The Influence of Video Games on Behavioral Patterns of Children in Private Schools of Lahore

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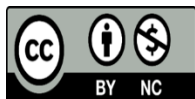University of South Asia, Pakistan

Abstract
This research is about how video games affect the behaviour of primary school children who study in private schools in Lahore. As digital learning became more prevalent during and after the COVID-19 pandemic, children's access to electronic devices and gaming platforms has increased significantly, which has caused some concerns about the behaviour of children. Using a mixed-methods approach, the study combines quantitative survey data from 51 students, qualitative insights from three gaming-industry experts, and structured behavioural observation of one child.

The results show that most children are engaged in long hours of gaming, often more than five hours per day, and they are strongly inclined towards violent or competitive game genres. Among the frequently reported behavioural changes are frustration, irritability, decreased self-regulation, and difficulty in stopping the game. The research results indicate that excessive and unsupervised gaming is linked to aggressive behaviour, lack of academic focus, and addictive behaviours, although gaming may have some cognitive and recreational benefits. The study calls for parental monitoring, informed digital practices, and policy interventions as a means of ensuring that children develop balanced and healthy gaming habits.
Keywords: Video Games, Education, Digital Technology, Child Behavior, Covid-19 Pandemic.

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Introduction

Digital technology has a major role in the advancement of human life in the 21st century. The use of gadgets and the internet have revolutionized our way of living, and they have become a major component of our lives. The children born after 2000 are known as Generation-Z, and they are exposed to digital technology the most. All the work we used to perform manually is now done through screens by them, whether it is writing a story, counting numbers, reading a book, or even ordering food at home. The adaptation of this technology is not as harmful as people have portrayed it. According to the Oxford University research press (2015), technology isn't a bad thing because it is making our lives better and much faster, although excessive use of it is not recommended.

With the rapid advancement of digital technologies, children today are exposed to screens far more frequently than previous generations. Increased access to smartphones, tablets, and gaming consoles has reshaped how young learners spend their time, communicating, and engage with entertainment. Researchers globally have noted that technology use is closely tied to shifts in behavior, attention patterns, and social interaction among children. As digital tools evolve and become more integrated into daily life, understanding how such technologies, particularly video games, influence children's behavioral development, has become increasingly important.

Generation Z isn't using technology for an improved lifestyle but also uses it as a source of leisure by playing digital video games. Digital gaming is very popular among children, and it has even become an official career path. The children who play the games are mostly younger than adults, and now in 2022, smartphones have made it easier for them to play them anytime, which has made it difficult for parents to stop them from playing them aggressively. Researchers have managed to do various kinds of research on calculating the average time a child spends on games and how it affects them but now in the recent pandemic of covid-19, due to massive lockdowns the schools have also started online and off-campus studies and all the education has been shifted to smartphones or laptops which has allowed a child to use the smartphone more aggressively and their extra-curricular leisure activity has also become limited to digital games due to pandemic.

The research conducted in this paper is to study the effect of video games on school-going children's behavior after the post-pandemic re-opening of school campuses in 2022. The objectives of this research were to determine if video games are affecting children's mental behavior, how much, and how children spend time playing video games, and what kind of video games children usually play and their impact on them. This research was conducted in Lahore, Pakistan, and the sample size was small, which cannot be applied to the entire country's population. Both qualitative and quantitative methodologies have been used to gather data and to get answers to research questions. The sample population is of primary school-going children from a single private school. The expert's opinion was also taken who were working in the digital gaming industry within Pakistan.

The purpose of this research was to check the impact of video games on school-going children of the primary level, how it affects their behavior, and should be worried or relaxed about it, as it is the most common leisure activity among children after the pandemic, and the interest in games is increasing rapidly among children.

Literature Review

Wenyi (2020) found that children who engage in video gaming for extended periods (more than three hours daily) exhibit higher levels of hyperactivity, aggressive interactions, and reduced academic engagement. The study investigated the impact of various game types and the duration of gaming on children's social and academic behaviors. The researchers from the University of Oxford found that the time spent playing games could be linked with problem behavior, and this was a significant factor rather than the types of games played. They could

find no link between playing violent games and real-life aggression on a child's academic performance. They also found that low levels of play, under an hour a day, might benefit behavior. The results of the study were published in the journal Psychology of Popular Media Culture, which is a publication of the American Psychological Association.

