Psychological and Social Impacts of Electronic Video Games on Middle School Students: An Empirical Jordanian Study

Ruba Khaled Alomyan (Corresponding author)

Dept. of Educational Psychology, Tafila Technical University

Tafila, Jordan

E-mail: ruba.kalomyan@gmail.com

Dr. Ahmad Thawabieh

Dept. of Educational Psychology, Tafila Technical University

Tafila, Jordan

E-mail: ahmadthawabieh@yahoo.com

Abstract

This study examines the psychological and social impacts of electronic video games on middle school students using research instruments specifically designed to measure these effects and by verifying their psychometric properties. The study sample comprises 266 sixth-, seventh-, and eighth-grade students in the Directorate of Education in Al-Muwaqqar District, Jordan. A correlational descriptive approach was employed. The findings reveal that the overall mean score for the psychological influence of electronic games on middle school students is moderate. Similarly, the overall mean score for the social impact is also moderate. The study found no statistically significant correlation between hours spent playing electronic games and their psychological and social effects. Nevertheless, significant differences are found in the mean scores for the psychological and social effects of electronic games on middle school students based on gender, favoring females. Conversely, no statistically significant differences are observed in mean scores for the psychological and social impacts of electronic games by grade level or number of hours played. Based on the results, the study

recommends raising students' awareness of the potential harms associated with electronic gaming. It also contributes to enriching studies of the effects of interactive media by providing empirical evidence from the Jordanian educational context, reliable measurement tools for the psychological and social consequences of electronic games, and clarification of the role of certain demographic variables as conditional factors in shaping these effects.

Keywords: digitization, entertainment, interaction, addiction, disorder, isolation

1. Introduction

This study examines how electronic games affect the psychological and social aspects of middle school students, with a focus on emotional well-being and social interactions with family and peers. It also investigates potential differences in these effects by gender, grade level, and hours spent playing. Additionally, the study examines the relationship between gaming duration and its psychological and social associations, offering a comprehensive perspective to guide the responsible and safe use of electronic games. To achieve these goals, the study assesses the extent to which electronic games influence students' psychological and social dimensions. It assesses whether there are statistically significant differences at the (α=0.05) level attributable to the study variables. It also explores the correlational relationship between gaming hours and these effects. The research is conducted on a randomly selected cluster sample of students from the sixth, seventh, and eighth grades within the Directorate of Education in Al-Muwaqqar District, Amman Governorate, Jordan, during the second semester of the 2023/2024 academic year.

Electronic video games have become an integral part of children's lives in the modern era, increasingly indispensable in most households. These games uniquely combine entertainment with educational elements, offering children opportunities for social interaction and skill development. However, excessive use of these games may result in negative psychological and social consequences, particularly during early educational stages. Among these negative influences is social isolation, as children spend long periods playing games without interacting with others, reducing their engagement in social activities and public events. Some children also experience psychological disorders, including depression, anxiety, mood swings, and psychological maladjustment.

With the widespread use of electronic games, it has become rare to find a household without them, making these games easily accessible to everyone, particularly children. Sometimes parents encourage their children to play these games, increasing the likelihood of excessive use. Some studies have highlighted the negative impacts of electronic games. Al-Asimi (2004), Ali (2006), and Al-Farah (2022) state that these games can lead to adverse behaviors, including social isolation and aggressive conduct. Additionally, Abdel-Aal (2019) notes that electronic games jeopardize the family's and society's roles in socialization by contributing to prolonged isolation from family members and friends. This condition underscores the significance of the current study, which examines the psychological and social effects of electronic games on middle school students.

Electronic games have become one of the most prominent cultural and recreational

phenomena of the modern era, spreading widely. These games are remarkably effective at capturing the attention of individuals of different ages, creating a virtual reality that combines entertainment and interaction. Furthermore, electronic games offer a unique opportunity to enjoy and learn simultaneously, transcending traditional entertainment to become a cultural phenomenon that inspires creativity, encourages learning, and fosters individual skill development. Over the past two decades, there has been a growing trend toward the use of electronic games among middle school children, making them a primary source of enjoyment, entertainment, and even learning. Ayed argues that despite the benefits they offer, excessive use of these games can result in negative consequences, including social isolation and addiction, as well as adverse psychological outcomes such as anxiety and depression (2017).

The origins of electronic games date back to 1947, when Thomas Goldsmith invented the "Cathode Ray Tube Amusement Device." In 1952, Alexander Douglas created "Nimrod," one of the earliest interactive video games. The evolution of electronic games continued with the invention of "Spacewar!" at the Massachusetts Institute of Technology in 1961, following pioneering creations such as "Computer Space" and "Tennis for Two" in 1958. In the 1970s, the commercial market for electronic games expanded with the release of "Pong" by inventor Ralph Baer in 1972. The 1990s witnessed a significant revolution in electronic gaming, driven by advances in computer technology, with the emergence of two- and three-dimensional games. This technological leap enabled the development of new types of games, including the "PlayStation," launched by a Japanese company in 1992. Electronic games have since evolved remarkably, becoming an integral part of individuals' daily lives.

Electronic games are displayed on televisions, computers, or smartphones. They are considered a double-edged sword; when used appropriately, they can positively influence a child's personality, enhance cognitive development, and foster creative thinking and social interaction during gameplay. However, if misused, Al-Asimi believes that they may lead to social isolation from the child's familial and social environment, reducing participation in social activities and increasing tendencies toward aggressive behavior (2004). Despite these risks, play is an activity for enjoyment and recreation, in which individuals engage in leisure or free play within specific rules. Children use play to explore the world around them and confront challenges, which enhances feelings of satisfaction and psychological and physical well-being. In this context, Taylor argues that play is the essence of a child's life, serving not merely as a pastime but as a fundamental part of education and self-expression (Faraj, 2005). Similarly, Moursund defined play as an activity people choose for enjoyment that helps build and develop social relationships (2006). Electronic games offer a unique and enjoyable experience, relying on animated graphics produced through electronic devices. These games enhance interactivity between the player and in-game characters, fostering a strong connection. Furthermore, the player's cognitive skills are directly reflected in the character's performance within the game, meaning that success or failure largely depends on the player's abilities (Moursund, 2006).

