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RELATIONSHIP BETWEEN GIFTED CHILDREN'S INTERNET GAMING ADDICTION AND QUALITY OF LIFE

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Abstract:
In this study, the relationship between internet addiction and quality of life of gifted children studying at the science and art center between the ages of 9-14, socio-demographic variables were evaluated within the framework of the relational screening model. Data collection studies related to the research were carried out with the snowball technique. Turkey reached the trainers who work in Science and Art Centers in different cities in each region, given detailed information about the research and 9-12 age group with the support of parents who accepted to participate in the survey was administered to children scales. The Online Game Addiction Scale was used to obtain data and the Quality of Life Scale for Children was used to measure their quality of life. A statistically significant and negative correlation was determined between the Online Game Addiction Scale and the Quality of Life for Children subscales of the specially gifted children who participated in the study. Gifted boys have more time to play than 4 hours without pause. As the game addiction levels of specially gifted children increase, their quality of life decreases. The quality of life of specially gifted children who play online games for a long time is low.

Keywords: gifted children, internet addiction, quality of life, science and art centers

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1. Introduction

The concept of intelligence refers to the ability of an individual to comprehend the relationship between abstract and concrete objects, to think abstractly, to make comparisons, and to use these mental functions for a specific purpose. The level of intelligence of a person is measured by how long he/she accomplishes the challenging tasks when the relevant conditions are equal, and to what extent he/she reaches the accurate result. Upon the measurement of intelligence, which is also called a set of cognitive abilities, people above a certain level are named as having higher intelligence (Morawska & Sanders, 2008; Varni, Seid & Knight, 2002). The concept of giftedness includes creative thinking, leadership skills, general intellectual skill, higher ability, and performance in visual and performing arts, including a specific psycho-motor ability (Aydın, Coşkun, Kaya & Erdönmez, 2011; Barbour & Shalilee, 1998). Since giftedness is not limited to having a higher level of general intelligence potential (Sak, 2012), the concept of "giftedness" or "superior ability" is often used instead of the concept of "superior intelligence".

Studies performed on the conceptualization of special abilities of gifted children with different characteristics are of great importance (Bildiren, Gür, Sağkal & Özdemir, 2020). Reis and Renzulli (2010) emphasize that the concept of giftedness was formerly considered as a one-dimensional structure as general intellectual ability, but nowadays giftedness term identified by most researchers also includes some important characteristics such as creativity, performance, motivation, the transformation of talent into a product, and personality traits. Saranlı (2017) states that these children may not be superior in all areas of development, regarding the children who are thought to have the potential to be gifted or who are diagnosed with special talents. She also points out that in some developmental areas, they show superior developmental characteristics according to their age, and in some developmental areas they can exhibit lower developmental characteristics compared to children with normal developments.

Giftedness refers to all of the knowledge and skills of the individual in the artistic and academic fields (Yuvacı & Dağlıoğlu, 2016). Renzulli, who has realized remarkable studies on the education of gifted children, has described such individuals who are productive and creative, who benefit people, and who display an above-normal skill and performance (Şahin, 2018). Having developed the first intelligence scale in Turkey, Sake (2012), defines giftedness as extraordinary capacity possessed in the fields of talent and core values for humanity. The prevalence of gifted children is estimated to be 2% in overall society in Turkey (Sak, 2012).

2. Literature Review

Gifted children tend to use all the opportunities of technology and perceive technology as a supportive tool for their personal development (McGee & Hughes, 2011). Some useful techniques for sorting out potential challenges, knowledge, and applications of the communication skills of gifted children have already started to be considered by most

researchers today. Children are provided with guidance on career planning methods in which they can improve their special talents using technology (Leana Taşcılar, Özyaprak & Yılmaz, 2016). Today, technological tools have become tools by which gifted children can realize their talents. Gifted children can also recognize their strengths by using the internet effectively like other children (Kurnaz, Yurt & Çiftçi, 2014; Olszewski-Kubilius & Thomson, 2015). Gifted children may develop learning methods for themselves through technology and can better explore their interests by using the internet (Subotnik, Olszewski-Kubilius & Worrell, 2011).

With its essential role in the development of gifted children, the internet has become the most important communication tool of today's technological opportunities, enabling rapid access to all kinds of information. Internet usage in the world and Turkey has spread quickly, opened a new era of mass communication (Yavuz, 2018). However, concerns about internet addiction, which affects the development and psychological health of children, are also increasing. Communication established via the internet has become more attractive, especially among adolescents, and the frequency of use has also increased respectively (Giordano & Cashwell, 2017). The widespread use of the internet in daily life has also brought about a problem of internet addiction. The cognitive, emotional, and social development of children and young people, who are overly attached to the virtual world, are affected considerably (Yalçın & Duran, 2017).

