Computer Game Addiction in Gifted Students and Non-Gifted Children: A Caution for Technology-Oriented STEM Activities

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Article Info	Abstract
	The aim of this research was to examine computer game addiction levels in gifted students, in comparison with addiction levels in non-gifted students. Data were obtained from 614 (169 gifted, 445 non-gifted) primary school students in Turkey, by using The Computer Game Addiction Scale for Children. This research was a correlational study using ANCOVA to compare gifted and non-gifted samples, and the multiple regression was conducted to determine predictors of game addiction in the gifted sample. Research findings showed that there was no statistical difference between gifted and non-gifted students' computer game addiction levels, after controlling for the gender, school type, and game type. However, there was a significant difference in addiction scores between males and females in the sample whilst controlling for the giftedness, school type, and game type. Finally, gender and daily playtime have been found to be significant predictors of game addiction in gifted students.

Introduction

The importance of science, technology, engineering, and mathematics (STEM) continues to increase in modern economies (Ball et al., 2020). Therefore, to compete with other economies, countries have tried to develop STEM-related activities in educational settings. Computers have been one of the main educational tools in teaching STEM. Computers and games have strong implications for education and daily life (Li, 2010). Computer games have been found to be effective for increasing technology-related skills (Admiraal, 2015), and have been considered a pathway to broaden participation in STEM (Sheridan et al. 2013). Playing more video games increases students' willingness to work with technology (Ball et al., 2020). Game-playing can be used to teach mathematics problem-solving (Chang et al., 2012), and as a practice to support social-emotional skills (Li, 2010). Professionals and students consider gaming a valuable tool for STEM instruction (Clark & Ernst, 2009). Gaming in education has been a hot topic in the field of education (Preston & Morrison, 2009). Digital games are found to enhance and motivate learning (Steiner et al., 2006). On the other hand, the negative aspects of playing increasingly more computer games may include computer game addiction. Advance in technology moved games from the streets, where friends were face to face, to the virtual environment where the computer screen is the primary correspondent. These computer games increasingly appeal to many young people (Festl et al., 2013) and have turned into one of the most popular recreational activities for children all over the world (Jadidian et al., 2012). There has been a widespread increase in the use of computers in all the contexts that young people are involved in, including school, family, and leisure (Sureda Garcia et al., 2020). Computer game addiction is one of the concerns we need to consider while teaching or doing technology-related activities.

Computer Game Addiction

Although computer games are recreational tools for most people, they may turn into a computer game addiction for someone who plays excessively (Johansson & Götestam, 2004; Chumbley & Griffiths, 2006). Computer game addiction may have some similar characteristics to other addictive conditions (King et al., 2013). However, there is a debate about how to define and measure computer game addiction (Ferguson et al., 2011; Shaffer et al., 2000). The Diagnostic and Statistical Manual of Mental Disorders (DSM−5; American Psychiatric Association, 2013) defines the addiction to internet gaming as internet gaming disorder (IGD). Tolerance, withdrawal, continued play despite negative outcomes, failure to decrease internet use, constant use of the internet more than intended and impairments in psycho-social functions are some criteria for IGD. Griffiths (2005) defined the six behavioral components of game addiction as salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse. Moreover, an increase in the amount of computer playtime, enduring desire for playing a game, spending more time gaming than planned, trying to shorten the time playing

but not able to succeed, and complaints from people around regarding playtime are some common symptoms observed in-game addicts (Ahn & Randall, 2007; Gentile, 2009). Computer game addiction can be defined as excessive and compulsive gaming that may cause some social and/or emotional problems in daily life with schooling, employment, and social relationships, and failing to control this problematic use (Lemmens et al., 2009; Vollmer et al., 2014). In this study, relative measures of symptoms of computer game addiction on a continuous scale were used, as there were no clinical diagnoses or cut-off scores.

