

Brain Behind The Screen

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DOI: 10.31219/osf.io/rucs2

Received: 19.02.2025,

Accepted: 18.03.2025.

Abstract:

Introduction: On one hand, virtual social interactions may stimulate serotonin release and contribute to feelings of connection and social validation. On the other hand, excessive use of social media can lead to social comparison, cyberbullying, and feelings of inadequacy, which are associated with lowered serotonin levels and increased risk of mood disorders.

Methods: A survey questionnaire containing the questions about qualitative and quantitative effect of social media on happy hormones was studied by using google form.

Result: This review also delves into the underlying neural mechanisms, such as the role of the mesolimbic dopamine pathway and the impact of disrupted circadian rhythms due to extended screen time.

Conclusion: Social media offer unprecedented opportunities for connectivity and self-expression, their effects on Happy Hormones are complex and multifaceted.

Keywords: Social media, Happy Hormones, Mental health, Addiction, Mood disorders

Introduction

The brain is a multifaceted organ that controls all functions of the body, including emotions, thoughts, and behaviours. Social media has become an essential part of our lives, affecting the way we think, feel, and behave. The use of social media can activate the release of dopamine and serotonin in the brain, leading to feelings of pleasure and happiness. However, excessive use of social media can lead to compulsion and negative effects on mental health.

A cross sectional Clinical Survey was conducted among all age groups, wherein mostly peoples of age (15-45) responded to our survey, in which logical questions were asked related to the effects that affected their Psychological as well as Physical life. Various outcomes were analysed and based on all the responses we were able to derive valuable information that backed our research.

The Social media loop

The social media loop can have a influential effect on our brain's reward system, which is responsible for releasing neurotransmitters like dopamine and serotonin. Dopamine is a neurotransmitter related with pleasure and reward, while serotonin is linked to feelings of happiness and well-being. When we create content on social media and receive engagement from others, such as likes or remarks, our brain releases dopamine, which gives us a sense of pleasure and satisfaction

This can create a constructive feedback loop, where we become more motivated to create content and seek out engagement from others. Similarly, when we receive positive feedback from others on social media, such as compliments or justification, our brain releases serotonin, which can boost our mood and feelings of well-being. This

can further reinforce our desire to engage with the platform and seek out social validation from others. However, it's important to note that social media use can also have negative effects on our mental health, such as increased feelings of anxiety, depression, and loneliness. This can occur when users become overly reliant on social validation from others and experience negative feedback or social comparison. Therefore, it's important to use social media in moderation and maintain a healthy balance with other activities in our lives.[1]

Literature Review

The 21st century is referred to as the era of information technology. The astonishing technologies of wireless communication and the internet have caused radical shifts in the communication industry. The first smartphone was released in 2007. Since then, smartphones have become a necessity for daily life in all societies. Smartphone use and ownership have skyrocketed significantly during the last ten years. For instance, there were around 2.1 billion smartphone users worldwide in 2017, and it was predicted by World Health Organization (WHO) that the number would approach 7.26 billion by 2022. After China, India has the second-highest smartphone user base [2]. According to the WHO, adolescents are between 10 and 19 years of age, whereas young adults are between 15 and 24 years of age [3]. The salient attributes of adolescents and young adults are emotional, psychological, physical, and social development. They have rapid but uneven physical growth and experience sexual maturity and the onset of sexual behavior. The desire for experimentation and exploration is insurmountable [4]. Development of adult mental process, the transition from dependence to relative independence and self-identity takes away years of their life.

Smartphone impact on adolescents and young adults

Adolescence plays an important role in grooming a person, making them capable enough to adapt to their surroundings. Smartphone usage primarily impacted adolescents and young adults by predisposing them to mental health issues, insomnia, cyberbullying, anxiety, depression, obesity, false prestige, self-control issues, physiological stress, vision problems, mind-wandering, attention deficit-hyperactivity disorder (ADHD), and obsessive-compulsive disorder (OCD). Smartphone addiction decreases life satisfaction and increases the chances of potential health risks and negative thinking styles in adolescents [5-6].

