

The Psychosocial Well-Being of Young Video-Gamer Children: A Comparison Study

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What is already known on this topic?

- *The influence of video games has been studied mostly on older children's and adolescents' psychosocial well-being. There is still a lack of literature about whether video gaming is associated with psychosocial well-being in preschool age.*

What this study adds on this topic?

- *Video gaming is neither a protective nor predisposing factor for mental health difficulties and seems not to be linked to psychosocial well-being in young children.*

ABSTRACT

Objective: In recent years, young children from all socioeconomic conditions found an opportunity to own or access video game devices. The precisely defined effects of video gaming on young children's behaviors and mental health are unknown. This study aimed to investigate the relationship between the psychosocial well-being and video gaming in preschool children.

Materials and Methods: The video gamer (n = 70) and non-gamer (n = 140) children between 2 and 6 years old and their mothers were included in the study. Psychosocial well-being was assessed using the Strengths and Difficulties Questionnaire parent version. Multivariable logistic regressions were used.

Results: 30% of the video gamers played video games for more than 1 hour per day. Factors associated with video gaming included sex, birth order, age of first screen exposure, daily screen time, and parent(s) video gaming. Being a boy, having a daily screen time of more than 1 hour and parent(s) video gaming increased the probability of video gaming [Odds (95% CI) = 3.00 (1.42–6.31), $P = .004$; 6.28 (2.86–13.80), $P < .001$; 6.49 (2.77–15.23), $P < .001$, respectively]. Not being the first child and having an age of first screen exposure older than 12 months old decreased the probability of video gaming [Odds (95% CI) = 0.29 (0.11–0.76), $P = .012$; 0.34 (0.13–0.89), $P = .027$, respectively]. Video gamers and non-gamers had statistically similar Strengths and Difficulties Questionnaire scores. There was no association between video gaming and being borderline or abnormal in emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, prosocial behavior, and total difficulties.

Conclusion: This study investigating the relationship between psychosocial well-being and video gaming revealed that video gaming is not associated with psychosocial well-being in preschool age.

Keywords: Preschool children, psychosocial well-being, video gaming

INTRODUCTION

Digital media use including video game playing has increased among both adults and children due to technological development and broad internet network. Modern devices such as computers (laptop or desktop), tablets, smartphones, and consoles enable video gaming. In recent years, preschool children from all socioeconomic conditions found an opportunity to own or access video game devices. The problem is that preschoolers can not evaluate the adequacy of video game genres, content, and time spent on gaming. Even if preschoolers are typically under adult supervision, they have some abilities to access and play video games without their caretakers. This dependent or independent engagement with video games leads to more controlled trials investigating behavioral outcomes regarding preschoolers'

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video gaming habit. The precisely defined effects of video games on young children's psychosocial well-being are still unknown.^{1,2}

There are some evidences for the pros (e.g., improving cognitive performance) and cons (e.g., increasing risk of conduct-related problems) of video gaming in childhood. Video games' level and content of use are the primary concerns.^{3,4} More video game exposure was reported to be associated with more impulsivity traits, loneliness, psychological distress, and attention, conduct, and emotional problems.^{5,6} On the other side, in school age, the sheer amount of gaming was not to be found harmful to children's mental health.⁷ Playing violent video games resulted in antisocial and aggressive behavior, while playing educational games resulted in gain in math and literacy skills.^{8,9}

The influence of video games has been studied mostly on older children's and adolescents' psychosocial well-being.⁶⁻⁸ A study conducted in 6 European Union countries including Turkey concluded that video gaming is not associated with an increased risk of mental health difficulties in children aged 6-11 years, even high video game use (>300 min/week) was found to be associated with decrease in peer relationship problems and prosocial deficits.¹⁰ There is an on-going need for investigations to determine whether video gaming is associated with behavioral outcomes in children under 5 years of age, because preschool children are especially vulnerable to various impacts of electronic screens.¹¹ There is still a lack of literature about video gaming and psychosocial well-being in preschool age in Turkey. The aim of this study was to demonstrate video gaming characteristics and to investigate the relationship between the psychosocial well-being and video gaming by using the Strengths and Difficulties Questionnaire (SDQ) in preschool children.