2. Electronic Games and Their Devices

Electronic gaming devices vary widely, each offering unique features tailored to different

types of players. One of the most prominent of these devices is the mobile phone, which has become a popular platform for electronic gaming. With advances in mobile technology, games have become more diverse and widespread, including role-playing, sports, and classic titles accessible to people of all ages. By contrast, computers offer a different gaming experience, allowing users to play using input devices such as a mouse and keyboard. Audio and visual elements are stored in the computer's internal memory, enabling a rich, precise gaming experience with high-quality graphics and performance.

Dedicated gaming consoles, such as the "PlayStation," are highly efficient and offer advanced features. These devices are equipped with processors similar to those in computers, enabling high-resolution, high-quality gameplay. They are operated using controllers, such as joysticks or laser guns, providing an immersive and exciting gaming experience. Finally, the internet has introduced a revolutionary dimension to gaming by enabling multiplayer experiences through the real-time streaming of electronic games. Through online platforms, players can communicate and play together remotely, enhancing social interaction and adding a new layer to digital entertainment. Altogether, these devices provide a wide array of experiences, catering to the diverse needs of players across various interests and specialties.

3. Characteristics and Impacts of Electronic Games

Video games possess several distinctive features that set them apart from traditional games. One key characteristic is the continuous interaction between the player and the game, where every situation depends on the player's actions, creating a unique, personalized experience for everyone. Some electronic games also do not require another player, as they can include programmed characters that simulate interactions within the game. Another notable feature, as Al-Khafaf thinks, is the flexibility to play without time constraints, along with the convenience of storing and accessing these games anywhere (2010).

Electronic games have profoundly influenced modern life, with both positive and negative correlations that vary with use. On the positive side, electronic games help develop cognitive and social skills. Allen notes that they enhance strategic thinking, problem-solving abilities, memory, and concentration. Innovative educational games also enjoyably facilitate learning in subjects like mathematics, languages, and science (2010). Cooperative online games help strengthen players' collaboration and communication skills, promoting social interaction. These games provide a unique recreational experience, while interactive games encourage physical activity and enhance cognitive flexibility. They also teach players how to cope with failure within a safe environment (Fu, Su & Yu, 2009).

Nevertheless, the overuse of electronic games is associated with several adverse effects. Mansi suggests that, from a health perspective, excessive gaming can cause physical issues such as neck and limb pain and impaired vision, as well as psychological problems, including anxiety and depression (2012). Additionally, electronic games can affect mental health by increasing stress and anxiety, while violent games may stimulate aggressive behavior. Excessive play of these games also results in social isolation and reduced communication with family and friends (Anderson & Bushman, 2001). Excessive engagement in electronic games can negatively affect academic performance by reducing attention span and neglecting

school assignments (Al-Zyoudi, 2013). Economically, electronic games can also have adverse effects, as gaming devices consume significant energy, imposing financial burdens on families. Moreover, some games promote ideas and language that contradict religious and societal values, potentially leading to cultural decline and reducing children's interest in religious duties (Mansi, 2012). Consequently, electronic games can offer both benefits that can be harnessed and risks that require caution, particularly when used excessively.

Therefore, electronic games play an important role in shaping values and behaviors and in developing children's psychological and social abilities. Given the increasing influence of these games in children's lives, it is essential to understand their potential impacts, such as social anxiety, psychological isolation, and depression associated with internet gaming disorder (Ali, 2006). These games can also affect various aspects of children's lives, including concentration, thinking processes, peer interactions, and social skills. Hence, it is crucial to guide children's use of electronic games appropriately, aiming to balance electronic activities with other pursuits that support the development of social skills and abilities (Al-Farah, 2022). Monitoring and guiding children's use of electronic games is important for maintaining a balance between positive social interaction and time spent on real-life social activities.

Recent studies in communication and sociology indicate that the effects of electronic games and interactive media on children and adolescents are complex and varied, with both positive and negative effects overlapping and shaped by cultural, social, and age-related factors. These studies also reveal that the mechanisms of influence remain unclear, and these differences in educational and social environments contribute to the variation in outcomes.

Despite growing interest in this field, studies that combine psychometric and sociological measures in Arab school settings remain limited, and the role of subgroup differences, such as gender and grade level, has not been sufficiently investigated. In this context, this study contributes to the literature on the effects of interactive media by presenting empirical evidence from the Jordanian educational context and by providing reliable measurement tools with acceptable psychometric properties. It also clarifies the roles of gender and grade level as conditional factors that help explain the variation in previous study results.

4. Significance of the Study

This study is significant for its focus on a vital segment of society, middle school students, and its examination of the critical issue of the psychological and social influence of electronic video games. Its importance stems from two main aspects: theoretical and practical significance. First, the theoretical significance lies in shedding light on the key variables related to video games and their psychological and social connections. This study provides new insights into the influence of these games and helps implement preventive measures to safeguard children from their negative consequences. The study also raises awareness among students and parents about the potential benefits and risks of electronic video games by distributing educational brochures in schools and recreational centers. Second, from a practical perspective, the study's findings enhance public awareness of the psychological and social effects of electronic games on middle school students. It also substantially impacts

researchers in educational sciences and decision-makers, such as teachers and parents. Furthermore, the study contributed to the development of two instruments to assess the psychological and social impacts of electronic games, providing reliable and practical measurement tools. Hence, the importance of this study lies in providing a comprehensive understanding of the influence of electronic games on children, taking into account individual differences such as gender, grade level, and duration of play, to guide their use appropriately and support their psychological and social development.

5. Theoretical Framework

Electronic games constitute a rich field of study, with numerous theories seeking to understand their impact on individuals, particularly children. Among the most prominent theories of "play" are the Psychoanalytic Theory (Freud) and other Cognitive Theories. First, Psychoanalytic Theory (Freud) views play as a mechanism for releasing repressed desires and emotions. It suggests that play allows children to express feelings they might otherwise find difficult to manage in life. According to this theory, Al-Hila (2005) states that play provides a safe environment where children can satisfy their desires without experiencing pain or frustration, thereby helping them alleviate tension and release negative emotions. In light of the above, it is necessary to examine the psychological effects of electronic games on middle school students, taking into account individual differences such as gender and school level.

On the other hand, cognitive theories offer different perspectives. First, Piaget's theory, one of the most influential in understanding children's cognitive development, emphasizes the processes of "assimilation" and "accommodation" as fundamental mechanisms for comprehending the world. According to Miller (2002), through play, children develop cognitive abilities by exploring their surroundings and learning social rules, thereby enhancing their thinking and imagination.

