

ORIGINAL RESEARCH

An Analysis of the Role of Intelligence Games in Policies Aimed at Fighting Gaming Addiction

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Main Points

- Intelligence class practices can be a successful method to combat game addiction.
- The addiction tendencies of those in the intelligence classes are lower.
- Male students' game addiction tendencies are higher than girls.
- Online gaming can be a critical reason for increasing game addiction.
- Environmental factors (type of school, number of siblings, presence of a computer at home, game purchasing status) are influential in students' online gaming tendencies.

Abstract

The objective of this study is to analyze the relationship of gaming addiction tendencies for students studying in schools with intelligence games course compared to those without and to start a conceptual discussion. The study adopts the quantitative approach with data being collected using a questionnaire. The study has been conducted during the 2019 spring semester. The study sample includes students in equal numbers from the same socio-economic levels and from schools with and without intelligence games courses in Düzce's city center. A total of 1.870 students have been analyzed within the scope of the study. The study's results indicate that the students studying in schools with an intelligence games course are less likely to develop gaming addiction. Accordingly, intelligence games courses may be used successfully in the fight against gaming addiction. Those who prefer online games can further be argued to be more likely to develop gaming addiction, which leads us to the conclusion that online games are a critical element in the development of gaming addiction. Finally, the study has revealed male students to be more likely to develop gaming addictions than female students. Therefore, gender and online gaming should be considered as the risk factors for game addiction.

Keywords: Gaming addiction, intelligence games, intelligence games course, internet addiction

Introduction

While recent technological developments have made social life substantially easier, they have also simultaneously brought about various problems for different segments of society. This phenomenon where each segment is affected differently has to be examined and analyzed in terms of different disciplines. Students are one of the most vulnerable groups and constitute an important part of society. The most prone to being directed subconsciously in this group are middle school students. Taking various measures in terms of the technology use for this

segment, which is almost completely vulnerable to external influences, is a critical issue that should be considered as a policy. Being carried out from this perspective, this study's aim is to investigate the results of implementing intelligent games courses in terms of their influence on middle school students' tendencies toward technological addiction by considering it as a policy issue.

In addition, the socio-economic characteristics of the students, families, and school environments and the directed activities are considered as sub-problems to be evaluated within the scope of the research.

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The study first generally summarizes the subject of addiction then examines Internet and technology addiction, intelligence games courses, and organic games and does a literature review. Next, the study shares information about the scales used on the universe sample and data collection process of the research, ending by including the findings and the results obtained from the analyses carried out in accordance with the purpose of the research.

Internet and Technology Addiction

Through the rapid developments of technology, the Internet and social media offer many opportunities, from education and shopping to entertainment, communication, and meeting individuals' needs and desires. However, in addition to these facilities the Internet and social media provide, overuse constitutes an important problem for individuals, which carries the risk of being transformed first into a habit then into an addiction (Koca, Büyükgebiz, & Mustafa, 2019, p. 33). In this context, Internet addiction is described as being unable to prevent the desire of excessive Internet use and feeling insignificant when time is spent not connected to the Internet, which can lead to excessive irritability and aggression when deprived of it and as such may decrease the quality of one's work, social, and family life (Arısoy, 2009, p. 57). The first research on Internet addiction are observed to have been conducted in 1996 on 600 heavy Internet users who were diagnosed with pathological gambling (Young & Abreu, 2010). In the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) published by the American Psychiatric Association, Internet addiction on one hand had not been defined as a disease, but publications and case reports indicating increased Internet use to have reached the dimension of addiction showed Internet addiction to have increasingly becoming a disorder that could be entered into DSM-V. (Arısoy, 2009; Cengizhan, 2005). Different types of addiction such as social media addiction, gambling addiction, and sex addiction occur within Internet addiction. On the other hand, Internet users have also been observed resorting to caffeinated drinks and caffeine pills, turning Internet addiction into a substance addiction (Söyler & Yıldırım Kaptanoğlu, 2018). Griffiths (2000) stated that those who use the internet very intensely are not addicted to it, but use the Internet as the most ideal way to satisfy other addictions. Similarly, Chin and Wen's (2013) study conducted in Taiwan concluded that the Internet itself is not addictive, but that certain applications embedded with interactive features appear to play an important role in the development of pathological Internet use and that Internet games draw players in. In addition, evidence exists where excessive computer and Internet use addictions negatively affect youths' social relations and decrease their school success (Cengizhan, 2005).