MATERIALS AND METHODS

Study Design and Study Sample

We conducted a descriptive cross-sectional study between June 2021 and November 2021 in a children's hospital in the city of Ankara, Turkey. Randomly selected healthy children aged 2-6 years who were admitted to the general pediatric polyclinic for well-child examination and their literate mothers were enrolled in this study. Study procedures were performed in accordance with the Declaration of Helsinki and Mersin University ethics committee approved the study (MEU 2021/401).

Among 0- to 8-year-olds, average time spent playing video games per day was reported to be 25 minutes in 2011, 23 minutes in 2013, 25 minutes in 2017, and 23 minutes in 2020.¹² Hence, in this study, children with a daily video gaming time of at least 20 minutes during the past 6 months were identified as video gamer and children who have never played video games were identified as non-gamer. Two non-gamer children were included for every 1 video gamer child providing a sample size with a 95% CI, 80% power, and 2.0 ratios of sample size using the "OpenEpi calculator." In the preliminary study, 40 non-gamer children were included, and the frequency of borderline-abnormal children in total SDQ score was found to be between 15% and 40%. The sample size was calculated as 58 cases and 116 controls to determine an odds ratio of 2.5 for

a problem which had a frequency of 40% in the control group, while it was calculated as 78 cases and 156 controls to determine an odds ratio of 2.5 for a problem that had a frequency of 15% in the control group.

Data Collection

Participation status was assessed in the waiting room with the following question: "Does your child play video games on a computer, smartphone, tablet or game console? Please consider video gaming indoors and out while answering this question and if yes, please state your child's daily video gaming time and how long your child has played video games." If the answer was "yes, he/she plays video game for ≥ 20 min daily for at least 6 months" or "no, he/she has never played video games," the study process was described to the mothers: "We would like to invite you to complete some forms investigating the video gaming habit and behaviors of your children; if you complete the forms voluntarily, we will evaluate them and brief you about outcomes." All volunteers who agreed to participate in the study were included until the target sample size is reached. Mothers' signed consent was obtained to participate and a structured survey form and the SDQ were fulfilled by the mothers while waiting in line at the outpatient department. Then, the fulfilled forms were collected and consultancy was given to mothers on the detected outcomes during the well-child exam. Children were excluded if they had a history of prematurity, low birth weight, never breastfeeding and diagnosis of chronic disease, acute serious illness, or mental and behavioral disorders. Also, children with a daily time of video gaming less than 20 minutes, children who have not played video games for at least the past 6 months, and children who have not played video games every day were excluded from this study (Figure 1).

A structured survey form was designed to collect sociodemographic, anthropometric, video gaming, and screen use data as general descriptive characteristics. Parental education levels were categorized into primary school (≤ 8 years) and above primary school (> 8 years). Family income level and settlement type were categorized according to the Turkish Statistical Institute classifications.¹³ Body weight and height were included as anthropometric data. Body mass index (BMI) values (kg/m^2) were calculated. Also, z-scores were calculated using the World Health Organization child growth standards.¹⁴ Video gaming among parents, the child's age of first electronic screen exposure, and total daily electronic screen time were asked. Informations related to video gamer children's video game use including details of age of first video gaming, preferences of genres of video games and video game devices, and daily time spent with video gaming were obtained. Two groups were identified according to video gaming habit as video gamers ($n = 70$) and non-gamers ($n = 140$).

The Strengths and Difficulties Questionnaire

Strength and Difficulties Questionnaire is a behavioral screening tool with 25 items and 5 scales. There are equal numbers of items on each of 5 relevant dimensions, namely emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behaviors.¹⁵ Strength and Difficulties Questionnaire has good support for its validity in Turkish children.^{16,17} The total difficulties score (range, 0-40) is generated by summing scores from emotional symptoms,

