



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 5, May 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

 9940 572 462

 6381 907 438

 ijirset@gmail.com

 www.ijirset.com

Social Media Effects on Cognitive Function

Smriti Pandey

U.G. Student, Amity Institute of Behavioral and Allied Sciences, Amity University, Uttar Pradesh, India

ABSTRACT: This study looks into how adults' use of social media affects their cognitive abilities. The study investigates the connection between social media use and cognitive skills like attention, memory, and decision-making through a thorough assessment of the literature and analysis of previous studies. According to research, using social media excessively may have a negative impact on cognitive function, impairing memory consolidation, reducing attention span, and impairing one's capacity for making decisions. Moreover, extended use of social media right before bed is linked to several sleep-related problems, such as a delayed start to sleep, a rise in nightly awakenings, and a general decline in the quality of sleep. Recommendations for people looking to lessen these effects and implications for public health efforts are discussed.

I. INTRODUCTION

Over the last two decades, social media has emerged as one of the world's most widely used platforms for consuming information (Zhuang et al., 2017). According to the Pew Research Center (2018), social media refers to websites and digital applications that enable people to communicate with each other through text messages and images. Sixty-nine to seventy-six percent of American adults use social media, up fifty percent from a decade ago (Gibbons et al., 2017; Pew Research Center, 2018). Users can engage with social media sites and applications on a daily basis due to the broad availability of smartphones and their capacity to stay continually linked to these platforms (Pew Research Center, 2018). The proliferation of information and the new medium of screen consumption over print media consumption may affect the way our brain organizes information (Barr et al., 2015). Changes in human cognitive functions, such as working memory and attention, must be addressed given the exponential growth in social media use among adults and children worldwide and the paucity of research on its consequences. Due to their close links to all other cognitive functions, working memory and attention are significant cognitive resources (Scott, 2011). Attention can be described as "an organism's ability to recognize and respond to changes in its environment" (Scott, 2011). "The ability to retain elements of a stimulus in a memory store while manipulating them in some novel way" (Fietzer & Chin, 2018) is the definition of working memory. Both of these cognitive features are necessary for both productivity and safety, and they are frequently integrated into a single cognitive domain or utilized interchangeably (Brown et al., 2019). There are more technological distractions than ever, such as notifications from smartphones while driving, working, or attending school (Brown et al., 2019). Distractions may impair task performance because of our limited capacity to pay attention to pertinent or essential information (Brown et al., 2019; Uncapher et al., 2016). Social networking and other forms of technology may have a detrimental impact on one's performance at work or in school. Even more concerning is the possibility that social media notifications on smartphones could divert drivers' attention from the road, which could have disastrous results. Thus, it is crucial to comprehend how using social media impacts our cognitive capacities to effectively navigate all aspects of daily life.

In light of the aforementioned data, this study will evaluate a few working memory and attentional domains in order to better understand how social media use affects these cognitive abilities. It would seem wise to address how to prevent social media from interfering with one's capacity to pay attention to more important information, given the possible harmful effects social media can have on one's attention span. Thus, this study will concentrate on the aspect of attention referred to as inhibition. The purpose of this study is to determine whether social media use has an impact on working memory, or attention span, as this can have an impact on long-term memory as well as the capacity to store information temporarily in order to process lengthy sentences or recall crucial numbers and names. Both self-rating and objective sleep continuity variables can be used to determine the components of healthy sleep, which include sufficient sleep duration, proper scheduling, regularity, the absence of sleep problems, and good quality.¹³⁻¹⁴ Although everyone has different sleep needs, the American Academy of Sleep Medicine (AASM) and Sleep Research Society (SRS) recommend that, in order to maintain optimal health, the average adult should get seven or more hours of sleep every night.¹⁴ The National Sleep Foundation (NSF) offers similar consensus recommendations, stating that adults should get seven to nine hours of sleep per night, and older adults should get seven to eight hours.¹⁵ Age-specific consensus recommendations differ for pediatric groups. These suggestions serve as benchmarks for the Healthy People 2030 goals, which aim to raise the percentage of Americans who get enough sleep among adults, high school students, and children.¹⁷ Sleep duration is an important target for health improvement, as baseline data from surveys by the

Maternal and Child Health Bureau (MCHB) and the Centers for Disease Control and Prevention (CDC) show that 34.1% of children, 74.6% of high school students, and 32.5% of adults do not get enough sleep on a regular basis. It's similar to an insatiable need to use social media or check your phone, even when doing so could be harmful. Symptoms include utilizing social media excessively, ignoring obligations, feeling nervous or restless when not using it, and going through withdrawals.

