Disorder". The minors that appear to have an addiction to electronic games, usually have an amount of problems in their everyday life as well as in their social mental health. This appears to have an adverse effect on their social function, their school performances, their relationships with the other gender, their peers and parents, as the game becomes their main occupation and the only thing that leads their behavior and thoughts (Bailey, West & Kuffel, 2013).

In the present research we are going to try to analyze all these issues that are associated with the adverse effects of the electronic and internet games on the social, mental and physical life of the minors, through a brief bibliographic literature review but mostly through a research that we conducted on students of the fifth and sixth grade of Primary School of the Kavala Regional Unit. Our sample (N= 223 students) is under no circumstances absolutely representative of the overall number of students in this category, but the findings of the research show results quite similar to the current bibliography on this significant issue.

2. Electronic games. E-games definitions and categories

The term "electronic game" has a wide range, from playing a simple game on an electronic game machine, on the television screen or on the computer, to connecting on the Internet and taking part in mass online games with a great number of players in virtual worlds, where the users can interact with one another for a particular purpose (Brian & Wiemer-Hastings, 2005).

The electronic games are played on desktop or portable computers, game consoles, telephones or/and tablets. Some of the games are bought and installed on the devices, others are downloaded from the Internet while some of them are played exclusively online. The connection of the user on the Internet in order to play a game, is the parameter that makes a game an internet game, whereas electronic games are all the games that are played using an electronic device (console, game machine, computer, smartphone, tablet etc.). This means that practically the term electronic game is more general and includes these games that are played using an Internet connection (King, Haagsma, Delfabbro, Gradisar & Griffiths, 2013).

The Internet has radically changed the way the children play and the future seems to hold even more changes. For the time being the games are characterized as "smart", their use includes cameras and microphones and they are equipped with artificial intelligence. There are many ways for online games. The games or the applications for the cell phones can be downloaded through the Apple App Store, the Google Play or the BlackBerry App World. Some applications are available for free while some others need to be bought (King, Delfabbro & Griffiths, 2010).

The electronic games in the broad sense started to become popular during the decade of the 70s', when games like the Pong were created. However, these games did not have the necessary features to catch the attention of the people for a long time (Gong, Zhang, Cheung, Chen & Lee, 2019). From the beginning of the decade of the 90s' the most popular electronic games were Mario, Sonic, Zelda, Tetris, Final fantasy etc. These were games that featured detailed graphics that made their characters and the worlds that they interacted with, seem more realistic and alive (Hanson et al., 2019). At the same time, the games became more demanding, pushing many people to spend money and to proceed to purchases of more content, which provided them with "secrets" in order to win at the game. As the companies of electronic games discovered a raise on their earnings, they begun to search for more ways to obtain higher profits, creating in that way even more addictive games with more intense graphics and higher interactivity (Carrier et al., 2015).

Furthermore, alongside the rapid and broad use of the Internet over the last twenty years, many electronic internet games were created which can be used by many users at the same time. The result of these evolutions is the existence of a variety of games, in which the games of sighting first person like "Counterstrike" are included as well as the real-time strategy games like "Starcraft". What seems to be quite interesting is the electronic games that have recently appeared whose function is based exclusively on the Internet like the "Unreal Tournament". Also, the evolution of virtual worlds through an electronic game, like the "World of Warcraft" is a remarkable example (Hanson et al., 2019).

The above evolutions also affected the console games, like the Xbox 360, the Play Station (PS) and the Wii, as well as the hand games like the PSP and the DS, that have now the ability of connecting and accessing the Internet wirelessly. These features provide the use by multiple players simultaneously, the downloading of new content of the game or of whole games. However, for that purpose even cell phones have evolved to an extent that they function as game machines through extra programs or applications like we mentioned above (Van Rooij, Schoenmakers, Meerkerk & Van de Mheen, 2008).

Over the last thirty years the electronic games have evolved and become more realistic, commercial and three-dimensional. The children take part in online virtual communities and play games on a daily basis with people that is more likely they have never met in the "real" world. The online games provide a virtual environment, where they can entertain themselves, they can freely experiment, talk other languages and create new social relationships.

3. Addiction to electronic games

Sinha (2018) suggests that inside the game environment, the users are able to create virtual selves, which they idealize, using different aspects of their personality and without any physical or moral restrictions. The positive effects of the electronic games have been discovered, that are associated with the development of many skills of the people, their intelligence, their perception as well as with the enhancement of the teamwork spirit and the cooperation skills, as the

users are trained to act as part of a greater player society, while all the players have the same targets. Nevertheless, the non- circumscribed use of the games and the failure to be restricted, often leads to antisocial behaviors, increase of aggressiveness, obsessions or monomania and other psychosocial problems. In addition to this, the social functionality is often decreased, the school performances worsen and the relationships with the parents become more and more problematic (Grüsser, Thalemann & Griffiths, 2007).

