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The Effect of Digital Game Addiction Tendency on Depressive Symptoms of Children (36-72 Months)

Melike YAVAS YAVAS CELIK *

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The Effect of Digital Game Addiction Tendency on Depressive Symptoms of Children (36-72 Months)

Melike YAVAS YAVAS CELIK

Gaziantep University; melikeyavascelik@gaun.edu.tr

Abstract: Aim: With this study, we aimed to evaluate the effect of digital game addiction tendencies of preschoolers (36-72 months) on children's depressive symptoms. **Method:** We conducted the research in a virtual environment with mothers who have 747 preschool children. Predictive evaluation was performed using simple regression analysis between the mean scores of Digital Game Addiction Tendency Scale (DGATS) and Child Depressive Symptoms Assessment Scale(CDSAS). **Results:** 53.9% of children report that they play games for 3-24 hours a day. The average duration of children playing digital games is 2.86±1.86 hours per day. The total mean score of the children on CDSAS was 142.48±27.36. The total mean score the children received from DGATS was 46.34±17.28. In the regression analysis, it was determined that there was a strong positive correlation between the (DGATS) total score average and the (CDSAS) total score average ($R=0.52, R2=0.27, p<0.05$). Accordingly, digital game addiction tendency explains 27% of children's depressive symptoms. **Conclusion:** When the standardized beta coefficient and t values are examined, it can be said that digital game addiction tendency is a significant predictor of children's depressive symptoms.

Keywords: Child; Digital game addiction; Depressive symptoms

INTRODUCTION

Digital game addiction; It is a concept used to describe excessive, obsessive, compulsive and generally problematic use of video games. Therefore, the concept still remains unclear. Game addiction; It is also used in various ways, such as excessive use and uncontrolled use of computer and video games. Information and communication technologies developing with the globalization process have led to both positive and negative consequences in human life. The most striking of these negative consequences is the emergence of new types of addiction. Digital game addiction, a new type of addiction, affects especially young people and children [1]. With the increasing number of buildings and the decrease in playgrounds, street games played by children are gradually decreasing [2]. In addition, advances in technology and the inclusion of some technological tools in our lives have led to a mandatory digitalization process [3,4]. For this reason, street games have gradually been replaced by digital games played with digital tools such as computers, tablets, mobile phones and game consoles [5,6]. (Palaiologou, 2016; Resnick, 2019). Play is the most important occupation of children. Games played in accordance with the age and development of the child have a beneficial effect on the development of the child. Ideally, a game is expected to be accessible, simple, versatile, participatory, functional and enjoyable. While playing, children acquire skills such as problem solving, exploration, thinking, reasoning, sharing, communication, strength, balance, coordination and self-organization [7,8].

It has been reported that limited playing of digital games is normal, and even games have positive effects such as emotional discharge and relaxation. It has also been reported to support competencies such as following the commands given in digital games, hand-eye coordination, and improvement in motor skills. In addition, it is stated that it supports children's problem-solving, reasoning, analysis and decision-making skills, as well as supporting their competence in strategy and prediction [9].

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However, big problems can occur when digital gaming turns into addiction. Digital game addiction is defined as "the person's excessive and compulsive use of computer or video games, even though it causes social and/or emotional problems, and the player is unable to control the excessive use" [10]. Also, studies explain the criteria for game addiction as a number of pathological behaviors such as spending excessive amounts of time in games, withdrawal, preoccupation, loss of control and interpersonal conflicts [11].

Recent studies show a relationship between low psychosocial well-being and excessive or pathological use of computer and video games.Studies have determined that game addicts are less satisfied with daily life, have less self-esteem, less social competence, and experience more loneliness [11].Digital game addiction causes some behavioral changes in addicted individuals. The time these people spend in games is longer. In addition, these people cannot leave the game, are dissatisfied with life, may exhibit aggressive behavior, suffer from loneliness, have low self-esteem, and have various psychological problems. Individuals who suffer from depression, attention deficit and low self-esteem are likely to become addicted to games [1].

Digital games can have more negative aspects than positive ones [12]. In the literature, especially when played for a long time of violent digital games, has been reported to be associated with mental and psychosocial problems such as distractibility [13], loneliness [14], depression and anxiety [15], aggression [16], violence tendency [17]. However, some studies had shown that children who spend excessive time with digital games had decrease in academic achievement [18], inadequate and irregular sleep habits [19], insufficient physical activity [20], obesity [21] and musculoskeletal problems [22]. It has been reported that playing digital games causes psychological and musculoskeletal problems such as anxiety and aggressive attitude and depression in children, physical health problems such as dryness, pain and redness in the eyes, and deterioration in sleep quality [23].