Computer game addiction is considered a worldwide problem, despite the lack of agreement in diagnostic assessments (Starcevic, 2016). Ferguson et al. (2011) reported the prevalence of game addiction as 3.1% when cases of highly engaged players were excluded in their meta-analysis of game addiction. Given that computer game addiction has been seen as an increasing public health issue, some countries, notably in Asia, have set up governmental regulations for problematic computer gaming (Király et al., 2018). Some studies have shown that computer game addiction has been related to a lack of coping skills or as avoidance coping strategies (e.g. escaping, denial) (Beranuy et al., 2013; Şenormancı, et al., 2014; Tejeiro et al., 2012). Similarly, negative associations have been found between game addiction and mental health, particularly anxiety, stress, and depression (Loton et al., 2016; Stockdale & Coyne, 2018). A recent study showed a positive correlation between mobile game addiction and social anxiety, depression, and loneliness (Wang et al., 2019). Peters and Malesky (2008) examined the relationships between personality traits and game addiction. They indicated that video game addiction was positively correlated with neuroticism, and negatively with extraversion, agreeableness, and conscientiousness (Peters & Malesky, 2008). Wittek and his colleagues (2016) identified some factors linked with video game addiction including being male, being young, living alone, scoring low on conscientiousness, scoring high on neuroticism, and having poor psychosomatic health.

The flow experience and enjoyment were found as predictors of game addiction (Chou & Ting, 2003). Social relationships and the specific time and flexibility characteristics in multiplayer games were found as the main causes for enjoyment (Klimmt et al., 2009). Olson (2010) examined children's motivations in playing video games and identified some motivating factors or needs including socializing with peers and making friends, opportunities to lead or teach others, and a sense of accomplishment in winning. These factors could lead children to play multiplayer games. In addition to multi-playing, feelings of pride or success in games would help individuals feel accomplished and higher self-esteem (Olson, 2010), which in turn increases playing time (Hamlen, 2010). Some studies concluded that computer ownership, socioeconomic status, and education level of parents were other important variables in computer game addiction. For example, Yılmaz (2008) found that children who possessed a computer played games more often than their peers who didn't own a computer. Children in families with high socioeconomic status were also higher in computer game addiction levels (Horzum, 2011; Lee & McKenzie, 2015). In addition, adolescent students who preferred evening hours to play games had a higher computer addiction score than students who preferred daytime playing (Vollmer et al., 2014). However, some research results have shown that computer game addiction was negatively associated with age among adolescents (Festl et al., 2013; Vollmer et al., 2014). Research on computer game addiction has shown considerable results in terms of gender differences. Boys were found to play significantly more often and more regularly than girls, preferring more action and fighting games with a high level of violence, and were also more likely to become addicted (Hartmann & Klimmt, 2006; Horzum, 2011).

Gifted Students and Computer Games

Education of the gifted is another area where the use of technology and computers is discussed. Using technology and computers is recommended in gifted education since these students have special needs that require the integration of different kinds of technology into their curriculum (Shaunessy, 2007). Although definition and identification of giftedness vary across cultures, the field of gifted education is based on the belief that gifted individuals are those who have superior abilities or potentials in one or more domains, including intelligence, creativity, art, sports, leadership capacity, or in specific academic fields. These children require differentiated educational services beyond the regular school curriculum (Davis et al., 2011). Lee (2001) proposed that the involvement of technology in gifted education would encourage gifted learners to develop their skills such as critical thinking, creativity, and abstract thinking. In addition, technological applications address many features of gifted learners, including quick information processing, capacity for complexity and depth, and inductive learning (Siegle, 2005). In a study examining the attitudes of gifted high school students toward technology, many of them have used technology throughout their learning process (Kahveci, 2010). Gifted students are able to use computers more efficiently and effectively (Siegle, 2005), and have a positive attitude towards computers (Üstünel & Meral, 2015). Gifted students start to use computers with programming in the fourth grade (Sesko, 1998). Grimes and Warschauer (2008) found that almost all gifted students reported

a positive learning experience using laptops at home and in school. Although many gifted students have computer skills that are significant for their education (Periathiruvadi & Rinn, 2012), playing games excessively might have deleterious effects on their social, emotional, and academic development. As they rely on computers much more and play games excessively, the risk of addiction will be higher for gifted children as well (Roberts, 2010).

Gifted children may differ from their non-gifted peers in playing computer games compared to their non-gifted peers. When engaged in these computer games, gifted children showed more goal-oriented behavior, and were able to excel in the game by focusing more on game strategies and cues (Blumberg et al., 2001). A study about the preferences of computer game types of gifted and non-gifted secondary school students concluded that gifted students preferred to play adventure, action, and strategy games to other types. Non-gifted students preferred to play adventure, action, and sports games (Üstünel & Meral, 2015).

