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A STUDY ON EFFECT OF ONLINE GAMES AND SOCIAL MEDIA ON HUMAN BRAIN

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ABSTRACT

Online games and social media have become the most favorite leisure activity, any individual irrespective of age (kids, teenagers and adults), gender, and profession intentionally get involved in such activities. These activities result in addiction which leads to anxiety, depression, loneliness, sadness, and behavioral changes. Gaming increases the user's risk for physical and psychological health problems. Excessive gaming can cause dopamine exhaustion, emotional suppression, and lack of motivation. Investing time in online gaming and social media not only has adverse effects but it can also be useful as it helps develop hand and eye coordination. Few gaming applications help increase the speed of decision-making and problem solving. Whereas it also increases memory capacity and benefits children with attention disorders. Gaming addiction and Social Media Addiction occurs when people prioritize the usage of such technologies over every other thing including their personal life and career, which leads to unhealthy behavior and dependency. Such people may not know the negative consequences of using certain applications.

Keywords: Addiction, Video Game, Social media, Mental Health, Anxiety, Online games, Depression, Loneliness, Sadness,

1. INTRODUCTION

Understanding the risk factors associated with Internet gaming disorder (IGD) is important to predict and diagnose the condition of an individual. The purpose is to identify major risk factors that predict addiction based on psychological factors and gaming characteristics of the player. Objective of using AI in gaming is to provide realistic gaming experience to the user which is fascinating. In addition, AI in gaming increases the player's interest and provides satisfaction for a long period of time. The rewarding part of the brain releases dopamine in response to a pleasurable experience or hyper arousal gained from the activity. If a person experiences hyper arousal while playing video games, the brain associates the activity with dopamine. The person develops a strong drive to seek out that same pleasure again and again and refrains from performing other activities that might seem boring [1]. Heavy involvement in online activities may increase the risk of problematic use of social media and games. The aim of this research is to understand the human dependencies over online games and social media. However, little is known about parental predictors of problematic social media and game use. While social media provides many benefits, such as giving adolescence the chance to express themselves

creatively, learning opportunities, and the chance to connect with others, social media can also have a negative impact on students, both physically and mentally. It is easy to become addicted, and research shows that students who spend too much time on games and social media can suffer from poor sleep, eye fatigue, negative body image, depression, anxiety, cyberbullying, and more [2]. Physical consequences of gameplay addiction includes migraines, disturbed sleep, backaches, eating irregularities, and poor personal hygiene. Social media use can reduce quality sleep and harm mental health. It impacts human in the form of depression, anxiety, and low self-esteem type of mental illness. Although social media has increased our connectivity, it is also reducing our social and
communication skills. Increased aggression, which may indicate that children are learning violence from gaming. Behavioral changes, such as increased social isolation or lower grades in school. Irritated Difficulty sleeping. This survey involves the impact of addiction, behavioral patterns of users based on previous work. We have extended our research for all age groups. ,

2. LITERATURE SURVEY

This review explores the research on the impact of online games and social media on human psychology, addiction, privacy risks related with gaming and usage of such harmful applications. The major objective of this review is to understand user preferences and behavioral patterns of humans. Another objective is to find the techniques and algorithms that can be used to classify the users according to the usage.

- **Online game Addiction**

Online games addiction has become a very common phenomenon that affects not only an individual, but also our societies. Researchers [4] studied the data collected by the user responses to set of questionnaire. A total of 1174 students were analyzed based on their answers, it was found that 5.7% of the sample were addicted users to games and 44%users were determined to be problematic gamers. The questionnaire also contained the questions about whether the parents are employed, do they have siblings' certain factors determined the social anxiety levels within an individual. It was also found that the students with single parents or working parents tend to have higher addiction levels and social anxiety. Similarly, Researchers [5] explored the data collected from students of Pondicherry, 574 students were analyzed. They compared the lifestyles before and now like previously physical activities were part of day-to-day lives but now people are more attracted to be on their digital handsets. They also brought into discussion the way adolescent communicate and interact has changed due to addiction.