According to the results of the ICT usage survey in households by TURKSTAT (2019), the rate of having portable computers such as laptops and tablets was found to be 50.1%, and having mobile phones/smartphones was 98.7% rate. In the same survey, it was determined that 46% of children between the ages of 6-15 played computer games every day, 46% of them played at least once a week, and 6.1% at least once a month. These rates reveal that internet addiction is increasing in children today. Internet addiction is a type of technology addiction that manifests itself with symptoms such as the inability to restrict internet use, continue to use it despite social or academic impairments, and anxiety when access to internet usage is limited for children (Yalçın & Duran, 2017).

A digital game is a medium of interaction provided through interfaces such as a monitor, a keyboard, or a joystick. Computer games played via internet connection are frequently preferred by the 11-14 age group and men. With the emergence of digital games in our lives to this extent, studies have investigated whether the positive and negative aspects of such games can be available. Conducted by Şahin, findings of a study (2018) examined the effect of internet and computer gaming addiction of gifted children on their school social behaviors, and it was found that boys had a more tendency to use the internet and played computer games than girls. The study of Han, Kim, Lee & Renshaw (2012), investigating the effect of the family factor on digital game addiction, found out that the online game addiction of young people who were not with their families increased considerably. In the research performed by Berber, Karadibak & Uçurum (2014), it was revealed that the children who played games with devices such as computers and phones for more than 5 hours a day had a higher risk of developing obesity, and there was a linear relationship between digital game playing times and the Body Mass Index (BMI). Balıkçı (2018) points out that online game addiction and

aggression are related to each other; Furthermore, male children/adolescents have higher levels of physical aggression than females; The aggression of those who regard their family's economic situation as bad and medium is higher than those who perceive at a good level; the study has found that those who prefer online games have higher aggression levels compared to those who prefer offline games. Dönmez (2018) analyzed the relationship between online game addiction, conscious awareness, and satisfaction with life. According to the results of the linear regression analysis applied, they found life satisfaction and conscious awareness as negative predictors of online game addiction, and conscious awareness as positive predictors of life satisfaction.

As observed in other addictions, excessive and unconscious internet usage causes a reduction in the quality of life, and the internet and computer emerge as a new type of addiction (Varni, Seid & Knight, 2002). It is important to have sufficient information about the characteristics of gifted children using technology and adapting to living conditions. In addition to getting knowledge on the physical, spiritual, social, and psychological characteristics of these children, it is also necessary to know how they think, their action styles, leadership styles as well as their quality of life (Jarwan, 2008) because such qualities seem to affect the quality of life of individuals (Penard & Mayol, 2015).

Quality of life has been defined as a way of perceiving one's own situation within the relevant culture and value system (Fidaner, Elbi, & Fidaner, 1999; WHOQOL Group, 1998). The World Health Organization emphasizes that in evaluating the changing living conditions, not only the absence of a disease but also a complete physical, spiritual and social well-being states must be available (WHO, 2013). Upon this definition, the concepts of complete well-being and quality of life have emerged (Starfield, Riley & Witt, 2002).

Proper usage of computers and the internet can increase the quality of life of individuals by affecting the psychological factors that determine the quality of life (Neikrug, Roth & Judes, 2011). Zuna, Brown & Brown (2004) underlines that psychological characteristics such as personal development, cognitive competence, productivity and adaptability, honor, perceived independence, social competence, control, autonomy, use of technology and access to information, and self-efficacy have all effects on the quality of life.

Many studies have demonstrated that investigation on the quality of life at early ages will be beneficial in terms of preventing problems as well as protecting from the quality of life problems that may occur in adulthood (Jirojanakul, Skevington & Hudson, 2003; Kurnaz & Tepe, 2019; Landgraf, Rich, & Rappaport, 2002; Rebok, Riley & Forrest, 2001). Individuals in similar living conditions and environments have different perceptions of their satisfaction with their life and their well-being (Hu, Wang & Fei, 2012). A large number of assessment tools have been developed in recent years to identify and measure the perception of living conditions (Eiser & Morse, 2001; Patalay & Fitzsimons, 2016; Steel, Poppe, Vandevelde, Van Hove & Claes, 2011). These scales also include question items to reveal children's internet usage, social relationships as well as the quality of life.