Ağaoğlu and Metin (2016) found that gifted students played more computer games than their non-gifted peers did, and the preferences of gifted students were more adventure and mental-logic themed games, whereas non-gifted students reported more violence themed games. Gifted students might make use of computer games to avoid challenges that they confront in real life, by experiencing achievements, discovering new information, and making new connections in games.

The Current Study

Several curricular activities and projects have been launched recently among STEM education to develop computer skills at the K-12 level, but stakeholders in the K-12 systems may not be yet fully aware of the risks of excessive computer game-playing. Computer game addiction among students is one of the potential concerns that people should pay attention to while teaching technology-related activities. Excessively playing computer games, and improper use of computers can lead to computer game addiction (Gentile, 2009). Previous research on computer game addiction has mostly focused on adolescents (Colwell et al., 1995; Lemmens & Bushman, 2006; Wan & Chiou, 2006). Adolescents seem at risk for game internet addiction (Leung, 2007). Griffith and Hunt (1998) stated that the earlier the children start playing computer games; the more likely they become addicted in the future. Low levels of self-control in childhood and the increasing number of child-age players might magnify the importance of this study. It is important to focus on the preadolescence period to prevent the risks related to the use of computer games. Therefore, results from the current study might add to the body of literature providing evidence about game addiction levels in gifted and non-gifted children and related factors. Research about game addiction in the gifted population would help to understand and prevent these addictive behaviors in the gifted population. The study may shed light on game addiction prevention programs in STEM education. This study was conducted as a preliminary study to understand computer addiction levels in gifted students by comparison with addiction levels of non-gifted students within primary school settings. The study attempted to test the following questions:

1.   What is the status of computer game preference in gifted and non-gifted students?
2.   Will gifted and non-gifted students report differing levels of computer game addiction in primary school settings?
3.   Will gifted students report different game addiction levels based on gender, having a computer game friend group, computer game type, and playtime?

Method

Population and Sample

The participants were selected based on the convenience sampling method, which involves gathering responses from readily accessible individuals (Kothari, 2004). The participants of the study were composed of 169 gifted students who were attending the Science and Art Centers (SAC), and 445 non-gifted students who were either from public or private schools in Turkey. To eliminate the effect of school and environment, non-gifted students were chosen from the same schools in which their gifted peers were attending. SAC is a state-funded institution providing special education for primary and secondary school gifted students, apart from their usual school time. These centers are examples of enrichment and grouping strategies for gifted students (Sak, 2010). The following steps are to be addressed for admission to the center: (1) firstly, teachers point their students out as candidates on an official website by using some observation forms (2) all nominated students take a group test

simultaneously (3) a certain number of students who are ranked according to group test are assessed by an individual intelligence test; (4) the students whose total intelligence test score is above 130 are admitted to the center within the frame of quota allotted each year for the centers. Gifted students in these centers attend both their regular schools and the centers in addition to their regular school schedule. Therefore, gifted students who are in SACs can study and socialize with both their non-gifted peers in their schools and their gifted peers in the centers. In these centers, the education program includes the following five stages: orientation, supportive training, recognition of individual talents, development of special talents and projects. In the supportive training stage, gifted students are given training about social skills, problem-solving techniques, group study techniques, scientific research techniques, and social activities (Sak, 2010). Even though SACs do not have a special curriculum for STEM education; throughout these stages, gifted students are provided STEM-related activities. Thus, SAC's are crucial to offering some programs in STEM fields.

Gifted students in the sample were composed of 40.2% female and 59.8% male students, but gender was almost equally distributed in the non-gifted group (50.3% female; 49.7% male). Regarding school type, the public school percentage was higher than the rate of private schools in both categories. This higher proportion of public schools was an expected finding because more students were attending public schools than private schools in overall populations in Turkey. 71% of gifted students and 67.6% of non-gifted students were attending public schools. 95% of gifted, and 86.5% of non-gifted students, had a computer in their houses. Almost all students preferred to play computer games in their homes (97% of gifted students; 95% of non-gifted students). The mean age of participants was 10.4 years (Min=9, Max=12). To determine the amount of time that participants spend playing computer games, they were asked ''How many minutes per day do you play computer games?'' The mean time that gifted students were spending on computer games was 84 minutes (1.4 hours per day). Similarly, non-gifted students reported 88 minutes (1.46 hours) per day. Both gifted and non-gifted students took game recommendations mostly from their parents and friends (87% and 85% respectively). In other words, they selected computer games based on the advice of their parents and friends.

