

The Mental and Cognitive Consequences of Smartphones and Modern Gaming Consoles on Children from Different Environments

Aseel Hafedh Jawad, Zainab Kareem Al-Kazazz, Naiel A. K. AlKhafaji

Babylon Technical Institute, Al-Furat Al-Awsat Technical University, 51015 Babylon, Iraq

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Annotation: Two hundred smartphones - heavy children between the ages of two to twelve took part in this study. The parents of research participants gave permission for their children to participate through questionnaire distribution. The participants comprised sixty percent children who exceeded five years of age within this study. Roughly 54% of participants identified as female while the rest belonged to the male population. Among the children participating in this research, the percentage of video game users in urban environments exceeded that of those in rural environments, reaching 66%. The parents in this study possessed advanced educational backgrounds with bachelor degrees or above as their highest qualification; these degrees were held by 38.0% of mothers and 36.0% of fathers. The high educational expectations for these children positively reflect their educational environment. Children whose parents work outside the home environment showed an increase in the use of smartphones and video games, with smartphone usage reaching 42% and video game usage reaching 78%. Research data showed most participants lived in households of the middle social class. According to the survey

results smartphones alongside other mobile devices for gaming purposes are utilised by 96 percent of children but only 4 percent of children avoid gaming through mobile devices. Most households owned multiple telephones (58%) along with nearly 78% of children constantly using them while a majority of participants experienced mood improvement following phone usage for at least two years (52%). (Survey Results) The research demonstrated that 56 percent of children possessed deficient intelligence combined with attention deficits. The research showed that finger difficulties develop in fifty percent of children because of excessive toy play and seventy percent of youngsters face dry eyes along with persistent drowsiness because of electronic device radiation. Studies demonstrate that 93% of people experience sadness together with anxiety. A phone addiction made 72% of surveyed youngsters experience headaches. An extensive study confirms that lengthy phone habits among children produce wide-ranging physical and mental medical complications. Parents need to make every attempt to prevent their children from utilization of smartphones while providing phone usage authorization only during emergencies. Children need specified utilization of smartphones times and they should be aware of what will happen in the short term and long term because of how they use their smartphones.

Keywords: cognitive consequences, smartphones, gaming consoles, children.

Introduction

The technological evolution during the twenty-first century led to substantial digital device usage increases among contemporary children. This trend consumes a major portion of their available free time ^(1,2,3). Children between 8 to 12 years old dedicate approximately 4 to 6 hours every day to screen activities including gaming and video viewing and social interaction according to research ^(1,4). Digital media offer children unique encounters which provide beneficial aspects but also produce detrimental effects on their cognitive growth ⁽⁵⁾. Neuroscientific research about how technology affects brain functions and human behaviors is now gaining focus because scientific research migrated to online platforms. Research shows that sustained technology usage affects brain operations and behavioral patterns and leads to combined positive and negative outcomes. The internet offers elderly adults who have cognitive decline the opportunity to gain independent support through its information resources. Many older adults who deal with

cognitive issues avoid or fail to use modern technology even though there are large numbers of such individuals ⁽⁶⁾. Internet game addiction affects both cognitive processing and emotional balance. Multiple studies in the past documented that Internet addiction exists along with other conditions ^(7, 8). A multi-time study demonstrated that initial levels of Internet game addiction together with depression rates showed positive links with subsequent depression scores and Internet game addiction scales. Research indicates that depression symptoms potentially interact with addiction development patterns in the online gamer population. Most people turn to playing online games to manage their psychological burdens. People who spend long periods playing games develop relationship detachment that results in severe depression as their primary mental health challenge ⁽⁹⁾. Mobile communication produces radiofrequency electromagnetic fields that represent the principal health threat to human wellness including physical and mental health issues and deficiencies of social relations and workers' abilities and daily operation capabilities ⁽¹⁰⁾. The content of numerous mobile games includes fighting against opponents alongside excessive shooting actions along with eclectic personality traits and robotic movement styles and soon after a confusion-filled storyline and fast-moving gameplay. Student emotional and mental state suffers major damage from such psychological content in mobile games. People addicted to such games tend to become restless while showing impulsive behavior and emotional instability and showing violent tendencies. Students who devote their mental presence to video games often develop schizophrenia symptoms because they remain mentally absorbed in online worlds. Children who are addicted to smartphones games show only rare evidence of psychological improvement. Researchers today prioritize mobile games because these platforms raise troubling antisocial behavior issues. The main reason for video game development remains entertainment alongside education but many games contain violent content according to data from Children Now in 2001 on non-profit work for children's learning and development. The research shows that back in 2001 all games had violent content and fifty percent of all games contained brutal violence ⁽¹¹⁾.