Internet use, online gaming, lesson activities, and some demographic variables may affect the quality of life (Hu, Wang & Fei, 2012; Zuna, Brown & Brown, 2014). The relationship between internet usage, online game addiction, allocating time for lesson activities and demographic variables with the quality of life can be summarized as in Figure 1.

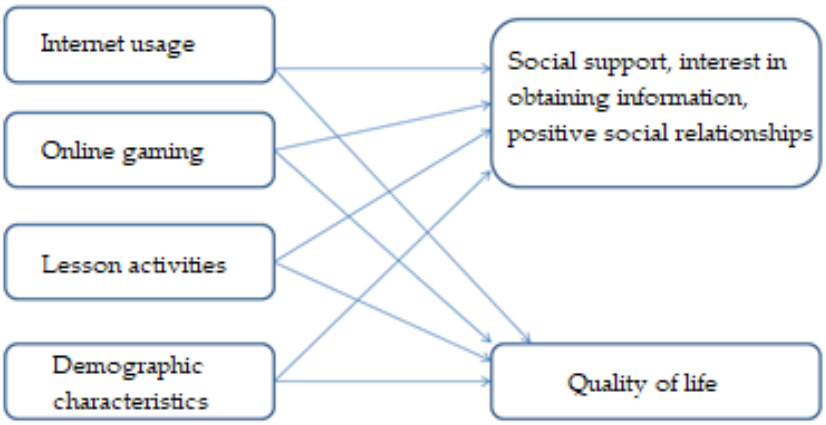

Figure 1: Internet Usage and Quality of Life Relationship

Proper use of the Internet, online gaming time, time allocation for lesson activities and some socio-demographic characteristics affect children's social life, and thus their quality of life. Although the effect of these behaviors on the child's quality of life is a challenging issue for every child, it becomes more challenging when considering the characteristics of gifted children. Therefore, it is important to examine such effects on gifted children regarding the quality of life and internet usage, as they can quickly learn the use of technology and utilize it easily in their lives (Tippey & Burnham, 2009; Yavuz, 2018; Yuvacı & Dağlıoğlu, 2016).

Even though there are some studies on internet addiction, computer attitudes and quality of life in children in our country, one can recognize that there are not enough studies on their relevance to gifted children. Among the current studies, there seems to be no study examining the relationship between computer addiction and the quality of life of children with special talents. One can consider that early recognition of the effects of computer addiction on the quality of life and the negative consequences it may cause in these children will make a great contribution to the literature in planning prevention studies in the future. Gifted children may fail in communicating due to internet addiction; moreover, they can display aggressive and destructive behaviors (Sucu, 2012). The online game or internet addiction of gifted children may affect their quality of life sub-dimensions such as physical, emotional, social, and school functioning, which then leads them to spend more time on the internet and to see technology as the way out (Yavuz, 2018).

Thus, this study aims to examine the relationship between computer addiction levels and the quality of life of gifted children aged 9-14. Following this overall aim, we have sought to answer the following research questions:

1) What are the socio-demographic variables of the study group?

2) Is there a relationship between the quality of life of the study group and online game addiction sub-dimensions?
3) Is there a relationship between the educational level of the mother and the quality of life of gifted children?
4) Is there a relationship between having a computer of their own and the online game addiction of the children in the study group?
5) Do the quality of life sub-dimensions of the children in the study group vary according to having their own computer aspect?

3. Material and Methods

3.1 Research Design

In this study, in line with the aim of examining the relationship between the computer addiction levels and the quality of life of gifted children between the ages of 9-14 who study at Science and Art Education Centers (SAEC), we have investigated whether the demographic variables differed in the quality of life of the child. Quantitative studies are those analyzing social phenomena through statistical analysis of numerically measurable data and aiming to reveal the cause and effect relationships between these phenomena. Comments are made to the relevant subject under investigation and relevant social events are questioned and interpreted respectively (Marshall & Rosman, 1999). In our research design, a holistic framework was presented within the scope of quantitative research, detailed information was provided, and participants' own predictions were taken into consideration. Science & Art Education Center (SAEC) is a governmental institution that provides children with certain higher abilities to receive more effective education and thus demonstrate and reveal their talents more easily. The students who are diagnosed with special talent or giftedness are identified by a SAEC exam. The SAEC exam is carried out using certain methods. Data collection tools were applied upon the approval of the Ethics Committee with the decision of the university numbered as 2020/013 at the beginning of the study.

