

## Computer Game Playing Habits of Children at Pre-school Education Level by Their Families' Views

*Okul Öncesi Eğitim Alan Çocukların Ailelerinin Gözüyle Bilgisayar Oyunu Oynama Alışkanlıkları*

Diler Aydın<sup>1</sup>, Suzan Yıldız<sup>2</sup>

### ABSTRACT

**Objective:** This study aims to examine the computer game-playing habits of children at preschool education level from the point of view of their families.

**Method:** The research was structured as descriptive study. The study of the population was based on 410 children attending 6 kindergartens in a district of Balıkesir province; and the sample is based on 321 children and their families. Data were collected with face-to-face interview method with a questionnaire form developed by researchers. The data were evaluated with SPSS 19.0 statistical package program using number-percentage distribution, chi-square test and logistic regression.

**Results:** 80.7% of participating children were found to play computer games. No significant difference was found between children's game-playing (playing versus not-playing) and either age range or gender ( $p>0.05$ ). A positive significant relationship was found between children's game-playing habits and those of their families through logistic regression evaluation ( $p<0.05$ ).

**Conclusion:** Families should be informed about improving positive parental behavior and role-modelling, and also these behaviors effects on child health. In addition, they should be counselled by health professionals (nurses of school health, physicians, etc.) regarding the length of time children spend in front of screens, children's game preferences and children's computer ownership.

**Key Words:** Child, computer games, preschool, parenting.

### ÖZET

**Amaç:** Bu araştırmanın amacı, okul öncesi eğitim alan çocukların ailelerinin gözüyle bilgisayar oyunu oynama alışkanlıklarını incelemektir.

**Yöntem:** Araştırma, tanımlayıcı olarak yapılandırılmıştır. Araştırmanın evrenini, Balıkesir iline bağlı bir ilçe merkezinde 6 anaokulunda eğitim gören 410 çocuk, örneklemini ise 321 çocuğun ailesi oluşturmuştur. Araştırmacılar tarafından hazırlanan anket formu, aileler ile yüz yüze görüşülerek toplanmıştır. Verilerin değerlendirilmesi, SPSS 19.0 istatistik paket programı kullanılarak, sayı-yüzde dağılımları, ki-kare testi ve lojistik regresyon analizi ile yapılmıştır.

**Bulgular:** Araştırmaya katılan çocukların %80.7'sinin bilgisayar oyunu oynadıkları saptandı. Araştırmaya katılan çocukların bilgisayar oyunu oynama durumları ile yaş aralıkları ve cinsiyetleri arasında istatistiksel bir anlamlılık tespit edilmedi ( $p>0.05$ ). Çalışmada okul öncesi dönem çocuklarının bilgisayar oyunu oynama durumları ile ailelerinin oyun oynama alışkanlıkları arasında yapılan lojistik regresyon değerlendirilmesinde pozitif yönde anlamlı ilişki bulundu ( $p<0.05$ ).

**Sonuç:** Aileler olumlu ebeveyn davranışlarının geliştirilmesi ve çocuklarına rol model olabilmeleri, bu davranışların çocuk sağlığı üzerine etkileri konularında bilgilendirilmeli, ayrıca ailelere çocukların ekran başında geçirdiği süreler, oyun tercihleri, bilgisayara sahip olma durumları konusunda sağlık çalışanları (okul sağlığı hemşireleri, hekim, vb) tarafından danışmanlık hizmetleri verilmelidir.

**Anahtar Kelimeler:** Çocuk, bilgisayar oyunu, okul öncesi dönem, ebeveynlik.

<sup>1</sup> RN, PhD, Assistant Professor, Bandırma Onyedi Eylül University, Faculty of Health Sciences

<sup>2</sup> RN, PhD, Professor, Istanbul University, Florence Nightingale Nursing Faculty

Address reprint requests to: Assistant Professor Diler Aydın, Department of Nursing, Faculty of Health Sciences, Bandırma Onyedi Eylül University- 10200 Bandırma, Balıkesir - TURKEY

E-mail address: dileraydin@gmail.com

Phone: +90 (266) 718 64 00

\* This study was presented at the 37th Pediatr Days and 14nd Days of Pediatric Nursing Congress organized in Istanbul on April 08th - 11th, 2015.

