Internet Addiction in Gifted Students: A Systematic Review of the Literature

Burcu KARABULUT-COŞKUN*, Kastamonu University, Faculty of Education, Department of Computer Education and Instructional Technology, Turkey, 0000-0001-5287-2239, bkarabulut@kastamonu.edu.tr

İbrahim AKAR, Kastamonu University, Faculty of Education, Department of Gifted Education, Turkey, 0000-0001-5147-129X, iakar@kastamonu.edu.tr

Abstract: This systematic review of the literature aims to examine the empirical studies about internet addiction of gifted students. The articles reviewed in this study were accessed through the final search made on Google Scholar as well as the searches made in the Web of Science and Education Resources Information Center directories. After determining the keywords and accessing the articles, research articles were selected by the inclusion/exclusion criteria. Only five research articles met those criteria to be reviewed in this study. These research articles were reviewed in terms of methodology, data collection tool(s), participants, statistical analysis and findings. This research review indicated that quantitative methods were chosen in all of the studies and two to four data collection tools (survey, scale, etc.) were used in these studies. In addition, it was revealed that most of the participants consisted of gifted students at secondary and high school levels and male participants of the studies were more than females. It was understood that while research questions were included in four of the studies, hypotheses were not presented in any of them. On the other hand, it was seen that pre-analysis of the statistical analysis was used only in two studies, and these were limited to testing the assumption of normal distribution. While the findings of two of the studies indicated that there were no statistically significant differences according to the gender variable; the findings of the other three showed that there were statistically significant differences according to the gender variable, and this difference was in the direction of males in two studies and females in one study. In addition, only one study has examined internet addiction in the context of online game addiction and revealed that the addiction scores of gifted students were lower than their non-gifted peers. Findings of the current review of the literature were discussed and several recommendations were formed.

Keywords: *Gifted, Talented, High Ability, Internet Addiction, Problematic Internet Use*.

1. INTRODUCTION

Today, the most common tool individuals use to access information fastest is the Internet. Seeing the Internet as the first information access tool has been a factor in expanding its use in every field (Ceyhan, 2008). Although the Internet makes life easier, it also causes negative consequences depending on the purpose and situations of its use. Excessive and uncontrolled

* Corresponding Author
Kastamonu University, Faculty of Education, Turkey

use of the Internet, whose primary purpose is to increase interpersonal communication and interaction, creates negative use situations similar to addictive behaviors in individuals. In this context, it is essential to examine internet addiction, which can negatively affect individuals' quality of daily life.

Problematic internet use behaviors, which are based on the use of the Internet for longer than necessary, the duration of use, and the inability to control one's behaviors, have been given many names since it started to be accepted as a concept. Internet use behaviors, which Goldberg (1996) first put forward and similar to uncontrollable psychological and behavioral impulse disorders such as alcohol/gambling/cigarette addiction, are labelled "internet addiction". With the diagnostic criteria developed by Young (1996) in the same year, it has been proven that such behaviors can be accepted as an addiction. The criteria developed by Young have been used by many researchers on different sample groups (Bai et al., 2001; Beard & Wolf, 2001; Chou & Hsiao, 2000; Tsai & Lin, 2003; Whang et al., 2003). As the relevant studies increased, new labelling suggestions for the concept began to be presented. Some of those were; problematic internet use (Ceyhan, Ceyhan & Gürcan, 2007; Yellowlees & Marks, 2007) and pathological internet use (Morahan-Martin & Schumacher, 2000). When the etymological and behavioral contents of the concepts were examined, it was stated that the behaviors exhibited were not considered appropriate to find a single nomenclature but could be categorized according to the level of display (Tam & Walter, 2013). Concordantly, Tam & Walter defined problematic internet use behaviors at four levels.

Accordingly, problematic use behavior disorders, defined as "internal effects" at the first level, are first noticed by the individuals' families and can be extinguished by them. On the other hand, problematic behaviors defined as "outwardly noticeable anxiety" at the second level can be noticed at home and school environment. At this point, the family and the teacher/teaching staff are authorized to determine and extinguish those behaviors. Moreover, behaviors defined as "introversion, impulse control disorder in loss of control" at the third level are behavioral disorders that require the intervention of a psychologist, as they are insufficient for family and teacher/teaching staff intervention. It has been stated that psychiatric treatment is now required in behavioral disorders defined as "dysfunction, loss of consciousness" at the last level. According to these stages, 3rd and 4th level problematic usage behaviors can be defined as "internet addiction". Internet addiction, which is caused by individuals' control disorders regarding their internet use, has been seen as a problem that negatively affects the social, physical and professional/academic quality of life of the person (Brand et al., 2014; Morrison & Gore, 2010). In addition, it is thought that individuals' personality and psychological characteristics, environmental factors and neurobiological structures affect internet addiction (Kayiş et al., 2016; Park et al., 2017). It is essential to examine the effects of internet addiction on individuals with different characteristics, as it has the power to create adverse effects for many of them.

