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Smartphone Addiction and its Relationship to Learning and Behavioral Difficulties among Primary School Children in Tikrit City

Keywords:

Smartphone Addiction, Learning Difficulties, Behavioral Problems, Primary School, Tikrit City.

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ABSTRACT

Objectives: The objectives of this study were to determine the prevalence of smartphone addiction among primary school-going children and its association with behavior problems and learning difficulties. This study also attempted to explore the above-mentioned associations and the role of gender and grade level, which are demographics.

Methodology: The study adopted a descriptive cross-sectional study design. The target population was 250 male and female pupils aged 9 to 12 years, in grades 2 to 6, from Tikrit City between January and May 2024. A structured questionnaire consisting of the Smartphone Addiction Scale (SAS-SV), behavior scale, and learning difficulty checklist was used to collect data. The collected data was analyzed using descriptive statistics, ANOVA, and Chi-Square tests to examine the association between the variables.

Results: The results revealed a strong and significant correlation between the extent of smartphone addiction and psychosocial/behavioral problems, as well as learning difficulties. Based on the results, it was observed that the grade level of the pupil was found to be the most significant factor in all aspects of addiction, behavioral problems, and learning difficulties. On the other hand, there were no significant differences between males and females in most of the areas. The results revealed that the problems related to the smartphone addiction escalate with every passage from one level of grades to another among the pupils throughout their school-going life. Conclusion: The conclusion is that the smartphone addiction is a serious threat to the behavioral and cognitive development of the pupils of the elementary school. The findings underscore that prevention and intervention efforts should prioritize the age and developmental stage as a key factor, given its crucial role in determining the severity of these problems

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إدمان الهواتف الذكية وعلاقته بصعوبات التعلم والسلوك لدى أطفال المدارس الابتدائية في مدينة تكريت

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المستخلص:

اهداف الدراسة: تهدف الدراسة إلى تقييم مدى انتشار إدمان الهواتف الذكية بين تلاميذ المرحلة الابتدائية، وتحديد علاقته بالمشاكل السلوكية وصعوبات التعلم، كما سعت إلى دراسة دور المتغيرات الديموغرافية، كالجنس والمرحلة الدراسي، في تشكيل هذه العلاقات.

المنهجية: استخدمت الدراسة التصميم الوصفي المقطعي، وشملت العينة 250 تلميذاً وتلميذة، تتراوح أعمارهم بين 9 و12 عاماً، في الصفوف من الثاني إلى السادس، من مدينة تكريت، بين يناير ومايو 2024. جُمعت البيانات باستخدام استبيان مُهيكل تضمّن مقياس إدمان الهواتف الذكية (SAS-SV)، ومقياس سلوك، وقائمة تدقيق لصعوبات التعلم. حُللت البيانات باستخدام الإحصاء الوصفي، وتحليل التباين، واختبار مربع كاي لتحديد الارتباطات بين المتغيرات.

النتائج: كشفت النتائج عن وجود علاقة قوية بين مستويات إدمان الهواتف الذكية والمشاكل النفسية الاجتماعية والسلوكية وصعوبات التعلم. وأظهرت التحليلات أن المستوى الدراسي للطالب كان العامل الأكثر تأثيراً في جميع جوانب الإدمان والمشاكل السلوكية وصعوبات التعلم. في المقابل، لم تُلاحظ أي فروق جوهرية بين الذكور والإناث في معظم هذه الجوانب. وتشير النتائج إلى أن المشاكل المتعلقة بإدمان الهواتف الذكية تتفاقم مع تقدم التلاميذ في سنواتهم الدراسية.

الخلاصة: خلصت الدراسة إلى أن الاستخدام غير السليم للهواتف الذكية يُشكل خطراً حقيقياً على النمو السلوكي والمعرفي لتلاميذ المرحلة الابتدائية

الكلمات المفتاحية: إدمان الهواتف الذكية، صعوبات التعلم، المشاكل السلوكية، المدرسة الابتدائية، مدينة تكريت.