Materials and instruments

An analysis of 200 children living in various parts occurred through authorized parent responses using distributed questionnaires. The participants ranged in age from 2 to 12 years. The investigation utilized multiple variables to ask questions that covered (age, gender, and livelihood) among other considerations. The parent's educational level, occupation, etc.) The research lasted five months, from March to July 2023.

Statistical analysis

Data analysis employed the available statistical software of SPSS version 28 (Statistical Packages for Social Sciences –version 28). The researchers presented findings through percentage measures and adopted a criterion of P value below or equal to (0.05) for statistical significance.

Results

Table (1) confirms that utilization of smartphones and video games are used by 60% of youngsters and individuals older than 5 years of age. People living in urban environments adopt the use of smartphones and video games at higher rates compared to those residing in rural environments (66% vs. 54% respectively). Both groups possess 38% and 36% of parents with the highest education level. The research established a direct link between maternal employment and child utilization of smartphones and video games despite both parents having university degrees. Working mothers and fathers showed higher frequency rates of mobile phone usage amounting to 42% and 78% while maintaining a p-value at 0.0001. The research base used economic status of guardians to choose its participants which consisted mainly of middle-income adults at 53.8%. A number of studies present similar outcomes.

Table (1): Display demographic and socioeconomic information related to mobile phones and gaming device usage

Socio-demographic characteristics		Utilization of smartphones and video games						P. value
		No		Yes		Total		
		No.	%	No.	%	No.	%	
Age groups	<= 5 years	8	50.0%	72	39.1%	80	40.0%	0.395
	>=5 years	8	50.0%	112	60.9%	120	60.0%	
Gender	Male	4	25.0%	88	47.8%	92	46.0%	0.079
	Female	12	75.0%	96	52.2%	108	54.0%	
Environment	Rural	4	25.0%	64	34.8%	68	34.0%	0.428
	Urban	12	75.0%	120	65.2%	132	66.0%	
Level of education of mother	Non institutional learning	0	0.0%	28	15.2%	28	14.0%	0.077
	Primary	8	50.0%	60	32.6%	68	34.0%	
	Auxiliary	0	0.0%	28	15.2%	28	14.0%	
	Academy	8	50.0%	68	37.0%	76	38.0%	
Level of education of father	Non institutional learning	0	0.0%	20	10.9%	20	10.0%	0.017
	Primary	8	50.0%	48	26.1%	56	28.0%	
	Auxiliary	0	0.0%	52	28.3%	52	26.0%	
	Academy	8	50.0%	64	34.8%	72	36.0%	
Occupation of mother	Occupied	8	50.0%	76	41.3%	84	42.0%	0.0001
	Unoccupied	0	0.0%	32	17.4%	32	16.0%	
	Household manager	4	25.0%	76	41.3%	80	40.0%	
	Pupil	4	25.0%	0	0.0%	4	2.0%	
Occupation of father	Occupied	16	100.0%	140	76.1%	156	78.0%	0.086
	Unoccupied	0	0.0%	32	17.4%	32	16.0%	
	Pupil	0	0.0%	12	6.5%	12	6.0%	
Level of Family income	Good	12	75.0%	72	39.1%	84	42.0%	0.018
	Moderate	4	25.0%	99	53.8%	103	51.5%	
	Poor	0	0.0%	13	7.1%	13	6.5%	

According to Table No. (2) 4% of children non usage smartphone but 96% usage smartphone when including complex gaming gadgets. Data shows that over fifty percent of families possess more than two telephones while eighty percent of their children display happiness during phone use according to parent feedback. Research results showed that prolonged cell phone usage exceeding two years or more resulted in the highest decreases of focus and intellect measured at 48% and 52% respectively. The reason behind the problem is the repetitive quick movements your child performs.

Table (2): Highlight children's mobile phone behavior and practices

Children's habitats and patterns		Utilization of smartphones and video games	
		No.	%
Kids and mobile device usage	Usage	192	96%
	Non usage	8	4%
Number of phone in the home	Tow and less	84	42%

	More than two	116	58%
When the child uses the phone	Every day	156	78%
	Several times or twice a day	44	22%
	Happiness	96	48%
The child's feeling when using the phone	Freedom	20	10%
	Comforts	44	22%
	Other than that	40	20%
	No more than a year	96	48%
Duration of children's mobile phone usage	Two years or more	104	52%

The percentages from Table No. (3) Show that autism developed in children because they used mobile phones at an 84% rate and their symptoms include changes in motor skills and language and mood swings. Diminished ability to concentrate of children a higher level of fifty-six percent as shown through phone usage analysis. A significant portion of 54 percent impact of mobile usage on children's fingers caused by phone handling according to research results which points to negative health consequences from gaming devices and phones. The research concluded that gaming devices produced 72% maximum radiation which led to vision issues and 93% highest rates of persistent sleepiness, anxiety, depression and loneliness among children with 72% as the most significant percentage. The cause of persistent headaches in children might be attributed to Smartphone overuse affecting kids or watching screens.