3.2 Study Group

Since the data collection procedure related to the research could not be realized face to face due to the virus pandemic affecting the whole world and our country in 2020, Google form was created and new participants were reached through the snowball technique as well as through the internet. To deal with the high number of respective participants, we contacted the instructors working in the Science and Art Education Centers (SAEC) in Aksaray, Karaman, Konya, Samsun, Kocaeli, Ankara, Isparta, Istanbul, Afyonkarahisar, Kahramanmaraş, Mersin, Van, and Sivas provinces, and detailed information was given about the research; we applied the forms to children with the technological support of parents who agreed to participate in the research. Thus, the study group consists of 133 gifted children aged 9-14, who attend SAEC institutions in different provinces.

3.3 Data Collection Tools

A Personal Information Form was created by the researchers in order to identify the participants and reveal their socio-demographic variables as a data collection tool. The Online Game Addiction Scale was used to measure the Internet addiction levels of the study group, and the Pediatric Quality of Life Inventory was used to measure their quality of lives.

3.3.1 Personal Information Form

It is a form consisting of 22 questions, in which the following characteristics have been identified: gender, age, number of siblings, birth order of the child, place where the child lived the longest time, family structure, family relationship status, parents' education level, availability of internet access at home, the child's daily internet usage time, the child's having his/her own room, having his/her own computer at home, and the child's having an individual smartphone.

3.3.2 Online Gaming Addiction Scale (OGAS)

Developed by Kaya (2013), the scale consists of 21 items. At the stage of developing the scale, a study was conducted on 327 secondary school children. The scale has three sub-dimensions: "Disturbances" (items that refer to the problems they have encountered due to their gaming habits), "Achievement" (the sense of winning they experience while playing games) and "Economic Gain" (statements that reveal the presence of economic concerns in the gaming behavior). There are 69 items in the scale, and the 3, 6, 11, 12, 21, 23, 24, 32, 38, 44, 48, 55, 59, and 60th items have been scored reversely. The items prepared in the 5-point Likert type have been scored as 5 "I totally agree" and 1 as "strongly disagree" respectively. Our study has assessed the validity of the scale and the split half application of scale, and Cronbach's Alpha coefficient has been found as 0.88.

3.3.3 The Pediatric Quality of Life Inventory (PedsQL)

The scale was developed by Varni et al. (1999) to measure the quality of life of children aged between 2 and 18 years. It was later adapted to Turkish by Çakın Memik et al. (2008). The scale consists of 23 items. The items are scored between 0 and 100. There are four sub-dimensions in the scale: physical functioning (8 items), emotional functioning (5 items), social functioning (5 items), and school functioning (5 items). The answer to the question is scored as 100 points if it is marked as "never", 75 points if it is marked as "almost never", 50 points if it is marked as "sometimes", 25 points if it is marked as "often", and scored as 0 points if it is marked as "almost always". In the split half process in which the validity of the scale has been analyzed in this study, the Cronbach's Alpha coefficient of the scale has been found at 0.91 value.

3.4 Data Collection and Analysis

Following the approval of the Ethics Committee, in the analysis of phase the data, the researchers reached the SAEC institutions in different provinces by phone and e-mail, and they provided with detailed information about the study. With the support of those

who voluntarily agreed to participate in the study among the administrators and teachers of the institution, the parents of the children were contacted, and informative e-mails and WhatsApp messages were sent to them. Self-reporting interviews were implemented with the parents who agreed to participate in the study, and the data collection tools were sent through the Google survey link, and they were directed to answer the scale questions. The data obtained were analyzed using the Statistical Package for Social Sciences (SPSS) 26 program. The Kolmogorov-Smirnov test was used to determine whether the data had a normal distribution. Reliability analyzes of the applied scales were assessed using split half and Cronbach Alpha methods. The Mann-Whitney U test was applied to compare variables that did not show normal distribution. Kruskall Wallis test was used to detect the effects of variables on addiction and quality of life levels. In order to determine the relationship between these variables, the correlation coefficient was calculated and the statistical significance was assessed at $p < .05$ level.

4. Results

In this phase of the study, socio-demographic findings and statistical evaluations are included regarding the participating gifted children. Table 1 shows the socio-demographic characteristics of the study group.