II. REVIEW OF LITERATURE

Anushree Tandon et al (2020) This study examines the relationship between young adults' troubled sleep and "fear of missing out" (FoMO), psychological well-being, compulsive social media usage (CSMU), and sleep hygiene. Data was gathered from 472 full-time working professionals and 1398 full-time students. The relationship between FoMO and poor sleep is influenced by CSMU, which is influenced by psychological well-being, according to the results. Professionals in the workforce demonstrated a larger correlation with FoMO.

2.Katerina Evers et al (2020) This study looks at the connection between Taiwanese middle school students' academic performance, school burnout, and disrupted sleep caused by social media use (DSSM). The findings indicate a negative feedback loop between academic success, burnout, and sleep disturbances, with higher DSSM resulting in poorer academic performance.

3. Manjur Kolhar et al (2021) According to a survey conducted among 300 university students, 97% of them use social networking sites for purposes other than academics, which has an impact on learning, social contact, and sleep quality. Twitter, WhatsApp, Instagram, and Snapchat were the most widely used apps. Extended usage may result in a sedentary lifestyle and increase the risk of non-communicable illnesses and mental health issues for students.

4. Jessica C. Levenson et al (2016) According to a 2014 study, young individuals' usage of social media and sleep disturbance are strongly correlated. Individuals who used SM more frequently and at higher volumes were more likely to report sleep disturbances. The health and wellbeing of young adults are clinically impacted by this.

5.V Eloesa McSorley et al (2019)Limited sleep duration has been shown in sleep lab research to have a deleterious effect on short-term cognition, especially memory. Studies using observational data demonstrate relationships between self-reported sleep length and cognitive performance. The Sleep Study conducted by the National Social Life, Health, and Aging Project discovered a correlation between actigraphic sleep disturbance measures and reduced cognitive function over a 5-year period.

6.Jessica C. Levenson(2016) In 2014, research revealed a significant link between the use of social media and sleep problems in young adults. Individuals who spent more time and used social media platforms more frequently were more likely to experience disruptions in their sleep patterns. This finding has important implications for the health and overall well-being of yours.

7.Michelle E. Kelly et al (2017) Study examines social engagements, networks, and support on cognitive abilities in healthy individuals aged 50+. Results show positive impact on cognitive performance, yet effects vary across domains, underscoring need for further research.

8.Joseph Firth, et al(2019)Recent studies examine how the Internet influences attention, memory, and social cognition. Discoveries indicate changes in cognition over both short and long periods, leading to a need for further exploration of its effects across various age demographics.

9.Chloe Berryman et al (2018) Driven by recent worries about the adverse effects of social media on mental health, this research scrutinized how social media engagement, including vaguebooking, correlates with mental health markers in 467 young adults. While general social media usage didn't show a connection to compromised mental health, vaguebooking was found to be linked to suicidal thoughts. The study implies that concerns regarding social media's influence on mental well-being may be exaggerated, except for particular behaviors like vaguebooking.Top of Form

10.Ruth Packett et al(2023) In this systematic review, the effectiveness of interventions targeting social media use on adults' mental well-being was investigated. Out of 2785 studies, 23 were analyzed. Findings indicate that therapy-based interventions, notably those utilizing cognitive behavioral therapy, exhibit potential in improving mental well-being, particularly in alleviating depression. However, the studies' overall quality was subpar, emphasizing the necessity for

more research with diverse samples to comprehensively evaluate these interventions and provide guidance for addressing problematic social media use in policy and clinical settings.

III. METHODOLOGY

SAMPLE AND ITS SELECTION

It is purposive sampling, and it was done on male and female, 30 male and 30 female was selected for the research. The age group was early adulthood that was 18 to 40 years old.

Sample size :60 (30 Male and 30 Female)

Sample Population: Early Adulthood (18 to 40 years)

Sampling Technique; Purposive Sampling.

INCLUSIVE CRITERIA

1. Studies examining how social media usage influence's cognitive function, Investigations involving human subjects across all age groups.
2. Research involving human participants of early adulthood age.
3. Studies published in peer-reviewed journals.

EXCLUSION CRITERIA

1. Research solely concentrates on the occurrence or frequency of social media utilization without exploring its effects on cognitive function and sleep.
2. Studies exclusively centered on alternative digital engagements or screen time not linked to social media.
3. Studies not published in peer-reviewed journals, including conference abstracts or dissertations.