Second, Bruner's theory views play as a learning tool that enables children to acquire skills and concepts through innovative, interactive methods. In this context, play is seen as a means to foster deep thinking, social development, and emotional growth, providing a secure environment for children to explore the world (Abdul-Latif & Al-Khawaldeh, 1995).

Third, the Sociocultural Theory (Vygotsky) emphasizes social and cultural interaction as key factors in shaping thinking and cognitive development. Therefore, this study seeks to analyze the social influence of electronic games, taking into account students' demographic characteristics and the context of their use. According to this theory, learning occurs through interaction with others, with adults playing a guiding role for children. According to the concept of the "Zone of Proximal Development," social interaction is considered essential for promoting personal growth and learning (Al-Dasouqi, 2008).

Fourth, according to Self-Determination Theory, individuals' motivation is internally driven, with a person seeking enjoyment and learning through play. It emphasizes the relationship between intrinsic and extrinsic motivation, suggesting that individuals' behaviors, especially in play, are shaped by their internal needs.

Fifth, Prensky's Motivation Theory holds that the primary motivation for playing electronic

games is the pursuit of fun and rewards. According to this theory, electronic games stimulate individuals' motivation to continue playing and achieve victories to earn rewards, thereby enhancing engagement and learning (Prensky, 2001).

Sixth, the Cognitive Disequilibrium Theory (Van Eck) holds that cognitive growth depends on perception and adaptation. It posits that electronic games create a state of cognitive disequilibrium for the player. This challenge motivates the player to persist in learning and problem-solving.

Seventh, the Dependency Theory examines the relationship between individuals and media, exploring how people rely on electronic games to satisfy various needs. This dependency shapes individuals' perceptions and behaviors, especially during crises or significant events (Ball-Rokeach & DeFleur, 1976). Collectively, these theories highlight different dimensions of play, including emotional expression, the development of cognitive and social skills, and a platform for enhancing social interaction and learning.

6. Literature Review

Al-Farah (2022) examines how electronic games influence middle school students in Sana'a, Yemen's capital. Using a descriptive research design, the study finds that middle school students spend one to two hours per day on electronic games, with mobile phones and the internet as their preferred platforms. Students also report difficulty discontinuing play. Moreover, electronic games significantly affect students' concentration in class, leading to declines in academic performance, poor memory retention, social isolation, and reduced cooperation with peers. Al-Deeb (2022) examines the psychological and social effects of children's use and addiction to electronic games in Egypt. The findings reveal that parents perceive numerous risks associated with electronic games, including psychological consequences such as weight gain, osteoporosis, vision and hearing impairments, decreased concentration, aggressive behavior, and social isolation. The study also shows statistically significant differences in children's use and addiction to electronic games by gender, with males being more affected.

Al-Sheikhi and Al-Zuwi (2022) investigate how electronic games influence family relationships, using the game "PUBG" as a case study in Libya. The sample consists of 384 individuals, and the study uses a descriptive approach. The results indicate that video games affect familial and social relationships but not emotional family relationships. Based on the study's variables, statistical differences are also found at the 0.05 significance level in the effectiveness of responses to family, social, and emotional relationships. Al-Jbour, Al-Karimyeen, and Al-Majali (2020) examine the relationship between the game "PUBG" and the tendency toward violence among youth in Jordanian society. Their study reveals that "PUBG" is widely prevalent among young people and indicates a negative impact, as it increases the tendency toward violence.

Meanwhile, Al-Dash's (2021) study examines how electronic games affect academic achievement and concentration among secondary school students in Jazan, Saudi Arabia. The results show that most students preferred playing electronic games on their mobile phones,

with 36% using them for more than 6 hours a day. The study confirms that electronic games have a 96% impact on academic achievement. Al-Habashi (2021) examines behavioral and emotional disorders and their relationship with electronic game addiction among elementary school students in Al-Baha, Saudi Arabia. The results show a positive relationship between playing electronic games and behavioral and emotional disorders, with statistically significant differences between males and females in behavioral and emotional disorders, favoring males. Ibrahim (2021) investigates the problems parents face due to their children's use of electronic games in Alexandria, Egypt. He finds that parents face challenges with their children staying up late to play electronic games, which negatively affects their academic performance and weakens family communication and interaction.

Abdel-Aal (2019) examines the extent of electronic game addiction and its relationship to psychological and social disorders among adolescents. She reports a positive correlation between gaming time, electronic game addiction, and violent behavior in adolescents. She also finds a positive relationship between game addiction and certain social disorders, such as depression and social isolation. Othman (2018) investigates the impact of electronic gaming on the behavior of upper elementary school children in Jubail, Saudi Arabia. The results indicate that electronic games enhance specific academic skills, such as research skills, writing, and foreign language acquisition. However, there are also negative effects on children's behavior, including school violence and social isolation. Mohammadi et al. (2016) examine the relationship between computer games and the psychological and social health of adolescent males. The findings reveal a weak negative correlation between gaming duration and social health, indicating that prolonged gameplay negatively affects adolescents' psychological and social well-being.

Dirandeh et al. (2015) examine the relationships among video game use, adolescent behavior, and academic performance. The results indicate that adolescents who frequently play video games exhibit aggressive behavior and poor academic performance. Al-Moula and Al-Obaidi (2012) investigated fifth-grade students' attitudes toward electronic games in Iraq. The results indicate positive attitudes toward electronic games, with significant differences favoring male students. Previous studies have examined the effects of electronic games from various perspectives, including psychological and social reactions, as highlighted by Al-Dash (2021), Al-Sheikhi and Al-Zuwi (2022), and Al-Farah (2022). Meanwhile, other studies, such as those by Abdel-Aal (2019) and Al-Moula and Al-Obaidi (2012), focus on electronic game addiction and its underlying motivations. These studies share common ground with current research in content and methodology, as most use the descriptive survey approach.

Previous studies have examined the psychological and social reactions of electronic games in a fragmented way across diverse cultural and educational contexts, with limited focus on middle school students in the Arab world. Some studies also indicate that these outcomes vary by students' demographic characteristics, such as gender and grade level, but there is no definitive consensus on the nature of these differences. In this context, the current study differs from previous research by targeting middle school students in the Al-Muwaqqar district, specifically in grades six, seven, and eight. It aims to analyze the psychological and social effects of electronic games and to examine differences across variables such as gender,

grade level, and playing time. This helps fill a clear research gap and enhances understanding of these effects in a specific local context.

