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Role of AI-Driven Analysis of Gaming's Psychological Impact on Child Behaviour: Positive vs Negative Perspectives

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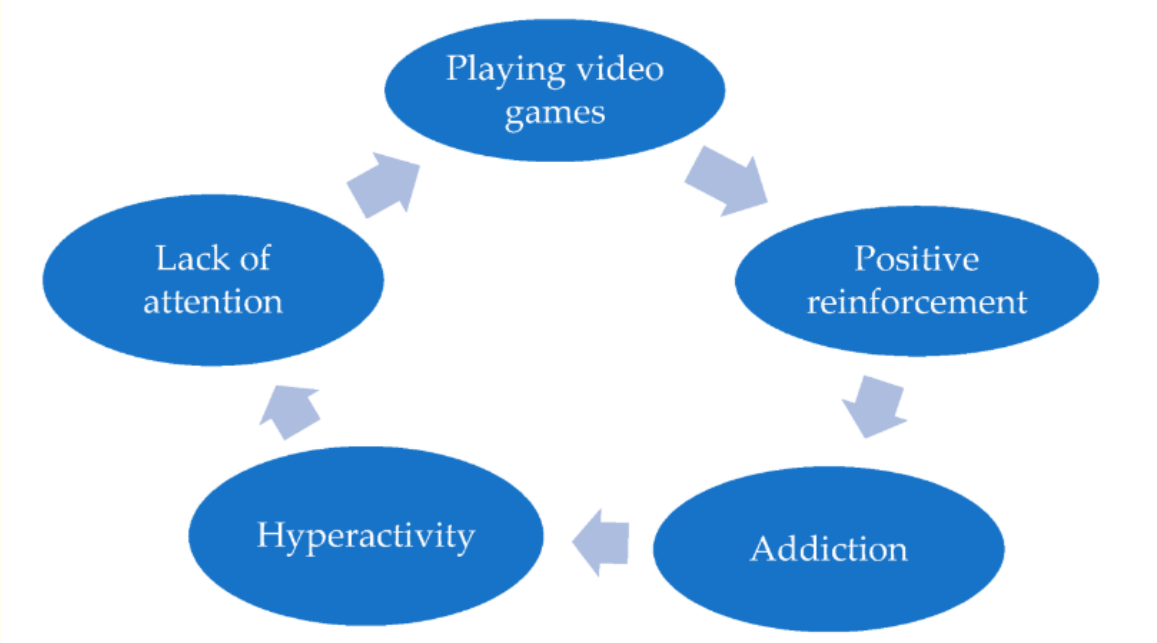
Abstract: E games have quickly influenced the growth of child, which has increased scientific research day by day and raised societal awareness. The effect of E games sometimes also known as video/mobile game on kids' psychological development are still warmly contested, with experts emphasizing that young children may be, vulnerable to the effects of playing E games. Artificial intelligence (AI) has surfaced as a revolutionary asset in the field of psychological research, providing advanced techniques to examine intricate behavioral patterns. Through the use of machine learning techniques and natural language processing (NLP), AI is capable of analyzing large datasets from gaming interactions, social media, and psychological evaluations to reveal detailed insights into children's behavior. With collecting data from few longitudinal study, retrospective studies and cross-sectional studies that might address the connection between various forms of E game playing and the psychological development of children, the present paper adds to the conversation on gaming's benefits and drawbacks. The Present review-based study was made to address the Psychological Problems faced by the children. The research papers were reviewed such as Elseiver, PubMed, Google Scholar, Web of Sciences etc. This study concludes that AI has an crucial role in E games effects the psychological behavior of children in both the ways either good or bad but reviewed article suggests that it affect more in a negative way.