Table 1: Findings Regarding the Socio-Demographic Variables in the Study Group (N = 133)

		Female (n = 61)		**Male (n = 72)**	
Variables		***n***	**%**	***n***	**%**
Age	9-10	29	47.5	34	47.2
	11-12	32	52.4	38	52.7
Economic status of the family	Low	11	18	8	11.1
	Middle	32	52.4	39	54.1
	High	18	29.5	25	34.7
Number of siblings	Only child	19	31.1	24	33.3
	2 siblings	34	55.7	31	43
	3 and more siblings	8	13.1	17	23.6
Educational status of the mother	Primary school	7	11.4	5	6.9
	Secondary school	13	21.3	16	22.2
	High school	27	44.2	32	44.4
	University graduate	14	22.9	19	26.3
Educational status of the father	Primary school	1	1.6	2	2.7
	Secondary school	9	14.7	11	15.2
	High school	20	32.7	26	36.1
	University graduate	31	50.8	33	45.8
Having a private room in the house	Yes	54	88.5	66	91.6
	No	7	11.4	6	8.3
Having own computer	Yes	49	80.3	62	86.1
	No	12	19.6	10	1.3
Longest time playing games without a break	Less than 1 hour	25	40.9	17	23.6
	1-2 hours	28	45.9	24	33.3
	2-3 hour	6	9.8	20	27.7
	More than 4 hours	2	3.2	11	15,2

45.8% of the children participating in the study were found to be girls, 54.1% of them were boys; 54.1% of them stated that their economic status was at middle level; 43% of the participants reported to have two brothers; 44.4% of the mothers were high school graduates; 45.8% of fathers were university graduates; 91.6% of the children had their own private rooms in their house; 86.1% of them had their own computers; 54.1% of them had their own phones, and 33.3% of the children expressed that they played online games for 1-2 hours without a break during the day.

The relationship between the PedsQL and OGAS overall scores applied to the study group was evaluated, and Kolmogorov-Smirnov and Shapiro-Wilk analyzes were performed to identify the compliance with the normal distribution. Table 2 illustrates the obtained results.

Table 2: Total Scores of Kolmogorov-Smirnov and Shapiro-Wilk Analysis Results of PedsQL and OGAS

	Kolmogorov-Smirnov			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
PedsQL	,086	131	,001	,971	131	**,000*** **
OGAS	,052	131	,200*	,995	131	,724

When Kolmogorov-Smirnov and Shapiro-Wilk analysis results were analyzed, it was found that PedsQL scores did not show normal distribution ($p < 0.05$). There was a significant negative relationship found between the quality of life of the study group and the online game playing status. In other words, as the level of online gaming increases, a decrease occurs in the quality of life.

Since the PedsQL data have not shown the normal distribution, the relationship between them has been analyzed via Spearman Correlation and summarized in Table 3.

Table 3: Spearman Correlation Analysis of PedsQL Findings

			PedsQL	OGAS
Spearman's Rho Value	PedsQL	Correlation coefficient	1,000	-,272**
		p	.	**,000****
		N	133	133
	OGAS	Correlation coefficient	-,272**	1,000
		p	**,000****	.
		N	133	133

*p<0,05

According to the results in Table 3, there is a significant negative relationship found between the quality of life of the children in the study group and their online gaming scores. In other words, according to the Spearman Correlation analysis, as online game-playing behavior increases, a decrease also occurs in the quality of life ($p < 0.05$).

Table 4 presents the mean scores of the PedsQL and OGAS subscales of the study group.

Table 4: Mean scores of PedsQL and OGAS of the Study Group

Scale sub-dimensions	Scale score interval	Revealed score interval	$\bar{X}$	sd
OGAS	0-105	0-103		
Disturbances Achievement	0-35	0-30	15.26	9.46
Economic Gain	0-25	0-25	8.34	3.18
	0-45	0-40	12.85	7.24
PedsQL	0-100	10-100		
Physical functioning	0-40	10-40	21.36	6.25
Emotional functioning	0-25	15-25	27.12	11.47
Social functioning	0-25	5-25	18.37	7.46
School functioning	0-25	0-15	9.86	6.78

In the study, the mean scores of the OGAS sub-dimensions were found as: "disturbances", 15.26, "achievement", 8.34; and "economic gain" was revealed at 12.85. The mean scores of the PedsQL sub-dimensions were determined as; "physical functioning", 21.36; "emotional functioning", 27.12; "Social functioning" as 18.37, and "school functioning" sub-dimension mean score was found at 9.86 value.

The relationship between the mother's educational status and PedsQL total score was firstly analyzed by applying Kolmogrov-Smirnov and Shapiro-Wilk tests (p> 0.05). Since a comparison was to be performed between more than two groups later, One-Way Anova analysis has been performed and the results are shown in Table 5.