DESCRIPTION OF THE TOOLS

MONTREAL COGNITIVE ASSESMENT (MoCA)

The test was administered, and scoring was done according to the manual. The Montreal Cognitive Assessment (MoCA) is a widely used cognitive screening tool developed by Dr. Ziad Nasreddine and his colleagues at the McGill University in Montreal, Canada, in 1996. MoCA is designed to assess various cognitive domains, including:

1. **Visuospatial and Executive Functioning**: This involves tasks such as drawing a clock, copying a cube, or connecting letters and numbers in a specific sequence.
2. **Attention and Concentration**: Tasks assessing attention include reading a list of letters and tapping whenever a specific letter appears.
3. **Memory**: Both immediate and delayed recall of a list of words is tested.
4. **Language**: Assessments of language include tasks like naming animals or repeating sentences.
5. **Abstraction**: This domain involves tasks such as explaining how two objects are similar, or identifying a proverb's meaning.
6. **Orientation**: Basic orientation questions, like the date or current location, are included.

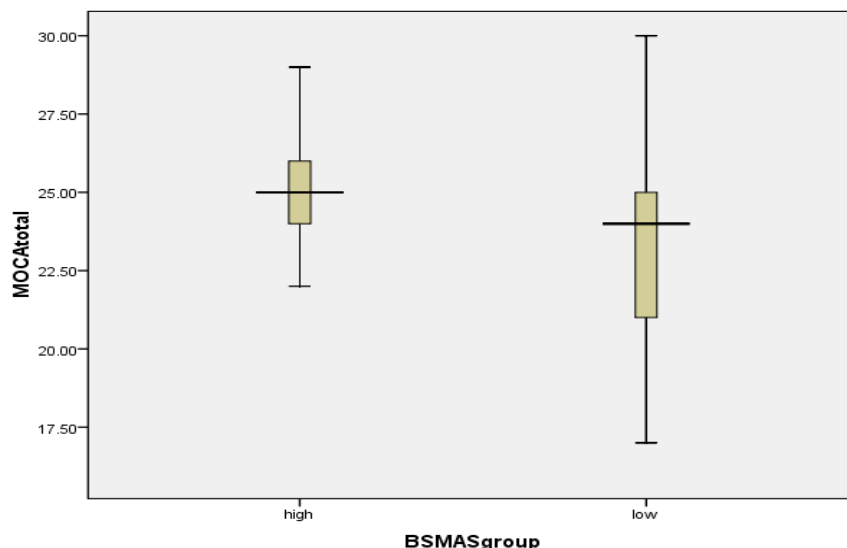
BRIEF SOCIAL MEDIA ADDICTION SCALE (BSMAS)

The Brief Social Media Addiction Scale (BSMAS) is a self-reported questionnaire crafted to evaluate addictive tendencies associated with social media usage. Comprising six items focused on the domain of social media addiction, it was developed by Andreassen et al. in 2013. The scale exhibits strong reliability, typically showing a Cronbach's alpha ranging from 0.79 to 0.91, indicating its internal consistency. The validity of BSMAS is evidenced by its ability to discern between individuals with varying degrees of social media addiction and its correlation with other addiction-related measures. Responses are scored on a 1-5 Likert scale for each item, with total scores ranging from 6 to 30, where higher scores signify heightened levels of social media addiction.



DEMOGRAPHIC DETAILS

VARIABLES N= 60		FREQUENCY	PERCENTAGE
SEX	MALE	30	50%
	FEMALE	30	50%
BIRTH ORDER	ELDER	18	30%
	MIDDLE	11	18%
	YOUNGER	24	40%
	SINGLE	7	11%
LOCALITY	RURAL	13	21%
	URBAN	47	78%
SOCIO-ECO STATUS	MIDDLE	53	88%
	HIGH	7	11%



IV. STATISTICAL ANALYSIS

2,3,13,46,13,14 were outliers.

MOCA	Social Media Addiction Scale (N= 54)				F	Sig.
	High (n= 19)		Low (n= 35)			
	Mean	SD	Mean	SD		
MOCA Total	25.21	1.75	23.17	3.29	6.28	.015
Alternating Trail Making	1.00	0.00	0.74	0.44	6.33	.015
Visuo-constructional skill (Bed)	0.21	0.42	0.26	0.44	0.141	.708
Visuo-constructional skill (Clock)	2.00	0.82	1.77	1.16	0.575	.452
Naming	2.95	0.23	2.94	0.24	0.005	.946
Memory	4.89	1.15	4.00	1.78	3.89	.054
Attention	1.16	0.60	1.14	0.84	0.005	.946
Sentence Repetition	0.89	0.46	0.86	0.35	0.112	.739
Verbal fluency	1.89	0.31	1.91	0.28	0.054	.817
Abstraction	4.79	0.42	4.14	1.22	5.01	.030
Delayed Recall	5.84	0.37	5.60	0.60	2.515	.119

V. RESULT

A significant difference was recorded on alternating trail making, memory, abstraction and MOCA total between the high and low scorer on social media addiction scale. The high mean was recorded in high scorer group on social media addiction test.

