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Cognitive and psychological effects of social media usage patterns among youth in Haryana, India population: A cross-sectional questionnaire-based study

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Abstract---This study explores the effects of social media on cognition and psychological well-being, with a focus on addiction, stress, anxiety, and behavioral changes. To research these impacts, a quantitative cross-sectional research design was conducted, and data were collected from 220 participants across different age groups using a structured questionnaire via Google Forms. The findings of this study were indicated that the majority of participants were moderately to highly engaged in the usage of social media, spending 1–3 hours per day and many others exceeding 3 hours daily. The of the cognitive effects were clearly indicated, with high levels of mental exhaustion (Mean = 3.50 ± 1.15) and addictive behavior (Mean = 3.47 ± 1.21) was moderate to high that suggested the impaired self-control and increased cognitive fatigue. Similarly, approximate 58.6% of participants reported difficulty in controlling their social media usage pattern, especially in terms of continuous scrolling behavior. The psychological outcomes of this study revealed moderate levels of stress and anxiety (Mean = 3.08), influenced by some factors such as mental exhaustion, social comparison and fear of missing out (FoMO). Furthermore, 70% of participants experienced mental fatigue and considered that the reducing screen time could improve their mental well-being. The study concludes that excessive use of social media is related to significant cognitive impairment, addictive behavior, and moderate psychological distress.

Keywords---Cognitive Effects, Psychological Effects, Mental Health, Social Media Addiction, FOMO.

Introduction

The rapid expansion of social media has changed how people communicate, find information, gradually build their identities, and make connections within broader societies (Boyd, 2007; Kaplan, 2010). As a result of becoming part of daily routines, they not only impact how we relate to others but also affect how we think and feel (Carr, 2010; Meshi, 2015). Social media now has over a billion users around the world and continues to increase daily time spent (Kuss, 2017). Consequently, understanding the cognitive and psychological effects of social media has become an important area of research for many academic disciplines, including psychology, neuroscience, communication studies, and behavioral sciences. Social media sites are deliberately created to capture attention by using features specifically designed to keep users engaged (Alter, 2017; Harris, 2016). Features such as likes, shares, comments, and infinite scrolling use reinforcement signals to encourage users to interact over and over again (Montag et al., 2019). These features can also have a significant effect on important cognitive areas, including attention span, memory processing, decision making,

and emotional regulation (Ophir, 2009; Ward et al., 2017). Because social media is a major part of our daily lives, many researchers across various fields have sought to understand how this expansion of communication channels has changed the way that individuals interact both with themselves and with the rest of the world. Not only do many people now rely on social media as an integral part of their daily routine, but they have also begun to see it as affecting their emotions and the way that they view other people and situations.

With more than a billion people worldwide actively using social media (Kuss, 2017), the time spent using these platforms continues to increase on a daily basis. As such, understanding the cognitive and psychological effects associated with social media use represents an increasingly important area of study across multiple disciplines (e.g., psychological studies, neuroscience, communication studies, and behavioral sciences). Social media platforms have been intentionally designed to attract and hold attention through elements such as “like”, “share”, and “comment” buttons and infinite scrolling features that provide users with constant reinforcement in order to keep them engaged (Alter, 2017; Harris, 2016). As demonstrated by studies such as Montag et al. (2019), many of these features will likely have a negative impact on cognitive processes such as attention span, memory processing, decision-making ability, and the regulation of emotions (Ophir, 2009; Ward et al., 2017). There are other sources of complexity due to the developing adolescent brain's increased sensitivity to social rewards and peer feedback, given that executive functions are still developing during this period (Steinberg, 2014; Crone & Konijn, 2018). This means that social media feedback may have a greater influence on their regulation of emotions and self-evaluation. People who have been exposed to digital gadgets and technology at an early age are developing new ways of thinking that we do not yet fully understand (Odgers & Jensen, 2020).

There are many ways to engage with social media, depending on how much you want to use it and how involved you would like to be with others online. Given the current state of knowledge regarding the effect of social media on cognitive and metacognitive abilities and psychological well-being, cross-disciplinary research is required to document all of the available evidence; examine any mechanisms involved; identify protective and risk factors; and highlight areas that still need to be researched. These methodological differences and differences between the various social media platforms have contributed to the lack of consistency in the research on social media's impact (Orben & Przybylski, 2019).

Social Media: Definition and Growing Influence

Social media is a set of online interactive services that enables people to create, share, and communicate with one another through content created by themselves and others in real time. Some of the most common examples of social media platforms are Instagram, Facebook, Twitter (now known as X), and Snapchat. These platforms have become an integral part of everyday life over the last decade, resulting in a huge increase in the number of people around the globe who use social media (Kuss & Griffiths, 2017). With the vast increase in accessibility of the internet and ownership of smartphones, a significant number of individuals use

social media for communication, entertainment, education, and information sharing worldwide.