Data Collection

A self-report survey and the Computer Game Addiction Scale for Children were used for data collection. The first author of the scale gave permission to use this scale in this study.

Survey: A survey was created by researchers to get information about the students' current state of computer usage, game preferences, game types, and some demographic characteristics. Game preferences were categorized based on classifications of Deubel (2006) as action-adventure, fighting, educational, sports, war, competition, and others. Participants were given these categories, and they marked them based on their preferences. There were two game types in the questionnaire; single-player and multiplayer games. Multiplayer games involve co-playing in which more than one player can play in the same game environment at the same time.

The Computer Game Addiction Scale for Children (CGAS-C): Horzum et al. (2008) developed the–scale to measure computer game addiction levels in Turkish children. The scale consists of 21 items with four factors, that require respondents to report their thoughts towards the given statements, on the 5-Likert format from 1 (never) to 5 (always). The minimum score on the scale is 21, and the maximum score is 105. All items on the scale are positive statements. The results of factor analysis indicated that the scale, consisting of 21 items accounted for 45% of the total variance. The Cronbach Alpha reliability coefficient of the scale was found to be .85 (Horzum et al., 2008). In this research, Cronbach's Alpha was found as .89 for gifted students and .88 for non-gifted students.

Analyzing of Data

Required official permissions and parental consent were obtained from the relevant entities for gathering the data. Primarily, all students were informed about the content and the importance of the study. The students filled out the forms as a paper and pencil test over forty minutes in a class period. Gifted students completed the forms at the Science and Arts Centers, and non-gifted students were given the forms at their regular schools. In data analysis, initially, descriptive and correlational analyses were performed. Additionally, ANCOVA was used in comparing the computer game addiction levels in gifted and non-gifted students, and finally, multiple regression analysis was used in examining the computer game addiction levels regarding gender, friend groups, and game types in gifted students.

Results

The means, standard deviations, and the correlations for all variables are presented in Table 1. As shown, the CGAS-C was significantly and positively correlated to gender ($r = .35$), , computer game type ($r = .23$), daily ($r = .42$) and weekly playtime ($r = .14$), while negatively related to computer game friend ($r = -.26$).

Table 1. Means, standard deviations and correlations between variables

Variables	M	SD	1	2	3	4	5	6	7
1-CGAS-C	40.4	14.12	-						
2-Giftedness	.27	.44	.021	-					
3-Gender	.52	.49	.350**	.090*	-				
4-School type	.31	.46	-.006	-.032	-.009	-			
5-Comp. Game Type	.49	.50	.235**	-.057	.311**	.030	-		
6-Comp. Game Friend	.61	.48	-.259**	-.024	-.259**	-.093*	-.332**	-	
7-Daily Play Time	.94	1.34	.428**	-.074	.222**	-1.35**	.144**	-.088*	-
8-Weekly Play Time	1.60	2.48	.144**	.224**	.190**	.78	.159**	-.202**	.165**

Note. n=616 (165 gifted, 445 non-gifted). *$p < .05$. **$p < .01$.

Table 2 shows the results of computer game choices of gifted and non-gifted students. The most preferred computer games were action-adventure (47.9%), strategy (39.1%), and football (23.1%) in gifted students. However, action-adventure (53%), educational (31.7%), and strategy (28.8%) games were the most favorite genres in the non-gifted group.

Table 2. Results of computer game preference of gifted and non-gifted students

Game Preferences	Gifted		Non-gifted	
	n	%	n	%
Action-Adventure	81	47.9	236	53
Strategy	66	39.1	128	28.8
Educational	32	18.9	141	31.7
Sports	39	23.1	104	23.4
War	37	21.9	87	19.6
Competition	33	19.5	98	22
Fighting	17	10.1	65	14.6
Other	13	7.7	62	13.9

Subsequently, a one-way analysis of covariance (ANCOVA) test was run to examine differences between the gifted and non-gifted students in computer addiction (CGAS-C) whilst controlling for the gender, school type, and game type. Before conducting an ANCOVA, a test of the homogeneity-of-slopes assumption was performed to determine the extent of the linearity. Based on analysis evaluating the homogeneity-of-slopes assumption, which indicated that the relationship between the covariates and the computer addiction variable differed significantly as a function of the independent variable, we proceeded with the ANCOVA analysis. The results indicated that there was no significant difference between gifted and non-gifted students in computer addiction. However, there was a significant difference in addiction scores between males and females whilst controlling the covariates. The results were presented in Table 3.