Turkey is a suitable ground for this disorder, especially due to the size of the young population, Turkey being a newly developing country, the increasing use of the Internet, unemployment, and the unchecked proliferation of Internet cafes. The problem of Internet addiction in Turkey is mostly seen among young people and children who have good knowledge about this technology; families have now begun to search for centers that will be able to treat this disorder because of the problems caused by their children's Internet use (Arısoy, 2009, p. 66). Namely, a 2017 Turkish Statistical Institute (TurkStat) survey showed that in April 2017, 80.7% of the country's population was formed of people with

access to the Internet. According to the Household Information Technology Use Survey (TurkStat, 2018), Internet usage for individuals between the ages of 16-24 was seen to increase from 82.4% in 2015 to 87.5% in 2016 up to 90% in 2017.

The presence of adequate but not outstanding academic studies in the literature in Turkey that address these issues and development attracts attention. For example, Açıkgöz Yiğit and Yalman (2018) study obtained data about how the content of digital games loads improper codes into children's subconscious by normalizing negative elements such as violence, racism, sexuality, and gender, in addition to its useful functions such as contributing to children's education, relieving stress, and filling in spare time. Cömert and Güven (2016) examined the frequency of children's computer use, intentions for using, and the types of games children prefer to play on the computer. As a result, children were concluded to use computers more often to play games and to prefer educational games that require mental skills and racing games more than others. Alper, Aytan, and Ünlü (2015) showed the effects of addictive video games on children and adults; they mentioned the effects of psychological problems such as family problems, problems in the educational environment, unsuccessful experiences, and mental disorders with respect to video game addiction, emphasizing video game features such as games' high scores, endings, and stories and the role playing that results in children and adults who become addicted. Ayas and Horzum (2013) found in their study that primary school students' and their families' attitudes toward the Internet and Internet addictions differ according to certain variables. Canoğulları Ayazseven and Cenkseven Önder (2018) in their research examined the extent to which loneliness and depression affect adolescents' Internet addiction levels, as well as the relationship of Internet addiction with gender, purpose, and frequency of Internet use. According to the results from their research, the levels of Internet addiction for users who use the Internet more than 3 hours a day and those who use it for social media were found to be significantly higher than the other groups. Bayram and Gündoğmuş (2016) found in their research that as elementary school students spend more time on the Internet, using the Internet for entertainment and raising grades increases the risk of becoming addicted to the Internet, with male students being more at risk than female students. Burak and Ahmetoğlu (2015), on the other hand, presented the names of violent and non-violent computer games to their students and asked them to indicate which games they have played; they reached the conclusions that 5.75% of students had not played violent computer games while 64.25% of them had played violent computer games.

Meanwhile, when examining studies dealing with this subject's family dimension, Çakır (2013) found that a large number of families place rules to protect their children from getting hurt by computer games, that most families find computer games to have a negative effect on their children's success, and that a large portion of families worry about their children playing computer games. In another study, Çalışkan and Özbay (2015) examined the interactions of their adolescent subjects who live technology-focused lives in this period known as the digital age. They reached the conclusion that parental attitudes are effective, with girls being more protected against alienating factors than boys due to being kept under greater control and boys to