As children get older, they become more independent and want to do things on their own and want to be more social. Children in this age group (3-6 years old) need to play with their peers in order to socialize, develop their motor skills and establish schemas. The development of motor skills and learning schemas play an important role in the growth and development process of preschool children. The addiction of this age group to digital games may cause them to be unable to learn a number of skills that affect later in life, such as grasping and recognizing schemas and taking steps to learn concrete operations. In this case, it may harm the academic success and social life of these children [24]. This addiction can even lead children to depression. A study has shown that there is a low-level, positive and significant relationship between online game addictions and depression tendencies [25]. According to the results of another study, there has shown a negative significant relationship between online game addiction and subjective happiness [26].

It is based on an accepted clinical basis that depression in children may present in different manifestations than in adults. Unlike the diagnostic criteria for adult depression, 'masked' symptoms may be observed in children [27]. The symptoms of masked depression seen in children were revealed for the first time by Cytryn and McKnew. These symptoms are of different types, such as school failure, aggression, somatic problems and hyperactivity [28]. The American Psychiatric Association defines childhood depression as a depressed mood or loss of interest/will, insomnia or excessive sleeping, lack of expected weight gain in children, psychomotor slowness or agitation, the child's inability to calm himself down, concentration problems and thoughts of worthlessness [29].

When we look at the studies conducted with older age group children (adolescents, young people and middle adolescence), it has been observed that depression and digital game addiction are related [25,30]. Therefore, it is also important to evaluate how younger age groups are affected by this situation. Considering the psychological problems that children may experience, in this study, we aimed to evaluate the effect of pre-school children's digital game addiction tendencies on children's depressive symptoms.

Research Question

1. What is the average daily time children play digital games?
2. What is the total average score of children from DGATS?

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3. What is the total average score of children from CDSAS?
4. What is the Effect of Children's Digital Game Addiction Tendencies on Children's Depressive Symptoms?

METHOD

Type of research: Research is descriptive research

Time and place of research: I conducted the research in a virtual environment between 23.12.2022 and 24.01.2023.

The universe and sample of the research: The universe of the research consisted of all mothers with pre-school children. Sample selection was not made in the study and all mothers who accepted to participate in the study and met the research criteria were included in the study and 747 people were included in the study as a sample.

Sample account: For power analysis, the sample was calculated using the G * Power program. The first error type was taken as 0.05 and the Cohen effect width as 0.3, and the sample group was determined as 278 people in total. The power calculated according to these inputs was found to be 95%.

Inclusion criteria

- To be familiar with the virtual environment in which the research is conducted
- Having a child in the preschool period (3-6 years old)
- Having a device that can access the virtual environment where the research will be conducted
- Volunteering to participate in research

Exclusion criteria

- Not having a child from the pre-school period (3-6 years old)
- Experiencing the recent loss of a family member
- Not volunteering to participate in research
- Having a health problem (mental problems, hearing or vision problems, having a serious chronic illness, etc.) that may prevent participation in the research

Data Collection Tools: It was collected data using Questionnaire, Child Depressive Symptoms Assessment Scale, and Digital Game Addiction Tendency Scale

Digital Game Addiction Tendency Scale: The digital game addiction tendency scale was developed to evaluate the level of digital game addiction tendencies of preschool children. It is answered by the parents. The scale consists of 20 items and is a 5-point Likert (5: Always, 4: Often, 3: Sometimes, 2: Rarely, 1: Never). The lowest score that can be obtained from the scale is “20” and the highest score is “100”. As the total score obtained from the scale increases, children's addiction tendencies towards digital games increase. The scores obtained from the scale are between 20-35 points; addiction tendency at least, between 36-51 points; low addiction tendency, between 52-67 points; addiction tendency is moderate, between 68-83 points; addiction tendency is high, between 83-100 points; addiction tendency is evaluated as too much. The reliability coefficients (Cronbach's Alpha) of the sub-dimensions of the scale, respectively, are as follows; Detachment from life= .88, Conflict= .90, Continuous Play= .82, Projection to Life= .70, and the total reliability coefficient of the scale was determined as .93 [31]. (Budak, 2020). In this study, the cronbach alpha was found to be 0.96.