Addiction

The use of term "Internet addiction" at first time is in 1996 by Goldberg. Internet addiction, also called pathological internet use, excessive internet use, compulsive internet use, problematic internet usage, can be defined as going to excessive nervous and aggressive state when deprived of using internet. [7]

For the diagnosis of addiction which is a psychiatric syndrome, it is sufficient that only three of the following criteria are seen together

1. Tolerance development in the used substance
2. The manifestation of withdrawal symptoms when the substance is cut or reduced
3. Efforts to control or abandon the use of drugs
4. Spend a lot of time to provide, use or leave the substance
5. Adverse effects in social, occupational and personal activities because use of substance
6. Taking the substance in a long time and higher quantities
7. Continue use of substance despite the emergence or increase of physical or mental problems

Negative Psychological Effects

Negative attitudes and feelings of fear due to smart phone usage are related to an increase risk of depression and anxiety. According to Jones, who carried out a study among students of Elon University, North Carolina, and the United States, students are always hooked to their mobile phones, and that determines their behaviour and negative psychological effect. [8-9]

Stress

Stress is any type of change that causes psychological, emotional, or physical strain. study reached similar conclusions, a questionnaire was distributed to 439 students aged 12-17 years, including parents and young adults from Central Switzerland, and it was discovered that smartphone usage during the night hours was common among adolescents and that being awake all night resulted in poor perceived health. There was no tangible link between memory performance and mobile phones. As a result, it was found that digital stress is a big stimulant and causes major psychological health effects. [6]

Depression

Depression is a psychological disorder that results in persistent emotions of sadness, loneliness, and lack of joy and is thought to be highly correlated with addiction to smartphone usage. In 2012, researchers discovered a significant

increase in smartphone usage among teens and symptoms of an increase in depression which ultimately lead to suicidal thoughts. [10]

Anxiety and Sleep Loss Pattern

Anxiety is a type of mental illness that causes fear, nervousness, worry, and apprehension [6]. In 2017, Boumosleh and Jaalouk studied whether depression and anxiety led to smartphone habits. Their cross-sectional study showed that sadness and anxiety are good predictors of smartphone addiction [6]. A descriptive study conducted by Fisoun et al. found that internet addiction is similar to drug addiction. If internet addiction persists, it will end in the same outcomes as alcohol addiction. Another observational research suggested that sleeplessness can lead to depression. The subjective experience of finding it difficult to fall asleep or stay asleep is known as insomnia or sleeplessness [9].

False Prestige

Adolescents may now easily access any of the most recent advancements in mobile technology. Adolescents who are naive for their age may accept the majority of things available on social media, can become serious about such things, and can get influenced, even if they may not be accurate. They might create a false sense of status and start living in a dream world. Some people could turn to crime to live out their desires [9].

Thus, this virtual world created by media highly influences their behaviour and so they are highly dependent on media. [11]

Connection and maintenance of relationships with family and friends

Young people enjoyed arranging social activities over SNS, seeing photos of themselves with friends and staying connected with family who they rarely saw. Nevertheless, young people remained cautious about the offline repercussions of sharing openly [12]

Fear of missing out (FOMO)

The term “FOMO” (fear of missing out) – which refers to the anxiety stemming from the belief that one might miss social events and experiences – has been tied to technology use, and might account for why users feel compelled to check their social media accounts multiple times per day. Teens also report losing sleep because they feel a constant need to use and check social media, reportedly keeping their phones by their beds and under their pillows to avoid missing messages at night. FOMO is thus indicative of social media dependency, and has been shown to be a predictor of social media use and social media addiction. [13] Physical Fitness

Addicts to smartphones were less likely to walk every day. In particular, smartphone addiction may have a severe impact on physical health by limiting the quantity of exercise, such as walking, leading to an increase in fat mass and a decrease in lean mass, both of which have negative health effects [14].

Material and Methods

Survey questionnaire: A set of questions related to social media usage and its effects on the human brain. Online survey platform: A platform that allows the survey to be distributed to a large number of participants, in our case we took help of Google Forms. Participants were recruited through social media platforms or other online platforms. The sample was stratified to ensure representation from different age groups, genders, and socioeconomic backgrounds. The survey was distributed to participants using an online survey platform.(Google Forms) The survey was designed to collect information on the following • Demographics: Age, gender, education level, socioeconomic status, etc.

- Social Media Usage: Frequency of use, type of platform used, duration of use, etc.

- Effects on the Brain: Changes in behavior, emotions, mental health, etc.

- Data Analysis: The data collected from the survey was analysed using statistical methods to identify patterns and trends.

Result and Discussion

After collection of survey forms from various sources each questions data was analysed for their results. Social Networking Site (SNS) Usage Based on our Surveyed it was found that most used social media platform was

Instagram, which might be due to short bursts of dopamine because of which brain seeks quick pleasures which is the key tactics for the platforms success

Reward and Pleasure:

Social media platforms are designed to be addictive, and users often experience a rush of pleasure and reward when they receive likes, comments, and shares on their posts. Over time, this can lead to changes in dopamine receptor levels, as the brain adapts to the increased dopamine levels. This can lead to a decrease in the brain's sensitivity to dopamine, making it harder to experience pleasure and reward from other activities.