An Oxford University Press article highlights that the transition from the analog to the post-digital era has significantly influenced cognitive development and human interaction patterns. The innovations that man has come up with have resulted in the betterment of life by making things more efficient. Due to demanding work schedules, many parents have limited interaction time with their children, increasing children's reliance on digital devices for engagement and entertainment. The compensation for this, surprisingly, is in the form of gadgets that have made children more antisocial as they interact with games and other forms of information. According to a study published in the Oxford Academia Journal, video games can have a positive impact on children's development by nurturing values like resilience, positive competition, teamwork, and cooperation. Despite these potential benefits, several studies have linked video games to increased aggression, reduced prosocial tendencies, and lower academic performance among children. It is against this backdrop that video games are evaluated. Since they have two sides, regulation should be at an all-time high if parents are to see the best they have always wanted in the development of their children.

The rise of digital gaming (esports) in Pakistan is relatively recent, facilitated by the introduction of stable 4G networks and increased accessibility of smartphones and gaming devices, compared with other developing countries. The buying power of an average citizen has also increased (Pakistan Bureau of Statistics-2022), due to which they can now easily purchase a console or a smartphone on which they can play video games. The introduction of smart gadgets, fast internet, and platforms such as Gamebird by the Telecom industry, on which they can earn money by playing games, is a new concept for students; hence, this all happened in the past two years, and at the same time, education was also being transformed digitally due to the COVID-19 pandemic.

The research conducted by Oxford Press is from developed countries' populations whose education and technology were accessible on gadgets a long time ago, but in Pakistan, this sudden change happened so instantly, which raises a question about the behavior change in students. The usage of technology in education as well as entertainment cannot be reversed now because a lot of corporations are heavily investing in game development and gaming platforms through which the digital gaming industry is being promoted. The games such as PUBG, Free Fire, DOTA, and Tekken are getting highly promoted in Pakistan, and their players are mostly children (Arslan 2019).

The news was published in Express Tribune, which stated that teens are becoming highly addicted to video games, and in a small village in Punjab, a boy killed his entire family only because they were stopping him from playing video games (Express Tribune 2022This incident generated widespread national concern, prompting policymakers to temporarily ban the game PUBG in an effort to regulate exposure to violent gaming content.

Video games have become a universal form of entertainment among children worldwide. While video games can provide numerous benefits, such as improving problem-solving skills and hand-eye coordination, concerns have been raised about their potential negative impact on children's behavior. Several studies have found that the playing of video games can negatively affect the behavior of children. For instance, a meta-analysis of 24 studies by Ferguson and colleagues (2015) reports that playing violent video games was linked to increased aggression, decreased prosocial behavior, and children's reduced empathy. Correspondingly, Gentile and Anderson (2003) research revealed that children playing video games for over three hours daily were more prone to initiate aggressive behavior than children playing for less than one hour.

In contrast, a number of studies have argued that no significant relationship may exist between video gaming and children's conduct. For instance, a longitudinal study by Przybylski and colleagues (2014) found no solid indication of a direct connection between violent video games leading to aggression or prosocial behavior changes. Further, Ferguson and Olson (2014) study also reported no substantial link between video game consumption and ADHD symptom development. Moreover, it is possible that determining the influence of video games on behavior largely revolves around how much time is spent playing such games. Kirsch and colleagues (2018) research discovered that children exceeding five hours daily in video games playing were at a higher risk of facing negative outcomes such as low academic achievement and social isolation, as opposed to a group engaging in less than two hours.

The question of video game impact on the behavior of school children is complicated, and numerous factors are involved. The extent to which video game use leads to negative behavioral outcomes has been established by some studies whereas others have refuted the existence of such a connection or argue that gaming may even have beneficial effects. Furthermore, various factors including video game content and the player's time consumption might markedly influence the behavior changes' magnitude resulting from gaming. More research is required before we can fully understand these variables and thereafter establish the evidence-based guidelines for regulating children's video games use in the private schools of Lahore.

Research Objectives

The objectives of the research are:
1. To examine whether video games influence the mental well-being and behavioral patterns of school-going children.
2. To determine the duration and frequency of video game usage among primary school children.
3. To identify the types and content categories of video games commonly played by children and evaluate their potential behavioral effects.