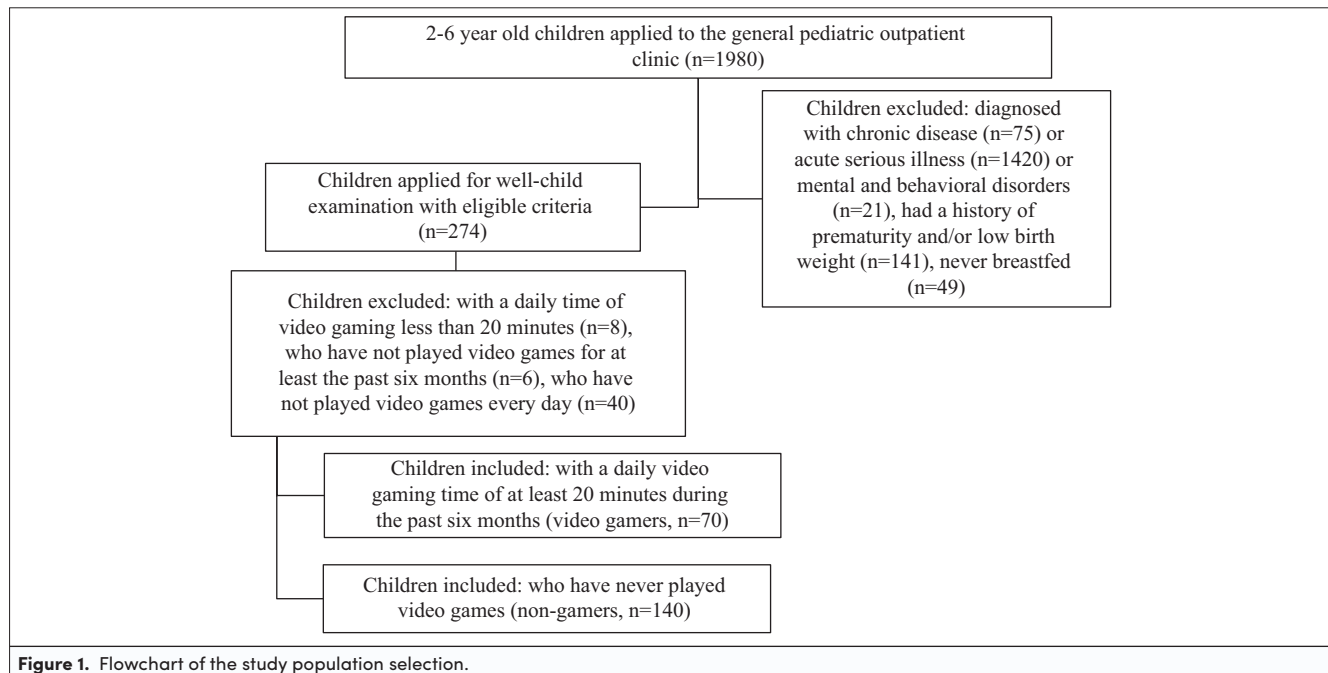


Figure 1. Flowchart of the study population selection.

conduct problems, hyperactivity/inattention, and peer relationship problem scales. The externalizing score (range, 0-20) is the sum of the conduct problems and hyperactivity/inattention scales. The internalizing score (range, 0-20) is the sum of the emotional symptoms and peer relationship problem scales. Higher total difficulties and externalizing, and internalizing scores are argued for greater behavioral problems. The prosocial scale is assessed separately, and a higher prosocial score is argued for better social behavior. Strength and Difficulties Questionnaire scores were classified into 3-band categories as normal, borderline, and abnormal. The cut-off points were defined as suggested in the literature.¹⁶

Statistical Analysis

Data were analyzed using Statistical Package for the Social Sciences 21 statistics program. The Kolmogorov-Smirnov test and histograms were used to test for the normality of data. Mean \pm standard deviation, median (minimum-maximum), and percentage values were stated. Independent samples *t* test or Mann-Whitney *U* test was used to compare 2 independent groups where applicable. A chi-square test checked the differences in frequencies between the groups. Multiple logistic regression was performed to search the independent variables including all studied sociodemographic and screen exposure characteristics with ENTER method. Independent variables included child's age, gender, birth order, primary caretaker, the first age of screen exposure and daily screen time, parental ages, educational levels and video gaming habits, and maternal occupation, family structure, income level, and household location. Univariate logistic regression for being video gamer (yes vs. no) is used to predict the odds of being borderline or abnormal compared to normal in emotional symptoms conduct problems, hyperactivity/inattention, peer relationship problems, prosocial behaviors, and total difficulties. Odds ratios (ORs) were calculated at a CI of 95%. Spearman rank correlation was used to measure the relationship between SDQ scores

and screen use characteristics in the video gamer group. The statistical significance level was set as $P < .05$.

