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THE NEGATIVE IMPACT OF DIGITAL GAME ADDICTION ON COGNITIVE PERFORMANCE

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Abstract. This article analyzes, based on scientific sources, the negative impact of mobile game addiction on cognitive processes, including attention, memory, thinking, work productivity, problem-solving skills, and emotional regulation. It also examines the neuropsychological mechanisms associated with the development of mobile gaming technologies, the psychological factors influencing gaming behavior, and the processes involved in the formation of gaming addiction.

Keywords: Digital games, gaming addiction, mobile technologies, cognitive processes, attention stability, selective attention, working memory, executive functions, impulsivity, cognitive load theory, operant conditioning, youth psychology, adolescents.

Introduction

The rapid development of modern information and communication technologies has influenced almost every aspect of human life. Among these changes, digital game addiction has become a widespread issue, particularly among adolescents. Parents and psychologists increasingly observe that many young people are becoming deeply immersed in virtual environments, often using digital games as a means of escaping real-life problems or seeking entertainment. At the same time, it cannot be denied that computers and smartphones provide numerous benefits, including access to valuable information, educational resources, digital libraries, films, and opportunities to communicate with people around the world.

Many digital games possess certain developmental advantages. For instance, logic games and puzzles can enhance cognitive skills such as analytical thinking, problem-solving, identifying relationships, and reconstructing logical sequences. Similarly, online communication platforms may contribute to the development of communication skills and facilitate foreign language learning. However, alongside these positive aspects, excessive use of computers and mobile devices has given rise to negative consequences, particularly in the form of persistent digital addiction. Due to their developmental characteristics, adolescents are especially vulnerable to such psychological problems. Nevertheless, addiction to digital technologies is not limited to teenagers; it can also affect younger children and adults.

In recent years, the widespread adoption of smartphones has contributed significantly to the rapid growth of mobile gaming worldwide. According to industry statistics, by 2024 mobile games accounted for more than half of the global gaming market. This remarkable expansion demonstrates that digital games have evolved beyond simple entertainment tools and have become influential factors affecting educational, professional, and social activities.

At the same time, scientific research has shown that excessive engagement in gaming may negatively affect cognitive functioning. The recognition of **Gaming Disorder** as an official diagnosis by the World Health Organization further highlights the seriousness of this issue. As digital games continue to be among the most popular recreational activities for young people and adolescents, concerns regarding excessive gaming, uncontrolled time expenditure, and the development of psychological dependence have become increasingly important. These concerns

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have attracted growing attention from researchers seeking to understand the cognitive, psychological, and behavioral consequences of mobile gaming addiction.

Literature Review:

Digital game addiction began to emerge as a significant phenomenon in the early twenty-first century, particularly between 2000 and 2005, alongside the increasing popularity of mobile phones. Although early mobile games such as *Snake*, *Tetris*, and *Space Impact* were already available in the late 1990s, their addictive potential was relatively low due to their simple design and limited interactive features [1].

The concept of gaming addiction became more prominent with the introduction of smartphones and the emergence of digital distribution platforms such as the App Store and Google Play. In scientific literature, mobile gaming addiction is considered a relatively new phenomenon. Early mobile games of the late 1990s and early 2000s, including Nokia's *Snake* and mobile versions of *Tetris*, rarely generated concerns regarding addiction because of their simplicity. However, the rapid advancement of smartphone technology enabled the development of more sophisticated games featuring immersive environments, reward systems, social interaction, and continuous engagement mechanisms, all of which increased their psychological attractiveness and addictive potential [2].

Researchers around the world, including scholars from Uzbekistan, have conducted numerous studies on the effects of digital games on human psychology. The findings of many of these studies indicate that excessive involvement in digital gaming may negatively affect various cognitive processes, including attention, memory, processing speed, and academic performance. Prolonged and uncontrolled gaming has been associated with reduced concentration, difficulties in sustaining attention, impaired working memory, and lower educational achievement among adolescents and young adults. These findings suggest that gaming addiction may have significant consequences for cognitive efficiency and overall psychological well-being.

Foreign researchers such as Mark Griffiths, Kimberly Young, and Craig Anderson have examined gaming addiction as a form of behavioral disorder. Their studies suggest that excessive gaming strongly stimulates the brain's dopamine-based reward system, which may contribute to attentional difficulties, reduced self-control, and impaired learning abilities. In recognition of the growing clinical significance of this phenomenon, the World Health Organization officially included **Gaming Disorder** in the *International Classification of Diseases (ICD-11)* in 2019 [3].