Date of submission: April 9, 2016

Date of acceptance: May 15, 2016

## INTRODUCTION

During the preschool and primary education periods, Games are importantly beneficial to children's socio-cultural, mental and psychological development. The games children play with their friends during this time foster development of social relationships and linguistic skills; they also contribute to children's biological development through exercise and energy expenditure (1, 2).

Increases in the daily use of computers, caused by modern technological advances, have altered children's playing habits (3, 4). Computer games have now replaced games played with friends as children's most important entertainment tool (2). The use of digital games, whose subtypes include console games, PC games and online games, has significantly increased among children and young people in recent years (3, 5).

Computers and computer games may positively and negatively affect children's and teenagers' development (3, 4, 6, 7). Development is at its fastest and most critical in children aged from zero to six years. Children of this age find computer games calming; they provide children with a feeling of control and superiority (3). Regarding specific benefits, computer games contribute greatly to hand-eye coordination, attention-focusing abilities (1, 3), problem-solving skills, cooperation, and language development (2, 7); they also foster mental development by enabling children to remain calm when under stress (4, 7, 8). Children use computer games to reinforce many concepts they learn in daily life and at school (3).

Computer games may also lead to social behavioral problems, such as obsessive and aggressive behavior, indications of violence, personality change, attenuation of emotions, loss of interest, hyperactivity, learning disorders and increased anxiety, while contributing to children's development (1, 2, 4, 7, 8, 9, 10). Additionally, they are considered responsible for early maturation, obesity due to long-term computer use (10), visual and musculoskeletal physiological problems, headaches and xerophthalmia (2, 10).

Regarding computer games' positive and negative effects, computer games may offer

benefits during the preschool period, but may also lead to damage that is difficult to repair. Computer games' positive and negative effects on children are related to games' content, and duration of game play (3). The American Academy of Pediatrics recommends that children spend a maximum of two hours of "screen time" a day; and that this restriction should be enforced by parental inspection (1-3, 11, 12, 13).

Most extant studies analyze computer games' effects on students, and evaluate their parents' point of view (1, 2, 9, 14). However, other studies have shown that computer game-playing habits are shifting towards younger ages, and that children also play computer games in the preschool period; these studies have evaluated parents' points of view (3, 15). These studies are limited, however. Specifically, the preschool period is important to children's physical and social development; hence, it is important to determine preschool children's computer game-playing habits, and focus parents' attention on those habits' effects on their children's health. This study therefore aimed to determine preschool children's computer game playing habits, from their parents' point of view.

## METHODS

### Design

Research was descriptive, and was conducted from November until December 2014, to determine preschool children's computer game playing habits from their parents' point of view.

### Population and setting

The study's population consisted of parents (n= 410) of children receiving education at six kindergartens administered by the Bandırma District National Education Directorate in the 2014-2015 school year. Inclusion criteria of the study: families with children receiving education at kindergartens and who were between the ages of 0-6; families who agreed to participate in the study, parents without mental, auditory and/or visual disabilities. Samples were not selected for

the study; instead, all kindergartens in the district, and all parents who were willing to contribute to the research, were included in the sample (321 parents). The written consent of the Balıkesir Provincial Directorate for National Education, and the oral consent of parents were obtained prior to the study. A questionnaire was administered to consenting parents, which included an explanation of the study's aims and methodology. Face to face interviews were conducted to obtain data.

### Instruments

The questionnaire, which the authors of the present paper developed to determine preschool children's computer game-playing habits from their parents' point of view, was used in accordance with the literature (2, 3, 16). The questionnaire contained 17 open-ended and two closed questions which evaluated children's and parents' demographic information, children's and parents' computer game-playing habits from the parents' point of view, and parents' awareness of computer games' effects. The first 16 questions concerned parents' age, gender and educational status, children's frequency of computer game playing and game type played children's reasons for playing computer games and whether and with what frequency children played computer games that contained violence. Questions 17–19 examined families' degree of education regarding computer games, and games' effects on children. On average, questionnaires took 10–15 minutes to administer.