Research Questions

The research questions were developed to operationalize the core components of the study's title and objectives
1. How much time does a child spend on video games?
2. What content and aspects are kept in mind before creating a video game?
3. How does a child behave while playing video games?

Significance of Study

Video games are a popular form of entertainment among children, and research on the impact of video games on school-going children's behavior in Lahore-based private schools is significant because it addresses an important and timely topic, has the potential to provide valuable insights into the impact of video games on children's behavior, and could contribute to the wider body of literature on this topic. This study may be instrumental in shedding light on the behavioral changes of children due to video games. When a thorough research methodology is employed, the gathered data reflects the true extent of children's behavior that is influenced by video games. As a result, it becomes easy for parents, teachers, and lawmakers to become aware of the possible risks and benefits of video game usage and, in turn, be able to decide on the kind of video game use that is appropriate for children.

This work can become an asset in the research concerning the effects of video games on children's behavior and academic performance. As a result of the contribution made by this research, it becomes easier to conduct future studies and interventions aimed at producing good outcomes for children. For instance, the results can be utilized as a base to create real and practical suggestions for parents and teachers in the management of children's gaming time or to be the source for the formation of the educational program subjects that lead to positive behavior and academic achievements.

Purpose of the Research

The purpose of this research was to check the impact of video games on school-going children of the primary level, how it affects their behavior, and should be worried or relaxed about it, as it is the most common leisure activity among children after the pandemic, and the interest in games is increasing rapidly among children.

Materials and Methods

Research design

A mixed-method approach was considered appropriate as it enabled numerical measurement of gaming habits while also capturing deeper insights from expert interviews and naturalistic observation. The purpose of the research is to investigate the effect of video games on a child's behavior.

The population consisted of 200 primary-level male students enrolled in a private school in Lahore. In addition to students, three gaming industry experts (a Community Strategist, a Game Developer, and a Marketing Head) were included to address qualitative aspects of the study.

A sample of 51 students was selected from the total of 200 students using the RAOSOFT calculator (95% confidence level, 10% margin of error). For qualitative data, a purposive sample of 3 industry experts was interviewed.

The sampling technique used for the student survey was *simple random sampling*, allowing each student an equal chance of selection. The sampling technique used for selecting gaming industry experts was purposive sampling, as they were chosen based on their professional relevance and expertise. For the Quantitative research, experts' opinions were required who are working in the gaming industry in Pakistan. Gamebird by the Telecom industry is a platform that is solely working on video game development and events in Pakistan.

Research Instruments

The research employed a mixed-method design, which involved both kinds of research tools quantitative and qualitative. For the quantitative aspect, a structured survey questionnaire comprising of closed-ended items was given to students to collect numerical data on their gaming habits, preferred game types, device usage, and behavioral responses.

Qualitative part involved open-ended interviews with three gaming-industry experts conducted to collect their insights on game design, content considerations, and potential behavioral effects. Furthermore, a structured behavioral observation was performed with one randomly selected child in his home setting. A predefined checklist was used to document the emotional response, attention level, physical engagement, and verbal reactions, which were coded on a 3-point scale to standardize. These instruments facilitated effective triangulation whereby qualitative findings described and supported the quantitative survey results.

Findings and Results

The student questionnaires provided quantitative data which were analyzed through descriptive statistical techniques. To find the trends in game usage, preferred game types, and behavioral responses, frequency counts and percentage distributions were calculated for each item. The outcomes were shown by means of the tables and bar charts that made the results easily understandable. The study being of an exploratory nature and the variables being categorical, no inferential statistical tests were employed.

The qualitative interview data from the gaming industry experts were subjected to a thematic analysis. Each line of the responses was coded to identify the themes that recurred and related to the game development practices, content considerations, and behavioral influences of gaming, which were the potential themes. For the behavioral case study, the child's actions were reviewed using a structured

observation checklist. The observations were converted into coded behavioral indicators (e.g., attention level, emotional response, frustration patterns), enabling a descriptive interpretation of the child's gaming behavior.