7. Methodology and Procedures

This study examines its methodology, population, sample, measurement instruments, methods for verifying their psychometric properties, and the variables and statistical methods used for data analysis. The psychological dimension was divided into positive experiences, such as relaxation, improved mood, reduced stress, and negative risks, such as addictive tendencies, depression, and loneliness. In contrast, the social dimension was divided into sub-dimensions, including peer interaction, family relationships, and social skills. This separation enables a distinct understanding of each sub-dimension without combining the elements into a single overall score. The study adopts a descriptive-correlational approach, given its suitability for achieving the research objective of uncovering the psychological and social effects of electronic games on middle school students.

According to Ministry of Education statistics, the research population consisted of sixth-, seventh-, and eighth-grade students in Al-Muwaqqar District during the 2023/2024 academic year, totaling 2,407 students. The population was almost evenly split between males (1,200) and females (1,207). From this population, a cluster random sample of 266 students was selected to ensure comprehensive representation of the target groups.

The sample includes demographic variables such as gender, grade level, and hours spent playing electronic games, as shown in Table 1, which presents the distribution of these variables. This comprehensive design facilitates a deeper understanding of the relationships among these variables.

Table 1. Distribution of the Study Samples According to their Variables

Variable	Category	Frequency	Percentage
Gender	Male	160	60%
	Female	106	40%
	Total	**266**	**100%**
Class	Sixth	76	28%
	Seventh	84	32%
	Eighth	106	40%
	Total	**266**	**100%**
Daily Hours of Gaming	Less than 1 hour	91	34%
	1 - Less than 2 hours	82	31%
	2 - 3 hours	43	16%
	More than 3 hours	50	19%
	Total	**266**	**100%**

To enhance the accuracy of the measurement tool, the method for assessing playtime was revised to recommend using a continuous metric, the number of hours played daily, rather than the traditional three categories: less than one hour, one to three hours, and more than three hours. It is also recommended to add two key exposure indicators: game

type/classification (competitive, relaxing, social, violent, etc.) and context of use (alone, with friends, or with online strangers). In the absence of additional data, it should be noted that duration alone does not reflect full exposure, which limits the interpretation of the results.

7.1 Ethical Considerations

This study was conducted in accordance with the ethical standards for educational research involving minors. The necessary official approvals were obtained from the relevant educational authorities and school administrations before data collection began, and informed consent was obtained from parents and students after the study's objectives and procedures were explained in an age-appropriate manner. The study emphasized voluntary participation, the right to withdraw, and the confidentiality and secure storage of data. The results are interpreted within a limited scope, covering students in grades 6-8 at schools in the Al-Muwaqqar district of Amman during the 2023/2024 academic year. The practical implications are categorized by stakeholder group: parents, schools, and policymakers, to ensure responsible use and realistic application of the findings.

8. The Study's Measures

The study develops two research instruments to measure the psychological and social associations with electronic games among middle school students, grounded in the theoretical framework and prior studies. The Psychological Effects Measure is developed by drawing on previous research (Al-Farah, 2022; Othman, 2018) and initially consists of 22 items. Meanwhile, the Social Effects Measure is designed to assess the social impacts of electronic games, drawing on theoretical literature and related studies (Al-Farah, 2022; Al-Deeb, 2022; Abdel-Aal, 2019), and its initial version comprises 11 items.

Data presented in Table 2 indicate that the correlation coefficients between each item's score and the total score of the Psychological Effects Measure ranged from 0.31 to 0.84, all of which are statistically significant. This concordance demonstrates an acceptable level of internal consistency, confirming the measure's suitability for use in the study sample. Similarly, the internal consistency validity of the Social Effects Measure for electronic games among middle school students is verified by administering it to a pilot sample of 30 students.

Table 2. Correlation Coefficients Between the Psychological Effects Measure Items and the Total Score

Item Number	Correlation Coefficient with the Total Measure Score	Item Number	Correlation Coefficient with the Total Measure Score	Item Number	Correlation Coefficient with the Total Questionnaire Score
1	0.74**	10	0.78**	19	0.31*
2	0.74**	11	0.73**	20	0.39*
3	0.81**	12	0.52**	21	0.52**
4	0.70**	13	0.71**	22	0.41*
5	0.62**	14	0.62**		
6	0.83**	15	0.62**		
7	0.61**	16	0.62**		

8	0.84**	17	0.44*
9	0.78**	18	0.41*

Notes. Statistically significant at the 0.01 level is indicated by (**). Statistically significant at the 0.05 level is indicated by (*).

Pearson correlation coefficients between each item's score and the overall measure score are calculated, as shown in Table 3, with all values being statistically significant. This reinforces the measure's credibility and suitability for achieving the study's objectives.

Table 3. Correlation Coefficients Between the Social Effects Measure Items and the Total Score

Item No.	Correlation Coefficient with the Total Measure Score	Item No.	Correlation Coefficient with the Total Measure Score	Item No.	Correlation Coefficient with the Total Measure Score
1	0.73**	5	0.73**	9	0.56**
2	0.59**	6	0.64**	10	0.47**
3	0.84**	7	0.71**	11	0.33*
4	0.86**	8	0.68**	12	0.39*

Notes. Statistically significant at the 0.01 level is indicated by (**). Statistically significant at the 0.05 level is indicated by (*).

The internal consistency validity of the Social Effects Measure is further confirmed in Table 3, which shows that correlation coefficients between each item's score and the total measure score ranged from 0.33 to 0.86, all statistically significant. These findings reflect acceptable values of internal consistency, indicating a high level of the measure's validity and its appropriateness for application to the study sample, thereby supporting the research objectives.

9. Reliability and Calibration of Study Measures

The reliability of the study's measures is established by administering them to a pilot sample of 30 students and calculating internal consistency reliability coefficients using Cronbach's alpha. As shown in Table 4, the reliability coefficient for the Psychological Effects Measure items is 0.934, while the reliability coefficient for the Social Effects Measure items is 0.876. These values are statistically high and acceptable, indicating good internal consistency and confirming that both measures have adequate reliability for achieving the study's objectives.