be particularly influenced by technology-alienating factors due to being highly popular in the traditional sense and encountering all kinds of demands. Toraman and Usta (2018) found the majority of secondary school students' cyberbullying levels did not change in their research with respect to their mother's work status or parents' education level but did change with respect to gender, class level, income level, and information and communication technologies used. Taş, Eker and Anlı (2014) concluded in their research that middle school students' Internet addiction differ in terms of school type and grade level, while game addiction does differ with respect to school type, not grade level or gender. Taş and Güneş (2019) investigated the effects of age, gender, alexithymia, and social anxiety on computer game addiction in children and concluded gender, alexithymia, and social anxiety to significantly affect computer game addiction in children. Another study conducted by Savcı and Aysan (2017) examined the predictive effects of four technological addictions (i.e., Internet addiction, social media addiction, digital game addiction, smartphone addiction) and concluded these to have a significant effect on social addiction. Koçak and Köse's (2014) study examining the computer game playing habits and socialization processes of adolescents in the 13-14 age group observed adolescents who play computer games more than 2 hours a day to have socialization problems in their family, school, and friendly relations decreased life quality, conflicts in family and friendly communications, and course failures, and determined that playing computer games less than 2 hours a day provides adolescents with fun and contributes positively to their development. Cömert and Güven (2016), meanwhile, examined the frequency of children's computer use, purpose of use, and types of computer games they prefer; the authors concluded that mothers, fathers, and children generally use the computer alone at home, with children using computers more to play games; when examining the types of games children play on the computer, the authors concluded that children mostly prefer educational games requiring mental skills, games containing virtual reality, and racing games. Berber Çelik (2016) revealed in his study that reducing Internet addiction in adolescents may be effective through educational programs developed for conscious Internet use, academic motivation, and effective use of time. Hazar, Tekkurşun Demir, Namlı and Türkeli (2017) research found physical activity and sports to possibly be an important tool in solving the problem of digital game addiction.

This subject is also in the literature discussed in terms of health. Extended uncontrolled use of the Internet and computers has been reported to adversely affect individuals' physical, psychological, social, and cognitive health and lives (Bozkurt, Şahin, & Zoroğlu 2016, p. 245). Improper use of technological devices at inappropriate times and frequencies with various postures may lead to health risks such as musculoskeletal problems, physical inactivity, obesity, and decreased sleep quality (Mustafaoğlu, Zirek, Yasacı, & Razak Özdiñçler, 2018). In addition, students who spend a lot of time with computer games at home, at school, and in places like Internet cafes become exposed to various physical and behavioral disorders and psychological problems, such as social and school phobias. These problems can push children away from social and social-learning environments (Öncel & Tekin, 2015).

Because the addictions created by technology in primary and middle school students, who constitute the target audience of the research, mostly occur through games, considering the addiction as a gaming addiction is critical in this context, as well as producing a solution. Therefore, what kinds of games exist and how, where, and to what extent they should be played must happen within a plan and program. Traditional games (organic games) have an important potential for being addressed and evaluated as an educational anti-addiction policy, because one of the most important criticisms against games that cause addictions through technology is that they adversely affect children's physical, mental, and social development compared to traditional games (Torun, Akçay, & Çoklar, 2015).

Intelligence Game Courses and Organic Games

With the rise of economic globalization, international companies have targeted children through marketing strategies around the world. Today, children increasingly socialize as consumers and become objects of commodification and reification processes (Sormaz & Yüksel, 2012). In this respect, they have moved away from the traditional games that have been shown to be one of the most basic tools for socialization. Games help children recognize themselves as well as positively impact their development by teaching them to communicate, share, collaborate, and cooperate with other people. By enabling social rules and ethical values, games reinforce what children learn; waiting in order, respecting others' rights, and taking responsibility help children learn concepts such as right and wrong. In addition, developing muscles such as hands, fingers, legs, and arms is supported by activities performed through play (Esen, 2008, p. 358). However, a need evidently exists to reveal the addictive effects and harmful effects technological tools such as computers, tablets, virtual games, smart phones, and gaming consoles, which are becoming more common day by day, have on children. Therefore, suggestions should be developed about an educational model that includes organic games that enable children's physical, mental, emotional, and social development (Turan & Çalışkan, 2015). Preparations for an elective course program started in 2012 in Turkey in this context with the idea that intelligence games would be an effective means for developing students' mental capacities and skills through games and activities. The issue of intelligence games has been revised with the decision from the Ministry of National Education's (MoNE) Head Council of Education and Morality dated September 5, 2013 on the Amendment of Middle Schools and Imam Hatip Middle Schools Intelligence Games Course Education Program (Grades 5, 6, 7, and 8). This decision aims for students to learn and develop their intelligence potentials in the intelligence games course; to have them develop different and original strategies in the face of problems; make quick and accurate decisions; develop a systematic thinking structure; develop skills to work in individual, team, and competitive environments within the context of intelligence games; and develop positive attitudes toward problem solving (MoNE's Head Council of Education and Morality, 2013).