Gifted students, representing a distinctive group with different characteristics, apply to technology and the Internet like other students. However, they can absorb them much more quickly than others due to their potential for rapid learning. For example, in a study in which higher intellectual ability students and other students were included, it was revealed that higher

students' internet use for non-academic purposes was higher than others, and there was a link between high internet use and low exam grades (Ravizza et al., 2014). As can be seen, fondness or addiction to the Internet can bring along social and emotional and even some other developmental problems in addition to academic problems in these individuals. Because the inability of these individuals to use the Internet in a controlled manner may trigger online gaming or other similar habits or even addictions. This situation may integrate or confront gifted people with a phenomenon known as asynchronous development (Silverman, 1997), which is critical in their education and development. In simple terms, asynchronous development can be expressed as the differentiation or falling behind in one or more of the cognitive, physical, social and emotional dimensions that occur when the progress in different development areas cannot be realized in a proportional and balanced way (Reis & Renzulli, 2004).

When examined in terms of cognitive characteristics, for instance, a child who has learned how to read during his/her preschool years and has been identified as gifted, his/her parents may encourage him to spend most of his time using the Internet in order to support this ability. Alternatively, just because the child's interests and curiosity cannot be satisfied, technology and the Internet can be seen as a support tool by their parents. However, because these children need physical movement, social interaction and other enriched experiences in order to correctly complete their physical, social and emotional development as well as their cognitive development; this child, who spends most of his free time using the Internet, maybe underweight or overweight and short in stature compared to his peers when he reaches primary school age. It is even possible that he will be present in educational environments as a child who has lagged in the psycho-motor skills he has acquired and whose muscle and bone development has not appropriately progressed. Addiction to the Internet can also be an obstacle or a problem for a gifted child to gain other critical gains by needing skills other than mental skills. To prevent this or to manage the process by taking precautions beforehand; requires the ability to understand internet addiction as a phenomenon based on empirical foundations in gifted students.

In this study, which aimed to describe the current situation of internet addiction in gifted students and to create a systematic framework by focusing on the relevant empirical studies in the literature and the findings of these studies, the following research questions were tried to be answered:

1. Which method(s) were used by the studies in the literature?
2. Which data collection tools were used in these studies?
3. What were the age, gender and school levels (elementary, middle, high school or university) of the participants of these studies?
4. What are the similarities and differences between the findings inspected using statistical analysis from these studies?

2. METHODOLOGY
Because it is essential to focus on one type of literature review rather than a definitive compilation study to reveal the existing situation from an evidence-based perspective, current

study requires a specific type of literature review. It is also necessary to follow a specific systematic review to answer the research questions, which developed for the current research and listed above. For this reason, a specific methodology was designed to conduct the current research.

2.1. Research Design

In this study, which focuses on the relevant empirical studies in the literature, the systematic literature review was chosen among different types of literature review (Grant & Booth, 2009). The reason underlying here is to follow a systematic and specific method to determine the relevant studies to be used to answer the research questions given above, choose among those studies, and bring the selected ones together (Kitchenham et al., 2010). In order to ensure this systematicity, the following steps were followed, respectively: determining the research questions, determining the keywords to be used, selecting the databases and searching, selecting the studies according to the inclusion/exclusion criteria, examining the studies, interpreting the findings and reporting the article.

2.2. Procedure

After determining the research questions to be answered by this study, which was carried out in the type of systematic literature review, it was decided which keywords to use when searching databases. The keywords to be used in the scans to be made were determined as "gifted", "talented", "internet addiction", and "problematic internet use". Web of Science (WOS) and Education Resources Information Center (ERIC) databases were primarily searched using these keywords. In addition to these, a search was done through Google Scholar to access the articles accepted for publication or published in a scientific journal but not yet indexed in the relevant databases. While searching, the previously determined keywords "gifted" and "internet addiction", "talented" and "internet addiction", "gifted", and "problematic internet use", and "talented" and "problematic internet use" combinations were used.

Using the keywords "gifted" and "internet addiction" among the searches performed on WOS, seven different articles were listed due to the search on all fields. 5 articles are listed with the keywords "Talented" and "internet addiction". Two of the articles included in the lists revealed in these two searches were included in both lists. As a result, a total of 10 articles are listed. Again, using the keywords "talented" and "problematic internet use" on WOS, 1 article was listed due to the search on all fields. 3 articles were listed using the keywords "Gifted" and "problematic internet use". There were no joint articles in both lists, and a total of 4 articles were reached. However, when the final results of the searches made with the keywords "internet addiction" and "problematic internet use" were compared, it was seen that there was an article with a typical result, and a total of 3 articles were listed. As a result of the searches on WOS, a total of 13 articles were accessed.

Three articles were listed due to the search made on all fields using the keywords "gifted" and "internet addiction" among the searches made on the ERIC Database. One article was listed with "Talented" and "internet addiction" keywords. A total of 4 articles were listed, and it was determined that one of the articles was listed as a result of the search on WOS and the other two were out of the field. Again, using the keywords "gifted" and "problematic internet use"

on the ERIC Database, 236 articles were listed due to the search in all fields. 172 articles were listed through the keywords "Talented" and "problematic internet use". The search result was limited to title, keyword and abstract, respectively, to extract the articles related to gifted, and no relevant articles were found. Finally, a total of 1 article was accessed through the ERIC Database.

1240 articles were listed as a result of the search made on all fields using the keywords "gifted" and "internet addiction". However, when the result of this search was limited to the title to find those related to giftedness, 3 articles were listed. 931 articles were listed using the keywords "Talented" and "internet addiction", and when the search result was limited to the title, no article was listed. A total of 3 articles were listed, and it was determined that one of the articles was also listed in the previous search results and the other one was out of the field. Again using the keywords "gifted" and "problematic internet use" on Google Scholar, 331 articles were listed as a result of the search in all fields. However, no articles were listed when the result of this search was also limited to the title to find those related to gifted students. 187 articles were listed through the keywords "talented" and "internet addiction". When this last search result was limited to the title to find the articles related to gifted, no articles were listed. Finally, only 1 article was accessed via Google Scholar.