- **Impact on mental health**

According to the study on students of International Islamic University Malaysia (IIUM)[6], the study determined the relationship between online gaming addiction and mental health, particularly depression, anxiety and loneliness. Online games are a popular technology that has recently become a concern, especially among youths, as mobile devices have become a major part of living since then. Whereas, youths are getting addicted. It also implies that adults and children tend to be exposed to violence in real-life due to excessive use of certain violent gaming applications. Apart from this there is major issue of depression which is generally seen

in today's generation. It's found that depression positively relates with gaming addiction [12]. Apart from this the authors [6] also bring into discussion few major concerns namely social anxiety and loneliness. In a study [32], playing violent games on daily basis is found to be associated with depression. Depressive symptoms can be clearly seen in an individual, where the individual plays video games for more than two hour a day is also shown by the researchers.

- **Data Collection**

The data collected by the researchers in [4][5][6] and mostly every paper (where the data is collected) was termed as biased data. The data gathered was based on the responses from the users or the participants. As the data was not real time and response biased there were certain ambiguity in the data as no user wants to be termed as a problematic user. The researchers though considered this data for their findings but also determined the data is not pure and hence, there's a probability that there could be little variations in their results.

- **Online Application Usage**

According to the results from survey [11] most popular online applications used on a daily basis were email (92%), web browsing (92%) and online gaming (91%). Other applications included rapid messaging (86%), downloading multimedia content (75%), social networking sites (68%), online banking (21%) and shopping sites (18%) along with it , the researchers found from collected data that the mean average number of days per week (SD = 2.17). Moreover, the mean average number of hours per weekday was found to be 4.42 (SD = 5.43) compared with 4.48 hours (SD = 3.31) per weekend day; highlighting that the majority of participants spent an equal number numbers of hours gaming during the week and at weekends.. Also, from [6] respondents preferred playing Player Unknown's Battlegrounds (PUBG) (65.1%) the most, followed by Mobile Legend (ML) (58.1%), Call of Duty (COD) (56.1%), Defense of the Ancients (DotA) (36.8%), and lastly, Free Fire (33.3%). This concludes that people are majorly interested in playing violent games rather than preferring any productive activity.

- **Behavioral Patterns**

According to researchers it's observed that there has been seen similar trait of behavioral pattern among the individuals suffering from addiction. Playing games has become the most important activity in person's life and dominates his or her thinking capacity, feelings, cravings and behavior [11]. The researchers also brought into considerations that how a person's mood modifies. Mood modification includes relaxing feelings, though it is only when the person is moving forward (win) application else the mood can modify in negative feeling. Furthermore, Unpleasant emotions and/or physical effects occur when attention from gaming is suddenly reduced or discontinued. Removing attention from the game mostly consists of moodiness and irritability, but also includes physiological symptoms, such as shaking behavior (incase of higher addiction level). Also, this may result in conflict in between the player and those are around him/her [13]. This paper also revealed that the participants for this research also included mostly students (approx. 95%), also government employees and full time workers. Consistent with current literature, a significant proportion of respondents which constitutes of 31% stated they would prefer to exist in a virtual world rather than being in environment of the

real world in which we exist today [17].

- **Risk Factors Associated with Gaming**

Internet gaming disorder can be considered a behavioral addiction and has been found to be related to a number of psychological and health problems, including depression, social anxiety, loneliness, a feeling of left out, fatigue, negative self-esteem, impulsivity and anger. Internet gaming co-occurs with various psychiatric conditions and can lead to a range of negative outcomes, physical or mental. Further, it was also related with several medical factors like addiction seemingly affects the brain's dopamine level which keeps the users from coming back for more. The health risks along with suicidal thoughts were also considered through discussion in [6] [7]. According to [7], the researchers have attempted to identify negative effects of excessive gaming and risk factors. Also, in [8] the research has been extended to academic performances of students depending on mobile game addiction or cyberbullying and it was found that academics is not majorly affected, according to the study in Spain[9]. Though studies have been conducted to promote learning and education through mobile learning [10], it cannot be disputed that there are ethical concerns that lurk on the use of mobile games.