1. Introduction

E games have quickly influenced the growth of child, which has increased scientific research day by day and raised societal awareness. E games have quickly and widely spread to become a part of every child's development [1][2]. The effects of E games on children's psychological development are still hotly contested, with experts emphasizing that young people may be especially, vulnerable to the effects of playing E games [3]. As a result, E games have received a lot of interest from researchers who are looking into how they may contribute to aggressive/hyperactive thoughts and actions, emotional issues including despair, and hyperactivity & inattention [4]. According to these words filtered from the research, E games are a fascinating kind of entertainment that deftly shapes negative reinforcement cycles and thought pattern [5]. On the other side, recent research has started to exploring E games as a pedagogy for teaching positive mental habits [6]. According to this view point, a lot of Es games

encourages co-operation and communication in addition to helping players deal with difficult feelings like dissatisfaction. Additionally, E games appear to offer a setting for the satisfaction of self -deterministic wants, positive impact on psychological well-being [7]. With data from few longitudinal study, retrospective studies and cross-sectional studies that might address the connectivity between various forms of E game playing and the psychological development of children, the present paper adds to the conversation on playing benefits and drawbacks.

2. Psychological influences of Digital Gaming



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While Researching About the digital games, a question that is popped out very frequently was the level of gaming experience which can effect on mind's Thinking Capacity. Many Authors highlighted the four characteristics that could discuss and explain the time spent by the children on Video Gaming that can lead him to addiction. Those four characteristics will be: quantity of time children spent in playing E games, Content of the Game as it plays an important role in conveying message by the game. In Previous studies it has been found that the content affects the behavior, attitude and skills of the game player. Another aspect of gaming is form; it refers to grow knowledge. It is enclosed with the issue of Practicality. Mechanics is another aspect which refers to both input and output devices that are used for gaming. Depending on the interface Involvement would be different. If compared with two groups of children, one who is experienced in comparison with the other found to be more attentive, enhanced thinking and had more logical abilities[8].

AI- Driven tools

Artificial intelligence (AI) has surfaced as a revolutionary asset in the field of psychological research, providing advanced techniques to examine intricate behavioral patterns. Through the use of machine learning techniques and natural language processing (NLP), AI is capable of analyzing large datasets from gaming interactions, social media, and psychological evaluations to reveal detailed insights into children's behavior. For example, AI can examine gaming data to detect behavior patterns, like heightened aggression, problem-solving abilities, or social interaction inclinations that may result from playing games. Additionally, AI-driven sentiment analysis can offer a clearer insight into the emotional reactions provoked by various game types, emphasizing their possible beneficial or harmful impacts.[10]

Moreover, tools powered by AI facilitate longitudinal studies by effectively monitoring behavioral changes over time, providing researchers the opportunity to link gaming habits with developmental results. This ability is especially useful in differentiating the impacts of different game types, like violent games that may encourage aggression compared to educational games that improve cognitive abilities. AI's predictive analytics can foresee potential risks, including gaming addiction or social isolation, by detecting early warning signals from user behavior trends. These innovations illustrate how AI not only enriches research depth but also offers practical suggestions to improve gaming as a means for positive growth while reducing negative impacts.[11]

Hypothesis and Design

The Present review-based study was made to address the Psychological Problems faced by the children. Firstly we focused upon the Types of Video game or E games children plays either cooperative or violent. After that we have discussed the negative and positive aspects of the gaming and its outcome such as psychological behavior, Violent activity by the child, peer relations with parents and other family members.

Method used in the Study

This retrospective study was done to assess the psychological changes faced by the children either positive or negative. The Data was collected from Different online Platforms such as Elseiver, PubMed, Google Scholar, Web of Sciences etc. There was No limit for the collection of the research articles. The last search was completed on 20th July 2023. The searches of the articles were conducted by using combinations of keywords like Psychological Behavior, Gaming, E games, Child behavior, Child Psychology, addiction to games, benefits, disadvantages etc. Some more searches were identified by reviewing the bibliographies of the selected articles. Only the studies written in English was included and no restriction of publication data was imposed. Also, there is no such limit of age for the participants. We tried

to collect All types of Gaming Data such as E games, Outdoor games and indoor games but most of the article were available on E games or you can say video games We excluded studies who were other than English language and was unable to justify our study.We identified few studies following different criteria for the assessment of psychological behavior changes in children. Out of which few studies had positive impacts of video games on child psychology. On the other hand few had negative results regarding the effect of E- games.