2.2.1. Inclusion & Exclusion Criteria
The following inclusion/exclusion criteria were used during the search of the databases and the inclusion of articles obtained from the search:

- To be published in a peer-reviewed scientific journal,
- To have been published in English,
- To be an empirical research article,
- To provide the fact that the research was carried out in the field of giftedness
- To be a different article from the ones listed in other searches and/or databases,

All the results obtained as a search result were combined in a single list. According to the criteria mentioned above, the articles in the final list were included or excluded. After this process, the researchers examined the listed empirical research articles in detail, and the research questions were answered.

3. FINDINGS
A total of 15 research articles reached as a result of the search made in the databases were examined through the suitability of the subject area, the name of the researcher, the year of the research, the research method used, the data collection tools and the content analysis table containing the findings. Accordingly, it was determined that 9 articles were not included in the subject area and were listed according to the keywords because of the word "internet". It has been determined that one article is a common article accessed due to two different searches. The remaining 5 articles (RA1: Orhan & Gürlen, 2021; RA2: Durak et al., 2022; RA3: Kaplan Sayı & Şahin, 2021; RA4: Sureda Garcia et al., 2020; RA5: Yalçın et al., 2020) were examined, and the findings obtained according to the research questions are presented below. According to the first research question, the data on the methods used in the studies in the literature are given in Table 1.

Table 1. *Methods Used in the Relevant Researches*

ID	Method	Design	F	%
RA1, RA3	Quantitative	Descriptive correlational survey method	2	40
RA2, RA5	Quantitative	Causal-comparative and correlational model Relational screening model	2	40
RA4	Quantitative	Case-control method	1	20

When the information given in Table 1 is examined, it is seen that the quantitative method was adopted in all of the studies. When examined in the context of the research design used under the quantitative method, the Descriptive correlational survey method was preferred in 2 (40%) articles, causal-comparative, correlational research and relational screening model were preferred in 2 (40%) articles, and case-control study model was preferred in 1 (20%) article appears to have been made. The findings regarding the data collection tools used in the studies within the framework of the second research question are given in Table 2.

Table 2. *Data Collection Tools Used in the Relevant Researches*

ID	Data Collection Tools	Scale	F	%
RA1 RA4	Internet addiction scale, UCLA Loneliness Scale Cyberbullying Questionnaire (CBQ), Internet-Related Experiences Questionnaire (CERI)	4 point Likert	2	40
RA2	Contingencies of self-worth scale, The academic self-efficacy scale, The Metacognitive Awareness Inventory, Online Game Addiction Scale	7 point Likert	1	20
RA3 RA5	Addiction Scale for Adolescents, School Social Behavior Scales (SSBS), The Online Game Addiction Scale	5 point Likert	2	40

According to the information presented in Table 2, Likert type scales were used in all of the data collection tools used in the studies. It was determined that a different measurement tool was preferred in each study, and 2 of these scales (40%) were in the 5-point Likert type, the other 1 (40%) was in the 4-point Likert type, and one (20%) was in the 7-point Likert type. Two different questionnaires were used as data collection tools in only one study.

In order to answer the third research question, the question of which levels of participants the relevant studies in the literature were conducted, in addition to the fact that the participants included in the studies were whether identified as gifted and/or included non-gifted students,

the level of education, gender and age group they were from was examined. The table below provides information about the participants included in the studies.

Table 3. *Participant Information of Each Research Study*

ID	N	Level/Grade	Age	Gender (Female/Male)
RA1	105 Gifted Students	9th, 10th & 11th grades	Not Specified	52/53
RA2	245 Students (113 Gifted-132 Non-gifted)	High School	Not Specified	45/68 for gifted* 55/77 for non-gifted*
RA3	157 Gifted Students 16 Teachers	8 to 12 years olds	8 years old=55 9 years old=61 10-12 years old=41	56/101
RA4	122 Gifted students	Secondary Education (between 13 and 17 years of age)	1st year:30 2nd year:34 3th year:31 4th year:27	77/45*
RA5	133 Gifted students	Ages from 9 to 12	9-10 years old: 63 11-12 years old: 70	61/72

*Frequencies were converted from percentages represented in related papers

As shown in Table 3, the study participants included in this literature review consisted of gifted individuals ranging from 105 to 157. Although the participants are primarily from high, secondary and middle school levels, gifted children from primary school were included, albeit partially. It is seen that the age range of the participants is between 8 and 17 based on the fact that only three studies have been specified, but when the estimated age ranges of high school students are considered, it can be said that the majority is 13 years old and over. In the distribution by gender, it is noteworthy that there are more gifted female students among the participants of only one study than males; in one study, they are almost close to each other, and in the other three studies, there are more males than female students. It is seen that the gifted male students, who are the participants of the research, receive a frequency value almost twice that of the female students.

In order to answer the fourth research question, the question of what the similarities and differences between the findings are obtained from the studies, the research findings were examined one by one. In the table on the following page, the findings obtained from each research are given.

