The Impact of Social Media Addiction on Teenagers

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Abstract: Electronic devices and social media platform usage has become so prevalent that it become almost indispensable for people to stay in contact and usage in daily life. Even though social media provides numbers of benefits, the overuse of social media can lead to problems such as social media addiction. In this research, the cause, impact, and solutions of social media addiction will be discussed. Due to the high susceptivity of teenagers to social media addiction, this research aims to figure out possible ways to interfere with teenagers' addiction and discuss possible treatments for it. This research used document analysis as the method. This research found social media addiction is caused by triggers, reward systems, and emotional needs; the impact of social media addiction is impaired brain functions, mental health issues, and overall well-being, including the cycle of depression and addiction, and the high rates of suicidal thoughts. This research also poses solutions, including setting limits to social media usage, adopting coping strategies, seeking therapy, and incorporating physical exercise.

Keywords: Social media addiction, Teenager, Mental health, Reward system.

1. Introduction

Social media can be explained as internet-based networks that enable interaction among users [1]. This model of heavy online communication channels facilitates addiction. The most important aspect in determining whether the usage of social media is addictive is the impairment of the function of individuals in everyday life [2]. For example, when scrolling on social media becomes uncontrollable and this behavior gets in the way of things such as work or school, the behavior is considered addictive. Also, people who are addicted to social media often have impulses to share content and scroll APPs online [2].

Dating back to 1997, the first SNS SixDegree emerged Having been used by more than two-thirds of internet users in 2019, which was at least 3.5 billion people worldwide, social media are growing increasingly popular among this generation [3]. Around 2004, the first social media site, MySpace, reached a million monthly active users, and this is considered the first milestone of the growing popularity of social media [3]. While most people are enjoying the convenience of online sharing and communications, there are growing concerns about the negative impact of social media addiction, which are growing each year. According to research from the University of Michigan, there are 210 million people worldwide who suffer from addiction to social media and the internet [4]. This study is also focused particularly on teenagers from 13 to 18, which are middle school and high school adolescents. During this period in which biological, social and psychological changes happen,

adolescents are strongly eager to engage in social media platforms [5]. Thus, adolescents are also at higher risk of experiencing social media addiction, since according to Newport Academy, 92% of teenagers go online every day and 75% of teenagers engage in social media [6]. This study is aimed to figure out social media addiction's impact particularly on teenagers and the related solutions. This research will answer the reasons social media are addictive, harms of social media addiction, and the treatments of social media addiction.

2. Reasons that Social Media are Addictive

Social media APPs are incredibly addictive because they are designed to prevent people from logging out of their accounts and promote them to mindlessly scroll through online contents. Social Media APPs are free, so companies earn their money through selling subscription services or, most commonly, is to selling user data to advertisements [7]. The longer the time users use social media APPs, the more money can the company sell their data to the advertisement. Thus, in order to make more money, the company makes their APPs strongly addictive.

2.1. Satisfaction of Psychological Needs

There are mainly two reasons that teenagers use social media as a means to satisfy their psychological needs. First, is the need for escape from reality, and second is the need for acceptance [5-6]. When teenagers feel "overwhelmed, lonely, bored, stressed, depressed, anxious, disconnected, shy" they will be more likely to be addicted to social media since the virtual world can act as an escape from problems of reality [6]. Teenagers who are struggling with real life and feel disconnected may be more likely to build a virtual world for themselves to express themselves openly and feel safe [6]. Also, teenagers use social media to meet their need for acceptance from the number of "friends," "likes," and "views" they get on social media platforms, which are considered by teenagers as their social acceptance level [5].