RESULTS

General Characteristics

Totally, 210 mother-child pairs participated in this study. Overall, the mean age of the children was 4.0 ± 1.0 years, and 51% of them were males. The numbers of video gamers and non-gamers were 70 and 140, respectively. Male gender was more common in the video gamer group (64.3% vs. 44.3%, $P = .010$). The video gamer and non-gamer children were not different in terms of age, birth order, parent and family characteristics, anthropometric z-scores, and the age of first electronic screen exposure ($P > .05$). Parent(s) video gaming was more common in video gamers (45.7% vs. 17.9%, $P < .001$). Having a daily screen time of more than 1 hour was more common in video gamers (65.7% vs. 35.0%, $P < .001$). Having an age of first screen exposure younger than 12 months was more common in video gamers (22.9% vs. 11.4%, $P = .030$). Comparisons of sociodemographic, anthropometric, and screen use characteristics are seen in Table 1.

Video Gamers' Characteristics

In the video gamer group, the median age of first video gaming was 36 (12-54) months. The video gamers' device preferences were tablet (47.1%), smartphone (32.9%), computer (15.7%), and game console (4.3%). The most played game genre was age-appropriate video games with educational and prosocial content (48.6%). 27.1% played video games with violent content, while 24.3% of mothers stated that they were unaware of their child's game genre preference. Since the mothers almost always reported a time range instead of an exact time, children's video gaming time was categorized. Among video gamers, 38.7% had 20-30 minutes, 31.3% had 31-60 minutes, 17.1% had 61-120 minutes, and 12.9% had more than 120 minutes of video gaming time per day.

Table 1. Sociodemographic, Anthropometric, and Screen Exposure Characteristics and Comparisons of the Groups

	Video Gamers (n = 70)	Non-Gamers (n = 140)	P
Age, year	4.2 ± 0.9	3.9 ± 1.0	.075***
Male, %	45 (64.3)	62 (44.3)	.010**
Maternal age, year	33.0 ± 4.7	32.9 ± 4.7	.893***
Paternal age, year	36.0 ± 4.9	36.1 ± 5.0	.954***
Maternal occupation, %			
Working mom	43 (61.4)	85 (60.7)	1.00**
Stay-at-home mom	27 (38.6)	55 (39.3)	
Maternal educational level, %			
Primary school	11 (15.7)	28 (20.0)	.572**
High school/college	59 (84.3)	112 (80.0)	
Paternal educational level, %			
Primary school	11 (15.7)	26 (18.6)	.749**
High school/college	59 (84.3)	114 (81.4)	
Video gaming among parent(s), %	32 (45.7)	25 (17.9)	<.001**
Number of child(ren) in the family, %			
1	26 (37.1)	50 (35.7)	.234**
2	27 (38.6)	68 (48.6)	
≥3	17 (24.3)	22 (15.7)	
Birth order, %			
1	45 (64.3)	74 (52.9)	.115**
≥2	25 (35.7)	66 (47.1)	
Number of family members	4 (3-5)	4 (3-4)	.902*
Family structure, %			
Nuclear family	62 (88.6)	125 (89.3)	1.00**
Extended family	8 (11.4)	15 (10.7)	
Primary caretaker, %			
Mother	28 (40.0)	59 (42.1)	
Grandmother	16 (22.9)	34 (24.3)	.935**
Baby-sitter	6 (8.6)	9 (6.4)	
Kindergarten	20 (28.6)	38 (27.1)	
Level of income, %			
High	35 (50.0)	70 (50.0)	.815**
Middle	25 (35.7)	54 (38.6)	
Low	10 (14.3)	16 (11.4)	
Household location, %			
Urban	55 (78.6)	106 (75.7)	.773**
Rural	15 (21.4)	34 (24.3)	
Z-scores			
Height for age	0.11 (-0.36 to 1.05)	0.15 (-0.65 to 0.90)	.293*
Weight for age	0.16 (-0.82 to 1.06)	0.04 (-0.84 to 1.11)	.376*
Body mass index	0.16 ± 1.63	0.09 ± 1.44	.741***
Age of first electronic screen exposure, mo	12 (3-36)	18 (4-48)	.116*
<12 months, %	16 (22.9)	16 (11.4)	.030**
≥12 months, %	54 (77.1)	124 (88.6)	
Daily screen time, %			
≤1 hour	24 (34.3)	91 (65.0)	<.001**
>1 hour	46 (65.7)	49 (35.0)	

*Comparison of medians, the Mann-Whitney U test; **Comparison of percentages, the chi-square test; ***Comparison of means, the independent samples t test. bold values indicate a statistically significance with a P-value less than 0.05.