Table (3): Demonstrate the negative impact of mobile and gaming devices on health.

Health effects	Utilization of smartphones and video games			
	Yes		No	
	No.	%	No.	%
Living with autism	168	84%	32	16%
Diminished ability to concentrate	112	56%	88	44%
Impact of mobile usage on children's fingers	108	54%	92	46%
Smartphone-induced vision issues	140	70%	60	30%
Manifestation of anxiety and depression	186	93%	14	7%
Smartphone overuse affecting kids	144	72%	56	28%

Discussion

The research data demonstrated that children from the ≥ 5 years' age bracket frequently usage smartphone and play technologies at a rate of 60%. According to Iqbal *et al.*, (2022), children from the ≥ 5 years' age bracket represented most of the study group (65%). This study revealed that females had a 52.2% use rate compared to males with 47.8% suggesting different results compared to Wang *et al.*, (2019). The present study confirms previous research by Iqbal *et al.*, (2022) at Karachi, Pakistan where an urban sample population exceeded 65.2% of the studied subjects⁽¹⁴⁾. The majority of parents who completed academy received the highest percentage of educational achievement for both mothers (38%) and fathers (36%). The research from Dehradun in India conducted by Ausier *et al.*, (2020) matched this study by displaying academy graduates as the most populous group among respondents while father's education demonstrated a meaningful effect on behavior⁽¹⁵⁾. The study demonstrated how occupational differences between mothers and their child usage of smartphone and video games created a substantial connection (p -value = 0.0001) while indicating high occupied rates among both parents (41.3% & 76.1%). Research findings by Jamel *et al.*, (2019) match the obtained results finding an association (p -value < 0.05)⁽¹⁶⁾. The highest percentage (53.8%) in "fair" was observed for parents who participated in the association's level of education exam. The research findings

match those of Wang *et al.*, (2019) in their study ⁽¹⁷⁾. There exists a high percentage of children using smartphone along with modern gaming devices as shown in the study data (96%) compared to those who non-usage smartphones (4%). Home phones outnumber two units in 58% of homes and children stay on the phone for 78% of each day. The study conducted by Iqbal *et al.*, (2022) revealed that children utilized their phones for the entire day during 49% of the observation period. A significant number of participants reported feeling happy when using the phone according to the study findings ⁽¹⁸⁾. The happy response rate was 48% for this question. The data in this table (3) demonstrates that gaming device usage results in child autism cases since autism presents delayed language impediments and delayed motor abilities and mood instability including tension and anxiety with percentages of (84%) and (70%). The study results by Wang *et al.* (2019) in China observed a similar highest percentage (90%) of patients with autism ⁽¹⁷⁾. The study result aligns with a Saudi Arabian study conducted by Raghad Al-Samman, (2019) ⁽¹⁹⁾ that discovered the phone duration creates negative effects on nervous system functionality which limits intelligence and concentration abilities through child device movements.

The health consequences from smartphones and video games usage result in hand finger pain that children experience because they use their phones often. The research findings demonstrated that gaming device radiation released the most harm to the vision issues while simultaneously creating dryness and regularly generating drowsiness with anxiety and depression experiences and feelings of being alone in 54% of cases and in 70% of individuals respectively. The findings support the research performed in Dehradun India by Dimri *et al.*, (2022) ⁽²⁰⁾.

Study outcomes indicated 72% stood as the maximum significant percentage of gamers who reported headaches because of phone game light flashes and deafening noises. The research findings conform to similar work conducted at Indonesian Islamic University by Rosyati *et al.*, (2020) ⁽²¹⁾.

Conclusions

Our research makes it clear that smartphones usage together with video games has become common practice among children who have reached age 5 and beyond. A significant segment of this population group occupies urban environments within central metropolitan areas and most of their parents possess college diplomas. The survey indicates children whose mothers maintain home work schedules use cell phones to a greater extent especially when both parents conduct their work activities outside the home. Most families owned multiple mobile phones according to the survey which revealed that children spent the day accessing their phones while many younger individuals operated cell phones and contemporary gaming devices. The researchers discovered that phone usage by children resulted in autistic symptoms and deficiencies in their social competence. Their studies focused on these findings because children experienced fingertip discomfort as a result of their smartphones usage. Through the use of the telephone. The study discovered that youngsters faced several negative health problems caused by gaming gadget radiation which produced dry eyes and chronic fatigue as well as anxiety and depression and social isolation symptoms. Children who play video games frequently develop headaches because of the continuous brightening effects produced by modern phones as well as games and lighting. To reduce potential adverse effects on children parents need to restrict their mobile device usage.

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