Table 4. *Statistical Analysis and Findings of Each Research Study*

ID	Frequency of Research Question(s)/ Hypothesis	Statistics	Preliminary Analysis	Results
RA1	5 (2 includes sub-questions)/Not Specified	Independent groups t-test, Kruskal Wallis H test, Mann Whitney-U test	Kolmogorov-Smirnov, Saphiro-Wilk	-No significant differences in internet addiction depending gifted students' gender
RA2	Not Specified/Not Specified	Multinominal logistic regression analysis.	Not Specified	-Online game addiction scores of gifted students are lower than non-gifted students, -Gender, general academic point average, most preferred online game type variables, physical appearance, competition, and virtue variables, which are among the contingencies of self-worth-CSW dimensions, have a significant effect on online game addiction
RA3	3/Not Specified	Independent groups t-Test, Levene's test, a post-hoc Scheffe test, Pearson Correlation Test	Not Specified	-Internet and game addiction scores of the gifted boys were higher than those of girls -Gifted girls achieved higher scores than boys in terms of school social behaviour -School social behaviour did not show a significant difference according to the age variable.
RA4	3/Not Specified	Mann–Whitney U test, Pearson's Chi square scale param- eter method, robust standard error estimation	Not Specified	-No significant main effect or other interactions involving intellectual ability were found. -Neither intrapersonal CERI, gender, nor age reached specific significance in explaining cyber aggressor or cyber victim scores.
RA5	5/Not Specified	Mann-Whitney U test, Kruskall Wallis test	Kolmogorov-Smirnov test, split half and Cronbach Alpha	-Significant and negative correlation was determined between the Online Game Addiction Scale and the Quality of Life for Children, -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.

When the information presented in Table 4 is examined, research questions were found to be present in four out of five studies. However, no hypotheses were found to be present in any of them. It is also seen that different statistical analysis methods have been used for the findings to be reached in line with the research questions. Among the studies examined within the scope of the research, independent groups t-test (in two out of five studies), Kruskall Wallis test (in two of them), Mann-Whitney U test (in three of them), Levene's test, a post-hoc Scheffe test and Pearson Correlation Tests (in one of them), and Pearson's Chi-square scale parameter method and robust standard error estimation analyzes (in one study) were used. In some studies, more than one test was used. When the studies were examined in the context of preliminary analysis before performing the main analysis, it was determined that while 3 of them did not provide any information about the preliminary analysis, only the normality distribution was examined with the Kolmogorov-Smirnov test in two of them. When the findings were examined, in two studies, it was determined that there were no statistically significant differences between female and male participants in terms of internet addiction. However, in the other three studies, statistically significant differences were determined between the groups according to the gender variable. In two studies in which these statistically significant differences were revealed, it was determined that gifted male students tended to be more addicted to the Internet than female students did. On the other, female students tended to be more addicted to the Internet than male students did.

4. DISCUSSION

According to this systematic literature review, which resulted in access to a limited number of (five) empirical article, the internet addiction levels of gifted students were lower in terms of online game addiction compared to their non-gifted peers. Although it is not the primary focus of any research, the analyses made according to the gender variable indicate significant differences in internet addiction in gifted individuals, both in men and women; Interestingly, it was also revealed that there was no significant difference according to this variable. Although this situation is similar to the findings of studies conducted with the general population (Adiele & Olatokun, 2014; Batıgün & Kılıç, 2011; Doğan, 2013; Gökçearslan & Günbatar, 2012; Hanımoğlu & Çelik, 2020; Jenaro et al., 2007; Kapudere, 2020; KhatibZanjani & AgahHeris, 2020; Ladikli & Ziyalar, 2021; Taş, 2018; Yurdakoş & Biçer, 2019), the reason for the differences between the findings may be the low/high frequency of the number of gifted male or female participants in different studies and the fact that the number of male and female participants differed from each other except for only one study. Moreover, to investigate the differences according to the gender variable based on scientific foundations through appropriate hypotheses, a unique research design is needed that is wholly focused on this focus.

When the articles were examined in the context of research design, it was seen that all of them were designed in the descriptive survey type within the quantitative approach. When they were examined in the context of the methods used, they were carried out with relational survey and causal-comparative survey methods. When the Internet addiction and problematic Internet usage studies conducted on different target groups are examined, it is seen that most of them were made in the descriptive type of survey, as in the articles included in the current research (Chi et al., 2020; Dong et al., 2020; Hassan et al., 2020; Karaer & Akdemir, 2019; Li et al.,

2019; Savcı & Aysan, 2017; Zhang et al., 2017). However, it is noteworthy that studies are also conducted using the systematic content analysis method as preferred in this study (Alimoradi et al., 2019; Mihajlov & Vejmekla, 2017; Zajac et al., 2017).

Examining the data collection tools used for each research revealed differentiated tools and that the same data collection tool was not used in any research. Thus, it would be beneficial to accept these findings as scientific-based rather than evidence-based. It has been observed that all of the measurement tools used are of the Likert type, 2 of them are of the 4-point Likert type, 2 of them are of the 5-point Likert type, and 1 of them is of the 7-point Likert type. According to some researchers, it is stated that Likert type scales are frequently used in educational studies on attitudes, opinions and tendencies due to the ease of implementation and evaluation (Turan et al., 2015). This view is supported by using the same measurement tool in all of the studies examined within the scope of the research.