Table 4. Reliability Coefficients (Cronbach's Alpha) for the Two Measures

No.	Measure	Number of Items	Internal Consistency Reliability (Cronbach's Alpha)
1	Psychological Effects	22	0.934
2	Social Effects	12	0.876

In addition to Cronbach's alpha coefficient, each psychosocial dimension was further divided into sub-dimensions: positive experiences and negative risks for the psychosocial dimension, and peer interaction, family relationships, and social skills for the social dimension. The psychometric validity of both measures was further strengthened by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), with reported fit indices (CFI, TLI, RMSEA, SRMR), composite reliability (CR), and extracted mean variance (AVE) to verify the convergent and discriminant validity of the factors. This procedure ensures that the psychosocial and social dimensions are empirically distinct, and that subsequent statistical analyses can be relied upon with confidence.

The study uses a binary rating scale to evaluate responses on the psychological and social effects measures, assigning "Agree" a weight of 2 and "Disagree" a weight of 1. To determine category lengths, the range between the maximum and minimum scale limits is divided by the required number of levels. Using the given values, the category length is (2 - 1) ÷ 3, which is 0.33. Based on this, the following three-level classifications are adopted to assess the psychological and social effects of electronic games on middle school students: the low level, with an average score between 1.00 and 1.33; the medium level, with an average score between 1.34 and 1.67; and the high level, with an average score between 1.68 and 2.00. These classifications serve as a reference for data analysis and interpretation of results, aligning with the study's objectives.

10. Study Results

This section presents and analyzes the study's findings on the psychological and social associations with electronic games among middle school students, addressing the research questions posed earlier. Data are collected and analyzed using appropriate statistical methods, including means, standard deviations, three-way ANOVA, and Pearson's correlation coefficient. The results reveal several significant indicators of the impact of these games on various aspects of students' lives.

Regarding the first question, which examines the extent to which electronic games affect the psychological aspects of middle school students, the data in Table 5 indicate that the mean score for the psychological effects was 1.44, suggesting a moderate influence on students' psychological well-being. The means for the measure items range from 1.25 to 1.71, with the item related to games providing relaxation and entertainment receiving the highest approval score (1.71), followed by the item pertaining to mood enhancement and boosting morale (1.64). However, items associated with gaming addiction, such as the tendency to play for long hours or the use of inappropriate language during gameplay, receive low approval scores.

This suggests that some negative psychological impacts of electronic games may be less apparent or prevalent within the study sample.

Table 5. Means and Standard Deviations of the Impact of Electronic Games on the Psychological Aspects of Middle School Students

Rank	Item No.	Statement	Mean	Standard Deviation	Agreement Level
1	17	I believe that electronic games provide a means for relaxation and entertainment.	1.71	0.55	High
2	16	I feel that electronic games help improve my mood and boost my morale.	1.64	0.57	Moderate
3	12	I have learned tolerance toward strangers from electronic games.	1.60	0.56	Moderate
4	20	I feel confident because many people praise my ability to play electronic games.	1.59	0.56	Moderate
5	5	I encourage my peers to engage in gaming.	1.52	0.57	Moderate
6	22	I feel that electronic games have caused me insomnia and lack of sleep.	1.53	0.57	Moderate
7	13	Electronic games push me toward addiction.	1.54	0.59	Moderate
8	19	I overcome my sense of loneliness when playing electronic games.	1.51	0.57	Moderate
9	18	I feel cheerful after playing electronic games.	1.50	0.59	Moderate
10	4	I do not notice those around me because I am deeply engaged in the game.	1.48	0.59	Moderate
11	8	My behavior is characterized by aggression and extreme irritability due to electronic games.	1.47	0.59	Moderate
12	14	Electronic games decrease my intelligence level.	1.45	0.58	Moderate
13	9	Electronic games cause me constant stress.	1.42	0.58	Moderate
14	15	I suffer from anxiety or psychological pressure due to electronic games.	1.38	0.55	Moderate
15	3	Electronic games make me isolated from my friends.	1.37	0.57	Moderate
16	6	My academic performance has declined due to electronic games.	1.35	0.55	Moderate
17	10	I do not respond to any instructions because of electronic games.	1.35	0.57	Moderate

18	21	Playing electronic games increases my rebelliousness and my refusal to accept guidance.	1.29	0.55	Low
19	2	I prefer playing electronic games to having meals.	1.28	0.54	Low
20	11	I act violently towards my siblings and classmates because of electronic games.	1.28	0.54	Low
21	1	I tend to play electronic games, especially violent ones, for long hours.	1.26	0.54	Low
22	7	I use inappropriate language while playing electronic games.	1.25	0.53	Low
		Overall	**1.44**	**0.35**	**Moderate**

Regarding the second question, which aims to identify statistically significant differences in the psychological effects of electronic games across gender, grade level, and hours of gameplay, the results from the three-way ANOVA in Tables 6 and 7 indicate statistically significant differences between males and females. Specifically, the psychological impact of electronic games is greater among females, with a mean score of 1.53, compared to 1.39 for males. However, no statistically significant differences are found in psychological aspects with respect to grade level or hours of gameplay.

Table 6. Means and Standard Deviations of the Impact of Electronic Games on the Psychological Aspects of Middle School Students According to the Study Variables

Variable	Grade	Number	Mean	Standard Deviation
Gender	Male	160	1.39	0.20
	Female	106	1.53	0.49
	Total	266	1.44	0.35
Grade Level	Sixth	76	1.43	0.47
	Seventh	84	1.41	0.19
	Eighth	106	1.48	0.35
	Total	266	1.44	0.35
Hours of Electronic Gaming	Less than 1 hour	91	1.39	0.43
	1 hour – less than 2 hours	82	1.46	0.40
	2 hours – 3 hours	43	1.47	0.12
	More than 3 hours	50	1.48	0.20
	Total	**266**	**1.44**	**0.35**

Table 7. Results of Triple Variance Analysis for the Significance of Differences in the Mean Scores of the Impact of Electronic Games on the Psychological Aspects of Middle School Students According to Study Variables

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F Value	Significance Level
Gender	1.339	1	1.34	11.28	0.001*
Grade Level	0.331	2	0.17	1.39	0.25
Hours of Gaming	0.26	3	0.09	0.73	0.535
Gender * Grade	0.20	2	0.10	0.82	0.921
Gender * Hours	0.14	3	0.38	1.16	0.814
Grade * Hours	0.87	6	0.146	1.21	0.30
Gender * Grade * Hours	0.79	6	0.131	1.09	0.36
Error	30.744	259	0.12		
Total	**32.686**	**265**			

Note. Statistically significant at the level ($\alpha=0.05$) is indicated by (*).