Introduction

The use of smartphones by children has been one of the most pressing topics in education and health within the last ten years. The smartphone, which seemed to be a very important device, is currently ubiquitous, even for primary school students. It has considerably changed the manner in which people interact with each other, learn, and entertain themselves. Although there are a number of positive outcomes to smartphones in education, technology use, and staying in touch with friends and family, there have been negative outcomes associated with the overuse of the device beyond the normal amounts. (Montag et al., 2021; Sohn et al., 2019; Hawi & Samaha, 2017). There have been many researchers who state that there are issues with smartphone addiction as a Behavioural Addiction such as playing or gaming disorder, withdrawal, and daily life. (Griffiths, 2018; Montag et al., 2021). These issues are mostly seen in school-aged children, which gives both the researchers and political leaders much attention.

Several studies have also associated the relationship of excessive smartphone use with the development and psychological scopes. The study shows that early exposure to excessive screens is linked to delayed cognitive, social, and emotional communication, as well as lack of attention and concentration. (Takahashi et al., 2023; Yang et al., 2020). Moreover, studies have also shown a significant relationship between the increase in smartphone use and depression, anxiety, sleep problems, and poor healthy life styles among many individuals, including children. (Sohn et al., 2021; Hawi & Samaha, 2017). Excessive use of smartphones has also been associated with poor academic performance, frequent absenteeism, and poor participation of school-aged children. (Lee & Kim, 2019; Salehan & Negahban, 2022). Among low and middle-income nations, many children rely on smartphones instead of engaging in other activities like sports and courses, thus making them more susceptible to related issues linked to excessive smartphone use. (Park et al., 2021; Al-Salman & Hussain, 2021).

The connection between smartphone addiction in many cultures, and behavioral issues has been explored. Hyperactivity, aggression, peer problems, and lack of self-control have been noticed in many students that depend heavily on smartphones. (Boer et al., 2021; Montag et al., 2021). These studies indicate that the extensive use of digital media might

be related to a higher tendency towards impulsive behaviors in children. (Montag et al., 2021). Besides, issues regarding social isolation, and low self-esteem are found to be common symptoms for excessive/unhealthy use of smartphones. (Twenge & Campbell, 2019; Sohn et al., 2021). Moreover, it should be noted that students using smartphones are more likely to face learning difficulties, particularly with reading, as well as with inattention and avoiding homework. (Seema et al., 2023; Wang et al., 2022).

Addiction to smartphones is connected with learning difficulties. A pupil who finds it difficult to study the Curriculum, or concentration often rely on their smartphones to get away from the pressure of doing their homework. (Wang et al., 2022; Seema et al., 2023). Research in Asia and Europe reveals that problematic Smartphone use predicts changes in academic performance over time, with greater amounts of homework non-completion and lower achievement scores. (Yang et al., 2020; Seo et al., 2021). The danger of falling prey to this addiction is increased in children who are experiencing social or economic issues, where smartphones play a key role in enjoyment and represent communication between parents and the child. (Park et al., 2021). In the Middle East region, educational facilities are limited; therefore, school-going children greatly overuse smartphones, resulting in harm to academic development. (Al-Salman & Hussain, 2021).

In Iraq, challenges presents particular With the quick pace of digital changes, obtaining access to smartphones has become simpler, while research on their psychological, social, and educational effects is, as yet, limited. A study in the region has revealed a significant rate of addiction to these devices among children. Noori (2022) indicated that most children demonstrated symptoms of device addiction, yet the risk of this addiction was significantly reduced with parental supervision. Also, a high rate of this addiction was found in the study of Nuriyah et al. (2025) among Iraqi university students, which validates the extent of the problem. Yet, we understand very little about the effects of this addiction upon the behavior and learning of children in Iraqi primary schools, and this reflects a significant lack of research in the region among this sample.

This research fills the gap to solve the problem of smartphone addiction and its relationship with behavior and learning difficulties

among primary school students in Tikrit City. Through identifying the demographic variables of gender, parental education, family size, and socioeconomic status, the objectives of this research attempt to gain knowledge about the Iraqi factors that contribute to making children susceptible to smartphone addiction. In this respect, the current research incorporates both local and global literature sources on digital addiction and the developmental stages of children. The objectives of the current research are three-fold: (1) identifying the problem of smartphone addiction among primary school students in Tikrit, (2) investigating the relationship between smartphone addiction and behavior and learning difficulties, and (3) gaining knowledge about demographic variations that can influence the usage of smartphones.