Considering the distribution of the participants according to their education levels and ages, it is thought that it would be more accurate to interpret the findings of the studies as specific to the gifted at the secondary and high school levels. According to a study examining the studies in the field of gifted education in Turkey, It is stated that the most systematic studies are carried out to determine the level of the gifted and determine their tendencies. Science and Art Centers carry out the diagnostic processes. The target audience of these institutions consists of primary and secondary school students (Güçin & Oruç, 2015). In this context, while it is seen that the target age groups are in harmony with the study groups at the center of the studies conducted in Turkey, it is also thought to explain why the studies on the gifted are conducted in similar age groups.

According to the findings regarding the analysis methods used, it is seen that the preferred analysis methods were chosen in accordance with the research design. When the tests used are examined, it can be said that the majority of the data sets and the proper test types are indicated to be non-parametric. Even though some of the studies have given information about normality tests, it was seen that sufficient and appropriate findings regarding the preliminary analysis of the statistical analyzes used in the main analysis were not shared in general. The distribution type of the study data can only be inferred from the actual test type. Although the test type is non-parametric, it is noteworthy that an additional test that proves the power of the test is not evaluated. This situation is thought to be proof of the study conducted by Karagöz (2010), which revealed that researchers using non-parametric tests underestimated the power and effectiveness of the tests. Finally, when the distribution of addictive behaviours, which are frequently presented in the findings of the studies, by gender is examined, no significant differences regarding gender variable seems to be in parallel with some research findings (Hanımoğlu & Çelik, 2020; KhatibZanjani & AgahHeris, 2020; Ladikli & Ziyalar, 2021); as well as the other research findings such as the direction of the difference are towards females (Gökçearslan & Günbatar, 2012; Jenaro et al., 2007), and towards males (Adiele & Olatokun, 2014; Batıgün & Kılıç, 2011; Doğan, 2013; Kapudere, 2020; Taş, 2018; Yurdakoş & Biçer, 2019) and in this respect, findings are similar to the studies conducted on the general population in the relevant literature.

In conclusion, when the studies discussed in this study are examined, it is noteworthy that the number of studies examining the internet addiction and problematic use behaviours of gifted individuals is limited. It can be said that there is a need to increase studies on gifted individuals of different ages and education levels, using both quantitative and qualitative methods, in order to meet this need in the field. In addition, it is necessary to examine the research focused on internet addiction in gifted people within the framework of a meta-analysis in a way that goes further than this study. It is thought that it will contribute to the shaping of research designs in the context of the method, data collection tools, sample and variables to be chosen by shedding light on further research.

5. RECOMMENDATIONS

There is a primary need to conduct a survey and/or comparative research on the level of Internet addiction of gifted individuals compared to their peers and/or the general population. Conducting current studies with similar or the same data collection tools with different researchers and participants will effectively reveal evidence-based and generalizable findings. In studies that will focus on the comparison of internet addiction levels in gifted people according to the gender variable, first of all, it should be ensured that the participants/sampling are sufficient in frequency and the male/female participant frequencies are identical to each other by designing appropriate research to carry out the relevant analysis. In addition, there is a need to conduct research on internet addiction by focusing on gifted children in the primary and pre-school periods and gifted youth and adults in undergraduate and postgraduate periods. It is recommended for future researchers that the qualitative method and the mixed method should be taken into account while choosing the method for further research to be designed according to different paradigms.

6. ACKNOWLEDGEMENTS

7. ABOUT THE AUTHORS

İbrahim AKAR: He is an associate professor in gifted education and currently teaches at Kastamonu University, the College of Education. He previously worked as a research assistant at Hacettepe University and as a classroom teacher at various public schools. His research interests and publications include gifted students, gifted education, teaching the gifted in the regular classroom, nomination practices of the gifted, twice-exceptionality, creativity and fostering creativity in students.

Burcu KARABULUT-COŞKUN: She is an assistant professor at the department of Educational Technologies at Faculty of Education/Kastamonu University. She previously worked as a research assistant at Gazi University and Usak University. Her research interests and publications are about educational technology, problematic internet usage, distance education and instructional design.

8. References

Adiele, I., & Olatokun, W. (2014). Prevalence and determinants of Internet addiction among adolescents. *Computers in Human Behavior*, *31*, 100-110. Retrieved from https://www.sciencedirect.com/science/article/pii/S0747563213003786

Alimoradi, Z., Lin, C. Y., Broström, A., Bülow, P. H., Bajalan, Z., Griffiths, M. D., ... & Pakpour, A. H. (2019). Internet addiction and sleep problems: A systematic review and meta-analysis. *Sleep medicine reviews*, *47*, 51-61. Retrieved from https://www.sciencedirect.com/science/article/pii/S1087079219300267

Bai, Y. M., Lin, C. C., & Chen, J. Y. (2001). Internet addiction disorder among clients of a virtual clinic. *Psychiatric Services, 52*(10), 1397-1397. Retrieved from https://ps.psychiatryonline.org/doi/full/10.1176/appi.ps.52.10.1397

Batıgün, A. D., & Kılıç, N. (2011). İnternet bağımlılığı ile kişilik özellikleri, sosyal destek, psikolojik belirtiler ve bazı sosyo-demografik değişkenler arasındaki ilişkiler [The relationships between Internet addiction and personality traits, social support, psychological symptoms, and certain socio-demographic variables]. *Türk Psikoloji Dergisi, 26*(67).