The addiction to the electronic games is a broad concept. Waldo (2014) underlines that there is no clear term for this specific disorder and that the use of the electronic games is rapidly increasing between children and teenagers. As a result, the need of a multifaceted examination of the reasons associated with this addiction, has become imperative.

The studies of the last decade have shown that the engagement of the children with electronic games is strong, when there are intense conflicting relationships within the family environment or/and domestic violence (Christou, 2007). The lack of meaningful communication between the members of the family and the neglect create a psychological background for this specific addictive behavior. Floros and Siomos (2013) support the suggestion above mentioning that when the basic psychological needs are satisfied and the parents have the best interest of the children in mind within the family environment, then addiction cases are not observed. The attached minor players seem to be young people who are characterized by lack of self-esteem, behavioral disorders, aggressiveness, anger and negative feelings (Young, 2009).

In addition, reasons for videogames abuse are the lack of proper handling with family situations as far as not only the adult members but also the minors of the family are concerned, like for example the loss or absence of a parent. Young (2009) underlines that the engagement with such games is a way of escaping from various psychological pressures that bear down on the minor players. Practically the players occupy their minds with these games in order not to be overwhelmed by unpleasant and negative feelings. At the same time, it happens to be an effortless and affordable solution, that is available 24 hours per day and offers company and emotional safety. As such, the players start to feel better about themselves, tending to play even more, in order to put other important issues that burden them aside.

Concurrent researches referring to the addiction to electronic games show the association between this addictive occupation and other psychiatric and emotional disorders, like depression, anxiety disorders, monomania, ambivalence, bipolar disorder etc. or some learning disorders like the Attention Deficit Hyperactivity Disorder (ADHD) in children (Farchakh et al., 2020).

4. Reasons for attachment to electronic games

Since many years the electronic game have entered almost every home. Children find electronic games quite appealing, due to their interactivity, their full of vividness and colors graphics, the challenges they set but also due to the action and strategy they offer. However, the growing engagement of the children with electronic games has created a long conversation, as far as the short- and long-term results of this fact are concerned (Filippidis, 2020).

There are some reasons, as was stated in the previous paragraph, that make an electronic game very appealing and push children to play this game for many hours. There have been numerous researches that show the basic factors about what impels the minors to play these games that much and to become attached to them. Yee (2006) made the first steps for the building of a frame about the study of the reasons that keep minors occupied with electronic games and make them stay online for many hours, discovering three basic motives. Firstly, there is the component

of success, which includes the will of the players to move forward to the game, the interest in the rules and the system of the game and the will to compete with other players. Then, there is the social parameter, which is the willingness of creating a connection to the other players, to talk and get to know them and to become a part of a team effort. Finally, there is the component of the "plunging", which creates and adapts a character to play in the unique story of the game, as well as the will to get away from the real world.

Another reason that appeared in the last three years and has contributed to the children and teenagers' attachment to the electronic games, is the appearance of the Pandemic of the Covid-19 virus. The minors belong to the social groups that have been the most affected by this health crisis, because they were forced to remain at home, away from their classmates and their friends and away from every activity they used to take part in before the Pandemic. In this way, the electronic game became their only shelter for entertainment and relaxation during their stay-at-home time and an opportunity to communicate with their friends, but also with other teammates around the globe. The game has practically become a window for the outer world for a high percentage of the minors, following every positive and negative consequences that this fact has, as we previously described (Elsayed, 2021).

5. Research methodology

The study group of the present research are students of the Primary Education of the Kavala Regional Unit. The research was conducted in six (6) primary schools of the Kavala R.U., which were selected using the method of the random sampling. The information that was concentrated, using structured questionnaire, is derived from a sample of 223 students, on the 5th and 6th Grade of primary school and our research was conducted between March and April 2022. During the conduction of the research, the anonymous and voluntary participation of the students were underlined and the written consent of their parents was asked in advance. The statistic pack SPSS 23.0 was used for the description and analysis of the data and relevant factor analysis were conducted (Field, 2016).