There is a larger proportion of adolescents and young adults using social media than any other age group. Research indicates that this age group spends several hours per day using social media to engage in activities such as posting photographs, watching videos, messaging friends, and following trends (Twenge & Campbell, 2018). Because of their increased involvement with social media, users in this age group are significantly influenced by the content and interactions on these platforms.

Social media use can be divided into two categories: active use and passive use. Active use involves direct interaction, such as posting content, commenting, or messaging others. Passive use includes scrolling through feeds and viewing others' posts without interaction. Studies suggest that passive social media use is often associated with negative psychological outcomes such as social comparison and lower life satisfaction (Vogel et al., 2014). People use social media for different purposes, including remaining connected with friends and family, expressing themselves creatively, consuming entertainment content, and getting knowledge. In recent years, social media has become an increasingly significant venue for public health and social awareness campaigns, product or service promotion, and corporate networking. Due to social media's widespread reach and the amount of time people spend on these platforms, understanding how it affects cognitive and psychological functioning has become an important area of research (Kuss & Griffiths, 2017).

Cognitive Effects of Social Media

Recent research has focused on how social media affects cognition since people are using so much time interacting with digital content in their everyday lives. The use of social media can impact cognitive functions such as attention, memory, learning, and decision-making. Research shows that excessive use of technology, particularly the fast-paced short-form content that many people are exposed to, promotes multitasking and a high frequency of task switching, thus hindering sustained attention and cognitive control (Ophir et al., 2009). One other detrimental form of use that may occur with heavy social media users is they may process information and form opinions about it in a very shallow fashion because heavy social media users are likely to skim large amounts of content rather than process the information in a more meaningful way, which has been shown to hinder memory and learning (Kuss & Griffiths, 2017). Additionally, social media can also impact how a person makes decisions by providing that person with an unending stream of information and opinions, which can impact their judgment and/or the choices they make.

However, some studies have also reported positive cognitive outcomes. Social media can improve digital literacy, increase access to information, and facilitate collaborative learning opportunities. While social media can provide certain cognitive benefits, excessive and unregulated use may negatively affect concentration, memory, and critical thinking, highlighting the importance of balanced usage.

Psychological Effects of Social Media

Social media has created new opportunities for individuals to connect with others, share ideas, and build communities. Although these platforms can facilitate social contact and emotional support, overuse may have detrimental psychological effects. Increased anxiety and depression are among the psychological impacts of extensive social media use that are most frequently observed. According to studies, people who use social media extensively are more likely to feel depressed, lonely, and psychologically distressed (Primack et al., 2017). Another significant problem with social media is social comparison. People frequently contrast their life with the carefully chosen and idealized representations that other people post online (Chou & Edge, 2012; Lee, 2014). Feelings of inadequacy, low self-esteem, and unhappiness with one's own accomplishments might result from such comparisons (Vogel et al., 2014). Another major psychological issue is cyberbullying. Long-term mental health problems, anxiety, and emotional suffering can result from online harassment. The internet's anonymity can occasionally promote negative behaviors that wouldn't happen in person. Social media can also lead to addictive behaviors. Individuals may develop a compulsive need to check notifications, messages, or updates, making it difficult to disconnect from these platforms (Andreassen, 2015). Over time, this dependency can interfere with daily activities and real-life relationships. Despite these negative outcomes, social media can also have positive psychological effects when used correctly. It allows individuals to connect with people and communities, share knowledges and experiences, and find emotional support from others facing similar type of challenges. Overall, the psychological effects of social media are complex and are primarily determined by the nature and manner of individual engagement.

Social Media Addiction

The excessive and compulsive use of social networking platforms that interferes with the daily life, work, and mental well-being. It is recognized as a behavioral addiction where individuals find it difficult to control their usage despite experiencing negative consequences (Andreassen, 2015). The addiction of social media includes spending the excess time on scrolling and online, constantly thinking about the social media, and unable to reduce the usage pattern. Many individuals develop a habit of compulsively checking notifications and messages even when it is unnecessary (Andreassen et al., 2012). Withdrawal symptoms may also occur when individuals cannot access social media. These symptoms can include irritability, anxiety, and restlessness. Over time, increased screen time and reduced self-control may negatively affect productivity, academic performance, and interpersonal relationships. Among students, social media addiction can interfere with studying and concentration, as frequent digital distractions reduce the amount of time dedicated to academic tasks. Thus, awareness about balanced and responsible use of social media has become increasingly important.