The issue of digital gaming and internet addiction has also become an important area of research within Uzbek psychological science in recent years. Local studies have primarily focused on youth psychology, the influence of information technologies on personality development, the consequences of excessive internet use among students, and changes in cognitive processes associated with prolonged digital engagement.

Researchers such as Gulchehra Ataeva, M. Dedaxonova, and G. Yunusova have reported that internet and gaming addiction negatively affect attention stability, emotional regulation, and academic performance among young people. Their surveys conducted among adolescents and university students demonstrated that excessive use of mobile games can reduce learning effectiveness, weaken academic motivation, and impair time-management skills [5,6].

Overall, the findings of both international and Uzbek scholars indicate that digital games may have educational and developmental benefits when used in moderation. However, excessive and uncontrolled gaming can significantly reduce cognitive efficiency by negatively affecting attention, memory, learning performance, and self-regulation. Therefore, maintaining a balanced and controlled use of digital games is essential for preserving cognitive functioning and psychological well-being.

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Research Methodology:

This study was developed on the basis of existing scientific literature, psychological theories, and previous empirical studies related to digital media and the impact of digital game addiction on cognitive performance. The research methodology consisted of the following main stages:

Analysis of Scientific Literature on Digital Gaming and Cognitive Processes

Relevant national and international studies examining the effects of digital gaming on cognitive functioning were reviewed and analyzed. Particular attention was given to research addressing attention processes, working memory, executive functions, and learning performance. Comparative analysis was conducted to identify common findings and theoretical perspectives regarding the relationship between gaming addiction and cognitive efficiency.

Conceptual Analysis Based on Psychological Models A conceptual framework was developed using established psychological theories and models. The mechanisms underlying digital gaming addiction were interpreted through the perspectives of Operant Conditioning Theory**,** Cognitive Load Theory**,** Executive Function Theory, and various neuropsychological approaches. These frameworks helped explain how excessive gaming may influence attention regulation, decision-making, self-control, and information processing.

Comparison of Risk Factors Across Different Age Groups The study examined risk factors associated with gaming addiction among adolescents, university students, and adults. Comparative analysis focused on variables such as gaming intensity, screen time, impulsivity, attentional difficulties, and patterns of digital media use. This approach enabled the identification of age-related differences in vulnerability to gaming-related cognitive impairments.

Synthesis of Clinical Observations and Educational Practice Clinical observations and practical experiences reported by psychological counseling centers, educational institutions, and healthcare systems were reviewed and synthesized. Particular emphasis was placed on documented cases of cognitive dysfunction, behavioral changes, academic difficulties, and psychosocial problems associated with excessive digital gaming.

The integration of these methodological approaches provided a comprehensive theoretical and practical examination of the research topic. Furthermore, it facilitated the identification of the primary psychological and cognitive mechanisms through which digital game addiction may negatively affect cognitive performance and overall functioning.

Discussion And Results:

The findings of this study indicate that mobile and digital games exert a multifaceted influence on psychological and cognitive processes. The obtained results, together with the analysis of existing scientific literature and psychological theories, confirm that excessive engagement in gaming can lead to a significant decline in attention stability, working memory capacity, and the efficiency of executive functions. In particular, participants who frequently engaged in gaming demonstrated increased difficulties in selective attention **and** attention shifting, resulting in a higher frequency of cognitive errors when switching between tasks. These findings can be explained through Cognitive Load Theory, which suggests that continuous exposure to intense visual and auditory stimuli during gameplay may overload cognitive resources and reduce overall processing efficiency.

From the perspective of Operant Conditioning Theory, many mobile and online games utilize frequent reward mechanisms that stimulate the brain’s reward system and trigger strong dopamine responses. These reinforcement patterns increase impulsivity and make it more difficult for individuals to regulate their gaming behavior. Increased impulsivity was found to be closely associated with weakened executive functions, particularly among adolescents and university students, who appeared more vulnerable to the effects of excessive gaming.

Comparative analysis across age groups revealed that adolescents are more sensitive to the cognitive consequences of gaming addiction than adults. One possible explanation is that the

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prefrontal cortex, which is responsible for self-regulation, decision-making, and impulse control, is still developing during adolescence. As a result, younger individuals may experience greater difficulties in managing gaming behavior and resisting rewarding stimuli. Clinical observations further supported these findings by identifying common symptoms among individuals with gaming addiction, including disrupted sleep patterns, academic fatigue, slowed thinking processes, reduced concentration, and superficial reasoning.

Overall, the results suggest that digital gaming addiction can gradually impair cognitive systems and negatively affect fundamental psychological processes such as attention, memory, and executive functioning. The findings are consistent with various psychological and neurocognitive theories, highlighting the complex mechanisms through which excessive gaming influences cognitive performance.