Beard, K. W., & Wolf, E. M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychology & Behaviour, 4*(3), 377-383. Retrieved from https://www.liebertpub.com/doi/abs/10.1089/109493101300210286

Brand, M., Laier, C., & Young, K. S. (2014). Internet addiction: Coping styles, expectancies, and treatment implications. *Frontiers in psychology*, *5*, 1256. Retrieved from https://www.frontiersin.org/articles/10.3389/fpsyg.2014.01256/full

Ceyhan, A. A. (2008). Predictors of problematic internet use on Turkish university students. *Cyber Psychology & Behavior, 11*(3), 363-366. Retrieved from https://www.liebertpub.com/doi/abs/10.1089/cpb.2007.0112

Ceyhan, E., Ceyhan, A. A., & Gürcan, A. (2007). The validity and reliability of the problematic Internet usage scale. *Educational Sciences: theory & practice, 7*(1). Retrieved from https://www.proquest.com/openview/120e6d991812ed01357f188ca89c9a52/1?pq-origsite=gscholar&cbl=28575

Chi, X., Hong, X., & Chen, X. (2020). Profiles and sociodemographic correlates of Internet addiction in early adolescents in southern China. *Addictive behaviors*, *106*, 106385. Retrieved fromhttps://www.sciencedirect.com/science/article/pii/S0306460319312468?casa_token=Sa9bMpSg2C4AAAAA:or1tBYCv1PFpOXAT2BEMh4VCVGYylCFFsWl56feQV6jc7NUnOWKfjCCK7gw0e10Aw6X-PNLr9w

Chou, C., & Hsiao, M. C. (2000). Internet addiction, usage, gratification, and pleasure experience: the Taiwan college students' case. *Computers & Education, 35*(1), 65-80. Retrieved from https://www.sciencedirect.com/science/article/pii/S0360131500000191?casa_token=2AZmBx4dkowAAAAA:wpN9ZW5L-nO5pYtI8eCzz82mwWDYDG47x26dpX1CDnK41GvGzomEAolEZUxqMzuXT4o4k31BQw

Doğan, A. (2013). *İnternet bağımlılığı yaygınlığı [The prevalence of internet addiction]*. (Master Thesis), Dokuz Eylül University İzmir. Retrieved from http://tez.yok.gov.tr

Dong, H., Yang, F., Lu, X., & Hao, W. (2020). Internet addiction and related psychological factors among children and adolescents in China during the coronavirus disease 2019 (COVID-19) epidemic. *Frontiers in Psychiatry*, *11*, 751. Retrieved fromhttps://www.frontiersin.org/articles/10.3389/fpsyt.2020.00751/full?report=reader&fbclid=IwAR0vs8kmD3OPy0eBWxYJrfOtywIvDKI2pkon8PS04IYQCRsiKUnbai_cVqE

Durak, H. Y., Demirhan, E. K., & Citil, M. (2022). Examining various risk factors as the predictors of gifted and non-gifted high school students' online game addiction. *Computers & Education*, *177*, 104378. Retrieved from https://www.sciencedirect.com/science/article/pii/S0360131521002554?casa_token=m7eUA vGTJ6sAAAAA:RI3fh5qxrJmTjSvMCUrhXOjJlWQSjXGI2TJJGsNoTwle1yj6Xqrq5nydlti4 SswIX1NlpTTJcA

Goldberg, I. (1996). *Internet addiction disorder*. Retrieved from www.webs.ulpgc.es/aeps/JR/Documentos/ciberadictos.doc at 12 November 2021.

Gökçearslan, Ş., & Günbatar, M. S. (2012). Ortaöğrenim öğrencilerinde internet bağımlılığı. *Eğitim Teknolojisi Kuram ve Uygulama*, *2*(2), 10-24. Retrieved from https://dergipark.org.tr/en/pub/etku/issue/6271/84223

Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health information & Libraries Journal, 26*(2), 91-108. Retrieved from https://onlinelibrary.wiley.com/doi/full/10.1111/j.1471-1842.2009.00848.x

Güçin, G., & Oruç, Ş. (2015). Türkiye'de üstün yetenekliler ve üstün zekâlılar alanında yapılmış akademik çalışmaların çeşitli değişkenler açısından değerlendirilmesi [Evaluation of academic studies in the field of gifted and talented gifted in Turkey in terms of various variables]. *Adıyaman University Journal of Educational Sciences*, *5*(2), 113-135. Retrieved from https://dergipark.org.tr/en/pub/adyuebd/article/256045

Hanımoğlu, E. & Çelik, E. (2020). Üniversite öğrencilerinde problemli internet kullanımının incelenmesi [Investigation of problematic ınternet usage in university students]. *Journal of Turkish Studies*, *15*(5), 2697-2710. Retrieved from https://web.s.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=f5faea62-6293-411c-84b5-c1a49f4f16e6%40redis

Hassan, T., Alam, M. M., Wahab, A., & Hawlader, M. D. (2020). Prevalence and associated factors of internet addiction among young adults in Bangladesh. *Journal of the Egyptian Public Health Association*, *95*(1), 1-8. Retrieved from https://link.springer.com/article/10.1186/s42506-019-0032-7

Jenaro, C., Flores, N., Gómez-Vela, M., González-Gil, F., & Caballo, C. (2007). Problematic internet and cell-phone use: Psychological, behavioural, and health correlates. *Addiction research & theory*, *15*(3), 309-320. Retrieved from https://www.tandfonline.com/doi/abs/10.1080/16066350701350247