Parents were informed about the purpose and content of the study by the researcher. We gave information about the study to a total of 321 parents and then asked if they would volunteer to participate in the study. In each case after verbally informed consent, all parents approved the research protocol. Written and oral approvals were taken from the participants.

### Data analysis

Data were analyzed using SPSS for Windows v.19.0. Descriptive statistics (averages, standard deviations, and percentages) were calculated.

Relationships between children's computer game-playing habits and various variables were tested via chi-square. Relationships between children's and parents' computer game-playing status and condition were analyzed via logistic regression. Statistical significance was set at  $p < 0.05$ .

## RESULTS

52.3% of children were male, and 47.7% of them were aged 48-59 months-old. 42.9% of mothers and 50.4% of fathers were graduates of university or higher education.

80.7% of children played computer games. 51.1% of these children had their own computer or tablet, 76.3% of them had internet access at home, and 54.8% accessed computer games via the internet. Children were found to play computer games for  $0.46 \pm 0.75$  hours per day,  $0.26 \pm 0.71$  hours on weekdays and  $0.67 \pm 1.00$  hours at weekends.

37.4% of children preferred educational-intelligence games; 16.8% preferred car races. 45.2% of children played computer games to pass the time, while tending to play for education/learning at a lower rate (Table 1).

89.1% of children did not play games that included violence; 9% played such games once or twice a week. 77.6% of families indicated restricting children's computer game-playing and 91% indicated restricting games that included violence.

50% of children aged 48–59 months stated that they did not play computer games; 47.1% between 48-59 months stated that they mostly played. 58.1% of female children did not play computer games; 54.8% of male children did. No statistically significant difference was found between children's status of playing computer games and either their age or gender ( $p > 0.05$ ; Table 2).

42.7% of mothers and 49.8% of families indicated playing computer games; 6.8% of families indicated playing violence-including computer games. Mothers indicated playing computer games for  $0.25 \pm 0.57$  hours per day;  $0.21 \pm 0.67$  hours on weekdays and  $0.23 \pm 0.67$  hours at weekends. Fathers indicated playing computer games for  $0.37 \pm 0.79$  hours per day;  $0.16 \pm 0.53$  hours on weekdays and  $0.29 \pm 0.69$  hours at weekends.

Statistically significant differences were found between the computer game-playing of children whose mothers played computer games compared to those whose mothers did not ( $p=0.013$ ), and between the computer game-playing of children whose fathers played computer games compared to those who did not ( $p=0.001$ ). Game-playing mothers' and game-playing fathers' children spent 0.3 and 0.2 times as long playing games as non-game-playing mother's and fathers' children, respectively (Table 3).

**Table 1: Computer Game Feature**

	n	%
<b>The types of computer games</b>		
Educational-intelligence	120	37.4
Car race	54	16.8
War-fighting	5	1.5
Futbol-athletics	3	0.9
Atari	16	5.0
Simulation	16	5.0
Car race + Educational	33	10.3
War + Educational + Car race	10	3.1
Car race + football	6	1.9
Barbi + Educational	13	4.0
Not playing computer games	45	14.0
<b>Reasons for playing games</b>		
Learning / Educational	62	19.3
Loneliness	15	4.7
Spend time	145	45.2
Racing	13	4.0
Proving himself	10	3.1
Take appreciation	3	0.9
Learning / Educational + Racing + Spend time	27	8.4
Not playing computer games	46	14.3
<b>Total</b>	<b>321</b>	<b>100</b>

**Table 2: Children computer Game Playing Habits By Gender and Age Group**

Variables	Play game		Don't play game		p
	n	%	n	%	
Age group					
48 month ↓	52	20.1	19	30.6	χ <sup>2</sup> :5.615 p=0.060
48-59 month	122	47.1	31	50.0	
60-72 month	85	32.8	12	19.4	
Gender					
Female	117	45.2	36	58.1	χ <sup>2</sup> :3.332 p=0.068
Male	142	54.8	26	41.9	

**Table 3: Relationship Between Computer Game Habits Children and Families**

Child who play computer games	$\beta$	S.E.	p	OR
Fathers who play computer games	-1.219	0.363	0.001	0.296
Mothers who play computer games	-0.962	0.386	0.013	0.382

$\beta$ : Regression coefficient, SE: Standart error, OR: Odds Ratio

51.4% of families indicated that they were informed of computer games' effects on children. Regarding families' ideas and opinions, 50.8% of families mentioned that computer games contribute to the development of children's skills and knowledge. Regarding families' knowledge of video games' negative effects, 49.5% of families mentioned that games prevent other social activities, 42.1% mentioned that games create dependency, 55.8% mentioned that they are harmful to children's health, and 65.7% mentioned that long-term use can cause obesity and problems related to vision and the musculoskeletal system (Table 4).