Table 3. One-way ANCOVA for CGAS-C comparing gifted and non-gifted students

	df	MS	F	*p*	η2
Giftedness	1	18.35	.107	.744	.000
Gender	1	10662.77	62.07	.000	.09
School type	1	77.104	.449	.503	.001
Game type	1	2725.77	15.868	.000	.025
Corrected model	4	4441.21	25.854	.000	.145
Intercept	1	40754.80	237.254	.000	.280
Error	609	171.777			
Total	614				
Corrected Total	613				

Note. n=616 (165 gifted, 445 non-gifted). Codes; Giftedness, non-giftedness=0, gifted=1; Gender, female=0, male=1; School type, public=0, private=1; Computer game type, single=0, multiple=1; Computer game friend, yes=0, no=1. R Squared=.145 (Adjusted R Squared = .140)

In the subsequent analysis, multiple linear regression was utilized to examine the relationship between CGAS-C and various predictors including gender, computer game friend, computer game type, and weekly and daily playing time in gifted students. The results of the correlational analysis indicated that gender, having computer game friends, computer game time, and playing time are correlated with CGAS-C of the gifted students.

Table 4. Correlation among Variables for Gifted Students

Variables	1	2	3	4	5	6
1.CGAS-C	–					
2.Gender	.32**	–				
3.Comp. Game Friend	-.16**	-.21**	–			
4.Comp. Game Type	.20**	.23**	-.36**	–		
5.Daily Play Time	.49**	.10	-.08	.28**	–	
6.Weekly Play Time	.35**	.19*	-16	.26**	.70**	-

*Note. *p* < .05. **p* < .01.*

The multiple regression analysis was found to be statistically significant $F_{(5, 163)} = 15.686$, $p<.01$, indicating that gender and daily playtime are significant predictors of CGAS-C in gifted students. This multiple regression accounted for 32% of the variability, as indexed by the adjusted R^2 statistic. The results are presented in Table 5.

Table 5. Multiple Regression Analysis for Gifted Students

Predictor	*b*	β	*t*
Gender	7.636	.268**	3.970
Comp. Game Friend	-2.203	-.078	-1.107
Comp. Game Type	-.644	-.023	-.316
Daily Play Time	7.802	.508**	5.543
Weekly Play Time	-.391	-.059	-.639

Note. n=165 (gifted) *p* < .05. **p* < .01. *Adjusted R^2=.32*

Discussion

This study aimed to investigate computer addiction levels of gifted students by comparing those with addiction levels of non-gifted students in primary school settings. The study revealed that gifted students preferred to play action-adventure, strategy, and football games but non-gifted students' preferences were action-adventure, educational, and strategy games. Therefore, action-adventure games were the game type most liked by both gifted and non-gifted students. Similarly, Şahin (2015) and Ustunel and Meral (2015) found that action-adventure was the most preferred game genre in Turkish gifted and non-gifted students in primary and secondary schools. The action-adventure genre might attract all the students because they contain actions and require quick decisions, reflexes, timing, exploration, and puzzle-solving. These challenges can make these games more appealing to children. Moreover, participants chose their games mostly based on family and friends' suggestions in the study, indicating that family and friends were the most influential groups on the game genre selection. Therefore, parents might recommend less harmful games for their children. This tendency might influence students' game preferences. This result also indicated that gifted and non-gifted students might have similar interests and preferences even though they have different cognitive, social and emotional capabilities and needs.

The study indicated no significant difference between gifted and non-gifted students in their computer game addiction levels, controlling for the gender, school, and game type. One of the explanations for this result might be parental control over computer use. Considering the participants' age, parents could be able to watch their children's preferences. Abelman (1995) pointed out that parents of gifted children had similar rules and regulations to other parents for television. Parents would monitor their children's time on computer games, as they monitor television-watching time. Another explanation might be that gifted and non-gifted students are in heterogeneous classes in the Turkish educational system so they spend a great deal of time together. This interaction might influence their activity preferences. In addition, experiencing achievements, discovering new information, and making new connections in games would be joyful and exciting for all students including the gifted and the non-gifted ones.