- **Algorithms And Accuracy**

Earlier the major research was done for user identification with the help of descriptive statistics, the findings were diversity of smartphones and app usage among individuals [26], also [27] showed that the 88% of users can be uniquely identified by four apps among 1.37 million participants. Whereas, many researchers used random forest for analysis over limited number of users which showed error rate of 3% [28] and an average F1 score of 96.5% for observing over 150 days[29] , the F1 score increased to 98% according to [30]. For mobile app classification using contextual information [31], the approach shown in this paper is efficient and effective for solving the problem of automatic app classification. Contextual information in App names is insufficient and sparse for achieving a good classification performance.

- **Privacy Risks**

In [11], the metrics was designed for data disclosure based on the number of data types they have previously disclosed within the gaming environments, participants having disclosure more than 7 were considered as high level disclosures and similarly, the low level disclosers were having value of data types less than 4. From this study the scientist were able to give relationships between the data disclosure and hours as well as levels of addiction. They found that there was significantly weak correlation between the hours in a week and levels of disclosure of data whereas there was a significantly positive correlation between addiction level and disclosure of data. However no correlation was seen among autonomy and data disclosure of participants.

3. IN OUR VISION

- **Data Collection**

The ambiguity in data or the data collected was termed as biased, in order to remove this issue with data we must capture the real time data. Capturing the real time data will help to gain higher accuracy about the addiction levels among individuals. The data can also help in finding

the relation between the behavior traits and gaming. The real time data can be captured by tracking the usage from the devices directly will ensure that the data collected is in pure form. Hence, from this method we would receive a better quality of results and findings.

- **Algorithms**

According to the literature survey, algorithms used to classify the participants or applications into various different categories were linear regression, KNN algorithm, SVM, descriptive statistics, probabilistic model etc. Whereas according to our literature survey we found that logistic regression can perform well on certain medical concern problems for classifying the participants as addicted or not [23] [24]. For app categorization certain app classification technique needs to be used by considering the complete description of the app whether it is violent game, social, educational or any other type of application. By this we can identify the psychological impact of the particular application on human brain. Also, this will analyze the addiction at greater depth.

- **Protocols/ Rules**

There should be a strict law in order to control the addiction levels for at least young generation. So, the youth of the nation can be protected from having psychological issues such as stress, anger, anxiety, loneliness, etc. whereas some of these problems can lead them towards harming themselves or having suicidal thoughts. Furthermore, there should be certain rules for publishing the games onto openly available software this makes the situation more difficult.

4. CONCLUSION

From above discussions we found that plenty of humans spend their time on gaming and social media. Also, majority of people involved are students for about 60%. This does not implies this problem is specific to any age group, we also found traces of individuals from all sectors involved in such activities. People are unaware of the physical and psychological impact one could have because of addiction of using online games and social media for enhancing their mood. Up to a particular limit its fine to be engaged in such activities for pleasure but completely relying on them may have an adverse effect on their lives. We also compared the behavioral pattern of a healthy human with the addicted human and came to know that the impact is negative on their psychological health. Furthermore, this behavior can result in conflict with the people in their surroundings. The individual need to observe in which direction their addiction is leading them. Specially, the students may have an immense adverse effect over their career. Also, According to further studies scientist have stated that there would be a huge evolution of humans because of this addicted behavior of human beings.

5. FUTURE SCOPE

A plenty of steps can be taken to prevent people from getting addicted, a lot of research in this domain is still remaining. Several controlling systems need to be built that can be used to prevent the consumers from being the victims of addiction. Furthermore, the solution should have a variety of approaches, including a fundamental shift in delivery mechanisms that will necessarily involve digital solutions. A set of governing policies and protocols can be found to limit the use of violent games, whereas several algorithms can be implemented to deny the

access to under- aged users. The researchers can also study the physical changes in an individual due to such habits.

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