10.6% of families mentioned that their children displayed violent behavior when playing computer games, 29.3% of them mentioned that children mimicked game characters, and 49.5% mentioned that computer games did not affect their children (Table 5).

**Table 4: Families Thoughts About Computer Games**

Families Thoughts About Computer Games	Agree		I do not know		Disagree	
	n	%	n	%	n	%
Games prevent other social activities (sports, reading, entertainment, etc.)	159	49.5	99	30.8	68	19.6
Games makes to enjoy the children's deaths and causing aggressive behavior.	107	33.3	124	38.6	90	28.0
Games contributes to the development of the child's knowledge and skills.	163	50.8	69	21.5	89	27.7
Games is developing the self-learning of my child.	162	50.5	62	19.3	97	30.2
Games create dependency	135	42.1	111	34.6	75	23.4
Games distancing from friends.	102	31.8	138	43.0	81	25.2
Games causing a waste of time to spend.	138	43.0	103	32.1	80	24.9
Games are harmful to children's health.	179	55.8	63	19.6	79	24.6
I'm worried about my child play computer games.	78	24.3	156	48.6	87	27.1
Long-term use can cause obesity and problems related to vision and the musculoskeletal system	211	65.7	20	6.2	90	28.0

**Table 5: Children's Response After Play Games**

Children's Response	Agree		I do not know		Disagree	
	n	%	n	%	n	%
Not affect children	159	49.5	70	21.8	92	28.7
Children mimic game characters	94	29.3	128	39.9	99	30.8
Brutal happening	27	8.4	179	55.8	115	35.8
Peaceful happening	73	22.7	97	30.2	151	47
Mind staying in the game	96	29.9	118	36.8	107	33.3
Children display violent behavior when playing computer games	34	10.6	168	52.3	119	37.1

## DISCUSSION

Computer games may negatively affect children if they are not properly regulated in childhood, especially during the preschool period. The lowering age and increasing frequency at and with which children are playing computer games that include violence, and these games' negative effects on children, concern families and health professionals.

This study aimed to determine preschool children's computer game-playing habits from their families' point of view. Children were found to be playing  $0.46 \pm 0.75$  hours per day,  $0.26 \pm 0.71$  hours on weekdays and  $0.67 \pm 1.00$  hours on average at weekends. Akcay and Ozcebe (3) found that preschool children play computer games for  $0.53 \pm 0.53$  hours on weekdays, and  $1.62 \pm 1.56$  hours at weekends. Kenanoglu and Kahyaoglu

(17) found that 40.7% of preschool children play computer games once a week, 26.9% play every day, and 23% do not play computer games. With their studies, Tin Wu et al. (15) determined that 64.4% and 33.2% of preschool children spend an hour or less, or 1–2 hours, on computer games per day, respectively. Though there are relatively few extant studies evaluating computer game-playing time in preschool children, these values are similar to those obtained in the present study. Our results indicate that children generally play computer games for longer periods at weekends. Since children's physical and social development during this period may encounter problems if children spend an excessive amount of time playing computer games, it is important to motivate children to engage in different activities, such as playing games, etc.

37.4% of families indicated that their children prefer educational-intelligence games, 10.3% indicated a preference for car races and educational games, 5% indicated a preference for arcade games, and 6% indicated a preference for simulation games. While the children in the present study preferred educational and race games, we observed that they mostly played computer games to pass the time. Extant literature indicates that primary school-aged children generally prefer educational and adventure games, as well as arcade and war/combat games (2, 14, 16); however, there are few studies examining preschool children in this regard. Extant literature indicates that preschool-aged children typically play educational and adventure-type games (7, 8, 18); however, we observed that a small proportion (1.5%) of these children play games including violence. Again, and considering these children's age, these results indicate that children should be directed to other forms of recreation, or to educational/instructive games that may better contribute to their development.