Kaplan Sayı, A. & Şahin, F. (2021). Examination of gifted students' Internet/game addiction and school social behaviours. *Pegem Journal of Education and Instruction*, *11*(4), 33-43. Retrieved from https://mail.pegegog.net/index.php/pegegog/article/view/1377

Kapudere, B. (2020). *Üniversite öğrencilerindeki problemli internet kullanımı, algılanan anne baba tutumları ve kişilik özellikleri arasındaki ilişkinin incelenmesi [The investigation of the relationship among university students' problematic use of internet, perceived parental attitudes and personality characteristics]*. (Master Thesis), Hasan Kalyoncu University. Retrieved from http://tez.yok.gov.tr

Karaer, Y., & Akdemir, D. (2019). Parenting styles, perceived social support and emotion regulation in adolescents with internet addiction. *Comprehensive psychiatry, 92*, 22-27. Retrieved from https://www.sciencedirect.com/science/article/pii/S0010440X19300197

Karagöz, Y. (2010). Nonparametrik tekniklerin güç ve etkinlikleri [The power and effectiveness of nonparametric techniques]. *Electronic Journal of Social Sciences, 9*(33), 18-40. Retrieved from https://dergipark.org.tr/en/pub/esosder/issue/6147/82524

Kayiş, A. R., Satici, S. A., Yilmaz, M. F., Şimşek, D., Ceyhan, E., & Bakioğlu, F. (2016). Big five-personality trait and internet addiction: A meta-analytic review. *Computers in Human Behavior, 63*, 35-40. Retrieved from https://www.sciencedirect.com/science/article/pii/S0747563216303363?casa_token=ZYgKnIv2dC4AAAAA:FHgbQ4dUyJb7qSJuVLx1Bg7rjJ0cMH99zHV2Tl4P3nxgrGUNsvEAnGWQCtWklDs6h0FBZtW8og

Khatib Zanjani, N., & Agah Heris, M. (2020). The prevalence of internet addiction among the students of Payam Noor University, Semnan Province. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, *5*(2), 1-7. Retrieved from https://ijvlms.sums.ac.ir/article_46103.html

Kitchenham, B., Pretorius, R., Budgen, D., Brereton, O. P., Turner, M., Niazi, M., & Linkman, S. (2010). Systematic literature reviews in software engineering–a tertiary study. *Information and software technology*, *52*(8), 792-805. Retrieved from https://www.sciencedirect.com/science/article/pii/S0950584910000467?casa_token=Vd75nq5XiqgAAAAA:4TsQsQgBhtb6_8ZEXiuB9xrbyBcp6oBUgT8Z5_GxRUjR8lO_sXDAtDwEQHEuSIBscEZPT7uWjA

Ladikli, N., & Ziyalar, N. (2021). Cinsiyet perspektifinden risk alma davranışı ve internet bağımlılığı [Risk-taking behavior and internet addiction from gender perspective]. Journal of Dependence, *22*(1), 76-90. Retrieved from https://dergipark.org.tr/en/pub/bagimli/issue/57731/799921

Li, G., Hou, G., Yang, D., Jian, H., & Wang, W. (2019). Relationship between anxiety, depression, sex, obesity, and internet addiction in Chinese adolescents: A short-term longitudinal study. *Addictive Behaviors*, *90*, 421-427. Retrieved from https://www.sciencedirect.com/science/article/pii/S030646031830947X?casa_token=F-BrwbmtCiMAAAAA:SGT9vJI4TNYAnUz2-H2XQJVK61pWPn48awqB-r0akmFWqO53s0SlxcejhbWxVmGFWpqvqy213Q

Mihajlov, M., & Vejmelka, L. (2017). Internet addiction: A review of the first twenty years. *Psychiatria Danubina, 29*(3), 260-272. Retrieved from https://hrcak.srce.hr/file/276157

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in human behavior, 16*(1), 13-29. Retrieved from https://www.sciencedirect.com/science/article/pii/S0747563299000497?casa_token=vGOzO PAuETsAAAAA:gZmpZmslhUbEu3x01mIsY9_KtM0qR7ZwYg5bz0zHj3YpasHSYl_3Vo4 yG2W54gkt-6kwkBgiqg

Morrison, C. M., & Gore, H. (2010). The relationship between excessive Internet use and depression: a questionnaire-based study of 1,319 young people and adults. *Psychopathology, 43*(2), 121-126. Retrieved from https://www.karger.com/Article/Abstract/277001

Orhan, A., & Gürlen, E. (2021). The analysis of the relationship between internet addiction and loneliness in science and art education center (Bilsem) students. *Educational policy analysis and strategic research*, *16* (2), 366-381. Retrieved from https://eric.ed.gov/?id=EJ1301904

Park, S., Jeon, H. J., Bae, J. N., Seong, S. J., & Hong, J. P. (2017). Prevalence and psychiatric comorbidities of Internet addiction in a nationwide sample of Korean adults. *Psychiatry investigation, 14*(6), 879. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5714733/

Ravizza, S. M., Hambrick, D. Z., & Fenn, K. M. (2014). Non-academic internet use in the classroom is negatively related to classroom learning regardless of intellectual ability. *Computers & Education, 78*, 109-114. Retrieved from https://www.sciencedirect.com/science/article/pii/S0360131514001298?casa_token=fzgRH2 X2dFkAAAAA:_KZhUCmTZy3FOJ50RKMeWzSDpQ2z2P8JDTJVC0KRCAvSqO57QQB yjp-mltITbQ-GMjuzVYoJLA