Table.1

| Question 1.	How much time does a child spend on video games?			
Questions	Answers n=51			
Do you play video games?	Yes 48	No 3	-	-
What Console do you use?	Xbox 3	PlayStation 13	Computer 20	Mobile Phone 12
How often do you play video games?	Once a week 0	Less than 1-hour daily 11	More than 5 hours' daily 40	Only on holidays 0
At what time do you play video games?	Morning 0	Evening 14	Night 32	Whenever Time get 5
Do you play games during exams?	Yes 14	No 22	Sometimes 15	-
What type of video games do you like to play?	Racing 5	Strategic 14	Sports 12	Shooting 20
What is your reaction when someone stops you from playing video games?	I get angry 14	I cry 0	I don't stop playing 37	I don't want to answer 0
Do you think playing video games is affecting your school grades?	Yes 10	No 29	Maybe 12	-

From the above (table.1), the most relevant data related to our research question is presented in the tables below.
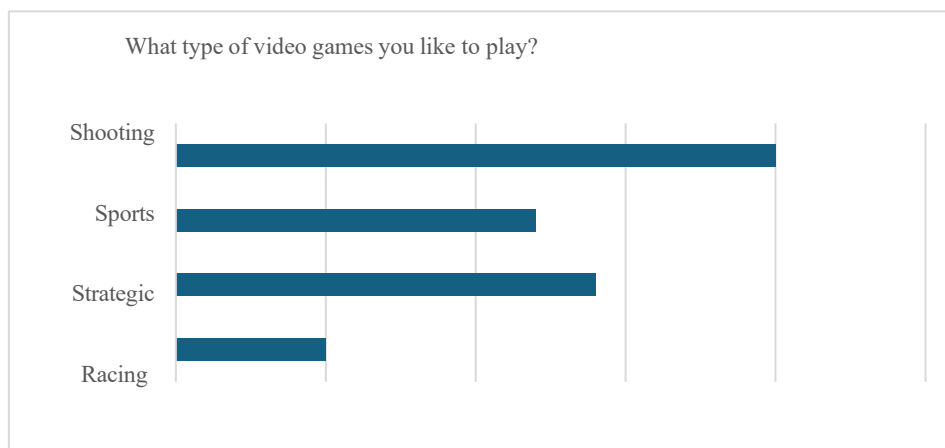
Graph.1
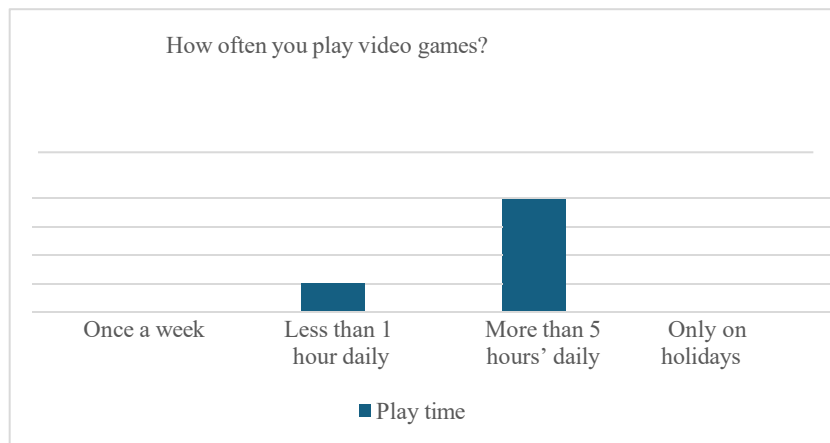
The data reveal that 78% of children reported playing video games for more than five hours daily, indicating a strong tendency toward prolonged gaming sessions.

Graph.2

At what time you play video games?

Morning   Evening   Night   Whenever I get time
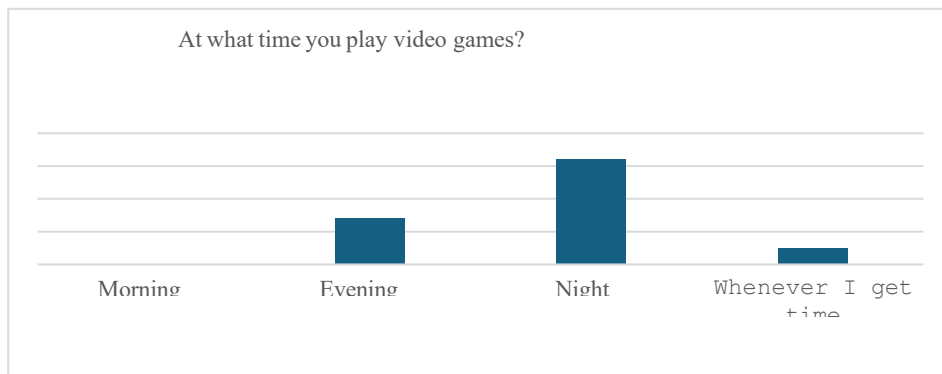
From the above chart, it is stated that most children play video games at night.