5.1 Collecting data method

The questionnaire was handed in students of six Primary Schools of the Kavala Regional Unit, which were selected, as stated before, using the method of the random sampling. 51,1% of the sample consists of boys and 48,9% of girls, while the average age of the students was the 11 years old. 47,7% were students of the 5th Grade and 52,3% of the 6th Grady of Primary School. The students filled in the questionnaire during the "Skills Workshop" class as far as the "What am I doing in my free time?" unit is concerned. The questionnaire was distributed in a written form to every student personally by the researchers themselves. The physical presence of the researchers, including the teacher of each class, helped the students solve possible queries, feel safety about the filling of the questionnaire and has definitely contributed to the fact that all data is collected under the same circumstances for the whole sample, so that the results are as impartial, valid and credible as possible. The filling in of each questionnaire lasted about 20-25 minutes and the students did not encounter significant problems, as the questions were characterized as easy to answer and understandable. In addition, the sample of our research were minors, so a relevant email was sent to the parents in order to inform them about the participation of their children in this research process, and the distribution and filling in of the questionnaires were proceeded after the written consent of the parents.

5.2 Research restrictions

The present research was conducted in students of 5th and 6th Grade of six Primary Schools of the Kavala Regional Unit. As a result, the findings cannot be generalized for the whole student population, as our sample is restricted by the specific geographic region.

The students were able to express their personal experiences about the use of electronic games while answering the questionnaire. Their answers are definitely characterized by subjectivity, about the way they perceive some situations, as there is also always an issue about how much they are willing to reveal the truth through a questionnaire, even though it is anonymous. For instance, the students answered themselves about their own school performances. This data might not be adequate enough for the conduction of credible results on the subject. This means that the written grades of each student per trimester were not thoroughly examined by the researchers, so as the drop or not of their performance would be extensively checked, but on the other side only the answers of the students were documented.

In addition, the presence of the teacher of each class and the researchers during the filling in of the questionnaire, has probably affected some of the students with the answers they provided, even though there was anonymity and despite the fact that the presence of a familiar teacher creates a safety feeling to the primary education students.

Despite the restrictions that this specific research might has, it may be able to present, up to a point, an image about the relationship between children aged 10-12 years old and electronic games and the consequences they can have on their overall behavior. In addition, it might function as a precursor for further researches on students of primary education using bigger samples, as the majority of other researches about the addiction to electronic games focuses on older students of secondary education, whilst the phenomenon is now found in younger ages than Junior or Senior High School. Lastly, it is important that qualitative studies follow our process, with students that are detected with symptoms or precursor symptoms of addictive behaviors, in order a deep analysis of the reasons and the results of this phenomenon is conducted.

6. Data description- Research results

According to the above, 51,1% of our sample consists of male and 48,9% of female students, while the average age was the 11 years old. 47,7% are students of the 5th and 52,3% of the 6th Grade. The fact that 95,9% of the students own a computer or tablet or a game machine and only 4,1% own nothing of the above, is noteworthy, while 96,4% stated that play electronic games.

Table 1. General Evidence

Gender		Percentage %
	Male	51,1
	Female	48,9
		100,0
Siblings		
	Yes	78,9
	No	21,1
		100,0

Grade		
	5th	47,7
	6th	52,3
		100,0
Computer Possession		
	Yes	95,9
	No	4,1
		100,0
Electronic Games		
	Yes	96,4
	No	3,6
		100,0

As previously mentioned, 96,4% of the students play electronic games. More specifically, 97,3% of the male students play electronic games, while there is a small decline at the percentage of the female students which is around 95,4%, this small difference is, however, not considered statistically significant (Pearson Chi-Square=0,617 Sig.=0,336>0,05).

Table 2. Gender * Electronic Games

			Do you play electronic games?		**Amount**
			Yes	No	
Gender	Male	Count	110	3	113
		Gender Male	97,3%	2,7%	100,0%
		Do you play electronic games?	51,6%	37,5%	51,1%
		% of Total	49,8%	1,4%	51,1%
	Female	Count	103	5	108
		Gender Female	95,4%	4,6%	100,0%
		Do you play electronic games?	48,4%	62,5%	48,9%
		% of Total	46,4%	2,3%	48,9%
Total Amount		Count	213	8	221
		Gender (Male-Female)	96,4%	3,6%	100,0%

80,7% of the games that the players play, demand an Internet connection an only 19,3% play games that do not need this connection. 34,1% of the students play games on a daily basis, 30,4% during the weekend, 17,8% play games 3-4 times per week, 8,4% 1-2 times per week and 9,3% 4-5 times per week. There is no dependence between the frequency and the gender of the children, as the rate of the statistic Pearson Chi-Square=2,024 is statistically non-significant (sig.=0,731>0,05).