1. **Positive Approach towards E-games**

In a recent reviewed study that has been reviewed for the E gaming potential to afford psychological advantages. This perspective concentrates on gaming as a meaningful & modern way of play. In another study done by Isabela Granic et al. it has been mentioned that playing E games aren't sedating and slothful, on the contrary these games promotes a huge variety of cognitive talent especially, for games like shooter games (also known as action games,) many of them are violent. A meta-analysis that was published by Uttal et. Al 2013 it has been concluded that these commercially available video games improve the level of skills compared with the effect of official high school or college/university courses aimed at enhancing these same basic skills.

According to another research articles, effect of the E- games vary in terms of several levels that are focused on different aspects of learning. This study has stated that digital games are a powerful tool in learning as they are active and a good problem solver. It also could be used I developing social skills in children. There are very few studies that shows positive effects of playing E games. Olson et al. has done a study in 2010 to investigate why American adolescents play violent E games. The boys were questioned how they see the importance of video games in their social relationship, as well as how they believed that violent games can influence their thoughts, behaviors and feelings. The author found that the boys play E games to express their fantasies of power and glory. A study offered behavioral and neural proof of generic positive effects from E games training on cognitive abilities of control with advancement competitive to those observed in younger adults has a habit of playing action video games. One of the studies suggests that E games could be treated as a therapeutic way to distract children from several things such as in pain management and in physiotherapy and occupational therapy for the patient who are physically handicapped, learning disabled, emotionally disturbed.

2. **Negative Approach towards E games**

One of the studies that showed the positive impacts of E games has also stated the negative effects of digital gaming. The research article has pointed out that playing E games for a continuous interval can cause physical pain like Nintendo thumb, seizures, muscle, joint pain and skin problems. Few researchers have also stated that playing continuous games affects the school work as the child get addicted to that and involve themselves with a longer period of play. A huge amount of psychological research in the E games literature has focused on the connection between negative outcome and violent video games among children and adolescents like hostility, aggression and decreased empathy. Anderson et al. 2010 enlisted over

150 studies that have experimented the effects of E games on negative outcomes like hostility, decreased empath and aggression. In addition, E games addiction and pathological gaming have been experimented in over 100 research articles. In few Cross-Sectional studies, E gameshave been connected to a wide variety of negative approaches like lower marks in school, depression and anxiety and low self-worth, low life satisfaction. Some Other research have been found problematic gaming to be linked with societal problems like lack of friends, isolation and reduced social skills. Gaming frequencies plays a very important role in changed behavior of children.

3. Temporary vs Stable Effects of Playing E Games

Talking about the temporary effects also called short Term effects, these are the effects in which an individual plays E games for a short amount of time i.e., 15 min. Mostly, Temporary effects are assessed in any experimental studies taken place in hospitals, schools and laboratories. Although stable effects, also known as long term effects are those that occurs through repeated exposure throughout a long amount of time and these types of effects are being assessed in cross-sectional research studies. For some reasons, the effect of violence in video games may differ as a function if discussing either short- or long-term effect. This could be due to the similar level of impulse that can have several impacts on factors that encourage aggression.