Table 5: Relationship between the Mother's Educational Status and PedsQL

	Educational status	n	Mean	Sd	F	p
PedsQL total score	Not literate	7				
	Primary school	13	23,121	131	3,122	**,031***
	High school	27				
	University graduate	14				

p<0.05

The effect of a mother's educational status on quality of life has been analyzed via One-Way Anova and a significant difference was found (p <0.05) between the pairs of means. Tamhane's T2 technique, one of the post_hoc tests, was used to determine which groups were different, and Table 5 illustrates the results.

Table 6: Tamhane's T Analysis Results Regarding Mothers' Educational States

Mother's Educational Status		Mean difference	Sd	Sig.	95% confidence interval Lower bound	95% confidence interval Upper bound
Primary school	Secondary school	-,06995	,06960	,900	-,2594	,1195
	High school	-,10874	,08246	,720	-,3314	,1139
	University graduate	-,20174*	,08234	**,035***	-,4565	-,0110
Secondary school	Primary school	,04995	,06960	,900	-,1195	,2594
	High school	-,03879	,06678	,993	-,2187	,1411

	University graduate	-,12379	,06663	,094	-,3441	,0165
High school	Primary school	,10874	,08246	,720	-,1139	,3314
	Secondary school	,03879	,06678	,993	-,1411	,2187
	University graduate	-,12500	,07997	,541	-,3404	,0904
University graduate	Primary school	,23374*	,08234	**,035***	,0110	,4565
	Secondary school	,16379	,06663	,094	-,0165	,3441
	High school	,12500	,07997	,541	-,0904	,3404

p<0.05

As one can see in Tamhane's T analysis results, there is a significant difference between the primary school graduate mothers and the university graduate mothers in terms of quality of life (p <0.05).

The data assessing the relationship between the OGAS scores according to the availability of a computer belonging to the gifted children in the study group are given in Table 7.

Table 7: OGAS Scores of Having a Computer Based on Mann-Whitney U Test in the Study Group

	Having own room	**n**	$\bar{X}$	**s**	**Min**	**Max**	**Z**	**p**
OGAS	Yes	49	23.85	4.72	23	48	-0.675	**0.34****
	No	12	8.29	3.81	8	11		

p<0.05

A significant difference was determined upon the comparison of the OGAS scores regarding the status of having a computer in the study group (p <0.05).

In the study group, one can see the sub-dimensions of PedsQL according to the children's having their own computers in Table 8.

Table 8: Mean Values of PedsQL Sub-Dimensions According to Status of Having their Own Computers

	Female		**Male**		
PedsQL Sub-dimensions	$\bar{X}$ **± SD**	$\bar{X}$	$\bar{X}$ **± SD**	$\bar{X}$	**p**
Physical functioning	42.7±12.3	47	53.2±9.3	52	**0.000****
Emotional functioning	44.6±16.8	41	52±19,4	48	**0.000****
Social functioning	46±11.6	52	56±18.2	58	**0.000****
School functioning	24.8±16.4	25	28.2±9.6	31	0.674

p<0.05

The total scores of the PedsQL sub-dimensions of the study group were found to be different (p <0.05) in terms of physical, social, and emotional functioning variables based on the status of having a computer; however, no significant difference was found in terms of school functioning sub-dimension. The mean scores of physical, social, and emotional functioning sub-dimensions of males who had their own computers were higher than

those of females. This difference lies in the fact that those who have a computer in their homes play more games than those who do not have a computer.

5. Discussion

In this study, it was determined that the quality of life levels of gifted children did not differ according to the variables of age, living together in the family, monthly income of the family, and the place where they lived the longest; however, it was revealed that there were significant differences between variables such as the number of siblings, educational status of the mother and father, having his/her own room, computer and phone at home, and the longest time he/she played games without a break. As a result of analyzing the relationship between internet addiction and quality of life of the gifted children within the framework of socio-demographic variables; statistically significant and negative correlation was found between the PedsQL sub-dimensions of the gifted children participating in the study. According to these results, as the online game addiction levels of gifted children increase, their quality of life also decreases. When compared to previous studies and considered that the participants identified in this study were children between the ages of 9-14, we observed that the study group shared similarities in line with other studies.