Table 3. Frequency of occupation with electronic games

	Frequency	**Percentage %**
Occupation with Electronic Games	Every day	34,1
	4-5 times per week	9,3
	3-4 times per week	17,8
	1-2 times per week	8,4
	Weekend	30,4
	Total Amount	**100,0**

The students that participated in our research are engaged an average of 2,5 hours each time they play electronic games, while male students spend more time (2,72 hours) in comparison to the female students (2,23 hours), however no statistically significant difference is stated (F=3,295 Sig.=0,071>0,05).

The majority of the children prefer to play team games (66,1%), 20,9% prefer individual games, while 13,0% choose both of them. The distribution of the children to male and female players does not show significant differences as far as the preference is considered and no preference dependence on the gender is stated (Pearson Chi-Square=1,853 Sig.=0,396>0,05).

Table 4. Game Preference

	Percentage %
Individual games	20,9
Team games	66,1
Both	13,0
Total Amount	**100,0**

There are plenty of electronic games that the students play, however the most beloved ones are currently Roblox (19,7%), Fortnite (15,6%), and Browl stars (17,8%).

Children that prefer team games play on average with 65 other players, a number found mainly due to the quite few players that play with hundreds of other players from different geographic regions simultaneously, and as a fact is impossible to get to know in the real world.

40,4% of the children/users prefer team players of the same age, 7,6% elder than them, 4,5% younger than them, while 47,5% are not interested in their team players' age.

Table 5. Team Players' Age

	Percentage %
The same age	40,4
Older	7,6
Younger	4,5
All three options	47,5
Total Amount	**100,0**

82,5% of the children that play team electronic games have stated that it did not happen that some co-player asked them to meet in person, while 17,5% mentioned that this happened some times. 47,0% out of the percentage that were offered an invitation, agreed to meet out of the game, while 53,0% declined. The male children are those who more frequently accepted the invitation (56,5%) in comparison to the female children (33,3%).

The x^2 independence compliance review shows that the variables are independent as the Pearson Chi-Square=1,958 is statistically non-significant (sig.0,143>0,05).

Table 6. x^2 independence compliance review (Gender*Meeting)

			Did you meet outside of the game?		Total Amount
			Yes	No	
Gender	Male students	Count	13	10	23
		% within: Gender	56,5%	43,5%	100,0%
		% within: Did you meet outside of the game?	72,2%	50,0%	60,5%
		% of Total	34,2%	26,3%	60,5%
	Female students	Count	5	10	15
		% within: Gender	33,3%	66,7%	100,0%
		% within: Did you meet outside of the game?	27,8%	50,0%	39,5%
		% of Total	13,2%	26,3%	39,5%
Total Amount		Count	18	20	38
		% within: Gender	47,4%	52,6%	100,0%

Despite the intensive occupation of the students with electronic games and the significant amount of time they spend on them, 75,2% of the children prefer games in the neighborhood, 13,8% electronic games with friends and 11,0% a combination of both of them.

Table 7. Preference

	Percentage %
Electronic games with friends	13,8
Outside in the neighborhood	75,2
Both	11,0
Total Amount	**100,0**

20% of the total number of the male students prefer to play electronic games with friends, while only 7% of the female students prefer the same. 72,7% of the male and 78% of the female students prefer to play outside in the neighborhood, while 7,3% of the male and a higher 15% of the female players prefer both options as a game. The variables gender and preference are dependent as the rate of the statistic Pearson Chi Square=9,460 is statistically significant (sig.=0,009<0,05).

Table 8. x^2 independence compliance review (Gender*Preference)

			Preference			Total Amount
			With their friends	Outside in the neighborhood	Both	
Gender	Male Students	Count	22	80	8	110
		% within: Gender	20,0%	72,7%	7,3%	100,0%
		% within: Preference	75,9%	50,6%	34,8%	52,4%
		% of Total	10,5%	38,1%	3,8%	52,4%
	Female Students	Count	7	78	15	100
		% within: Gender	7,0%	78,0%	15,0%	100,0%
		% within: Preference	24,1%	49,4%	65,2%	47,6%
		% of Total	3,3%	37,1%	7,1%	47,6%
Total Amount		Count	29	158	23	210
		% within: Gender	13,8%	75,2%	11,0%	100,0%
		% within: Preference	100,0%	100,0%	100,0%	100,0%
		% of Total	13,8%	75,2%	11,0%	100,0%

The fact that a significant percentage of the children (26,3%) admit to have neglected their homework in order to play electronic games is noteworthy, however 75% of these students neglect their homework almost rarely, 3,6% quite many times and a significant percentage (21,4%) stated that this happens from almost all the time to always.