Child Depressive Symptoms Assessment Scale: It is a five-point Likert-type scale consisting of eight sub-factors and 56 items developed by the researchers. It is answered by the parents. In the calculation, 'never', 'rarely', 'sometimes', 'often' and 'always' options are given a value of 1, 2, 3, 4, and 5, respectively. The scale has a total of eight subscales: aggression, social adaptation, impulsivity, hyperactivity, separation anxiety, impairment in cognitive processes, somatization, incompatibility with objective reality, and archaic anxiety. Scale not applicable to children over 80 months.The cronbach alpha coefficient of the scale was found to be 0.95 [32]. In our study, the cronbach alpha coefficient of the scale was determined as 0.98.

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Statistical Evaluation of Data: SPSS (Statistical Package for Social Sciences) 23 Windows package statistical analysis program was used in the analysis, creation and conclusion of the data. Number, percentage, mean and standard deviation were used as descriptive statistical methods in the evaluation of the data. In the statistical analysis, whether the numerical variables were in accordance with the normal distribution was examined with the Kolmogorov-Smirnov test and Histogram graph. The results were evaluated with a significance level of $p<0.05$ at the 95% confidence interval. Scale reliability was obtained with the Cronbach Alpha test. Predictive evaluation was performed using simple regression analysis between the mean scores of (DGATS) and (CDSAS)

Application of research: The research was conducted to parents in a virtual environment using the snowball sampling method. Participants were included in the sample on a voluntary basis. The research was conducted with mothers who agreed to participate in the study. Answering the questions and scales in the research took a maximum of 15 minutes. In the study, mothers were asked to evaluate their children's digital addiction and depression. Mothers made this evaluation based on the behaviors of their children they observed.

Ethics of Research: The required permission was obtained before the study to meet the ethical requirements of clinical research. Ethical approval was obtained from XXX Clinical Research Ethics Committee (Reference No: 2022/429/07.12.2022) and XXX Provincial Health Directorate. Detailed information about the aim of the study and what participation would involve was provided on the first page of the questionnaire. Participants were informed that they could withdraw at any time, without providing a reason, and that all information and opinions given would be confidential and anonymous. The purpose of the research was written on the digitally prepared form and volunteerism was taken as basis. This study was conducted in accordance with the Principles of the Declaration of Helsinki.

RESULTS

Of the mothers participating in the study 52.2% are 26-35 years old, 89% live in a nuclear family, 55.2% have completed undergraduate education or have received postgraduate education, 52.2% have income proportional to their expenses, 45.5% have 2 or 3 has a child. of children age of 61.3% is between 49 and 72 months. 53.9% of children report that they play games for 3-24 hours a day. The average duration of children playing digital games is 2.86±1.86 hours per day (Table 1).

Table 1. Demographic data of children and their mothers.

Data		**n=747**	**%**
Age of mother	18-25 age	218	29.2
	26-35 age	390	52.2
	36-55 age	139	18.6
Type of Family	Nuclear	665	89.0
	Extended	82	11.0
Education status	Literate / illiterate and primary school graduate	118	15.8
	Middle school and high school	217	29.0
	Undergraduate and higher education	412	55.2
Mother's working status	Yes	289	38.7
	No	458	61.3
Income status	Income less than expenses	229	30.7
	Income balanced with expenses	390	52.2
	Income more than expenses	128	17.1
Number of children	1 child	307	41.1
	2-3 children	340	45.5

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Child's age	4-10 children	100	13.4
	36-48 months	289	38.7
	49-72 months	458	61.3
The duration of children playing digital games per day	1-2 hours	344	46.1
	3-24 hours	403	53.9
The average duration of children playing digital games per day	2.86±1.86		

The total mean score the children received from DGATS was 46.34±17.28.The average scores the children received from Subscales of DGATS were as follows: break away from life 14.31±6.08, conflict 10.11±4.11, constantly playing 14.46±5.61, reflect on life 7.47±3.01(Table 2).

Table 2. Average scores of children from total DGATS and subscales.

DGATS and subscales	Mean±SD	Min-Max
Detachment from life	14.31±6.08	13.87-14.74
Conflict	10.11±4.11	9.81-10.41
Continuous Playing	14.46±5.61	14.05-14.86
Projection to life	7.47±3.01	7.25-7.65
Total DGATS	46.34±17.28	45.10-47.59

The total mean score of the children on CDSAS was 142.48±27.36. The average scores the children received from Subscales of CDSAS were as follows: aggressions 14.09±5.56, social adaptation 33.47±6.21, Impulsivity- hyperactivity 17.66±4.32, separation anxiety 13.64±3.58, impairment in cognitive processes 25.56±7.76, somatization 11.33±3.16, incompatibility with objective reality 18.23±6.05, archaic anxiety 142.48±27.36(Table 3).

Table 3. Average scores of children from total CDSAS and subscales.