2.2. Reward Center Triggering

Social Media is created to be used as a means of communication and connection, so social media has the function of sharing and commenting on contents. This design of likes and comments can stimulate the brain's reward center [8]. According to Dr. Nancy Deangelis, the director of Behavioral Health, "Social media platforms drive surges of dopamine to the brain to keep consumers coming back… The shares, likes and comments on these platforms trigger the brain's reward center, resulting in a high similar to the one people feel when gambling or using drugs." This is also why social media addiction is similar to other addictive behavior, it is caused by the triggering of excessive release of dopamine, a chemical that gives feelings of pleasure and satisfaction and motivation, which causes people to repeatedly use social media [9].

2.3. Reward Prediction Error Encoding (RPE)

As discussed in 2.2, social media platforms trigger the reward center for releasing of dopamine which causes repeated actions, but there's more that can explain this endless cycle, which is the reward prediction error encoding (RPE). In simple words, RPE can be defined as the error of the difference between predicted rewards and the actual received rewards [10]. Teenagers' future behavior will change depending on the difference between their predicted rewards and the actual reward we perceive [10]. Thus, the behavior of using social media will be enhanced if the prediction error is positive, in which there is more reward experienced than predicted, or if the predicted error was none, in which there's nothing learned and the behavior of social media usage continues. Only when the

error is negative, which the reward experience is less than predicted, the behavior will be suppressed [10]. This can further explain why social media is addictive. When people receive notifications from social media APPs and websites, their prediction of reward will be triggered, and they will log into the APP [2]. When they log into the APP and receive positive feedback such as more likes and more comments, their prediction error will be either positive or none, thus behavior of using social media will still be enhanced [2].

3. Social Media Addiction's Impact on Teenagers

3.1. Impaired Brain Function

Social media's triggering of the brain's reward center in releasing dopamine and the expectancy of dopamine causes repeated impulsive social media use, as discussed in 2.2 and 2.3–this repeated impulsive use of social media will impact the structural and functional changes of the brain [11]. One of the changes is in the reward system, the most critical neurogenetic basis for addiction [8]. Social media offers a variety of immediate rewards, which require no or little effort, such as self-efficacy and satisfaction, and these rewards are highly addictive that would result in continued and increased use of social media [12]. This process of addiction that people become dependent on immediate rewards makes people need one hit after another to receive the same amount of dopamine they expected, which alters the reward system that has diminished function as the dopamine receptors availability decreases [8,12]. Since the brain's reward system is being functionally and structurally changed by social media addiction, there will be damage to the brain's structure and function of reward, executive, and decision-making systems [8]. Cognitive, emotional processing and working memories will also be negatively impacted by social media as social media platforms overload users with information, which depletes their cognitive resources [11-12].

3.2. Mental Health Issues

A study published in Journal of the *American Medical Association* (JAMA) concluded that teenagers who use social media more than three hours per day are at heightened risk of mental health problems, which especially could be applied to social media-addicted teenagers [13]. As discussed in 3.1, addiction to social media can change the brain's reward system, in which people will constantly seek for immediate rewards, leading to obsessive, compulsive and addictive behaviors, which can worsen mental health problems such as impulse control disorder, ADHD, anxiety disorder, and depression [11,13-14]. These serious mental health issues are from the addictive use of social media since it affects users' moods [14].

Since teenagers tend to compare themselves with others online, social media posts from other users can lead teenagers to have lower self-esteem, dissatisfaction, and even narcissism [6,14]. The Royal Society for Public Health and the Young Health Movement survey has concluded that teenagers between the ages of 14 to 17 claimed to have increased feelings of anxiety, depression, loneliness, and the fear of missing out when scrolling Instagram [1]. Also, a study found a correlation that the more teenagers used Facebook, the more their satisfaction with life declined since when teenagers are focusing on showing off their "best self," their self-esteem is actually reduced [6]. This can be explained by Festinger's social comparison theory, which is the behavior of individuals wanting to improve themselves and are motivated to measure their performance peaks at teenage, so this causes teenagers to be motivated to use others as a comparison to measure their performance [5]. This comparison of likes, views, and comments received and overall performance can lead to the eagerness to present the "best self" online, in which not only reduces self-esteem, but also limits teenagers from being fully absorbed in an activity since their brain is constantly interrupted from rest and relaxation

state with social media posts and updates [6]. Later on, this comparison will lead to either feelings of inferior or superior, which can lead to symptoms of both low self-esteem and narcissism [5-6].