Regarding the third question, which examines the association between electronic games and middle school students' social performance, the findings in Table 8 show that the mean score for social concern is 1.39, indicating a moderate association. The means for the measure items ranged from 1.29 to 1.62, with the item concerning the positive influence of electronic games on friendship relations receiving the highest score. In contrast, items related to the impact of games on family communication received the lowest scores. This suggests that electronic games may have varied social effects—they can enhance social interactions with friends in some cases but may also harm familial relationships.

Table 8. Mean Scores Ranked in Descending Order, Standard Deviations, and Agreement Level for the Impact of Electronic Games on Social Aspects of Middle School Students

Rank	Item Number	Item	Mean	Standard Deviation	Agreement Level
23	6	I feel that electronic games have helped me distance myself from bad companions.	1.62	0.49	Medium
24	2	I believe that electronic games have improved my relationship with my friends.	1.56	0.50	Medium
25	9	I have made friends of both genders because of electronic games.	1.50	0.50	Medium
26	1	I feel that electronic games have contributed to my isolation from others.	1.41	0.50	Medium

27	8	I experienced more family problems because of my engagement with electronic games.	1.37	0.48	Medium
28	3	I no longer practice any hobbies because of electronic games.	1.35	0.49	Medium
29	5	My use of electronic games has caused quarrels between my parents and me.	1.34	0.48	Medium
30	4	I do not play sports because of electronic games.	1.33	0.47	Low
31	7	I do not communicate with my friends due to playing electronic games.	1.32	0.47	Low
32	12	I delay many family visits because of electronic games.	1.32	0.47	Low
33	11	Electronic games have kept me from discussing and having conversations with my family about general topics.	1.29	0.45	Low
34	10	I prefer not to go out with my family because of electronic games.	1.29	0.45	Low
	Total		**1.39**	**0.23**	**Medium**

Regarding the fourth question, which examines differences in the social effects of electronic games across gender, grade level, and hours of gameplay, the results presented in Tables 9 and 10 show statistically significant differences between females and males, with social impacts more pronounced among females. However, no statistically significant differences are observed by grade level or hours of gameplay, indicating that the social effects of electronic games are not strongly associated with academic grade or playtime duration.

Table 9. Mean Scores and Standard Deviations for the Impact of Electronic Games on Social Aspects of Middle School Students According to Study Variables

Variable		Number of Participants	Mean	Standard Deviation
Gender	Male	160	1.37	0.25
	Female	106	1.43	0.21
	Total	266	1.39	0.23
Grade	Grade 6	76	1.39	0.26
	Grade 7	84	1.39	0.23
	Grade 8	106	1.40	0.22
	Total	266	1.39	0.23
Hours of Electronic Gaming	Less than one hour	91	1.38	0.26
	One hour - less than two hours	82	1.41	0.22
	Two hours - three hours	43	1.40	0.22
	More than three hours	50	1.38	0.21
	Total	**266**	**1.39**	**0.23**

Table 10. Results of the Triple Variance Analysis for the Significance of Differences in Mean Scores of the Impact of Electronic Games on Social Aspects of Middle School Students According to Study Variables

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F Value	Significance Level
Gender	0.273	1	0.27	4.95	0.027*
Grade	0.026	2	0.01	0.24	0.79
Hours of Play	0.035	3	0.01	0.21	0.887
Gender* Grade	0.60	2	0.30	542.0	0.582
Gender* Hours	0.57	3	0.19	344.0	7930.0
Grade* Hours	0.171	6	0.29	515.0	7970.0
Gender* Grade *Hours	0.380	6	0.63	1.143	0.338
Error	14.269	259	0.06		
Total	**14.593**	**265**			

Note. Statistically significant at the level of ($\alpha = 0.05$) is indicated by (*).

Finally, regarding the fifth question on the relationship between the number of hours played and psychological and social correlates of video games, the Pearson correlation coefficient results showed no statistically significant association between the number of hours played and psychological issues, as shown in Table 11. However, this should be interpreted with caution, as the measured duration does not capture the full extent of exposure, including the type of game, content density, social/interactive features, and the platform used. These limitations indicate that a null result does not necessarily mean the absence of any relationship; rather, it reflects the limitations of the current measurement. As for the social effects, a positive but not statistically significant relationship was found, suggesting a

potentially moderate and unclear influence. These results indicate that video games may affect students' psychological and social aspects to varying degrees, with slight differences between genders.

Table 11. Pearson Correlation Coefficient between the Number of Hours of Play and Mean Scores for the Impact of Electronic Games on Social and Psychological Aspects of Middle School Students

		Number of Hours	Psychological Aspects	Social Aspects
Number of Hours	Pearson Correlation	1	0.100	0.003
	Sig. (2-tailed)		0.105	0.963
	N	266	266	266
Psychological Aspects	Pearson Correlation	0.100	1	0.279**
	Sig. (2-tailed)	0.105		0.000
	N	266	266	266
Social Aspects	Pearson Correlation	0.003	0.279**	1
	Sig. (2-tailed)	0.963	0.000	
	N	266	266	266

Note. Statistically significant at the level of ($\alpha = 0.01$) is indicated by (**).

To further clarify the interpretation of the results, it is important to note that the study relied on cross-sectional self-report data, which means the results reflect correlations or group differences without establishing direct causation. Therefore, the results should be interpreted with caution, taking into account other factors such as parental monitoring, academic pressure, underlying mental health, social support, and the type of game that may influence the results. Longitudinal or experimental designs are recommended for future studies.

11. Discussion of Findings

Before conducting the statistical analyses, the assumptions of the tests were verified, and the data were shown to be suitable for the analytical procedures adopted in the study. Each sub-dimension was analyzed separately to clarify the nature of the correlations. The psychological dimension separately identifies positive experiences and negative risks within the measure, while the social dimension separately addresses different levels of interaction with peers, family relationships, and social skills. This enhances clarity in interpreting the results and facilitates discussion and conclusions without requiring a separate table.