CDSAS and subscales	Mean±SD	Min-Max
Aggression	14.09±5.56	13.69-14.49
Social adaptation	33.47±6.21	33.02-33.92
Impulsivity- hyperactivity	17.66±4.32	17.35-17.97
Separation anxiety	13.64±3.58	13.38-13.91
Impairment in cognitive processes	25.56±7.76	25.01-26.12

 doi:10.20944/preprints202401.1612.v1

Somatization	11.33±3.16	11.10-11.55
Incompatibility with objective reality	18.23±6.05	17.81-18.67
Archaic anxiety	8.46±2.63	8.27-8.65
Total CDSAS	142.48±27.36	140.51-144.45

In the regression analysis, it was determined that there was a positive and strong correlation between the DGATS total score average and the CDSAS total score average (R=0.52,R2=0.27,p<0.05). Accordingly, digital game addiction tendency explains 27% of children's depressive symptoms. In addition, a strong correlation was found between the scores of the DGATS sub-dimensions and the total scoring of CDSAS (Detached from Life: R=0.50, R2=0.25,p= p<0.05; Conflict: R=0.47, R2=0.22,p<0.05; Continuous playing: R=0.45, R2=0.21,p<0.05; Projection to life: R=0.47, R2=0.22,p<0.05)(Table 4). Accordingly, when the standardized beta coefficient and t values are examined, it can be said that digital game addiction tendency is a significant predictor of children's depressive symptoms.

Table 4. The effect of preschool children's digital game addiction tendencies on children's depressive symptoms.

Independent variables (DGATS)	**Dependent variables= Child Depressive Symptoms Assessment Scale** (CDSAS) **Mean± S.D**	**F** / p**	**R**	**R^{2*}**	**(r) / p**	**t / p**	**Durbin-watson**	**B**	**Beta**
Detachment from life	14.31±6.08	243.32/0.01	0.50	0.25	0.50/0.01	48.40/0.01	1.85	2.23	0.50
Conflict	10.11±4.10	207.31/0.01	0.47	0.22	0.47/0.01	45.83/0.01	1.89	3.11	0.47
Continuous Playing	14.46±5.60	190.58/0.01	0.45	0.21	0.45/0.01	43.36/0.01	1.83	2.21	0.45
Projection to life	07.47±3.01	211.91/0.01	0.47	0.22	0.47/0.01	45.52/0.01	1.85	4.28	0.47
DGATS total	46.35±17.28	264.50/0.01	0.52	0.27	0.52/0.01	41.20/0.01	1.85	0.81	0.52

* Simple regression analysis, **ANOVA.

DISCUSSIONS

Online games, which can be played online individually or by multiple users, have become playable at any time and place on various devices such as mobile devices other than computers and

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game consoles, due to the development of technology. The development of online games has made it possible to interact with others by eliminating the necessity of being physically together with another person. The emergence of massively multiplayer online games has enabled players to explore new worlds and brought all individuals together for digital companionship. It is claimed that this social aspect provided by online games increases many people's addiction to online games[33]. In this study, in which we aimed to evaluate the effect of digital game addiction tendencies of preschool children (36-72 months) on children's depressive symptoms, we determined that children's addiction rates are quite high. In this study, it was determined that children spend an average of 2.86±1.86 hours a day while playing digital games. In addition, it was determined that most of the children played digital games for 3 or more hours. The mean score of the children on the digital game addiction tendency scale was found to be 46.34±17.28, approximately at a moderate level. The scores obtained from the scale are evaluated that between 20-35 points; addiction tendency at least, between 36-51 points; low addiction tendency, between 52-67 points; addiction tendency is moderate, between 68-83 points; addiction tendency is high, between 83-100 points; addiction tendency as too much [31]. It has been determined that children in early childhood spend an average of 2 hours a day playing these games, where their digital game preferences increase [4,34,35]. Playing digital games for a long time worries experts and parents. Unconsciously and without being bound by certain rules, children's playing digital games increases the tendency to these games and causes negative effects on children due to playing too much [36]. It has been determined that playing excessive digital games can cause addiction in children [37].