Caregiver of the child, parental ages and educational levels, maternal occupation, family structure, income level, and settlement type were not associated with child's video gaming ($P > .05$). Older age, being a boy, having a daily screen time of more than 1 h, and parent(s) video gaming increased

probability of video gaming [Odds (95% CI) = 1.49 (1.01-2.20), $P = .0045$; 3.00 (1.42-6.31), $P < .004$; 6.28 (2.86-13.80), $P < 0.001$; 6.49 (2.77-15.23), $P < .001$, respectively]. Not being the first child and having an age of first screen exposure older than 12 months old decreased the probability of video gaming

Table 2. Associations Between Video Gaming and Child-Family Characteristics

	P	Odds Ratio	95% CI for EXP(B)	
			Lower	Upper
Age, year	.045	1.49	1.01	2.20
Gender				
Male versus female	.004	3.00	1.42	6.31
Birth order				
≥second versus first	.012	0.29	0.11	0.76
Primary caretaker	.675			
Grandmother versus mother	.569	1.79	0.24	13.32
Baby-sitter versus mother	.269	3.64	0.37	35.96
Kindergarten versus mother	.395	2.39	0.32	17.70
Age of first electronic screen exposure				
≥12 months versus <12 months	.027	0.34	0.13	0.89
Daily screen time				
≥1 hour versus <1 hour	<.001	6.28	2.86	13.80
Maternal age	.219	1.08	0.96	1.23
Paternal age	.164	0.93	0.83	1.03
Maternal educational level				
>8 years versus ≤8 years	.430	0.60	0.16	2.16
Paternal educational level				
>8 years versus ≤8 years	.827	0.87	0.25	3.07
Maternal occupation				
Working versus not working	.326	2.59	0.39	217.31
Family structure				
Nuclear versus extended	.730	0.81	0.25	2.62
Level of income	.795			
Middler versus high	.809	1.10	0.50	2.42
Low versus high	.499	1.50	0.46	4.87
Household location				
Urban versus rural	.655	0.81	0.31	2.08
Video gaming among parent(s)				
Gaming versus not gaming	<.001	6.49	2.77	15.23
Consant	.062	0.03		

[Odds (95% CI) = 0.29 (0.11-0.76), P = .012; 0.34 (0.13-0.89), P = .027, respectively]. Associations between video gaming and child-family characteristics are seen in Table 2.

Video Gaming and SDQ Outcomes

Video gamers and non-gamers had statistically similar SDQ scores on all scales and total difficulties. Frequencies of belonging to normal, borderline, or abnormal categories in emotional

symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, prosocial behavior, and total difficulties were not different between the video gamers and non-gamers (P > .05). There was no association between video gaming and being borderline or abnormal in SDQ scales and total difficulties (Table 3).

There was a weak correlation between total difficulties score and daily video gaming time (r = 0.32, n = 70, P = .006), while there was no correlation between prosocial score and daily video gaming time (r = -0.23, n = 70, P = .051) (Table 4).

DISCUSSION

At this age, video gaming as a screen-based activity tends to become widespread among preschool children all over the world, also in Turkey.¹⁹ However, the effects of video gaming on the psychosocial well-being of young children are still unclear.^{1,20} The present study investigated the relationship between the psychosocial well-being and video gaming in preschool children as main objective and found that video gaming is not associated with psychosocial well-being in this age group.

Previous studies using SDQ revealed consistent findings of the relationship between video gaming and psychosocial well-being in childhood. Kovess-Masfety et al¹⁰ and Parkes et al²¹ concluded that playing video games is not associated with an increased risk of behavioral problems.

The American Academy of Pediatrics recommends to put clear limits on the child’s video gaming but recommended time of video gaming per day or per week is not clear.²² A recent report concluded that video gaming took up 16% of all screen use in children aged 8 or under in the United States, young children aged 2-4 played for 15 minutes per day and those aged 5-8 played for 40 minutes per day.¹² In this study, average video gaming time per day was not determined, and we demonstrated that 70% of video gamers played less than 1 hour, while 12.9% played more than 2 hours per day.