First, as for the Psychological Effects of Electronic Games, the results indicate a moderate overall impact. The item stating that "electronic games provide a means of relaxation and entertainment" scored the highest mean, whereas the item related to the use of "inappropriate language during gameplay" scored the lowest. Notably, most items span the spectrum from negative to positive, highlighting the diversity of electronic games and their varying influence on individuals.

These findings contradict some previous studies, such as Al-Deeb (2022) and Al-Habashi

(2021), which report a significant psychological connection with electronic games. This discrepancy can be explained by the wide variety of electronic games, ranging from educational games that enhance cognitive and social skills to violent games that may negatively influence psychological behavior. Studies such as Granic et al. (2014) and Gentile (2009) have shown that the psychological effects of electronic games depend on game type and play duration. Furthermore, a meta-analysis by Anderson et al. (2010) shows that violent games might increase aggressive behavior and decrease prosocial behavior. Therefore, the moderate correlation observed in this study can be attributed to game type, playtime, and the context of use.

Second, the Gender, Grade, and Playtime Differences in Psychological Effects, which examines psychological effects by gender, grade level, and hours of gameplay, shows significant gender differences, with females experiencing more substantial psychological differences than males. This finding aligns with Al-Habashi (2021) but contrasts with Abdel-Aal (2019), who finds no gender differences. These differences may be explained by gender-specific psychological responses to electronic games. Females are generally more sensitive to social and emotional interactions, which can amplify the leverage of social and emotional games. Gentile et al. (2004) support this suggestion, finding that females are more affected by games with social and emotional elements than males.

These differences can also be explained by considering other possible mechanisms, such as differences in game-type preferences, social interaction patterns, and levels of parental control, which may act as mediators or moderators and should be tested in the future using multivariate models.

Regarding grade level, the study finds no significant differences in psychological variation. This contradicts Al-Habashi's (2021) findings, which report differences by grade. This inconsistency may reflect the similar developmental characteristics of middle school students, typically aged 11 to 14, who share comparable interests and cognitive abilities. Valkenburg (2009) suggests that electronic games have similar effects on children and adolescents in the same age group because they share similar psychological and social developmental stages. As for gameplay hours, the study finds no significant effect on psychological outcomes, unlike Al-Dash's (2021) study, which reports a substantial association between playtime and psychological outcomes. This difference may be because the psychological impact of games is influenced not only by the duration of play but also by game type and usage patterns. Additionally, a balanced lifestyle that includes sports and social interactions may mitigate negative psychological outcomes.

Third, as for the Social Effects of Electronic Games, the study finds a low overall correlation. The item stating that "electronic games have helped me distance myself from bad companions" scored the highest, while the item about "electronic games have kept me from discussing and having conversations with my family" scored the lowest. These findings align with studies by Al-Sheikhi and Al-Zuwi (2022) and Al-Deeb (2022), which suggest a limited association with social behavior. One interpretation of these results is that many electronic games provide online social interaction platforms that enhance players' communication skills,

as Valkenburg (2009) confirms.

Fourth, the next question examines differences in the social factor based on gender, grade level, and hours of gameplay. The results show significant gender differences, favoring females, consistent with Al-Habashi (2021), who finds that females are more affected by electronic games. However, no significant differences are found for grade level or hours of gameplay, suggesting that social differences are influenced more by game type and social context than by grade or playtime.

Finally, regarding the fifth question on the relationship between gameplay duration and psychological and social variations, the study finds no significant association between hours of gameplay and these outcomes. This contrasts with Al-Dash's (2021) and Al-Habashi's (2021) studies, which link playtime to behavioral outcomes. This discrepancy can be explained by noting that the influence of electronic games depends on game type, social interaction within games, and individual differences in psychological and social traits.

To better understand the results, the detailed patterns of individual items within each psychosocial dimension were analyzed, with a focus on the interplay between positive and negative associations. The study shows that higher-level items, such as relaxation and improved mood, reflect positive results, whereas lower-level items, such as loneliness and depressive tendencies, indicate negative results. This discrepancy is explained by potential mechanisms, including the compensatory use of games, emotional regulation, and social support. The analysis demonstrates that the results are not simply averages but rather synchronized dynamics between positive and negative effects, thereby strengthening the study's theoretical contribution.

12. Conclusion

This study aims to analyze the psychological and social effects of electronic games on middle school students in the Jordanian educational context, in light of the theoretical debate about the influence of interactive media. The results indicate that these outcomes are multifaceted and non-unidirectional, with varying degrees of psychological and social impact. This supports the argument that the effects of interactive media are conditioned by cultural and age contexts, as well as by user characteristics.

The results also reveal statistically significant differences attributable to demographic variables, most notably gender and grade level. This suggests that understanding the influences of electronic games requires considering the social and educational contexts surrounding students. The study contributes theoretically to the literature on the effects of interactive media by providing empirical evidence from the Jordanian context and by developing reliable psychometric tools to comprehensively measure psychological and social dimensions.

However, the results are interpreted in light of several methodological limitations, including reliance on two-way correlations and analysis of variance, the absence of multivariate models or effect-size reporting, and the limited sample size and cultural context. Therefore, the results should be interpreted with caution, and future studies using more advanced analytical

designs and conducted in more diverse contexts are needed to verify their reliability and generalizability.

13. Recommendations

Based on the study's findings and interpretations, the study offers practical and research recommendations and procedures to promote the positive use of electronic games and mitigate their negative effects.

First, raising awareness of the psychological and social association with electronic games is essential. This can be achieved through awareness campaigns in schools and local communities, targeting students and parents to educate them on maintaining a balance between gaming and other activities. These campaigns should highlight the potential impact of electronic games and how to manage their use to maximize benefits without harming psychological or social well-being.

Then, there should be programs and activities that aim at reducing gender differences in the effects of electronic games. These programs can encourage girls to engage in activities that build self-confidence and strengthen social relationships beyond electronic games. By providing environments that promote gender equality in the use of modern technologies, including electronic games, these initiatives can support practical communication skills and physical activities, fostering psychological and social balance.

Additionally, it is recommended to integrate physical and social activities into students' daily routines. Sports and group interactions can reduce reliance on electronic games, supporting children's psychological and social well-being; they also minimize the social isolation associated with excessive gaming. Furthermore, developing specific guidelines for the safe use of electronic games is crucial, including setting daily playtime limits and encouraging regular breaks. These policies should guide students toward games that promote positive values and social interaction, with parental monitoring to ensure optimal use.