In many countries around the world, information technologies are actively used in the educational process of gifted children (Poftak, 1998). Ogel (2012) states that internet and game addiction and social support levels are important in gifted children, and such gifted youth use the internet and information technologies more frequently than the younger age groups. The internet addiction scores of those who use the internet for chatting, social sharing, gaming, listening to music, watching movies and videos are higher than those who use it for homework and research purposes. Hu et al. (2012) have emphasized the fact that for gifted children it is more fun to spend their time by playing online games and chatting with their playmates, and that these children also tend to play games to ease their loneliness and gain more self-confidence. Kurnaz et al. (2014) investigated the usage habits of computer and information technologies in gifted children and the children with superior intelligence. The study reports that technology and internet usage improve the vocabulary of gifted children, and they find the opportunity to learn and understand different cultures. Thus, gifted children do not stop using computers while doing their school projects and homework. In our study, it is emphasized that once the computer use and online game skills of gifted children develop, their ability to make quick decisions and problem- solving skills will also improve respectively. Usta (2016) investigated the internet addiction process in the children with superior intelligence as well as that of gifted children on the basis of different variables. In the study, it was revealed that children who used the internet to connect on social networking sites suffered from internet deprivation and experience psychological difficulties when they could not have access to the internet. In our study, once SAEC guidance was provided, it paved the way for the formation of preliminary assessments that children who could devote appropriate time to online games and such personal

development process enabled them to have a higher quality of life. This interpretation refers to the fact that getting support from strong bonds that enrich children's educational life improves their quality of life. This implication is consistent with the studies revealing the fact that low level of educational support, misuse of the internet, and low participation in social activities are associated with psychological well-being or quality of life (Brown, 2004; Çelik Şahin, 2014; Jolly & Kettler, 2008; Patalay & Fitzsimons, 2016) As a result of examining the quality of life levels of the gifted children participating in our study according to certain variables, it was determined that the quality of life levels did not differ according to the variables of age, living together in the family, monthly income of the family, and the place where they lived the longest. However, our research highlighted that there were significant differences between the variables such as the educational level of the mother and the children's having their own computer at home ($p < 0.05$). The socio-demographic variables of gifted children identified within the scope of our study were in line with the research results on the gaming addiction and quality of life of children with normal development. There are studies on internet game addiction and quality of life in children, but the relationship between internet game addiction and quality of life in gifted children does not seem to have not been investigated sufficiently. The time that gifted children spend online may become more worthy than the relationships they have in their real lives; furthermore, although gifted children have developed their ability to comprehend quickly, solve problems, and make decisions more efficiently, they may not be able to control their negative behaviors leading to online addiction due to the pleasure of gaming habits. In addition, for children with special talents, additional time spent on playing online may bring about more discovery learning; on the other hand, there is also the possibility of getting away from more valuable activities such as sleeping or reading a book. However, gifted children, who are younger than their calendar age, may assume that spending too much time playing online is more of an instructive environment than face-to-face interaction. These preliminary assessments are consistent with previous research results suggesting that the misuse of the internet erodes children's physical comfort and social happiness (Giordano & Cashwell, 2017; Koçoğlu & Akın, 2009; Morawska & Sanders, 2008; Varni, Seid, & Knight, 2002). Thus, misuse of the internet can lead to a reduction in considering the quality of life of gifted children.

In our study, boys having their own computers were found to have higher physical, social and emotional functioning than the girls, regarding the PedsQL sub-dimension mean scores examined according to the gender of the study group. Some studies have indicated that there is a strong relationship between gender and quality of life (Fidaner et al, 1999; Top, Özden, & Sevim, 2003; Wallander & Koot, 2016). The relationship between the quality of life based on gender is more evident in objective quality of life measurements, especially in terms of age, occupation, and residence. Our research demonstrated that the total mean score of the boys was higher than the girls, and this outcome has been considered to be specific to the relevant study group.

Educational level is assumed as an important determinant aspect in revealing the quality of life (Varni, Seid & Rode, 1999). The higher the education level, the less affected

the individual from some external factors. This implication also is valid for the parents of children whose quality of life is involved (Wallander & Koot, 2016). In our study, when the parents of the sample group were identified, a significant difference was found in favor of the university graduate mothers and fathers ($p < 0.05$). The findings of our research based on Tamhane's T analysis, there was a significant difference revealed between primary school graduates and university graduates in terms of quality of life ($p < 0.05$). The study conducted by Işık and Ergün (2018) determined that middle school students were as many internet addicts as high school students and they spent on computer games more frequently. In light of these data, we may claim that overuse of the internet affects the quality of life.