Both positive and negative effects of gaming are dependent on the duration spent playing.²³ Increased duration of video game play was reported to be associated with the brain’s structural properties in older children and adolescents.^{3,24,25} As it is well known, preschool age is a critic period of neuroplasticity, large amounts of video gaming may affect developing brain and behavioral development more seriously. As in our study, in Spanish children, SDQ scores were found to be similar between video gamers and non-gamers, in addition, a large amount of video gaming (9 hours or more per week) was found to be associated with poorer conduct and prosocial outcomes.³ Lobel et al²⁶ reported that gaming frequency was found to be related to increased internalizing but not externalizing problems in school age. Przybylski²⁷ reported that children and adolescents with low levels of electronic gaming time had higher prosocial behavior and lower externalizing and internalizing problems, compared with non-gamers, while the opposite was true for children with high levels of electronic gaming time. We also demonstrated that total difficulties score and daily video gaming time were correlated, even if it was a weak relationship. Further studies should investigate video gamer preschoolers’

Table 3. Strengths and Difficulties Questionnaire Scores and Categorizations in the Groups

	Video Gamers (n = 70)	Non-Gamers (n = 140)	P	Odds Ratio	95% CI for EXP(B)	
					Lower	Upper
Emotional symptoms	1 (0-9)	1 (0-8)	.829*			
Normal	52 (74.3)	107 (76.5)		1.00		
Borderline	7 (10.0)	16 (11.4)	.755**	0.90	0.35	2.32
Abnormal	11 (15.7)	17 (12.1)		1.33	0.58	3.05
Conduct problems	1 (0-7)	1 (0-5)	.828*			
Normal	52 (74.3)	117 (83.6)		1.00		
Borderline	10 (14.3)	9 (6.4)	.151**	2.50	0.96	6.52
Abnormal	8 (11.4)	14 (10.0)		1.29	0.51	3.25
Hyperactivity/inattention	3 (0-10)	3 (0-9)	.499*			
Normal	54 (77.1)	113 (80.7)		1.00		
Borderline	9 (12.9)	13 (9.3)	.725**	1.45	0.58	3.60
Abnormal	7 (10.0)	14 (10.0)		1.05	0.40	2.74
Peer problems	2 (0-7)	2 (0-7)	.712*			
Normal	39 (55.7)	75 (53.6)		1.00		
Borderline	16 (22.9)	30 (21.4)	.847**	1.03	0.50	2.11
Abnormal	15 (21.4)	35 (25.0)		0.82	0.40	1.69
Prosocial	8 (4-10)	8 (2-10)	.524*			
Normal	55 (78.6)	120 (85.7)		1.00		
Borderline	8 (11.4)	9 (6.4)	.372**	1.94	0.71	5.30
Abnormal	7 (10.0)	11 (7.9)		1.39	0.51	3.77
Total difficulties	9 (0-25)	8 (2-26)	.720*			
Normal	57 (81.5)	107 (76.4)		1.00		
Borderline	5 (7.1)	22 (15.7)	.176**	0.43	0.15	1.19
Abnormal	8 (11.4)	11 (7.9)		1.37	0.52	3.59
Externalizing score	5 (0-14)	4.5 (0-14)	.513*	-	-	-
Internalizing score	3.5 (0-13)	4 (0-13)	.977*	-	-	-

*Comparison of medians of scores, the Mann-Whitney U test; **Comparison of percentages of categorizations, the chi-square test.

psychosocial well-being by considering their daily or weekly video gaming time.

Numerous positive and negative effects of video games on children were reviewed, for instance, increasing kids' self-confidence and self-esteem, improving prosocial behavior versus making kids socially isolated, teaching kids the wrong values like violence and vengeance, posing a risk for addiction, exhibiting impulsive behavior, and attention problems. Most of the negative effects were blamed on the violent content of video games.^{28,29} In a previous study, 6-10 years old children's gaming consisted mostly (61%) of educational games, and the percentage of playing violent games was 23%.³⁰ In the present study, among 2-6 years old children, about 50% played educational/prosocial video games and 27% played violent video games.

A longitudinal study reported that violent or competitive or cooperative gaming had no influence on children's psychosocial well-being, as long as for adequate gaming time.²⁶ By looking at older children's data, a certain inference can not be made about how video game content affects psychosocial adjustment in preschool age. Also, this study did not reveal any findings that were analyzed with respect to game contents. Further studies should investigate video gamer preschoolers' psychosocial well-being by considering their game content preferences.