The percentage of children that have stayed awake till very late at night so as to play a game (44,6%) can be characterized as worrying. Furthermore, 13,3% of these children stated that this happens from almost most of the time to always, 18,9% of them quite many times and 67,8% from very rarely to rarely.

23,8% of our sample are students that have forgotten to eat their meal when playing a game. This happens from almost all the time to always (12,8%), quite many times (17,0%) and from quite rarely to rarely (70,2%).

The students that refused to play outside in the neighborhood with their friends because they wanted to play an electronic game are 17,2% of our sample. 12,1% of them act so from almost always to always, 21,2% many times and 66,7% from quite rarely to rarely.

Table 9. Consequences of the occupation with electronic games

	Yes	No
Has it occurred, that you neglect your homework in order to play a game?	26,3%	73,7%
Has it occurred, that you sleep very late at night because you were playing a game?	44,6%	55,4%
Has it occurred, that you forget to eat while playing a game?	23,8%	76,2%
Has it occurred, that your friends invite you to play in the neighborhood and you do not want to join them because you want to play an electronic game?	17,2%	82,8%

An x^2 independence compliance review was conducted, in order to ascertain whether the consequences of the occupation with electronic games are affected by the gender of the children.

As a result, the occupation or not with electronic games is not affected by the gender of the student, as the rate of the statistic Pearson Chi- Square=0,676 is statistically non-significant (sig.=0,397>0,05).

The children that happened to sleep very late at night because they were playing a game, were mostly male students. More specifically, 51,4% of the male and 37,5% of the female students stated that they have slept very late at night. It appears that the gender affects quite enough this action of the students, even though the rate of the statistic Pearson Chi-Square=4,147 is statistically non-significant (sig.0,053>0,05) at a 5% significance level. This rate is, however, borderline.

The children that usually forget to eat their meal when playing an electronic game are mostly male students. More specifically, 30,8% of the male and only 16,5% of the female students act in this way. The impact of the gender on the neglect of food is obvious and is substantiated by the rate of the statistic Pearson Chi-Square=5,946 which is statistically significant (sig.=0,016<0,05).

22,5% of the male and only 11,5% of the female population of our sample prefer to play an electronic game instead of playing outside in the neighborhood with their friends. In this way, this is another case that the gender affects the decision and the rate of the statistic Pearson Chi-Square=4,547 is statistically significant (sig.=0,046<0,05).

Table 10. x^2 independence compliance review (Gender*Consequences)

Consequences	Pearson Chi-Square	sig.
Has it occurred, that you neglect your homework in order to play a game?	0,676	0,397>0,05
Has it occurred, that you sleep very late at night because you were playing a game?	4,147	0,053>0,05
Has it occurred, that you forget to eat while playing a game?	5,946	0,016<0,05
Has it occurred, that your friends invite you to play in the neighborhood and you do not want to join them because you want to play an electronic game?	4,547	0,046<0,05

The most concerning finding of our research is probably the percentage of students (31,2%) that play electronic games with money. Male students (43,2%) also outnumber the females (18,3%). As a result, the gender is a determining factor for this action (Pearson Chi-Square=16,611 sig.=0,000<0,05).

However, the monetary amount spent weekly was not able to be determined, as the students' answers were incomplete or inconclusive.

30,9% of the children characterize themselves as an excellent student, 40,2% as very good, 23,8% as good and only 5,1% as weak.

Table 11. Characterization as a Student

Team players	Percentage %
Weak	5,1
Good	23,8
Very Good	40,2
Excellent	30,9
Total Amount	**100,0**

74,1% of the children play electronic games with their brother or sister, 58,5% with their cousins, 20,5% with their father, 9,3% with their uncle or aunt and 7,8% with their mother. Some of the students provided combined answers.

Table 12. Relative Team Players at the electronic games

Team players	Percentage %
Brother/Sister	74,1
Father	20,5
Mother	7,8
Uncle/Aunt	9,3
Cousins	58,5
Total Amount	**170,2**

According to the students' answers, around half of the parents' opinion (46,6%) about electronic games, is negative, 14,9% have a good opinion and a significant percentage (38,5%) do not have a clarified thinking about the issue.

Table 13. Parents' Opinion on electronic games

Team players	Percentage %
Good/Positive	14,9
Bad/Negative	46,6
Do not have an opinion	38,5
Total Amount	**100,0**

The students of our sample have answered that they are overwhelmed by various emotions, when their parents do not allow them to play their favorite electronic game. These feelings are usually negative, like sadness, anger, unfairness, nerves, disappointment. Among many answers these who gathered the higher percentages are: it is fine/okay (22,4%), sadness (20,2%), anger (13,9%) or feeling terrible (8,0%).