Serious hyperactivity has been reported in children who watch images and movement on computers, or who watch acts of violence (5, 6, 8). Children have been reported to engage in offensive or damaging behavior due to inactivity associated with long periods at computers (2, 5, 7, 8). Also, since children of this age are not fully able to distinguish the imagined and notional from the real

and the substantial, they may identify with game heroes, modeling the violence they find in computer games (2, 3). In our study, 77.6% of families had children who played computer games. 91% of those limited their children's playing of computer games; nonetheless, 9% of all children studied played computer games including violence once or twice a week. Since the opportunity to play games that include violence is under families' control, parents should be informed of computer games' effects on their children's physical and psychological health.

Extant literature suggests that children's game-playing increases with age (3, 13). Our study found no significant difference between children's computer game-playing and their age (Table 2). Extant literature also suggests that families may believe the computer to be a "boy's toy" and that not limiting its use particularly leads men and male children to play more (3, 5, 13). Our study did not find a significant relationship between children's computer game playing and gender. We consider that this result may be due to the fact that most of the families studied were well educated, and therefore did not discriminate between genders (Table 3). Akcay and Ozcebe (3) found that 68.3% of male children play games, and found a significant relationship between computer game playing and gender. Similarly, Carson and Janssen (13) did not find any significant relationship between computer game playing and gender. Thus, though the present study's results do not show a relationship between computer game playing and age, our results with respect to gender are similar to those of Carson and Janssen (13).

In the present study, logistic regression analysis found a positive significant relationship between whether children played computer games and their families' game-playing habits ( $p < 0.05$ ). Families' playing of computer games was found to affect children's game playing habits; however, this influence was found to be primarily exerted by mothers. Regarding children's screen dependency in computer game-playing families, Carson and Janssen (13) found a significant relationship between time spent with television and computer screens, and whether children aged 0-5 played computer games. Similarly, Akcay and Ozcebe (3) found that children's game-playing increased according to whether

their families played computer games. Our results bear similarities to those of Carson and Janssen (13) and Akcay and Ozcebe (3). The properties and tendencies of parents directly and indirectly affect children; preschool-age children look for behavioral models. This leads these children to exhibit attitudes they observe in their families, which explains the relationship between whether parents play computer games and whether their children do.

If families are not properly educated and directed in computer and computer game use, these tools may become harmful to children, who are beginning to use them at increasingly younger ages. Children's physical, personality-related and psychological wellbeing may be preserved by taking actions that are appropriate to computer games' negative effects on health (2). In the present study, 51.4% of families indicated that they were aware of computer games' effects on their children. Families expressed beliefs that computer games contribute to the development of knowledge and skills and facilitate their children's self-education (50.8% and 50.5% of families, respectively.) Cakir (2) found that 45.6% of families felt that computer games contributed to their children's knowledge and skills; and 35.3% felt that games promote self-education. Comparing the results of the present study with Cakir's (2), families in the present study were better informed of games' positive effects. Regarding computer games' negative effects, families indicated believing that games prevent other social activity, create dependency, are unhealthy for children, and that long-term use may cause obesity or problems related to vision and the musculoskeletal system (Table 5). Despite the fact that the studied families' level of education regarding the positive and negative effects of games was found to be above average, 48.6% of families indicated that they were not worried by their children's playing of computer games. 10.6% of families indicated that their children exhibited violent behavior, 29.3% of which children were considered to be mimicking computer game characters, and 49.5% indicated that their children were unresponsive when playing computer games. We therefore consider that families who believe their children to be unaffected by computer games are not worried by their children's playing

of computer games. Hence, despite the fact that most of the studied families are university educated or above, similar families should be informed of the risks computer games pose to children.

Our study has some limitations; The study was conducted with only a small group of preschool children's. We were unable to contact all of the preschool children's and their families and also the study period was short. In our country, there is a need for large-scale and multidisciplinary experimental studies in order to address the computer addiction of the preschool children's and to suggest solutions.