Video games seem neither uniformly good nor uniformly bad for children. Monitoring children's video game use is essential. Observing their behaviors and the effects of video games on them may prevent stopping or limiting children's video gaming

Table 4. Correlations Between SDQ Scores and Screen Use Characteristics in the Video Gamer Group

	1	2	3	4	5
1. Total SDQ score	-				
2. Prosocial score	-0.307**	-			
3. Age of first electronic screen exposure	-0.233	0.137	-		
4. Age of first video gaming	-0.036	0.136	0.218	-	
5. Daily screen time	0.305*	-0.231	-0.143	-0.050	-
6. Daily video gaming time	0.327**	-0.234	-0.062	0.035	0.540**

*P < .05, **P < .01 (2-tailed); Spearman's rho.
SDQ, Strengths and Difficulties Questionnaire.

unduly. Preschool age is a preoperational developmental stage, so preschoolers can not assess the appropriateness of media content and time spent using media by themselves. What is important for parents is supervising their children in respect of the content of video games and the time of video gaming.^{1,28} In a recent report, it was revealed that 92% of parents pay attention to the games their child plays and 48% of parents limit the amount of time spent on playing video games in the United States.³¹ In this study, approximately, one-quarter of mothers were unaware of content, another quarter was aware of violent content of video games that their children play, and one-third of mothers were deaf to their children's daily video gaming time of above 1 hour. Hence, we can recommend providing consultancy to the Turkish mothers on appropriate video gaming for kids to protect them from the adverse effects of video gaming.

In agreement with our result, previous reports showed that games are played more by boys than girls.¹² In accordance with the fact that parent media use is strongly correlated with child media habits,³² we demonstrated that parent(s) video gaming increased the probability of child's video gaming. In this study, having a high screen time was found to be associated with having video gaming habits. For all reasons, since video gaming is a popular screen-based activity in children, high screen time may indicate the presence of video gaming habits. In the present study, the median age of first video gaming was 36 months, consistently, it was accepted that 3 years of age is the typical period when a child starts video gaming.³³ Composition of screen use has been changing as it shifts from an early age.¹ In this study, the onset of screen use in the first year of life increased the probability of child's video gaming. We can suggest that early screen exposure may lead to falling into video gaming habit in preschool age. In early childhood, screen use was reported to be positively related to being a child of first-time mother.³⁴ This study also revealed that not being the first child decreased the probability of video gaming which is a type of screen use.

This study has several limitations. Firstly, this was a self-reporting study; therefore, self-report response and short-term memory biases could be raised. Secondly, this study was conducted in a hospital and presented one center experience, so the findings could not be generalized to the Turkish population or the other settings. Thirdly, we did not consider background media exposure. Children's exposure to household video gaming and the effects of this type of exposure may alter the results. Lastly, daily video gaming time of <20 minutes or video gaming but not gaming daily or video gaming for less than 6 months may also be associated with psychosocial well-being. Also, sampling region and game genre preference might have affected the results. In the video gamer group, the positive effect of a child playing an educational or prosocial video game might have masked the negative effect of a child playing a violent video game. Thus, further multi-centric studies considering game content should perform correlation and/or linear regression analysis between video gaming time as a continuous variable and SDQ scores. Psychosocial well-being is a complex and multifactorial construct, so further larger sample size studies should investigate the relationship between video gaming and psychosocial well-being in preschool age by considering the role of child-care facilities, parental attitudes,

parent-child interaction, mother's personal well-being, sleep quantity and quality, and physical health. Longitudinal studies should find out whether the psychosocial well-being will be affected in young video gamer children at later ages.

In conclusion, the findings of the present study suggest that video gaming is not associated with psychosocial well-being in preschool children. The data presented here suggest that being a boy, having an excessive screen time, and parent(s) video gaming increase the probability of video gaming in young children and video gaming is neither protective nor predisposing factor for mental health difficulties since video gamers and non-gamers have statistically similar SDQ scores. Video gaming seems not to be linked to behavioral problems in young children. According to our data, long-standing consequences of video gaming can not be predicted due to the cross-sectional nature of this study. Prospective studies are needed to monitor the relationship between video gaming and behavioral outcomes as children grow up.

Ethics Committee Approval: This study was approved by Ethics committee of Mersin University, (Approval No: 2021/401).

Informed Consent: Written informed consent was obtained from the participants who agreed to take part in the study.

Peer-review: Externally peer-reviewed.

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