Intelligence games have specific rules, goals, winners, and losers; they reveal a problematic context with a least chance factor waiting to be solved that requires one to use one's mental abilities, psycho-motor skills, memory, attention power, basic mathematical skills, and cognitive strategies. These games have a wide range

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of options, from things based on various materials to things containing no materials and from verbal to visual options (Erdoğan, Çevirgen Eryılmaz, & Atasay, 2017). Intelligence games are activities that enable individuals to realize their own potential, to make quick and accurate decisions, to produce original solutions in the face of problems, and to renew themselves; critical thinking and innovation skills such as logic, verbal, and visual intelligence; problem solving; three-dimensional thinking; unique approaches; designs, formations, and tactics can be developed through these games (Devecioğlu & Karadağ, 2016).

In the study conducted by Alkan and Mertol (2017, p. 57), parents who participated in the study were trained for three hours a week over two months on mind-wit games and then their opinions were taken. They stated that parents and children do not have much free time due to the courses they attend. The children spend their free time on the computer and the Internet environment. They had attended the mind-wit courses in order to spend more productive time with their children and to spend more entertaining time with their children. The training they received in the mind-wit games training was able to help them get their children away from environments such as television, computer, Internet, and mobile phones (p. 57). Alkaş Ulusoy, Saygı and Umay (2017) found the majority of mathematics teachers who entered intelligence classes to think that these courses had positive contributions to mathematics education in general, particularly mathematical skills; however, they indicated problems such as the difficulty implementing it in the environment of students from different grade levels, as well as problems such as deficiencies in materials and classroom equipment, time limits, and overcrowding. In the research conducted by Hazar et al. (2017), ten themes were created for both traditional and digital games (i.e., affective, negative, struggle, individual, health, motivation, nature, time, value-added, and abstract images), while nationalist images were seen as educational images in traditional games, images of violence, addiction, supernatural powers, and technol-

ogy came to the fore in digital games. The participants identified digital games to have many negative expressions. Gençay, Gür, Gençay, Gür, Tan, & Gençay (2019), in their study investigating the effect of intelligence games on the aggressive behaviors of children between the ages of 12-15, showed a significant decrease to occur in the aggressive behaviors of children who played intelligence games within this age range. Meanwhile, Devecioğlu and Karadağ's (2016) research concluded the intelligence games course, which is thought to have important contributions in increasing Turkey's mental power, to be able to improve students' cognitive, affective, and psychomotor competencies, and as such to make very important contributions in the formation of advanced manpower.

Methods

This research uses the general survey model, a quantitative research method. The research was carried out in the 2019 spring semester at four different primary and middle schools located in Düzce's city center, that either have or don't have intelligence game courses (Table 1), and that have equal numbers of students. Questionnaires were applied to the students in the second through eighth grades who were in these schools at the time of the research, whose parents had given consent for conducting the research, and who shared similar socioeconomic levels. Data were collected from each of the schools over a 20 minute span for all classes on the same day and at the same time. Analyzing the obtained data has been done using the Statistical Package for Social Sciences (SPSS) for Windows 16.0. Of the collected questionnaires, 42 were excluded from the analysis because they contained incomplete information; as such, the analysis was carried out over data from 1,730 students.

The Computer Gaming Addiction Scale for Children, developed by Horzum, Ayas, and Çakır Balta (2008), has been used as the data collection tool in this study. The scale has a four-factor structure with a total of 21 items. The first factor in the scale is

Table 1.
Information on the Intelligence Game Courses Where the Questionnaires Had Been Applied