Graph.3

What type of video games you like to play?

Shooting
Sports
Strategic
Racing

From the above chart, it has been found that most of the child play shooting games.

Graph.4

What is your reaction when someone stops you from playing video games?

I don't want to answer I don't stop playing
I cry I get angry

0   5   10   15   20   25   30   35   40

From the above chart, we can say that most of the students don't stop playing games when ordered by their parents.

Graph.5
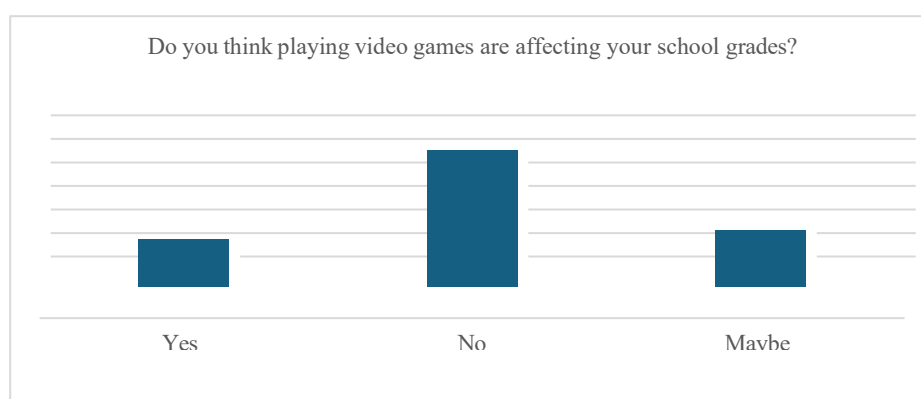
The majority of school-going children think that their grades aren't affected by playing video games

Table.2

Question 2: What content and aspects are kept in mind before creating a video

Common answers to questions among three interviewers based on themes

Questions	Themes	Expert 1	Expert 2	Expert 3
How long have you been working in the Animation/video game development industry?	Experience	3	5	8
How many gaming projects have you done or contributed to in the digital industry? Can you share some of your work?		Gaming Industry experts from the Telecom industry		5 Published games on the App Store
What is the procedure for creating the story for a video game?		Choosing Genre	-	Story Boarding
Are certain aspects kept in mind before creating a game (violence, addiction)?	Aspects	Censor Board License / PG Rating		
How much time and effort does it take to create a video game?		Not an easy job, it requires a lot of skill.		
Your final comments on the future of the gaming industry in Pakistan.	Prediction	More Clients		

Thematic Analysis

The experts(table.2) from the industry had a minimum of three years of experience in the game industry of Pakistan. They all said that the gaming industry came very late in Pakistan, the internet can be a major factor in it, but now as more clients are signing up for the games, and which are mostly children in their teenage years. The demand for games and gaming platforms is also increasing; the Telecom industry has the privilege to launch Pakistan's first-ever online gaming platform through which children can turn their passion into a career to participate in worldwide events. A game is made in-game labs, which require a lot of skilled people, which unfortunately we don't have, but because of the internet worldwide, gaming companies are providing access to their games at a very low cost. The theme of the video games seems to be violent to viewers, but they are passed by a censor board of either Google Games or EA Sports, which rates the game according to its content and labels it for certain age groups. The purpose of the games is to attract children's attention more than usual, so an audience can

be built for ratings. Usually, good games require more time to get finalized and get published after receiving a license from the censor board. All the experts agreed that the future of the gaming industry is bright as more and more children and taking an interest in playing them, but a body of rules and regulations needs to be established here to control the content according to our society's norms, similarly as they control the film industry.