With the increase in the duration of time spent on the internet and playing games, it was observed that individuals' communication with their families and social environments decreased, whereas depression and loneliness cases increased considerably (Yüksel & Baytemir, 2010). The study conducted by Usta (2016) pointed out that 352 out of 421 gifted students attending SAEC did not have the internet at home, and 69 students had access to the internet at their homes. The same study found out that students mostly used the internet for gaming purposes. In our study, we focused on the relationship between internet usage and quality of life, and it was revealed that the long-term internet usage affected social behavior in the "social functioning" sub-dimension of the PedsQL. Şahin (2018) investigated the effects of internet usage and computer gaming addiction on social behaviors of 157 students who were diagnosed as having giftedness and superior intelligence at the primary education level in İstanbul. Thus, the study found that the gifted children who used computer games more often exhibited more negative school-related social behaviors. When the subjective quality of life measures, which included the criterion of satisfying the living environment, were analyzed, no significant difference was found between age groups in this study ($p > 0.05$). However, in their study evaluating the quality of life in families with developmental disabilities in different cultures, Zuna, Brown & Brown (2014) revealed that there were different results in different age groups, different socio-economic environments and the reasons for the low quality of life of children with special needs. Koçoğlu and Akın (2009) in their study, determined the relationship between socioeconomic inequalities and healthy lifestyle behaviors and quality of life, and stated that the quality of life of girls was statistically significantly lower than boys.

In our study, the total scores of the PedsQL sub-dimensions were found to be different ($p < 0.05$) from each other in terms of physical, social, and emotional functioning aspects based on the status of having a computer; however, no significant difference was found in terms of school functioning sub-dimension. The mean scores of physical, social, and emotional functioning sub-dimensions of males who had their own computers were higher than females. Similarly, in Yörük's study (2019), in which the psychological resilience levels of gifted children were examined in terms of self-esteem, peer relationships, and parental attitudes, it was revealed that the social and emotional attachment of children, and their ability to tell their characteristics to someone else was found to be higher in female students. The study also indicated that the peer relationships

of gifted children did not differ according to the age variable. That is to say that, because of the extraordinary achievements of gifted children, various physical or psychosocial problems may arise accordingly. Although gifted children have well-developed cognitive abilities and language skills, many studies have emphasized that they experience emotional and social problems (Ayhan Bostancı, 2020; Yıldız, Arslan & Kılıçarslan Toruner, 2017). Problems such as parents' expectations, gifted children's maladaptive behavior and higher anxiety levels about school failure are more common in boys. Morawska and Sanders (2008) found that gifted boys displayed challenging behaviors, and their families had higher expectations. A study by Tippey and Burnham (2009) reported that boys had more bodily injuries, school failure, and nightmare fears, while girls suffered from fear of danger more often, which brought about an impact on the quality of life.

Physical, emotional, and social functioning of an individual is a remarkable indicator of the quality of life (Varni, Seid & Rode, 1999). There are findings in some studies where the quality of life is measured and evaluated according to demographic variables that some physical ailments decreased the quality of life (Üneri & Çakın Memik, 2007). Objective quality of life indicators refers to situations such as income, education level, occupation, health, and the status of the household. The senses of satisfaction that an individual feels about these conditions are subjective indicators of the quality of life (Neikrug, Roth & Judes, 2011). Ajuwon and Brown (2012), in their study on the quality of life of families having individuals with special needs, reveal that low economic living standards affect their physical, emotional, social functioning, and spiritual satisfaction, and therefore, it has an impact on their quality of life.

6. Conclusion and Recommendations

As a result of examining the internet game addiction levels of gifted children according to certain variables, this research has highlighted that once the level of online gaming gets higher, the levels of quality of life sub-dimensions decrease. In accordance with the results of this study, it is recommended to take the necessary measures to ensure the gaming addiction and quality of life of gifted children, and to organize regular training and support groups. Further studies will be beneficial to conduct similar multifactorial studies that investigate the factors associated with online gaming addiction of gifted children as well as the factors that may affect their quality of life in larger age groups. The current study has been conducted with gifted children. The same work can be performed with parents of gifted children. Within the scope of this study, educators working with gifted children can prepare an Individualized Education Program (IEP); thus, they can support the organization of the educational environment according to the needs of these children and plan activities in line with the IEP. In-service training could be given to teachers and administrators who work at all levels of education so as to improve their ability to evaluate the quality of life of gifted children. In schools, by organizing classroom activities through the guidance service and teachers, support might be provided to support children to gain positive social behaviors, to express their feelings,

and to participate in school activities, which will likely increase their overall quality of life. Special events for each child can be organized at home and at school, as well as the relevant activities to raise their awareness about online addiction. Gifted children are of vital importance to the progress of society. We strongly recommend that future studies are aimed at measuring the relationship between internet technologies and the quality of life of such special children.

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