Information About the Intelligence Game Courses	Primary School	Secondary School
Opening Date:	October 2016	April 2016
What materials are available in the intelligence games classroom and what games are played?	Mangala, Reversi, Abbalone, Hallway Chess, Tangram, Tetris, Colorful Tetris, Soma Cube, Surakarta, Jenga	Mangala, Chess, Go, Zetka, Wooden Block, Checkers-Chinese Checkers, Knight Moves, Subarto-Bihar, Reversi, Corridor, Target, Tactical-Nim, Hanoi Tower, Five Point, Pentago, Parcel, Abbalone Practical Intelligence 1-2, Tetris Square Tangram, Operation Tower
Intelligence games classroom use times	Classes can be used during class hours according to a pre-planned schedule	Extracurricular breaks
Which classes uses the intelligence games classroom?	All classes use	5 th -8 th grade classes
Daily and weekly intelligence games classroom duration of use	1 hour for each class	1 hour daily 6 hours weekly
Has a seminar on technology use and gaming addiction been given at school?	Seminar has been given	Seminar has been given

Primary School and Secondary School, the other two schools where questionnaires have been applied, have no Intelligence Games Course.

playing computer games non-stop (Never give up), has 10 items, and explains 27% of the total variance. The internal consistency coefficient for this factor is 0.83. The scale's second factor is associating computer games with real life (Reality) and consists of four items. The internal consistency coefficient for this factor, which explains 6.5% of the total variance, is 0.60. The scale's third factor is neglecting tasks due to playing games (Task Negligence), consists of three items, and explains 6% of the total variance. The internal consistency coefficient for this factor is

0.50. The last factor of the scale is preferring to play computer games to other activities (Another Choice), and consists of four items. The internal consistency coefficient for this factor, which explains 5.50% of the total variance, is 0.50. When considering the entire 21-item scale, the scale is found to explain 45% of the total variance and to have an internal consistency coefficient of 0.85. The participants can score a minimum of 21 points and a maximum of 105 points on the scale. All items are positively scored.

Table 2.
Information on Participants' Demographic Characteristics (N=1.730)

Variable		n	%
Gender	Female	823	47.6
	Male	907	52.4
Age	8	43	2.5
	9	250	14.5
	10	374	21.6
	11	423	24.5
	12	336	19.4
	13	233	13.5
	14	71	4.1
Grade	3 rd	258	14.9
	4 th	346	20.0
	5 th	401	23.2
	6 th	379	21.9
	7 th	290	16.8
School	8 th	56	3.2
	İsmetpaşa Middle School	607	35.1
	Azmimilli Primary School	288	16.6
	Uzunmustafa Primary School	387	22.4
	Mehmet Akif İnan Hafız İmam Hatip Middle School	448	25.9
Number of siblings	0	216	12.5
	1	555	32.1
	2	525	30.3
	3	326	18.8
	4	79	4.6
	5	19	1.1
Schools success status	6	10	0.6
	Low	47	2.7
	Intermediate	649	37.5
Students present at intelligence game class	Good	1,034	59.8
	Absent	818	47.3
Computer present at home	Present	912	52.7
	Yes	1,587	91.7
	No	142	8.2

The t-test and ANOVA analyses have been used to compare the data obtained from the measurements among the groups; the frequency distributions, means, and standard deviation levels have been examined and their results interpreted.

Results

A total of 1.730 students participated in the study, with the proportion of male students being higher than females (52.4%). When evaluated on the basis of age, 8 year olds and 14 year olds participated the least (2.5% and 4.1%, respectively), and in terms of grade, 8th graders participated the least (3.2%) in the study (Table 2).

Table 3.
Participants' Knowledge about the Status of Playing Games on the Computer (N=1730)

Variables		Number	%
Status of playing games on computer	Yes	1,245	72.0
	No	465	26.9
How many years playing on the computer	Less than 1 year	745	43.1
	1-2 Years	362	20.9
	More than 2 years	498	28.8
Status of playing games at home	No	7	0.4
	Yes	1,391	80.4
Status of playing at cafes	Unanswered	332	19.2
	No	7	0.4
	Yes	227	13.1
Existence of a time limit	Unanswered	1,494	86.4
	Yes	1,251	72.3
	No	328	19.0
Time when playing	Unanswered	151	8.7
	Morning	220	12.7
	Noon	667	38.6
	Evening	611	35.3
	Night	88	5.1
Time spent playing (per day)	Unanswered	144	8.3
	Less than 1 hour	769	44.5
	Between 1-2 hours	581	33.6
	Between 2-3 hours	127	7.3
	More than 3 hours	130	7.5
	Unanswered	123	7.1

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The study was conducted at four schools, with İsmetpaşa Middle School having the largest representation of students (n=607, 35.1%). When examining students' scholastic success, 1,034 students' (59.8%) achievement levels are defined as good. More than half of the students included in the research attend the intelligence games courses. The majority of the respondents (91.7%) stated having a computer at home (Table 2).