Table.3

Question 3	How does a child behave when playing video games?
Sample	One randomly selected primary school child who regularly plays video games (3 days).
Tool	Structured Observation

Data Analysis

The observation data (table.3) were summarized descriptively to identify dominant behavioral patterns during gameplay. The child was observed in his home environment while playing two games: GTA V (violent/action genre) and FIFA 22 (sports genre) on a PlayStation console. A predefined behavioral checklist guided the assessment of emotional responses, attention levels, physical engagement, and verbal reactions.

During the violent-themed game, the child appeared highly engaged and showed enjoyment even in scenes involving aggression. In contrast, while playing the sports game, he displayed noticeable frustration and irritability, especially when unable to score. Throughout the sessions, he played continuously for nearly three hours without taking a break, demonstrating deep absorption in the game and limited awareness of his surroundings.

Although the child exhibited frustration, no abusive language was used. After the gaming session ended, he completed only about thirty minutes of homework and expressed fatigue, indicating reduced willingness to transition from gaming to academic tasks.

Discussion

Video games impact the behavior of school-going children in Lahore, Pakistan. The reviewed literature points out that videogames are an essential part of children's everyday life because of a post-COVID-19 shift towards digital education, which allows school children to play video games anytime. The shift towards digital education has blurred the lines of video games usage in the educational context and video games used in a recreational context. The literature reveals that video games have become a leisure activity for school children.

The literature has shown that most of the children are video game players for about five hours a day. When children engage in video games for five hours of time, that is a long time being spent in front of a screen device which leaves little time for other essential daily activities. The repetitive time spent is suggestive of the kids being school-educated video game players. The already reviewed information indicates that children that engaged in school digital video game education for more time, the children showed little self-control and no willingness to disengage when they were required to. Child gaming dependency becomes a problem that could affect children in focus, emotional regulation and time management. These findings support Bandura's Social Learning Theory. This theory suggests that children may imitate behaviors they see often in their environment. When children are exposed to violent or aggressive game content, it can strengthen similar behaviors, especially when the gameplay is extended and emotionally engaging (Dirandeh et al., 2015).

Another important finding is about the types of games played. Most children preferred shooting and combat games that often-had violent content. Even though these games are popular worldwide, they might negatively affect children's developing minds. Being exposed to aggression and violence in gameplay can desensitize children to violent behavior. It can also promote competitiveness over teamwork and reinforce impulsive behaviors.

These consequences were different for each individual, but the child's behaviour that was observed during the study was in line with this idea. The child was so hooked on the game that he hardly noticed the real world, and he was totally absorbed in the virtual environment.

This kind of engagement with the game shows how an immersive game can completely take over a child's attention and emotional response. Interviews with experts from Pakistan's gaming industry shed light on the issue, giving us a more informed picture (Ghanim et al., 2020). The developers have acknowledged that the majority of the games that Pakistani children play are made for the foreign market, mainly for the United States, and are not adjusted for local cultural and social sensitivities. Besides that, the lack of a national censor board for video games means that there is no organized system for regulating gaming content according to the community values and age standards in Pakistan.

Though the international publishing boards do check content for the presence of explicit material, their standards may not agree with the local ethical and psychological frameworks. As a result, children are constantly exposed to the raw global content that may influence their views and behavior in a way that is different from the local societal norms Pallavicini et al., 2022.The mixed-method approach of this research allowed for triangulation between quantitative data (survey responses) and qualitative insights (observations and interviews). Individually, these data sources tell somewhat different stories; video games are a source of fun and mental exercise, but, if overused or unsupervised, can lead to psychological and behavioral problems. Kids not being able to stop playing, choosing violent content, and their behavior changes like getting easily irritated, becoming withdrawn, or showing less academic focus are all signs that parental involvement and digital literacy awareness are becoming indispensable.

Besides, it is worth noting that not all impacts of video gaming are positive. Some research works argue that moderate gaming can be a source of skill enhancement in problem-solving, hand-eye coordination, and creativity (Ayala et al., 2022). Nevertheless, the present study indicates that the equilibrium between the educational benefit and the behavioral harm mainly depends on the content, the duration of the play, and whether the parents are monitoring their children. If there is no set guidance, children will most probably choose to play games that give them instant gratification rather than those that provide cognitive development.