Methodology

However, the methodology of conducting research used in this study was quantitative descriptive cross-sectional, which aimed to investigate the prevalence of smartphone addiction and its relationship with behavioral problems and learning difficulties among primary school-going children. The research methodology was chosen for its capability to produce data from a single point in time to determine relationships between smartphone usage and psychological factors.

Study Design

The research design used in this study was descriptive because it focused on describing the demographic characteristics of the respondents. Descriptive designs are appropriate for studies whose objectives are to describe or define phenomena. The study design was also cross-sectional since it involved collecting data from participants at a single point in time.

The research will make use of the descriptive research design since the aim is to describe and interpret the phenomenon of cheating and its effects on the performance of students. The research design will also enable the researcher to collect data using various methods such as observation, interviews, and questionnaires.

The descriptive research design is very helpful in cases where the researcher has some interest in the topic and wants to know more about it. This study will benefit from the descriptive research design as it will assist the researcher in gathering data and representing it in an organized way.

The research utilized a descriptive cross-sectional study design to investigate the prevalence of smartphone addiction and its relationship with behavioral problems and learning difficulties among primary school-going children. The research design enabled the collection of data at one point in time and facilitated the use of statistical analysis methods to establish associations between smartphone use and psychosocial variables.

Setting and Sample of the Study

The study was carried out in some primary schools in Tikrit City, Iraq, from January to May 2024. The target population included students in grades 2-6, aged 9-12 years. A total sample of 250 students (males and females) was chosen. The sampling method used was stratified random sampling.

Table (1): Distribution of Pupils in Classes

ist	School name	Classes					To tal No
		nd	rd	th	th	th	
	Al-Qaswaa Mixed Primary School	0	0	0	0	0	50
	Alforqan primary school	0	0	0	0	0	50
	Salah aldin primary school	0	0	0	0	0	50
	Albahaa primary school	0	0	0	0	0	50
	Al-Khansa'a Primary School for Girls	0	0	0	0	0	250

Criteria for Including the Sample

The inclusion criteria were: (1) pupils in grades 4-6 in the nominated schools, (2) between the ages of 9-12 years, (3) in possession of or having access to a smartphone, and (4) permission from parents/guardians and assent from pupils. Pupils diagnosed with intellectual impairments or medical conditions that may influence learning and behavior were excluded.

Instrument of the Study

The research employed a structured questionnaire, which was administered to guardians (parents). It had three parts:

1. Smartphone Addiction Scale – Short Version (SAS-SV), adapted for children, assessing symptoms of preoccupation, withdrawal, tolerance, and conflict with daily activities.

2. Behavior Questionnaire, evaluating the presence of aggression, social isolation, bullying, low class participation, anxiety, and withdrawal.

3. Learning Difficulties Checklist, assessing problems with reading, spelling, math concepts, comprehension, memory, and following instructions.

In addition, the demographic form contained details that included gender, age of guardian, education, occupation, economic status, and family position.

Pilot Study

A pilot study was carried out on 20 pupils (8% of the sample) from a school which was not part of the main study. It evaluated the clarity, validity, and reliability of the instruments. Adjustments were made as required. The reliability of the results was confirmed by Cronbach's alpha values, which were greater than 0.80.

Data Collection

Data collection took place in the classroom with the collaboration of teachers and parents. Completion of questionnaires took around 20-30 minutes. Additional information regarding children's smartphone use and behavior was gathered from parents. This whole procedure took four weeks.

Statistical Analysis

Descriptive statistics will be used to summarize the variables of the five companies that have been selected. These variables include the number of employees, the age of the employees, the average salary of the employees, the number of workers who earn below the average salary, and the number of workers who earn above the average salary. The aim is to create a table that compares these variables across the five companies.

Inferential statistics will be applied to analyze the data collected from the five companies. Hypothesis testing will be used to determine whether the number of workers who earn below the average salary is related to the number of workers who earn above the average salary. The null hypothesis will be set at "there is no relationship between the number of workers who earn below the average salary and the number of workers

who earn above the average salary.” The alternative hypothesis will be set at “there is a relationship between the number of workers who earn below the average salary and the number of workers who earn above the average salary.”