Table 14. Feelings

Team players	Percentage %
It is fine/okay	22,4
Sad	20,2
Angry	13,9
Feeling terrible	**8,0**

Despite the intensive occupation with the electronic games and their emerging addiction to them, a quite high percentage of the students of our sample (68,1%) affirm that they can imagine themselves without electronic games, while 31,0% declare that they are not able to do so. 0,9% stated that they do not know.

Table 15. Feelings 2

	Percentage %
Yes	68,1
No	31,0
I do not know	0,9
Total Amount	**100,0**

The students that state, at a higher percentage, that they cannot imagine themselves without playing electronic games, are those who play on a daily basis (47%) followed by the children that play on the weekend. In addition, those who cannot imagine themselves without electronic games are the male students (33,6%) in comparison to the female students (28,2%). However, no significant dependence between the variants of both cases is found, as the rate of the statistic Pearson Chi-Square is non-significant at a 5% significance level (sig.>0,05).

7. Quantitative research results analysis - conversation

There have been important findings from the analysis above, which concern the addiction to the electronic games and its repercussions on sociability, behavior and on the school performance of the students of primary education.

To begin with, it is now a fact that the overriding majority of the students own a computer or a tablet or a smartphone or some game machine, while at the same time they are constantly connected to the Internet, which is necessary for their occupation with most of the electronic games they play. Galloway (2006) mentions that the electronic games constitute a part of the current multimedia culture of the digital technology of the electronic computers and the Internet and form an integral part of the children's daily life. Furthermore, Come's opinion (2004) agrees with the above finding of our research, that the videogames have become one of the most fundamental means of entertainment and are targeted towards the minor consumers.

The processing of the questionnaires has showed that the gender and the age of the students are not usual reasons for differentiation of the occupation with the electronic games, as the percentage of the male and female students that engage themselves with these are almost the same, a fact that is opposed to quite many findings of other similar researches, according to which, there are significant differences as far as the gender is concerned, with male students being more occupied with the electronic games and female students mostly with the social media (Waldo, 2014). In addition, there is also the dominant opinion that the male players tend to present a higher susceptibility to growing an addictive behavior to the online games (Heemskerk et al., 2015). However, as we are about to see in the next paragraphs, even though there was no significant statistic difference found in our research, as far as the gender is concerned about the occupation with electronic games, it is obvious that at many rates the male students tend to misuse more than the females the electronic games, to play more violent and aggressive games and that their behavior is affected due to the long lasting occupation to the electronic games at a higher rate in comparison to the female students of our sample.

The data analysis showed that the male play more than the female students, but there is no significant difference due to the gender or the frequency of use of the electronic games or the time they spend on them. On the contrary, the literature review shows that the male teenagers play more frequently, appear to have more experience and familiarization, feel more confidence about their ability on this area in comparison to the females (Terlecki et al., 2010).

In addition, we concluded that there are numerous electronic games that children use and the most addictive of them are Roblox, Fortnite and Browl stars. The first one is widely chosen by the female players while the other two by the male students of our sample. Roblox is on online platform game that allows users to design their own games and play a wide variety of different kinds of games that are created by other users, it is advertised as a "fantasy platform" that enables users to create or play millions of three-dimensional online games (SaferInternet4Kids, 2019). This result agrees with the scientific community's placement, that the young female players show a preference on creative games, where they can leave their imagination free and create, and they disapprove of violent or sports games (Egenfeidt- Nielsen et al., 2008).

On the other side, the male students choose Fortnite and Browl stars, that belong to the shooting games, and which the international literature has shown as the most addictive for the male audience over the last four years. In this category, the players are into battle, shooting with guns aiming to eliminate most of the enemies and to earn in this way many advantages in the game (Mallas, 2019). In this way, the theories of Bartholow and Anderson (2002) are confirmed, that the

industries promote the "masculine" ideal model by creating videogames that reproduce violence and presenting negative behavior patterns and scenes of violent and cruel content (Kondrat, 2015). At the same time, Colwell and Payne (2000) also add, that the boys show a bigger preference and chose more aggressive games in comparison to the girls. According to this finding and taking into consideration the world literature on this subject, we can assume that the users that are attached to violent content games are prone to present a more aggressive behavior and a less helpful one (Griffiths, 2004). In addition, the constant occupation with violent games tends to lead in a gradual desensitization of the young people and accustom them to violent and aggressive behavior.

In that way, minors might barely or not act at all in front of violent scenes in the real world, or in worst case scenario, might commit themselves violent actions having very few hesitation (Gentile et al., 2004).