In the study, there was a significant difference between male and female students in their computer game addiction levels controlling for giftedness, school, and game type. Being a male positively predicted an increased likelihood of reporting game addiction. This result was consistent with other studies, which showed that in the general population, male students were playing games more frequently and more intensively than female students (Griffiths & Hunt, 1998; Hartmann & Klimmt, 2006, Won & Han, 2010). Similarly, some studies showed that boys had higher game addiction levels than girls in the general population in Turkey (Horzum, 2011; Şahin & Tuğrul, 2012; Zorbaz et al., 2015). One of the plausible explanations may be that male students have more opportunities to access computer games than girls do. Males were also found to spend more time playing computer games than girls (Rideout et al., 2010). Spending more time might lead to an increase in game addiction levels among males. Traditionally, playing computer games is considered a masculine stereotype, which also might affect the result. Moreover, females felt more uncomfortable with violence in computer games than males did (Thomas & Smith, 2004; Giles & Heyman, 2005). Another speculation would be parental attitudes towards their children's use of computers. Parents might put different restrictions in place depending on the gender of their children. Barcus (1969) showed that parents set fewer TV rules for boys than girls. Similar to the results of gender differences in addiction levels, gender is found to be a significant predictor of game addiction levels of gifted students. Being male also increases computer game addiction in gifted children.

According to the results, playing more computer games on a weekly basis (i.e., spread out) was not related to an increased likelihood of addiction. Instead, playing more computer games daily was related to addiction levels. An increased amount of computer playtime on a daily basis is one of the key symptoms of computer game addiction. Männikkö et al. (2015) indicated that increased gaming time was closely related to problematic use. On the other hand, these results would imply that computer gaming, just like most things, can be healthy in moderation, especially when it is spread out over time.

In conclusion, computer game addiction levels of gifted students were not significantly different than non-gifted students' levels in the study. On the other hand, male students had significantly higher game addiction scores than female students in both gifted and non-gifted samples. In addition, gender and daily playtime were found to be significant predictors of CGAS-C in gifted students. These results supported the fact that gifted students had similar game addiction patterns to non-gifted peers. For many students, though, these games are a social release and an integral part of their lives, however, the addictive potential of computer games should not be forgotten especially in students who spend their time gaming excessively.

There are considerable implications of the current findings. First, we, as adults, parents, educators, or professionals should consider the reality that computer games are part of children's lives. We cannot ignore its importance in their social, emotional, and academic lives. Wisely, incorporating computer games in teaching wisely would lead to favorable attitudes toward learning and STEM careers (Ball et al., 2020). While embedding games into technology-oriented STEM activities, educators should remain wary of potential risks of game addiction. Thus, this study implied the need to develop prevention programs for children to keep them from playing addictively, and to help them to overcome the adverse consequences of excessive computer gaming. Making adults aware of the close relationship between playing time and addiction risk would give them some tools to monitor and limit their children's time spent on gaming.

Limitations

Although the study revealed some considerable findings, it has some limitations. Firstly, the data about computer game addiction were collected using a self-reported scale that is mainly based on students' perceptions, which might lead to more positive than negative responses. In addition to self-report instruments, qualitative assessment, observation or other parties' views should be considered in the assessment of computer game addiction. Longitudinal design and follow-up studies would have strengthened the results by allowing the evaluation of changes over time. Another limitation related to the generalizability of these findings would be that the students were drawn from a convenience sample in Turkey. Also, the parents' views about their children's computer game use would have to be taken into account because children in the study were playing computer games mostly in their homes. Also, parental attitude towards computer games seems to be an important factor that should be taken into account in further studies. Bickham et al. (2003) found that age was a significant predictor of playing games. Thus, further studies should include a broader range of age to examine the effect of age on computer game addiction in gifted students. Gifted students in the study had attended a special program; therefore, other gifted students who do not get any special support should be involved in further research. Mazurek and Engelhardt (2013) showed that children with Autism Spectrum Disorders and

ADHD were at greater risk for problematic game use. Therefore, future research can focus on examining computer games in twice-exceptional students (i.e., gifted and ADHD or ASD).

Scientific Ethics Declaration

We, the authors, declare that the scientific ethical and legal responsibility of this article published in JESEH journal belongs to the authors.

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