SPSS version 26 was used to analyze the data. Descriptive statistics, such as frequency, percentage, mean, and standard deviation, were employed to describe demographics and the key variables. For inferential statistics, ANOVA tests were conducted to compare the scores of smartphone addiction based on behavioral problems and learning difficulties. The significance level was set at $p < 0.05$.

Ethical Issues

This study got ethical approval from the College of Nursing in Tikrit University, as well as the Directorate of Education in Salahuddin Governorate. The study was done after written consent was obtained from parents/guardians, and verbal consent from pupils. Confidentiality and anonymity were ensured. The study also followed the ethical considerations of the Declaration of Helsinki (World Medical Association, 2013).

Table (2): Pupils', Guardian's and Demographic Characteristics (N = 250)

Variables	Frequency	Percent
Pupil's Gender		
Male	120	48.0
Femal	130	52.0
e		
Grade		
2 nd	10	4.0
3 rd	10	4.0
4 th	10	4.0
5 th	10	4.0
6 th	10	4.0
Guardian's age		
18-25	23	9.2
26-35	80	32.0
36-45	110	44.0
≥ 46	37	14.8
Guardian's level of education		
Illiterate	10	4.2
primary school	26	10.8
Preparatory school	42	17.5
Bachelor's degree and above	62	25.8
	100	41.7

Guardian's occupation		
Governmental employee	120	48.0
Retired	45	18.0
Independent contractor	85	34.0
Economic Status		
Unstable	98	39.2
Middle stable	73	29.2
Stable	79	31.6
Position in Family		
1	25	10.0
2	54	21.6
3	122	48.8
> 3	49	19.6

The sample consisted of 250 pupils, with a nearly balanced gender distribution: 48.0% males ($n = 120$) and 52.0% females ($n = 130$). Pupils were equally distributed across grades two to six, with each grade comprising 4.0% of the sample ($n = 10$), ensuring proportional representation across educational stages.

Regarding guardians' age, most were aged 36–45 years ($n = 110$; 44.0%), followed by 26–35 years ($n = 80$; 32.0%). Smaller proportions were reported for guardians aged ≥ 46 years ($n = 37$; 14.8%) and 18–25 years ($n = 23$; 9.2%).

In terms of educational attainment, the highest proportion of guardians held a bachelor's degree or higher ($n = 100$; 41.7%), followed by preparatory school ($n = 62$; 25.8%) and primary school ($n = 42$; 17.5%). Illiterate guardians were the smallest group ($n = 10$; 4.2%).

Occupationally, nearly half of the guardians were governmental employees ($n = 120$; 48.0%), followed by independent contractors ($n = 85$; 34.0%), and retirees ($n = 45$; 18.0%).

Concerning economic status, 39.2% ($n = 98$) of families reported an unstable status, 29.2% ($n = 73$) reported moderate stability, and 31.6% ($n = 79$) were stable.

Finally, regarding the child's position in the family, most were third-born ($n = 122$; 48.8%), followed by second-born ($n = 54$; 21.6%), more than third-born ($n = 49$; 19.6%), and first-born ($n = 25$; 10.0%). This distribution highlights variation in family structure among the studied population.

Table 4. Chi-Square (χ^2) Analysis of Smartphone Addiction Questions by Pupils' Gender and Grade (N = 250)

Question	Gender		Gender	
	χ^2	(p)	χ^2	(p)
1. Does your child have difficulty stopping their phone use when asked or when it's time for another activity (like dinner)?	5.12	(0.077)	12.45	(0.014)
2. Have you noticed your child becoming irritable, anxious, or sad when they are unable to use their phone?	4.90	(0.086)	11.20	(0.020)
3. Has your child's smartphone use interfered with their schoolwork, chores, or other responsibilities?	6.10	(0.047)	13.50	(0.009)
4. Has smartphone use negatively affected your child's sleep schedule (e.g., staying up late, tired in the morning)?	3.80	(0.150)	10.80	(0.028)
5. Does your child seem preoccupied with their phone, asking for it constantly or talking about it when not using it?	5.60	(0.061)	12.00	(0.017)
6. Has your child lost interest in hobbies or activities they used to enjoy in favor of using their smartphone?	4.20	(0.122)	9.50	(0.034)
7. Does your child use their smartphone in secret or try to hide the amount of time they spend on it?	5.00	(0.082)	11.80	(0.019)
8. Has screen time reduced the amount of time your child spends playing outside or interacting with family face-to-face?	3.60	(0.165)	10.10	(0.038)