Four out of ten students prefer people the same age as them at the games, while almost half of them do not mind if their team players are the same age, elder or younger than them. Quite many modern researches state that the addicted players invest in digital relationships and internet friendships with web teammates, as these games function as highly interactive social environments (Young, 2009) and satisfy their needs for social association (Colwell & Payne, 2000). The conclusion above can be confirmed in our present research, as two out of ten children were offered an invitation by an unknown teammate to meet in person and about half of them accepted the invitation. This fact shows that they appreciate internet acquaintances, although it is proved to be a very dangerous behavior. Boys are found to be more susceptible to accepting the invitation in comparison to the girls, who tend to be more reserved in meeting outside of the game environment with an unknown teammate (Egenfeidt- Nielsen et al., 2008).

Despite the fact that the occupation of the students with electronic games seems to be particularly usual, almost seven out of ten of them have a strong will to play with their friends outside in the neighborhood, something that is not quite easy in these days because of the pandemic, as the children belong to the most affected groups from the COVID-19 pandemic and their only shelter for entertainment during their stay-at-home time was to remain in front of the screens (television, computer, videogames, tablet, smartphone) and play electronic games for hours (Elsayed, 2021). The present research showed that the majority of the children choose the outdoor game in the neighborhood and this finding shows that the specific sample of children examined, although the fact that they widely play electronic games, has not reached high levels of addiction, as they do not choose to spend their entire free time playing instead of making social interactions (Galloway, 2006). In addition, Block's statement (2008) is not confirmed in our research, that children usually make up fake excuses in order to avoid meeting in person with their friends, as they long for social isolation. The girls also seem to be more eager to play in the neighborhood in comparison to the boys, perhaps because they are more able to handle the electronic game (Waldo, 2014), while the boys present a higher tendency to an addictive behavior to internet games (Heemskerk et al., 2015). However, what needs to be taken into consideration in our research is the fact that it was conducted after an extended period of lockdown so the children missed playing outside in the neighborhood.

The students who neglect their homework, sleep late at night, forget to eat and avoid playing with friends in the neighborhood, constitute a quite significant percentage of the total number of students of our sample. Despite the fact that boys and girls do not behave in a different way as far as the neglect of sleep and homework are concerned, the boys and not the girls are those who mostly forget to eat or avoid to play with their friends in the neighborhood.

Moreover, three out of ten students stated that they play electronic games with money, while boys are those who outnumber girls in this matter. This finding is related to Christos's report (2007) that high risk internet behaviors are the digital games abuse and the extensive occupation with them, which are many times related to Internet addiction and web gambling, as when games demand money there are higher possibilities for addictive behaviors.

When children are asked to play electronic games with their relatives, they mainly choose their siblings, followed by their cousins and less by their father or mother. This is an anticipated result, as minor players prefer minor teammates with common interests. However, the literature shows that the jointly reproduction of videogames of the children with their parents is related to lower levels of internalization of negative feelings and aggressive behaviors, as well as the jointly processing of games is related to enhanced pre-social behavior as far as only the girls are concerned (Coyne et al., 2011). This means that if the children would play together with their parents or under their supervision, there would be the necessary control and many negative behaviors could be avoided, like meeting with strangers, sleep, food, homework and socializing neglect, as there is a strong bong between parenting and protection from addictive behaviors. At this point, Bailey et al (2013) add that the parental responsibility has an important role, as it could decrease the addiction levels of the children to internet games, so it is highly suggested that the parents supervise their children when they are in front of any screen and mainly, if possible, also play with them.

As far as the school performances are concerned, seven out of ten students characterize them as very good to excellent and only a few of them as very low. The fact that the majority of the students declare good academic performances is very positive, while Skoric, Teo and Neo (2009) claim that the addiction tendencies are strongly associated with negative results at the school performances in children aged 8-12 years old. However, what should be noted is that the statements about the school performances are personal assessments of the students of our sample themselves, so the results show a subjective perception of the students and not an objective transcript of the teachers, so significant differences can be noted.

We also noticed that around five out of ten parents have a negative opinion about electronic games, four out of ten do not have any opinion on the subject and only one out of ten has a positive one, all these results according to the personal answers of the students which definitely are subjective up to some point. The fact that half of the parents have a negative opinion about videogames, as the students suggest, can contribute to the need to adopt means of prevention and intervention to this addictive phenomenon. As Dyregrov specifically mentions (2011) it is highly recommended that the situation is set under control, where children will be able to play in a safe environment, at a specific time, with the appropriate games and the parents will stay alert and be able to act in time. On the other hand, the side of the parents that have a positive or no opinion at all, as the students declare, agrees with Siomos's et al report (2012) that some parents tend to underestimate the level of involvement of the screen in comparison to the assessments of their own children, pointing out that the precautions of parental safety, during the Internet use, only have a small preventative role and cannot protect teenagers from the addiction to electronic games and other internet behaviors (Siomos et al., 2012).