When evaluating the educational status of the participating students' parents, both mothers and fathers are mostly high school graduates (633 students' mothers, 696 students' fathers), with 630 mothers being primary school graduates and 363 mothers being university graduates. A higher number of fathers were found to have graduated from a university (n=553) than the number of fathers with a primary school education level (n=374).

The majority of students who participated in the study stated playing games on the computer (72.0%), with the majority of them playing games at home (80.4%). Although the frequency of playing in the cafe was low, the number of students who answered this question was also very low. Answers to the question of whether a time limit exists while playing games on the computer show most have a limit (72.3%). The time of day when the

students participating in the research play games is concentrated mainly at noon and evening. The time allocated to play games per day is generally reported at 2 hours or less (40.9%; Table 3).

Another topic covered in the research is the kind of games that students play. Family, action, and adventure games are the most preferred in order of frequency. The least preferred game type is character games (9.5%). Moreover, while games are mostly played online (56.8%), answers to the question of whether the games are purchased are that they are mostly not purchased (83.7%; Table 4).

Different tests have been used to determine whether students' enrollment in the intelligence games course affects their tendency toward gaming addiction. The tendencies to never give up playing computer games (never give up), neglect tasks due to playing computer games (Task Negligence), and preferring computer games to other activities (Another Choice) all vary according to being enrolled in an intelligence game course. On the other hand, the tendency of respondents to associate computer games with real life (Reality) does not differ according to being enrolled in an intelligence games course (p=0.207). Those enrolled in an intelligence games course have lower averages for the gaming addiction

Table 4.
Respondents' Game Preferences (N=1730)

Game Types	Yes		No		No Answer	
	n	%	n	%	n	%
Family	863	49.9	851	49.2	16	0.9
Action	811	46.9	910	52.6	9	0.6
Adventure	720	41.6	1003	58.0	7	0.4
Sports	623	36.0	1102	63.7	5	0.3
Shooting	570	32.9	1151	66.7	6	0.3
Racing	460	26.6	1265	73.1	5	0.3
Education	417	24.1	1308	75.6	5	0.3
Puzzles	430	24.9	1291	74.6	9	0.5
Strategy	405	23.4	1319	76.2	6	0.3
Roleplaying	220	12.7	1502	86.8	8	0.5
Character	164	9.5	1531	88.5	35	2.0
Purchased	252	14.6	1448	83.7	30	1.7
Online	983	56.8	666	38.5	81	4.7

Table 5.
Relationship of Attending the Intelligence Games Course with Gaming Addiction

Gaming Addiction Factors	Status on Attending an Intelligence Games Course	n	M	SD	t	p
Never gives up	Not enrolled	818	21.2727	8.60909	3.011	0.003
	Enrolled	912	20.0829	7.72933		
Reality	Not enrolled	818	7.3720	3.49800	1.262	0.207
	Enrolled	912	7.1717	3.05181		
Task Negligence	Not enrolled	818	4.3141	1.98722	2.641	0.008
	Enrolled	912	4.0837	1.59250		
Another Choice	Not enrolled	818	9.2358	3.25689	5.510	0.000
	Enrolled	912	8.3416	3.49264		

Table 6.
Relationship Between Playing Online Games and Games Addiction

Gaming Addiction	Playing Online Game	n	M	SD	t	p
Not Giving Up	Enrolled	983	23.1448	8.33165	-11.371	0.000
	Not enrolled	666	17.1673	6.41325		
Reality	Enrolled	983	7.9705	3.43520	-14.108	0.000
	Not enrolled	666	6.2619	2.74104		
Task Negligence	Enrolled	983	4.4532	1.86687	-6.490	0.000
	Not enrolled	666	3.7826	1.55581		
Another Choice	Enrolled	983	9.0858	3.40190	-6.779	0.000
	Not enrolled	666	8.3598	3.37968		