Discussion

The goal of this study was to assess the psychological changes in the behavior of children whether positive or negative and to provide insights about effects of playing E Games on children's psychological development. The potential of negative impacts on children's behavior is might be the main concern among the public and researchers. Violent E games in specific have hugely seen as having hazardous control on children's behavior giving a raise to aggression, violence and discouraging pro-social behavior. Although the review in this study has revealed advantages and disadvantages both. This study revealed the Short and Long-term effects of playing E games. Children are attracted towards various types of games depending on their individual differences and interest on a variety of factors including personality differences their own interest, needs and mood. Artificial intelligence (AI) provides a new method for examining the psychological impact of E-games on children. Utilizing sophisticated AI technologies, researchers can examine extensive datasets produced during gaming to detect behavioral shifts instantaneously. For example, machine learning algorithms can identify patterns of aggression, pro-social behaviors, and cognitive growth by analyzing children's interactions with different game components. These insights enable researchers to investigate the complex connection between gaming and psychological growth, surpassing conventional survey techniques. AI is capable of sorting E-games into categories like violent, educational, and social simulation games and linking these to particular behavioral results in children. For instance, by utilizing natural language processing (NLP) and image recognition, AI can examine game content to identify possible psychological triggers it might contain. This allows researchers to explore how various game genres impact both short-term and long-term behavioral outcomes.

If discussed according to future reference, according to a study there are few drawbacks that needs to be addressed first, there are few researches that focus on both positive and negative aspects of gaming, we tried to overcome this drawback in the present study. Secondly, the majority of studies that includes both negative and positive effects are seen to be based on surveys assessment. Although retrospective assessment and self-reports are useful, relying totally on these data limits the authenticity of the study. Instead of this, a multi-method approach should be taken in which objective observations are taken for in-game behavior that are linked with immediate and stable effect. This method could help in a better way to understand psychosocial and neural behavior of the child playing game.

Conclusion

In the modern world the new technologies emerging day by day and with that emerging technologies we see both good and bad effects in this study. This applies to digital games as well. E games in the present is an evolution of past games and it affects the lifestyle and behavior of children whether it positive or in negative way. This study concludes that E games effect the psychological behavior of children in both the ways either good or bad but reviewed article suggests that it affect more in a negative way.AI Plays an important role in analyzing the psychological effects a it is very difficult to keep kids reach out from mobile and games on children A behavioral change could be seen in an individual such as depression, aggressiveness, discouragement and disconnect from social life. The frequency of playing per week and hours per day plays a vital role in the change of behavior of the child. We should limit the time of playing for the children and should encourage outdoor gaming more as to make children physically fit. E games can be encouraged if provided for a limited time to play.

References

1. Adachi PJC, Willoughby T. Do video games promote positive youth development? J Adolesc Res [Internet]. 2013;28(2):155–65. Available from: http://dx.doi.org/10.1177/0743558412464522

2. Anderson CA, Dill KE. Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. J Pers Soc Psychol [Internet]. 2000;78(4):772–90. Available from: https://psycnet.apa.org/fulltext/2000-08135-012.pdf

3. Bauer DJ, Curran PJ. Probing interactions in fixed and multilevel regression: Inferential and graphical techniques. Multivariate Behav Res [Internet]. 2005;40(3):373–400. Available from: http://dx.doi.org/10.1207/s15327906mbr4003_5

4. Bioulac S, Arfi L, Bouvard MP. Attention deficit/hyperactivity disorder and video games: a comparative study of hyperactive and control children. Eur Psychiatry [Internet]. 2008;23(2):134–41. Available from: http://dx.doi.org/10.1016/j.eurpsy.2007.11.002

5. Burk WJ, Laursen B. Mother and adolescent reports of associations between child behavior problems and mother-child relationship qualities: separating shared variance from individual variance. J Abnorm Child Psychol [Internet]. 2010;38(5):657–67. Available from: http://dx.doi.org/10.1007/s10802-010-9396-z

6. Bushman BJ, Huesmann LR. Short-term and long-term effects of violent media on aggression in children and adults. Arch Pediatr Adolesc Med [Internet]. 2006;160(4):348–52. Available from: http://dx.doi.org/10.1001/archpedi.160.4.348

7. Dolgov I, Graves WJ, Nearents MR, Schwark JD, Brooks Volkman C. Effects of cooperative gaming and avatar customization on subsequent spontaneous helping behavior. Comput Human Behav [Internet]. 2014;33:49–55. Available from: http://dx.doi.org/10.1016/j.chb.2013.12.028