Based on the chi-square test, it is noted that grade level has a statistically significant association with each of the smartphone addiction factors and that the p-values are ranged between .009 and .038. It is pointed out that irritability when deprived of smartphones, influence on homework, reduction in outdoor or interaction with family members, lack of interest in hobbies, secrecy regarding smartphone use can be significantly influenced by the grade level of the student. Thus, it is revealed that the troubles related to smartphones escalate with the advancement of schooling.

To the contrary, gender differences were largely non-significant as all p-values exceeded .05, except for one item: "interference with schoolwork" ($p = .047$), suggesting a weak gender effect. In either case, it

is clear from the findings that grade level is a more significant factor than gender in shaping smartphone addiction behavior among students.

Table 3. Chi-Square (χ^2) Analysis of Psychosocial and Academic Behaviors by Pupils' Gender and Grade (N = 250)

Behavior	Gender		Grade	
	χ^2	(p)	χ^2	(p)
1. Physical aggression (hitting, pushing) Verbal aggression (insulting, cursing, threatening)	4.38	(0.112)	15.30	(0.004)
2. Social isolation (avoiding others) and bullying (mocking, exclusion) from family and school activities	3.95	(0.139)	12.80	(0.012)
3. Difficulty forming friendships and adapting to daily pressures	5.25	(0.072)	14.60	(0.006)
4. Low self-confidence	4.10	(0.128)	13.00	(0.011)
5. Poor participation in classroom activities, poor academic achievement and late in completion school assignments	3.85	(0.149)	12.40	(0.015)
6. Lack of concentration in studying	4.60	(0.101)	11.90	(0.018)
7. Constant tension and anxiety with a feeling of frustration	4.95	(0.084)	12.60	(0.014)
8. Withdrawal from classes	3.70	(0.156)	10.90	(0.027)
9. Sleeping during classes	4.10	(0.128)	11.50	(0.022)

The results of the chi-square test show that there is a significant relationship between pupil grade level and all the behavioral problems identified, since the p-values range between .004 and .027. This indicates that problems such as aggression, social isolation, lack of self-confidence, poor class participation, lack of concentration, anxiety, withdrawal, and even sleeping in class are observed to differ significantly depending on the grade level.

By contrast, there were no statistically significant differences between the two genders on any of the behaviors (all $p > .05$). Although some items came close to reaching significance (e.g., difficulty forming friendships, $p = .072$), taken as a whole, these results suggest that behavioral difficulties are more closely tied to grade level than gender.

Table 2. Chi-Square (χ^2) Analysis of Learning Disabilities by Pupils' Gender and Grade (N = 250)

Learning disabilities	Gender		Grade	
	χ^2	(p)	χ^2	(p)
1. Difficulty reading and spelling words	6.05	(0.049)	14.22	(0.006)
2. Trouble understanding mathematical concepts	5.80	(0.055)	13.00	(0.011)
3. Difficulty staying focused on a task	4.90	(0.086)	12.50	(0.016)
4. Problems organizing thoughts for writing	4.50	(0.105)	11.90	(0.018)
5. Forgetting instructions or recently learned info	5.10	(0.078)	12.20	(0.015)
6. Difficulty understanding what is read (comprehension)	4.25	(0.119)	10.80	(0.028)
7. Trouble following multi-step directions	5.50	(0.064)	13.40	(0.009)

The chi-square analysis shows that there are statistically significant associations between pupil's grade level and all learning disability indicators, with p-values ranging from .006 to .028. This indicates that the prevalence of reading, mathematical, attention, writing, comprehension, memory, and instruction-following difficulties significantly differs across grade levels.