To sum up, the results point to the necessity of formulating local policies concerning digital content regulation and embedding media literacy into the curricula of schools. Parents and teachers should know the influence of digital games on children's behavior and be actively involved in managing their gaming habits. Besides that, a partnership among government bodies, educational institutions, and the gaming industry can help set up standards that are not only safe but also beneficial gaming experiences for children in Pakistan and at the same time, are culturally appropriate.

Conclusion

The decisive factor of this research are the pieces of evidence, according to which children are increasingly attracted to video games. point which is very important is that nowadays electronically devices are very widely distributed meaning that video games have become the Favorite pastime for children who have easy access to these devices. Those tapes have turned into a centre of their daily lives, since they are used for educational and entertaining purposes. Thus, school-children have chosen video games as the most dominating way of their leisure activities. Yet, the research discloses that play time often doubles the time of homework and other productive works thus the emergence of behavioral dependency is implied.

An initial gaming addiction causes children to become lost in virtual worlds as they even forget about their real surroundings. They are so involved that they do not stop before getting the satisfaction or reaching the desired goal. The study results are accompanied by a large proportion of such children who in response to parental instructions and study responsibilities continue play even more. Academic performance is dropped due to continuous and unsupervised engagement, which in turn promotes the deration of behavior with the help of aggression, irritability, and decrease of interaction with the society. The aggression symptoms could, among other things, be explained by insufficient real-life communication and repeated

exposure to violent or competitive game content.

It is undeniably unrealistic that children should be totally banned from playing video games as these digital platforms are intertwined with devices that serve educational purposes as well. However, it remains very important to control their screen time and the content that they are exposed to. Firstly, the study suggests that most of the games children in Pakistan play are made in foreign countries and usually reflect the cultural and social values of the places where they are made. These kinds of exposures, without any understanding of the context or even without any moderation, may change children's attitudes and behaviors indirectly, though their cultural environment may still be the same.

In the first place, video games have become hugely popular in Pakistan especially after the COVID-19 period as digitalization has changed the way we learn and the way we get entertained as well. Though video games in some situations can improve certain cognitive and problem-solving skills, as reported in the excessive use of these games led to the development of addiction and aggressive behavior among children. Hence, it is crucial to find a proper balance which would not only allow the continuation of healthy gaming habits but also increase the awareness of parents and encourage the creation of local policies regarding the regulation of content. All these combined efforts will ensure that technology will be a great tool for personal development instead of being a cause for behavioral problems.

Recommendations

Based on the findings and limitations of this research, the following recommendations are proposed for future studies and interventions:

1. Broader Sample Inclusion: A forthcoming study ought to consider a larger number of children as a diverse sample from different educational institutions not only in Lahore but also in other cities of Pakistan. Inclusion of both private and public schools pupils would be necessary to get a well-balanced understanding of socioeconomic backgrounds influence. Moreover, girls should be involved as well to identify possible gender differences in behavioral patterns of gaming and psychological impact.

2. Longitudinal Case Studies: The recommendation is to carry out long-term case studies involving children, emotional traumatized and with problematic behaviors caused by excessive gaming. Such a thorough study over time could reveal in detail the development of gaming addiction over time and the therapeutic factors such as coping mechanisms or environmental elements that lead to recovery.

3. Controlled Experimental Research: A progressively controlled experimental framework may be used to figure out intervention strategies practically addressing issues related to gaming addiction. Through the usage of targeted behavioral interventions and monitoring the outcomes before and after intervention, they could see which behavioral modification techniques truly bring a diminishment in overdone gaming acts and at the same time invite users toward another non-harmful agreeable pastime.

4. In-Depth Industry Exploration: It will most likely unveil abundant information when research workers arrange private meetings with the ideators of video games; furthermore, besides accompanied interviews, with studio professionals as well, to an extent reach first-hand specifics on the decision-making procedurals involved in game designing, content production, and marketing strategies. Besides that, a near look at the game development studios will probably clear out the obscurity of the deep-down production chain to which young consumers are becoming content-wise, regulated, and delivered.

5. Policy and Parental Guidance: Suggestions made express emphatically the wish of the decision-makers in charge of pontificating over the nation; an official censor or a rating board for video games in Pakistan thus is highly recommended by them to assure the adaptation of the given content to the need of children. In addition to this, parental involvement awareness programs brought into the school system could become a great prerequisite for moms and dads

to effectively keep an eye on and control their children's gaming time.

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