8. [cited 2024 Dec 24]. Available from: http://1089-2680/97/$3.00

9. Lérida-Ayala V, Aguilar-Parra JM, Collado-Soler R, Alférez-Pastor M, Fernández-Campoy JM, Luque-de la Rosa A. Internet and video games: Causes of behavioral disorders in children and teenagers. Children (Basel) [Internet]. 2022 [cited 2024 Dec 24];10(1):86. Available from: https://www.mdpi.com/2227-9067/10/1/86

10. Cho M, Kim G. A cross-cultural comparative analysis of crowdfunding projects in the United States and South Korea. Comput Human Behav [Internet]. 2017;72:312–20. Available from: http://dx.doi.org/10.1016/j.chb.2017.03.013

11. Griffiths M. The therapeutic use of videogames in childhood and adolescence. Clin Child Psychol Psychiatry [Internet]. 2003;8(4):547–54. Available from: http://dx.doi.org/10.1177/13591045030084012

12. Granic I, Lobel A, Engels RCME. The benefits of playing video games. Am Psychol [Internet]. 2014;69(1):66–78. Available from: http://dx.doi.org/10.1037/a0034857

13. Essex MJ, Kraemer HC, Armstrong JM, Boyce WT, Goldsmith HH, Klein MH, et al. Exploring risk factors for the emergence of children's mental health problems. Arch Gen Psychiatry [Internet]. 2006;63(11):1246–56. Available from: http://dx.doi.org/10.1001/archpsyc.63.11.1246

14. van den Eijnden R, Koning I, Doornwaard S, van Gurp F, Ter Bogt T. The impact of heavy and disordered use of games and social media on adolescents' psychological, social, and school functioning. J Behav Addict [Internet]. 2018;7(3):697–706. Available from: http://dx.doi.org/10.1556/2006.7.2018.65

15. Bochner RE, Sorensen KM, Belamarich PF. The impact of active video gaming on weight in youth: a meta-analysis: A meta-analysis. Clin Pediatr (Phila) [Internet]. 2015;54(7):620–8. Available from: http://dx.doi.org/10.1177/0009922814545165

16. Gunawardhana LKPD, Palaniappan S. Psychology of digital games and its effects to its users. Creat Educ [Internet]. 2015;06(16):1726–32. Available from: http://dx.doi.org/10.4236/ce.2015.616174

17. Anderson CA, Shibuya A, Ihori N, Swing EL, Bushman BJ, Sakamoto A, et al. Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: a meta-analytic review. Psychol Bull [Internet]. 2010;136(2):151–73. Available from: http://dx.doi.org/10.1037/a0018251

18. Anguera JA, Boccanfuso J, Rintoul JL, Al-Hashimi O, Faraji F, Janowich J, et al. Video game training enhances cognitive control in older adults. Nature [Internet]. 2013;501(7465):97–101. Available from: http://dx.doi.org/10.1038/nature12486

19. Eastin MS. The influence of competitive and cooperative group game play on state hostility. Hum Commun Res [Internet]. 2007;33(4):450–66. Available from: http://dx.doi.org/10.1111/j.1468-2958.2007.00307.x

20. Bushman BJ, Pollard-Sacks D. Supreme Court decision on violent video games was based on the First Amendment, not scientific evidence. Am Psychol [Internet]. 2014;69(3):306–7. Available from: http://dx.doi.org/10.1037/a0035509

21. Online Communication, Compulsive Internet Use, and Psychosocial Well Being Among Adolescents: A Longitudinal Study.

22. Ewoldsen DR, Eno CA, Okdie BM, Velez JA, Guadagno RE, DeCoster J. Effect of playing violent video games cooperatively or competitively on subsequent cooperative behavior. Cyberpsychol Behav Soc Netw [Internet]. 2012;15(5):277–80. Available from: http://dx.doi.org/10.1089/cyber.2011.0308