Table 7.
Relationship Between Gender and Gaming Addiction

Gaming Addiction	Gender	n	M	SD	t	p
Never Give Up	Female	823	18.3896	7.55279	16.429	0.000
	Male	927	22.6925	8.18585		
Reality	Female	823	6.1767	2.61217	11.197	0.000
	Male	927	8.2552	3.48850		
Task Negligence	Female	823	3.9045	1.61885	7.914	0.000
	Male	927	4.4540	1.90129		
Another Choice	Female	823	8.1881	3.41402	4.263	0.000
	Male	927	9.2873	3.32588		

factors of Never Give Up, Task Negligence, and Another Choice (Table 5).

In the scope of the research, whether participating students' status for playing online games affects their tendency toward game addiction is examined next. Students' tendencies toward game addiction vary according to whether they play online games or not for all factors of game addiction (Never give up, Reality, Task Negligence, and Another Choice). Those who prefer to play online games have higher averages for all factors (Table 6).

Thirdly, whether gender has an effect on gaming addiction tendencies is next discussed. Students' tendencies for all game addiction factors (Never give up, Reality, Task Negligence, and Another Choice) vary according to gender, with boys having a higher tendencies than girls for all factors (Table 7).

Discussion

In general, addiction is a multidimensional issue that needs to be evaluated from different perspectives, and technology addiction has made this more complex conceptually in terms of content. Different methods are needed in relation to struggling with the complexity and multidimensionality of the subject. Diversifying the methods of struggling is necessary both in introducing technology to people in different ways, in the process of living together, and in the studies carried out to minimize losses.

Within the scope of this research, the tendency towards gaming addiction for primary and middle school students, who are one of the most vulnerable social groups in society, has been examined

with emphasis on the role of intelligence games courses that have been formed in primary and middle schools within the struggle to reduce this addiction. In light of the findings, participating students have tendencies toward four different attitudes within the scope of technology addiction: not being able to give up playing computer games (Never give up), associating computer games with real life (Reality), neglecting tasks due to playing computer games (Task Negligence), and preferring computer games to other activities (Another Choice).

As for the main problem the research has attempted to solve, the participating students' gaming addiction tendencies in terms Never give up, Task negligence, and Another choice change according to whether or not they are enrolled in an intelligence games course. Because the research has been performed using the observational method, making a definite interpretation in terms of the cause-effect relationship is not possible in the obtained results. This only shows that those attending intelligence games courses have less gaming-addiction tendencies and that therefore implementing intelligence games courses can be a successful method to use in the fight against gaming addiction. Similarly, the participating students' tendency towards gaming addiction has been determined to differ according to gender. Namely, the tendencies to Never give up, Reality, Task Negligence, and Another Choice are higher for boys than girls on average. This shows boys to have a higher tendency toward gaming addiction. Therefore, gender can be an important factor to consider in the struggle against gaming addiction. On the other hand, all participating students' game addiction tendencies have been concluded to differ according to whether or not they play online games.

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Those who prefer to play online games tend to have higher averages for gaming addiction tendencies. This shows online games can be a critical reason for increasing game addiction for those who prefer to play online games.

The majority of the students participating in the study are in a good situation in terms of school success. Parents on average have a high school educational status. Along with this, the number of students with fathers who are university graduates is much higher than the number of students whose mothers are university graduates. Meanwhile, most participants have computers at home and are understood to have preferred to play games at home for nearly two years. The number of people who play in Internet cafes is small. Again, students generally have a time limit for playing games on the computer, but often spend more than 1 hour playing games on the computer. In addition, family, action, adventure, sports, and shooting games stand out as the participating students' most preferred game types, respectively. The least preferred game type for students is character games. Another striking result is the behavior that students often prefer to play games without buying. This result can be interpreted as the fact that parents perceive children's use of technology as a necessity and try to keep the child away from environments with high risk of addiction such as cafes by providing the necessary environment at home.

Ethics Committee Approval: Ethics committee approval was not required as the subject of the study was not open to any ethical violation and the participation was voluntary.

Informed Consent: Verbal consent was obtained from students' parents who participated in this study.

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