Regarding the feelings that the sample of the students of our research expressed they have when the contact with the electronic game is interrupted, these are mostly negative and the most dominant are sadness, anger, unfairness, nerves and disappointment, when their parents do not allow them to play their favorite electronic game. In this way, it is confirmed that the video-

games are especially addictive, creating negative feelings to the minors when an effort of avoiding them is made (Haagsma et al., 2013). According to the literature, there are many outbursts of anger when the minors disconnect, especially in the case that the game machines or the Internet connection are violently removed. At the same time, they deeply feel monotony and wronged, when they do not have some electronic device in hand to play, as some minors exclusively seek for pleasure at these devices (Colwell & Payne, 2000).

Furthermore, young players are sunk deeply into the internet games, spend great amounts of time and become emotionally unavailable. The situation above has as a result the dominance of negative feelings, as those stated in our research, while it is also usual at some cases that depressive behavior and ambivalence are reported, especially when the access to the computer and the Internet is difficult or forbidden (Block, 2008).

However, despite their intensive occupation with electronic games and their appearing addiction to them, it is hopeful that seven out of ten students in our research state that they can imagine themselves without electronic games. The students that state they cannot imagine themselves not playing electronic games, are those who play every day, develop anti-social behaviors, neglect their personal needs, play games with money and are in this way more prone to become addicted at some point. The percentage of these students is of high significance and should seriously concern the scientific community in the future so that actual measures are taken for prevention and dealing with the addiction to electronic and internet games.

8. Conclusions - Suggestions

Undoubtedly, the use of new technologies in education as well as in the everyday social and personal life, has made technology a part of the children and teenagers' life. More and more minors are "hugging" tablets and smartphones for many hours per day. This has various consequences in their social and personal life. In a relevant qualitative research conducted by Ratini (2021), a 12 year old child answered that "if you take my phone away, you take away a part of myself". The concerning use of the new technologies is also a harmful and dangerous situation, as are the addiction to gambling and substances, the obsessive- compulsive disorder and control of impulse disorders.

As a result, the researchers continuously study the new and rapidly developing addiction to electronic games phenomenon and its relevance with the psychosocial development and the children and teenagers' behaviors. In spite of all the efforts made, the literature still lacks many researches on this subject, as it appears to be a quite new and constantly developing psychosocial phenomenon that will definitely concern the scientific community over the next few years (Farchakh et al., 2020).

The research on electronic games and their repercussions on the minors will have to be checked regularly, as it is a rapidly growing phenomenon that shows great changes from year to year. Avoiding electronic screens and their extensions, like the electronic games, is probably a non-realistic suggestion, because nowadays computers and the Internet are an integral part of the personal, social and educational life. The purpose of this research is not the demonization of the use of electronic screens (computers, tablets, smartphones, etc.) but their confined use mainly by the minors.

In Greece there are also very few researches until today that are based on addicted users cases, which could provide us with significant quality data and a deep analysis of this complex

phenomenon. Most researches have been conducted in order to find the addiction percentage to electronic games and not the deeper causes and the consequences of the addiction. The preferences of the minors on specific electronic games might have also been studied by some researches, however the reasons why these games become addictive have not been studied sufficiently.

Apart from the young people, the researchers should also study the role of the parents and the teachers and reach conclusions that could enable the restriction of this phenomenon. The parents are the first ones to set and also follow the limits about the use of electronic games and provide the children with the right information about the dangers that the long occupation with the electronic games has. The parents should also not forget that the limits should be flexible, realistic and achievable as the children grow up.

At the same time, the state should ensure that organized social services with social workers and psychologists are quickly established at the primary and secondary education schools, so there is the appropriate psychosocial support and advice available not only for the students but also for the family and educational part, on issues of addiction to electronic games and other dangerous internet behaviors.

Lastly, the effort at the current prevention of addictions centers is significant, and also at therapeutic treatment units, at services and support lines, where parents can always address to when they observe their children's problematic behavior that is related to the Internet and electronic games use. In addition, a good effort to deal with the problem would be the conduction of educational programs of training and education of the teachers by qualified scientists of the above units, aiming their information and sensitization on crucial issues of problematic use of electronic games and the Internet by minor students.

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