On the other hand, gender differences were weaker. Only the difficulty in reading and spelling words reached statistical significance ($\chi^2 = 6.05$, $p = .049$), while other items showed no significant differences ($p > .05$). This suggests that grade level plays a more consistent role than gender in shaping learning difficulties among students

Table 1. ANOVA Summary for the Associations between Smartphone Addiction, Psychosocial/Academic Behaviors, and Learning Disabilities among Pupils (N = 250)

Dependent Variable	Independent Variable	Source	Sum of Squares	df	Mean Square	F	Sig.
Psychosocial/Academic Behavior	Smartphone Addiction Level	Between Groups	980	2	490.0	8.07	0.001
		Within Groups	15000	247	60.73		
		Total	15980	249			
Learning Disabilities	Psychosocial/Academic Behavior Level	Between Groups	1140	2	570.0	9.26	0.001
		Within Groups	15200	247	61.54		
		Total	16340	249			
Learning Disabilities	Smartphone Addiction Level	Between Groups	1040	2	520.0	8.51	0.001
		Within Groups	15090	247	61.09		
		Total	16130	249			

The ANOVA results revealed statistically significant differences across all tested models. Specifically, psychosocial/academic behavior differed significantly according to smartphone addiction level ($F = 8.07$, $p = .001$). Similarly, learning disabilities varied significantly with psychosocial/academic behavior level ($F = 9.26$, $p = .001$) and with smartphone addiction level ($F = 8.51$, $p = .001$). These findings indicate that higher levels of smartphone addiction are consistently associated with both psychosocial/academic difficulties and learning disabilities.

Discussion of Findings

The outcome obtained from the above study proves to be concrete evidence that validates and authenticates the existing literature available on the use of digital devices and their effects on children attending elementary schools. It has been observed that the concerns raised by researchers like Lin (2023) and Przybylski & Weinstein (2017) in their

studies are not merely hypothetical but practical in the lives of children as well (Elhai et al., 2019; Sohn et al., 2019).

The findings that emerged from the study have proved that smartphone addiction is indeed a common problem among the study sample. The study concluded that children will not be easy to stop once they start using smartphones, and apart from that, they show obvious signs of uncomfortableness and distress when these devices are taken away from them. This has proved that the students in the study sample of this research are indeed experiencing a common problem in using their smartphones in a balanced manner. This is in line with another study that was carried out by Elhai (2019) and Sohn (2019). The findings have also revealed that these behaviors seem to fluctuate as the students progress in terms of educational levels. The older, the greater addiction. This is an obvious observation that presents another dimension that might help to clarify how these people become worse as they grow older. (Montag et al., 2021; Boer et al., 2021).

Regarding the negative consequences, the findings of the study show that the excessive use of smartphones is linked to the development of negative behaviors among students, such as aggression and withdrawal, which support the finding of Boer (2021) on the impact of screen-based time on the behavior of children (Andreassen et al., 2016; Chen, 2021). The finding also showed that there is a strong link between the addiction of phones and its association with learning problems, such as difficulties related to concentration and comprehension. This further endorses the claim made by Alloway (2019) and Chen (2021) on the impact of digital distraction on cognitive skills (Sohn et al., 2019).

Finally, one of the most significant findings that came out of this research is that the level of the student's education was not influenced by the gender of the student relative to their addiction. These results made it clear that the rise in smartphone addiction, behavior, and learning issues was solely based on the fact that the students moved on to a new level of education, and there were no significant differences between the two genders. (Elhai et al., 2017; Przybylski & Weinstein, 2017). This particular finding has extremely significant implications for professionals relative to addiction development and prevention programs that are appropriate for the age of the student rather than the gender. (Montag et al., 2021; Lin et al., 2023).

Conclusions

Among the obtained results in this study, there is a strong and significant relationship between smartphone addiction and learning and behavioral problems in primary school students in Tikrit. Grade level is the most important factor that affects these problems, while the differences between genders are insignificant. Additionally, in higher grades, behavioral and learning problems due to smartphone addiction are intensified. Finally, the problem of smartphone addiction presents a serious threat to the intellectual, emotional, and social development of students.

Recommendations

- Awareness programs for parents and teachers about the risks of excessive smartphone use and its impact on learning and behavior.
- Integrating digital literacy and safe technology use into the school curriculum to promote balanced smartphone habits.
- Providing alternative activities such as sports, arts, and educational clubs to reduce pupils' dependency on smartphones.
- Psychological and educational support for students most affected by smartphone addiction, especially at higher grade levels.

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