Reis, S. M., & Renzulli, J. S. (2004). Current research on the social and emotional development of gifted and talented students: Good news and future possibilities. *Psychology in the Schools, 41*(1), 119-130. Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1002/pits.10144?casa_token=CmJLa9nDMOQAA AAAA:PqJ8MG3UFa-YbkdbmHl6dlHWCLlgTA4vGpe6W6u93U7YGXiRpxVWDTGogObd3VQVrp6rr5haUjMh kKA

Savcı, M., & Aysan, F. (2017). Technological addictions and social connectedness: Predictor effect of internet addiction, social media addiction, digital game addiction and smartphone addiction on social connectedness. *Düşünen Adam: Journal of Psychiatry & Neurological Sciences, 30*(3), 202-216. Retrieved from https://arsiv.dusunenadamdergisi.org/ing/Articledetails09b6.html?MkID=1192

Silverman, L. K. (1997). The construct of asynchronous development. *Peabody journal of education, 72*(3-4), 36-58. Retrieved from https://www.taylorfrancis.com/chapters/edit/10.4324/9780203765098-4/construct-asynchronous-development-linda-kreger-silverman

Sureda Garcia, I., López Penádes, R., Rodriguez Rodriguez, R., & Sureda Negre, J. (2020). Cyberbullying and internet addiction in gifted and nongifted teenagers. *Gifted Child Quarterly*, *64*(3), 192-203. Retrieved from https://journals.sagepub.com/doi/abs/10.1177/0016986220919338

Tam, P. & Walter, G. (2013). Problematic internet use in childhood and youth: evolution of a 21st-century affliction. *Australasian Psychiatry, 21*(6), 533-536. Retrieved from https://journals.sagepub.com/doi/full/10.1177/1039856213509911?casa_token=lUqS7Xh5tp wAAAAA%3Aqfc7oEToJyF-r7SDA9Y7NRpVyJmmmJNIka_CneF4R1pvD2ChrTvToY2sQ-hqyESKatM18yTh7qHC

Taş, İ. (2018). Ergenlerde internet bağımlılığı ve psikolojik belirtilerin çeşitli değişkenler açısından incelenmesi [The examination of internet addiction and psychological symptoms among adolescents according to various variables]. *Anemon Journal of Social Sciences of Mus Alparslan University, 6* (1), 31-41. Retrieved from https://dergipark.org.tr/en/download/article-file/455838

Tsai, C. C., & Lin, S. S. (2003). Internet addiction of adolescents in Taiwan: An interview study. *Cyber Psychology & Behavior, 6*(6), 649-652. Retrieved from https://www.liebertpub.com/doi/abs/10.1089/109493103322725432

Turan, İ., Şimşek, Ü., & Aslan, H. (2015). Eğitim araştırmalarında likert ölçeği ve likert-tipi soruların kullanımı ve analizi [The use and analysis of likert scales and likert-type items in educational research]. *Sakarya University Journal of Education Faculty – SUJEF*, *30*(1), 186-203. Retrieved from http://www.eytepe.com/uploads/dosyalar/likert.pdf

Whang, L. S. M., Lee, S., & Chang, G. (2003). Internet over-users' psychological profiles: A behaviour sampling analysis on internet addiction. *Cyberpsychology & behaviour, 6* (2), 143-150. Retrieved from https://www.liebertpub.com/doi/abs/10.1089/109493103321640338

Yalçın, H., Güvener, E., & Kasal, D. (2020). Relationship between gifted children's Internet gaming addiction and quality of life. *European Journal of Special Education Research*, *6*(4), 35-55. Retrieved from https://www.oapub.org/edu/index.php/ejse/article/view/3483

Yellowlees, P. M., & Marks, S. (2007). Problematic Internet use or Internet addiction?. *Computers in human behaviour, 23*(3), 1447-1453. Retrieved from https://www.sciencedirect.com/science/article/pii/S0747563205000439?casa_token=44faQx2 p9skAAAAA:WxTsG-zamOlDQr6nRLrUpCXhzbn64-7ovby7jt5GEEV3c-v0nK2xhjkZ56zoeR-i0koZqj7ofw

Young, K. S. (1996). Psychology of computer use: XL. Addictive use of the Internet: A case that breaks the stereotype. *Psychological reports, 79*(3), 899-902. Retrieved from https://journals.sagepub.com/doi/abs/10.2466/pr0.1996.79.3.899

Yurdakoş, K., & Biçer, E. B. (2019). İnternet bağımlılık düzeyinin akademik ertelemeye etkisi: Sağlık yönetimi öğrencileri üzerine bir araştırma [The effect of internet addiction level on academic procrastination: A research on health management students]. *YYU Journal of Education Faculty, 16*(1), 243-278. Retrieved from https://dergipark.org.tr/en/pub/yyuefd/issue/50700/660852

Zajac, K., Ginley, M. K., Chang, R., & Petry, N. M. (2017). Treatments for Internet gaming disorder and Internet addiction: A systematic review. *Psychology of Addictive Behaviors, 31*(8), 979. Retrieved from https://psycnet.apa.org/record/2017-40993-001

Zhang, M. W., Lim, R. B., Lee, C., & Ho, R. C. (2018). Prevalence of internet addiction in medical students: A meta-analysis. *Academic Psychiatry, 42*(1), 88-93. Retrieved from https://link.springer.com/article/10.1007/s40596-017-0794-1