## CONCLUSION

During the preschool period, mental development is almost completely facilitated by games. Children learn about themselves and the world they live in through games, best express themselves while playing games, and gain critical thinking skills within games. Games requiring physical effort promote muscle development and positively affect respiration, circulation and digestion. Advancing technology has led to changes in preschool children's game-playing habits. Children have begun to play games in which they are immobile, and to play games in front of computers. As a result, certain physical and psychological disorders may develop. Families should therefore be informed of positive parenting behaviors' development, and their effects on children's health. Moreover, health professionals (school health nurses, physicians, etc.) should consult parents regarding the amount of time children should spend with computer screens, and the appropriateness of computer ownership.

School nursing's purpose concerning preschool children is to support positive knowledge and attitudes, promote healthy behavior, and change negative or insufficient knowledge, attitudes and behaviors. Nurses interact with parents and education professionals, and are aware of computer games' effects on child development with regard to public and children's health and psychology. Determining computer games' effects on preschool children and consulting with families, will thus provide a critical contribution to the wellbeing of children and the public.

## REFERENCES

- 1- Horzum MB. Examining computer game addiction level of primary school students in terms of different variables. *Education and Science* 2011; 36: 56-68.
- 2- Cakır H. Taking the opinions of parents and specifying the effects on students about computer games. *Mersin University Journal of the Faculty of Education* 2013; 9: 138-150.
- 3- Akcay D, Ozcebe H. Evaluation of computer game playing habits of children at pre-school education levels and their families. *J Child* 2012; 12: 66-71.
- 4- Kurt AS, Ince P, Arslan FT. Elementary school students' attitudes towards computer. *The Journal of Pediatric Research* 2014; 1: 22-7.
- 5- Comert IT, Kayıran SM. Internet use among children and adolescents. *J Child* 2010; 10: 166-170.
- 6- Kumtepe AT. The effects of computers on kindergarten children's social skills. *The Turkish Online Journal of Educational Technology* 2006; 5: 1303-6521.
- 7- Prot S, McDonald KA, Anderson CA, Gentile DA. Video games: Good, bad, or other? *Pediatr Clin N Am* 2012; 59: 647-658.
- 8- Iscibasi Y. Our children amidst computer, internet and video games. *Journal of Selcuk Communication* 2011; 7: 122-130.
- 9- Erboy E, Vural RA. The factors that make 4 and 5 grade elementary students addicted to computer games. *Journal of Aegean Education* 2010; 1: 39-58.
- 10- Marsh S, Mhurchu CN, Jiang Y, Maddison R. Comparative effects of TV watching, recreational computer use, and sedentary video game play on spontaneous energy intake in male children. A randomised crossover trial. *Appetite* 2014; 77: 13-18.
- 11- American Academy of Pediatrics, Committee on Public Education. Children, adolescents, and television. *Pediatrics* 2001; 107: 423-6.
- 12- American Academy of Pediatrics. Policy statement: Media use by children younger than 2 years. *Pediatrics* 2011; 128: 1-6.
- 13- Carson V, Janssen I. Associations between factors within the home setting and screen time among children aged 0-5 years: a cross-sectional study. *BMC Public Health* 2012; 12: 539.
- 14- Deveci SE, Açıky, Gulbayrak C, ve ark. Investigation of frequency of mobile phone, computer and television like electromagnetic field-producing equipment use among primary school students. *Firat Medical Journal* 2007; 12: 279-283.
- 15- Ting Wu CS, Fowler C, Yin Lam WY, et al. Parenting approaches and digital technology use of preschool age children in a Chinese community. *Italian Journal of Pediatrics* 2014; 40: 44.
- 16- Hamlen KR. Children's choices and strategies in video games. *Computers in Human Behavior* 2011; 27: 532-539.
- 17- Kenanoglu R, Kahyaoglu M. Relationship between the cognitive, emotional and social behavior of pre-school children and the internet use. In *5th International Computer & Instructional Technologies Symposium*, 2011: Firat University, Elazığ.
- 18- Sahin MC, Tas I, Ogul IG, et al. Literature review on the use of tablet computers in preschool education. *European Journal of Research on Social Studies* 2014; 1: 80-3.