Materials and Methodology

In this research, a cross-sectional quantitative study was used to explore the cognitive and psychological impacts of social media use on individuals. The cross-sectional method was deemed best suited to compiling a large volume of data from participants at one point in time to provide insight into behavioral and psychological trends.

A total of 220 participants representing different ages and backgrounds were included in the study to allow for differences in how social media is used and the associated effects. The data was collected using a structured self-administered questionnaire created using Google Forms to facilitate the easy distribution of questionnaires to participants and effective collection of their responses while ensuring the confidentiality of the participants; that is, their responses were no longer associated with identifiable or personally identifiable information. The form was also circulated to different participants and was filled out by them using a QR code.

The questionnaire was divided into three sections. The first section asked for demographic information of participants and their average amount of time spent on various social media daily; this information provided a basis for understanding how participants used social media. The second section of the questionnaire was developed to measure cognitive impacts; addiction (inability to control scrolling), mental fatigue, and loss of interest in daily activities were assessed in this section. The final section was designed to assess psychological impacts; stress, anxiety, social comparison, fear of missing out (FOMO), and annoyance were evaluated in this section.

All responses were rated on a Likert-type scale, typically from one to five, with one representing little and five representing a lot of intensity for each variable. In the case of constructs with multiple indicators (like stress and anxiety), composite scores were calculated to allow for a more reliable measure.

The survey was distributed online, and all participants provided informed consent prior to data collection. Data were analyzed using descriptive statistics, such as frequency and percentage for categorical data and mean and standard deviation (mean $\pm$ SD) for continuous variables, in order to assess patterns in results as well as levels of effect. Ethical principles were adhered to throughout all steps of the study with respect to assuring confidentiality, anonymity, and using data for academic/research purposes only.

Results

This study includes a total of 220 participants in it. The results are presented in terms of social media usage patterns and their associated cognitive and psychological effects. The most respondents (40.5%) used social media for 1-3 hours each day (shown in the Figure 1); 27.7% reported using social media for 3-5 hours, and 22.3% reported using social media for over 5 hours each day. The remaining 9.5% of respondents reported using social media for less than 1 hour

each day, showing that participants are primarily moderately to highly engaged with their social media use.

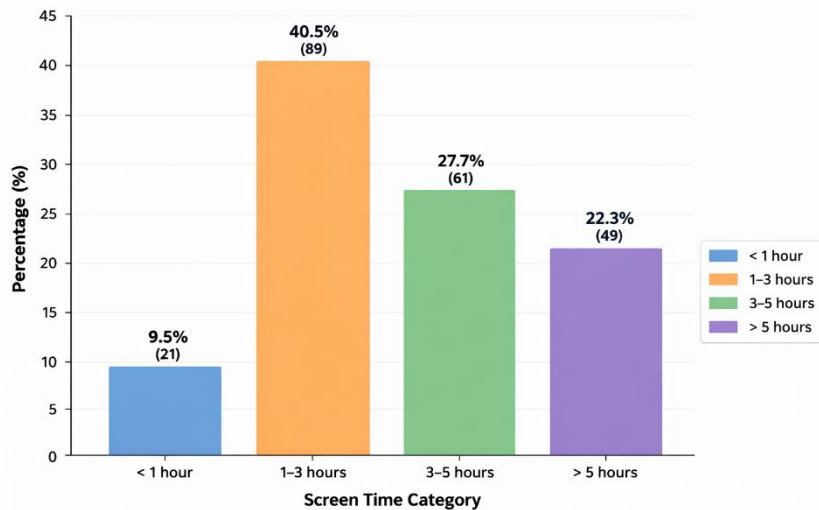


Figure 1: Distribution of social media usage %

The data shows that the cognitive functioning (Table 1) has been negatively affected by social media usage since participants indicated high levels of mental fatigue (3.50 ± 1.15) and moderate to high levels of addiction (3.47 ± 1.21). Therefore, this suggests that the cognitive control of study participants has been impaired due to fatigue. Additionally, the data regarding loss of interest (3.09 ± 1.27) represents moderate reductions in the ability to pay attention and be engaged in daily activities thus, indicating that study participants are not fully engaged with what they are doing throughout their day.

Table 1
Cognitive effects of social media usage

Variable	Number of Indicators	Mean $\pm$ SD	Interpretation
Addiction (Scrolling Difficulty)	1	3.47 ± 1.21	Moderate to high impairment in self-control
Mental Exhaustion	1	3.50 ± 1.15	High cognitive fatigue
Loss of Interest	1	3.09 ± 1.27	Moderate decline in attention and engagement

According to the findings on Psychological Effects showed in Table 2, the level of stress (3.08 ± 1.22) and anxiety (3.08 ± 1.28) was low to moderate overall, with both being considered in the middle of the scale (the midpoint is 3.0) and having very similar average scores for each of the two variables. Mental exhaustion accounted for the variation in stress levels, while social comparison and fear of missing out (FoMO) accounted for the variation in anxiety levels. It is interesting

to note that the level of irritation was much lower than the mean of the other two, resulting in a greater range of emotional response for some participants.