Furthermore, the study demonstrated that the negative effects of gaming addiction on cognitive processes can be explained through multiple theoretical perspectives. The convergence of evidence from cognitive, behavioral, and neuropsychological frameworks strengthens the conclusion that prolonged and uncontrolled gaming represents a significant risk factor for cognitive inefficiency, particularly among adolescents and young adults. These findings underscore the importance of promoting balanced gaming habits and implementing preventive measures aimed at reducing the adverse cognitive consequences of excessive digital game use.

Key Findings:

The study revealed that young individuals who spent excessive amounts of time playing digital games performed significantly worse on cognitive tasks compared to those with moderate gaming habits. In particular, they demonstrated lower levels of sustained attention, became mentally fatigued more quickly, and were more easily distracted during task performance.

The findings also indicated that prolonged gaming negatively affected memory efficiency. Participants identified as having higher levels of gaming addiction achieved significantly lower scores on short-term and working memory assessments, suggesting impairments in information retention and recall processes.

Another important finding was the decline in time-management skills among frequent gamers. Individuals who spent extended periods playing digital games experienced greater difficulty completing planned tasks on schedule and showed increased tendencies toward procrastination and delayed task completion.

Sleep-related problems associated with excessive gaming were found to have a substantial impact on cognitive performance. Participants who regularly sacrificed sleep for gaming exhibited reduced attention, weaker memory performance, and slower thinking processes. These results highlight the important role of healthy sleep patterns in maintaining optimal cognitive functioning.

Furthermore, a negative relationship was observed between the level of gaming addiction and academic performance. As gaming addiction increased, participants showed lower achievement in educational activities, including difficulties in understanding learning materials, finding solutions efficiently, and retaining newly acquired information.

Overall, the results support the conclusions of various psychological and neurocognitive theories, demonstrating that digital gaming addiction can gradually disrupt cognitive systems and significantly impair fundamental mental processes such as attention, memory, and executive functioning. These findings emphasize the importance of balanced and responsible gaming habits in order to protect cognitive efficiency, academic success, and overall psychological well-being.

Conclusion And Recommendations:

The collected scientific data, together with the analysis of existing literature and psychological theories, indicate that excessive engagement in digital and mobile games leads to a

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significant decline in cognitive processes among adolescents and young people. In particular, excessive gaming was found to impair important cognitive functions such as attentional control, selective attention, and task-switching abilities. This process can be explained by the mechanisms of operant conditioning, where dopamine-driven reinforcement strengthens addictive behavior, leading to increased impulsivity and reduced ability to regulate gaming time.

Overall, although digital games may have certain developmental benefits, excessive use leads to consistent negative changes in key cognitive systems, including attention, memory, executive functions, and time management skills. The findings of this study highlight the need to strengthen preventive measures, regulate gaming time among adolescents, and improve monitoring by parents and educators. Rational and purposeful use of digital games, especially when directed toward educational or developmental goals, can help reduce their negative cognitive effects.

REFERENCES

1. Anderson, E. L., Steen, E., & Stavropoulos, V. (2017). *Internet gaming disorder: A systematic review of empirical research*. Australian Journal of Psychology, 69(1), 197–205. (A strong meta-analysis on cognitive decline and gaming addiction)
2. Griffiths, M. D. (2010). *The role of context in online gaming addiction: A theoretical overview*. Cyberpsychology, Behavior, and Social Networking, 13(3), 249–252. (Explains dopamine mechanisms, impulsivity, and operant conditioning models)
3. World Health Organization. (2019). *International Classification of Diseases for Mortality and Morbidity Statistics (11th Revision)*. WHO. (Official diagnostic source for Gaming Disorder)
4. Turamov, M. (2026). Mobil o‘yinlarning psixologik va kognitiv xavflari: o‘smirlar misolida. Research and Implementation, 4(2), 20–24. извлечено от https://rai-journal.uz/index.php/rai/article/view/2642
5. Turamov, M. R. (2026). *Mobil o‘yinlarning psixologik va kognitiv xavflari: o‘smirlar misolida*. Research and Implementation, 4(2), 20–24. https://rai-journal.uz/index.php/rai/article/view/2642
6. Ganiev, A., Ahmedov, D. S. U., Boltaboyev, A. K. U., & Turamov, M. R. U. (2026). *Cognitive load theory and AI integration: Optimizing educational technology for enhanced learning outcomes*. AIP Conference Proceedings, 3393, 060053. https://doi.org/10.1063/5.0318803