There is no evidence that social media addiction directly causes depression, anxiety, and stress but there's a strong association between [11,15]. Social media addiction can worsen mental health disorders such as anxiety, depression and ADHD since social media makes people have less self-esteem, more dissatisfaction, and even more of the feeling of being isolated, which together can affect mood and worsen symptoms [11,14]. In a study conducted among students of higher secondary schools or colleges, there is also a vicious cycle of depression found in which people with depression enter the virtual world of social media to escape from depression or gain acceptance, but their addiction further begets depression [15]. Moreover, people with internet addiction have three times higher than average rates of suicidal ideation, planning, and attempts, which rings an alarm of problematic social media use [11].

4. Solutions to Social Media Addiction

4.1. Setting Limits and Coping Strategies

To stop the cycle and addiction to social media, setting limits on APPs and devices is essential. Research shows people with screen usage within 30 minutes have a significant reduction in anxiety, depression, and loneliness [14]. However, it might be unrealistic to reduce heavy users' screen time to 30 minutes on the first try, so it is important to set a reasonable amount of screen time limit per day and develop a social schedule controlling daily use [14,6]. APP tracker and alarm clocks can also be useful [14]. Developing coping strategies for stress, anxiety, and depression is also essential since it can help develop a healthier coping mechanism than social media [9,14].

4.2. Therapy

Therapy is considered the best way to treat behavior addictions, such as social media addiction [2]. Several therapy approaches such as cognitive behavioral therapy, psychotherapy, and psychiatry are used as treatments [11]. Cognitive behavioral therapy or CTB is considered a very useful approach in treating social media addiction. It helps the patient to understand their thoughts, feelings, and behavior, then identify and change the negative beliefs that lead to unwanted behavior. Lastly, it teaches the coping skills to manage unwanted feelings [2]. Moreover, addicted individuals may have deep-rooted issues in their lives, which lowers their satisfaction and drives them continue or increase addictive behaviors [4]. A study done by Longstreet showed that life satisfaction can decrease the levels of internet and social media addiction [4]. With therapy helping manage the unwanted feelings and improving life satisfaction, there's a great chance social media-addicting behaviors will be reduced [2,4].

4.3. Exercise

Exercise is considered the best way to intervene in social media addiction due to its unique advantage of high withdrawal and few side effects [8]. Moreover, since social media addiction has already changed the brain's reward system, cognitive function, and decision-making, it is important to recover brain function [8]. It is found by Chen's study that physical exercise can improve behavioral and cognitive function in patients with internet addiction, and most importantly, the functioning of reward, execution, and decision-making systems is enhanced [8].

5. Conclusion

In conclusion, social media addiction is highly addictive, especially to teenagers. Through offering instant gratification, need acceptance, and need of escapism, social media repeatedly stimulates users to engage in continuous and uncontrollable use of social media. The impact of social media addiction on teenagers can be severe, including impairment to brain function, cognitive deficits, and heightened risk of mental health issues such as anxiety, depression, and low self-esteem. Fortunately, solutions to social media addiction are found, including setting usage limits, developing coping strategies, seeking therapy, and engaging in physical exercises to restore cognitive and brain function. By addressing the underlying causes and providing targeted interventions, it is possible to reduce the negative consequences of social media addiction and promote healthier habits. This research can be improved by not only exploring the psychological and neurological aspect, but also exploring further cultural and social-economic causes of social media addiction. Also, the research method can be improved. Case studies and surveys of different groups of individuals across different regions can be used and analyzed to learn how social media addiction develops across different regions and among individuals with different backgrounds. Future studies on this topic could focus on cross-cultural comparison of social media addiction and study how people with different backgrounds are impacted and respond to this issue.

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