But, on contrary it was found that there's equal views, where people seeking pleasure is slightly higher than other which don't (might people being diplomatic).

Anxiety and Stress:

Social media can also lead to increased levels of anxiety and stress, which can impact serotonin levels in the brain. Social media use can lead to feelings of social isolation and the fear of missing out (FOMO), which can increase stress and anxiety level. Based on our survey it was observed that it has shown positive effects on individuals mental health and wellbeing as we as academic professional performances. It depends on the specific questions asked and the sample size and demographics

The prevalence of FOMO among different age groups, genders, and socioeconomic backgrounds

The specific triggers or situations that tend to induce FOMO in individuals

The ways in which people cope with or try to overcome FOMO

The relationship between FOMO and social media usage, as well as other factors such as personality traits and attachment styles [14]

Emotional Concern

According to research, excessive social media use can have a negative impact on mental health, including an increased risk of anxiety and depression, loneliness or social isolation, and lowered self-esteem, due to overstimulation of the dopamine receptors causes to desensitization which further leads to decrease in serotonin levels causes long term side effects. On the other side, social media can also be beneficial for mental health because it offers chances for community development and social support. Overall, the effects of spending time on social media can be complex and depend on a variety of individual and contextual factors.

Sleep Deprivation

Social media use can also impact sleep patterns, which can affect both dopamine and serotonin levels in the brain. The blue light emitted by screens can disrupt the body's natural circadian rhythm, leading to sleep disturbances. Lack of sleep can decrease dopamine receptor levels. Based on our survey data, social media usage can have a negative impact on sleep patterns for many individuals

Visual impairment due to excess screen time

From the chart as per the responses we could see that 60% of the study participants were affected due to increased screen time on social media As per recent reports, there are many cases of vision problems that are mainly associated with increased smartphone screen time. Symptoms are ocular muscle fatigue, redness, lacrimation, irritation, blurry vision, and dry eyes.

Effects on Physical Activity

Social media can have both positive and negative effects on physical activity. On the positive side, social media can be a powerful tool for promoting physical activity and healthy lifestyles. For example, fitness influencers and bloggers can inspire and motivate their followers to exercise more and lead a healthier lifestyle. However, social media can also have negative effects on physical activity. For example, excessive social media use can lead to a sedentary lifestyle, where individuals spend more time on their devices and less time engaging in physical activity. Therefore, it's important to use social media mindfully and in moderation, and to prioritize physical activity and healthy habits in our daily lives.

Connection and maintenance of relationships with family and friends

There are following impacts on relationship due to social media

- 1) Increased communication
- 2) Increased transparency
- 3) Increased jealousy
- 4) Increased opportunities for infidelity
- 5) Increased pressure to present a perfect image

Among this according to the survey it shows moreover positive impact on their relationships as it increases the transparency and bridge the communication gap between them. [12]

Conclusion

In conclusion, social media use can have a significant impact on the levels of dopamine and serotonin receptors in the brain. Social media can lead to augmented dopamine levels due to the reward and pleasure associated with receiving likes and comments. It can also lead to decreased dopamine receptor levels, making it harder to experience pleasure and reward from other activities. Social media use can also effect serotonin levels in the brain, leading to increased anxiety and stress, and decreased serotonin levels can donate to mood disorders such as depression. Therefore, it is crucial to be aware of the potential effects of social media use on the brain and to take steps to reduce its negative impact on mental health Smartphone undeniably improves access to knowledge and connectivity, but at the same time, its addiction is quite alarming. If guardians intend to give youngsters a phone, ensure they strictly supervise their phone usage. Otherwise, they may spend the entire day staring at a screen. If not, it will have irreparable consequences for the person's physical health, relationships, studies, friendships, and family bonds. They must also agree on smartphone usage guidelines. And thus, this paper tries to pinpoint prior research by examining the links between smartphones and mental health problems related to addiction and helping us justify whether or not it is making us antisocial and unhealthy.

Social media can have negative effects on physical and mental health, but there are ways to minimize these impacts. Some tips include spending less time on social media, turning off notifications, and avoiding scrolling first thing in the morning or before bed [15] Spend less time on social platforms. Don't scroll first thing in the morning or before bed. Turn off notifications and only check social media at certain times. Use social media on a device that's not your phone Generate a feel-good follow list Meditate Listen to Soulful Music Taking breaks, setting intentions or purposes, and connecting with positive people are other ways to stop the negative effects of social media [16]

Warning social media usage to 10 minutes a day for three weeks leads to lower loneliness and depression.

However, reducing social media usage to even 30 minutes a day can result in a significantly lower level of Anxiety, Depression, FOMO, Loneliness, Sleep Deprivation. [17]

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