Studies have shown that digital game addiction may be associated with problematic behaviors and aggression in children [38–41,43]. In addition, in a study investigating the negative effects of digital games on children's mental and physical health, it was stated that the age of playing digital games is 1-6 years old and it has been reported that the negative effects of digital games are digital game addiction, violent games affect children's moods, depression, lack of communication within the family, posture disorder, and sleep quality disorders [23]. In another study examining the aggression, depression and loneliness levels of primary school students who play and do not play computer games; It was concluded that as the duration of playing computer games increased, anti-social aggression increased, and violent computer games affected the emergence of anti-social behaviors more [39]. Unlike the diagnostic criteria for adult depression, 'masked' symptoms can be observed in children [27]. The concept of masked depression, first described by Kielholz, was adapted for children by Cytryn and McKnew; They added different symptoms such as school failure, aggression, somatic problems and hyperactivity to the depression clinic [28]. In addition to introverted symptoms such as anxiety, fear, attention problems, reluctance, lack of pleasure, lethargy, inhibition; The relationship between extroverted symptoms such as aggression, hyperactivity, impulsivity, agitation or behavioral symptoms such as sleep, overeating, and social adaptation problems with depression has been mentioned [27,44,45]. These symptoms negatively affect the growth and development of children and prevent them from socializing. It is therefore a useful initiative to identify conditions that may affect the symptoms of depression in children. Digital game addiction, which is becoming increasingly common nowadays, has also shown in this study that it is a strong predictor of depression symptoms in children. In addition, the average score of these children with moderate digital game addiction on CDSAS, which evaluates their depression levels, was determined as 142.48±27.36. It has been determined that playing digital games causes psychological problems such as anxiety and aggressive attitude (74.8%) and depression and asocialization (69.7%) in children [23]. In a study conducted with high school students, a low-level positive relationship was determined between game addiction and depression, and between game addiction and loneliness [25]. In the study conducted by Brunborg et al. (2018) with 1928 high school students, a significant relationship was found between the students' digital game addiction levels and the students' perceived depression [47]. According to another study conducted by Mehroof and Griiths (2010), participants stated that their anxiety levels increased as the time they spent with digital games increased [48]. Sancaktar (2020) states that there is a significant relationship between the time adolescents play digital games and the level of stress they experience and perceived social support [49].

 doi:10.20944/preprints202401.1612.v1

It is extremely important to take initiatives to solve this problem, to ensure that children receive the necessary psychosocial support and to cooperate with the family. Research unfortunately shows that parents have average knowledge about bullying and information security [50,51]. In this process; parents did not know exactly what to do, were worried and tended to wrong practices such as punishment [52]. It does not seem possible to remove children from digital game addiction with punishment, and this situation can harm children. In addition, today, removing digital games from children's lives restricts them from falling behind in these developing technologies and acquiring the necessary digital skills for their future lives [52]. Therefore, instead of preventing children's interaction with digital tools, it is important to teach children to use these tools consciously and effectively. Determining the guidance strategy that parents use when their children play digital games can make this process more accurate [53]. Parents play a critical role in the lives of preschool children [54]. If the parent thinks that the digital game harms their child; it is necessary to learn the level of addiction tendency of the child with excessive and inappropriate use, to take measures accordingly, and to establish the child's digital life balance [55]. It is important to determine the level of children's use of digital games in order to intervene in children with a high tendency to addiction. The content of the behavior of parents, which is considered among the most important factors of the digital game process, during the digital interaction of their children is also important. In this process, the parent should observe their child, control the content of the game, and be in contact with him [56,57]. Depressive symptoms in children should not be ignored and psychological support should be sought if necessary.

CONCLUSSION

As a result, it was determined in our study that preschool children's digital game addiction is approximately moderate and digital game addiction tendency is associated with children's depression symptoms. It was also found that children's digital game addiction was moderate and their depression levels were high.

So that, it can be said that digital game addiction tendency is a strong predictor of children's depression symptoms and children's tendency to digital games may increase their depression symptoms. Considering the increasing digital addiction in children today, it can be predicted how great the danger awaiting children and their parents can be. It can be said that parents have an important place in preventing this danger for pre-school children and therefore parents should be supported to develop a guidance strategy that their children use while playing digital games. Parents should be aware of the type of play their children prefer and replace the feeling of pleasure of playing games, or even playing at a risky level, with the right alternative activities. It would be useless to impose restrictions and remove computers and digital devices to keep the child away from digital play. For this reason, determining the types of games that children like and directing them to active sports can prevent this addiction.

In future studies, the relationship between children's cyberbullying or victimization and their game addictions can be examined. It is especially important for parents and nurses to be conscious and aware of the digital world in guiding students.

Data Availability Statement: The data that support the findings of this study are not openly available due to [reasons of sensitivity e.g. human data] and are available from the corresponding author upon reasonable request [include information on the data's location, e.g. in a controlled access repository where relevant]

Conflict of Interest: There is no conflict of interest of the authors and / or family members regarding this study.

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