Table 2
Psychological effects of social media usage

Variable	Number of Indicators	Mean $\pm$ SD	Interpretation
Stress (Composite)	3	3.08 $\pm$ 1.22	Moderate stress
Anxiety (Composite)	3	3.08 $\pm$ 1.28	Moderate anxiety
Social Comparison	1	3.05 $\pm$ 1.29	Moderate psychological influence
FoMO	1	3.02 $\pm$ 1.30	Moderate fear of missing out
Irritation	1	2.65 $\pm$ 1.26	Low to moderate emotional response

Discussion

In this current study, the researchers used a structured questionnaire to investigate the cognitive and psychological impacts of social media usage and found that many subjects engaged in moderate to high levels of social media usage, leading to considerable cognitive and emotional impacts. One of the major cognitive impacts that emerged in this current study was mental exhaustion, especially among people engaging in high levels of social media usage. High social media users exhibited signs of addictive behavior, specifically an inability to stop scrolling and browsing, by being unable to stop browsing. This is similar to previous studies suggesting that high media multitasking causes poor attention and cognitive control abilities (Ophir et al., 2009). Moreover, in line with the study conducted by Ward et al. (2017), excessive use of smartphones may lead to reduced cognitive capabilities.

Besides cognitive fatigue, most of the participants experienced a lack of interest in routine tasks, shorter attention spans. Such an observation was also reported by Rosen et al. (2014), who proved that regular distractions on digital devices negatively impacted the ability to pay attention and learn. Additionally, Kuss and Griffiths (2017) stated that exposure to vast amounts of online content leads to shallow processing of information which in turn negatively impacts one's memory and learning. As far as the psychological consequences go, the participants' levels of stress and anxiety were observed to be at a relatively moderate level but mental fatigue served as the main reason for such. Social factors such as social comparison and Fear of Missing Out (FoMO) were also proven to have a significant effect on anxiety. The results of the investigation are consistent with those obtained by Primack et al. (2017) who observed the negative effects of increased social media usage on people's mental health. Specifically, Lin et al. (2016) showed a correlation between the two and depression and anxiety in particular. Moreover, Vogel et al. (2014) pointed out that social comparison in social networking sites is detrimental to people's self-image. The fact of the manifestation of addictive behavior in this research is also confirmed by the findings of Andreassen (2015), who highlighted social media addiction as a form

of behavior that implies a compulsion for repetitive use of social media and difficulty with control. Montag et al. (2019) also noted that notifications, likes, and infinite scrolling contribute to the process of repetitive use of social networks, making it easier for individuals to become addicted. Although there are clear indications of the detrimental influence of social media, it should be acknowledged that this type of technology can bring positive outcomes in case of appropriate usage. For instance, Burke and Kraut (2016) reported that meaningful usage of social media leads to improved psychological well-being of individuals. Therefore, the influence of social media is determined primarily by the purpose of its usage.

Conclusion

In conclusion, this study emphasizes the substantial effect that the use of social media can have not only on cognitive processes but also on an individual's psychological state. While social media is important for communication, information exchange, and expression of one's views, the data obtained from the survey prove that excessive and uncontrolled use of these platforms can be problematic. The result of this study emphasize that the use of social media may leads to cognitive tiredness, reduced attention span, loss of interest, and inability to concentrate, that also indicates the deterioration of basic cognitive functions. Furthermore, some negative psychological effect on people was analyzed that shows the moderate stress and anxiety caused by mental fatigue, social comparison, and FoMO. Moreover, addictive behaviors, including compulsiveness and impaired self-control, play a significant role in the development of both cognitive and psychological consequences. It can be concluded that the outcomes depend not only on the time spent using social media but also on the user specific behavior patterns. This study emphasizes on its cognitive and psychological consequences. Although social media has potential benefits when used in moderation, thus it is important to promote awareness about the balanced use of social media to minimize these effects and to achieve better cognitive and psychological well-being among the North Indian population of Haryana.

Conflicts of Interest

Authors declare that there is no conflict of interest

Abbreviations

FOMO – Fear of Missing Out, SNS – Social Networking Sites, SM – Social Media, MH – Mental Health, IV – Independent Variable, DV – Dependent Variable, CS – Cross-Sectional, % – Percentage

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