Finally, the study recommends encouraging further research on the effects of electronic games across age groups. These studies should focus on gender differences and the impact of various game types on children and adolescents, providing more accurate insights into the long-term psychological and social effects of electronic games.

Not applicable

Competing interests

Not applicable

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Macrothink Institute.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

Copyrights

References

Allen, W. S. (2010). How video games are changing our lives. *Naples Daily News*. Retrieved from
www.naplesnews.com/news/2010/dec/06/health-advice-by-dr-weiss-how-video-games-are-changing-our-lives

Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science*, *12*(5), 353-359. https://doi.org/10.1111/1467-9280.00366

Anderson, C. A., et al. (2010). Violent video game effects on aggression, empathy, and

prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin*, *136*(2), 151-173. https://doi.org/10.1037/a0018251

Ball-Rokeach, S. J., & DeFleur, M. L. (1976). A dependency model of mass-media effects. *Communication Research*, *3*(1), 3-21. https://doi.org/10.1177/009365027600300101

Dirandeh, E., Sohrabi, M. R., Dirandeh, A., Kaghazloo, L., Hajihashemi, Z., & Pouriran, R. (2015). The effect of video games on teenagers' behavior and performance: A cross-sectional study in Tehran. *Social Determinants of Health*, *1*(3), 120-127.

Fu, F. L., Su, R. C., & Yu, S. C. (2009). EGameFlow: A scale to measure learners' enjoyment of e-learning games. *Computers & Education*, *52*(1), 101-112. https://doi.org/10.1016/j.compedu.2008.07.004

Gentile, D. A. (2009). Pathological video-game use among youth ages 8 to 18: A national study. *Psychological Science*, *20*(5), 594-602. https://doi.org/10.1111/j.1467-9280.2009.02340.x

Gentile, D. A., et al. (2004). The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. *Journal of Adolescence*, *27*(1), 5-22. https://doi.org/10.1016/j.adolescence.2003.10.002

Granic, I., Lobel, A., & Engels, R. C. (2014). The benefits of playing video games. *American Psychologist*, *69*(1), 66-78. https://doi.org/10.1037/a0034857

Miller, P. H. (2002). *Theories of developmental psychology* (4th ed.). NY: Worth Publishers.

Mohammadi et al. (2016). Effects of computer games on adolescent health. *Journal of Health and Social Behavior*, *57*(2), 210-224.

Moursund, D. G. (2006). *Introduction to using games in education: A guide for teachers and parents*. David Moursund.

Prensky, M. (2001). *Digital game-based learning*. London: McGraw-Hill.

Valkenburg, P. M., & Peter, J. (2009). Social consequences of the internet for adolescents: A decade of research. *Current Directions in Psychological Science*, *18*(1), 1-5. https://doi.org/10.1111/j.1467-8721.2009.01595.x

Foreign Resources [1]

Abdel-Aal, H. (2019). The extent of electronic game addiction and its relationship with psychological and social issues among adolescents. *Zagazig Journal of Agricultural Research*. Damietta University. *2*(46), 559–579.

Abdul-Latif, K., Al-Khawaldeh, M. & Abu Talib, S. (1995). *The Psychology of Play*. Amman: Open University of Jerusalem.

---

[1] I have translated the resources and in-text citations from Arabic to English; therefore, the original text in English is not available for either.

Al-Asimi, A. (2004). *The social effects of the internet. Riyadh*: Dar Qurtuba for Publishing and Distribution.

Al-Dash, H. (2012). The impact of electronic games on academic achievement decline among secondary school students. *Knowledge Enrichment for Conferences and Research*, *3*(2), 113-130.

Al-Dasouqi, M. (2008). *Studies in mental health*. Cairo: Anglo-Egyptian Library.

Al-Deeb, H. (2022). The psychological and social effects of electronic game use and addiction among children. *Egyptian Journal of Public Opinion Research*, *21*(2), 317-334.

Al-Farah, M. (2022). The impact of electronic games on middle school students in the Republic of Yemen. *Al-Nasser Magazine*, *19*(10), 269-299.

Al-Habashi, N. (2021). Behavioral and emotional disorders and their relationship with electronic game addiction among elementary school students in Al-Baha city during the COVID-19 pandemic. *Journal of Special Education*, *33*(8), 75-95.

Al-Hila, F. (2005). *Games for thinking and learning*. Amman: Dar Al-Masirah Publishing and Distribution.

Ali, A. (2006). *The child between the love of imitation and the barriers to innovation*. Amman: Dar Al-Huda.

Al-Jbour, R., Al-Karimyeen, A., & Al-Majali, M. (2020). The relationship between PUBG game and the tendency for violence among children: A parental perspective in the northern region of Jordan. *Dirasat: Human and Social Sciences*, *47*(1), 868-884.

Al-Khafaf, I. (2010). *Play (Modern Teaching Strategies)*. Amman: Dar Al-Manhaj for Publishing and Distribution.

Al-Moula, M. & Al-Obaidi, L. (2012). Attitudes of fifth-grade primary school students towards electronic games. *Jerash for Research and Studies Journal*, *14*(2), 243-267.

Al-Sheikhi, B. & Al-Zuwi, I. (2022). The impact of electronic games on family relations: PUBG as a case study. *Humanities and Natural Sciences Journal*, *3*(7), 254-275.

Al-Zyoudi, M. (2013). Educational implications of children's use of electronic games as perceived by teachers and parents in Medina. *Taibah University Journal of Educational Sciences*, *10*(1), 15-31.

Ayed, B. (2017). *Electronic games*. Riyadh: Al-Janadriya for Publishing and Distribution.

Faraj, A. L. (2005). *Teaching methods in the 21st century*. Amman: Al-Ahliyah Publishing and Distribution.

Ibrahim, J. (2021). Educational implications of electronic games and their impact on children in kindergarten. *The Arab Journal of Qualitative Education (AIESA)*, *9*(18), 147-165.

Othman, A. (2018). The impact of electronic games on the behavior of upper primary school

children. *Journal of Faculty of Education - Assiut University. Assiut University*, *14*(1), 124-160.

Mansi, H. (2012). The negative effects of electronic games on primary school children in Al-Rass Governorate, Kingdom of Saudi Arabia. *Journal of the Faculty of Education - Mansoura University*, *27*(2), 183-228.