VI. CONCLUSION

In conclusion, the findings presented in this study highlight a significant association between social media addiction and cognitive function, particularly in areas such as attention, memory, abstraction, and overall cognitive performance. The stark contrast in performance between individuals identified as high and low scorers on the social media addiction scale underscores the potential impact of excessive social media usage on cognitive abilities. These results emphasize the importance of understanding the underlying mechanisms driving this association. Excessive social media use may lead to cognitive distraction, attentional deficits, decreased memory performance, and impaired executive function.

Moreover, this study underscores the broader implications of social media addiction beyond its immediate psychological effects. It suggests that excessive social media use may have significant consequences for cognitive health and functioning, highlighting the need for further research into its long-term effects on brain health.

Furthermore, the observed difference in mean scores between high and low scorers on the social media addiction test underscores the importance of accurately identifying and addressing social media addiction as a distinct construct with measurable consequences. This calls for promoting healthy social media habits and implementing interventions aimed at reducing excessive use, such as setting limits on screen time, promoting mindfulness, and raising awareness about the potential negative impacts of excessive social media use on cognitive function. In essence, these findings shed light on the complex relationship between social media addiction and cognitive function, urging further research and intervention efforts to mitigate its potential negative consequences and promote cognitive well-being in an increasingly

REFERENCES

1. Tandon, A., Kaur, P., Dhir, A., & Mäntymäki, M. (2020). *Sleepless due to social media? Investigating problematic sleep due to social media and social media sleep hygiene*. *Computers in Human Behavior*, 113, 106487. doi:10.1016/j.chb.2020.106487
2. Evers, K., Chen, S., Rothmann, S., Dhir, A., & Pallesen, S. (2020). Investigating the relation among disturbed sleep due to social media use, school burnout, and academic performance. *Journal of Adolescence*, 84, 156–164. doi:10.1016/j.adolescence.2020.08.011 10.1016/j.adolescence.2020.08.01
3. Kolhar, M., Kazi, R. N. A., & Alameen, A. (2021). Effect of social media use on learning, social interactions, and sleep duration among university students. *Saudi journal of biological sciences*, 28(4), 2216-2222.
4. Levenson, J. C., Shensa, A., Sidani, J. E., Colditz, J. B., & Primack, B. A. (2016). The association between social media use and sleep disturbance among young adults. *Preventive medicine*, 85, 36–41. <https://doi.org/10.1016/j.ypmed.2016.01.001>
5. McSorley, V. E., Bin, Y. S., & Lauderdale, D. S. (2019). Associations of Sleep Characteristics With Cognitive Function and Decline Among Older Adults. *American journal of epidemiology*, 188(6), 1066–1075. <https://doi.org/10.1093/aje/kwz037>
6. Xanidis, N., & Brignell, C. M. (2016). The association between the use of social network sites, sleep quality and cognitive function during the day. *Computers in human behavior*, 55, 121-126.
7. Firth, J., Torous, J., Stubbs, B., Firth, J. A., Steiner, G. Z., Smith, L., Alvarez-Jimenez, M., Gleeson, J., Vancampfort, D., Armitage, C. J., & Sarris, J. (2019). The "online brain": how the Internet may be changing our cognition. *World psychiatry : official journal of the World Psychiatric Association (WPA)*, 18(2), 119–129. <https://doi.org/10.1002/wps.20617>
8. Berryman, C., Ferguson, C. J., & Negy, C. (2018). Social Media Use and Mental Health among Young Adults. *The Psychiatric quarterly*, 89(2), 307–314. <https://doi.org/10.1007/s11126-017-9535-6>
9. Pirdehghan, A., Khezme, E., & Panahi, S. (2021). Social Media Use and Sleep Disturbance among Adolescents: A Cross-Sectional Study. *Iranian journal of psychiatry*, 16(2), 137–145. <https://doi.org/10.18502/ijps.v16i2.5814>
10. Scott, H., & Woods, H. C. (2019). Understanding links between social media use, sleep and mental health: recent progress and current challenges. *Current Sleep Medicine Reports*, 5 (3), 141-149.
11. Liang, S., Mao, H., Yang, J., Deng, W., Cao, B., Yu, Z., ... & Li, T. (2022). Digital cognitive behavior therapy for insomnia improving sleep quality: a real-world study. *BMC psychiatry*



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details