Original Article

Attention, Productivity, and Screen Time: Understanding the Adolescent Experience

Naisha Kapoor

The Shri Ram School Moulsari, Haryana, India.

Corresponding Author : naishakapoor1@gmail.com

Abstract - This study investigates the impact of screen time on cognitive tasks among adolescents, focusing specifically on attention span, productivity, and social media addiction. Quantitative data from n = 49 adolescents were analysed through ANOVA, correlation, and regression models to assess relationships among variables. The findings reveal no statistically significant link between screen time and attention span or productivity, challenging common assumptions about screen exposure as inherently detrimental. However, a significant and large effect was observed between screen time and social media addiction, highlighting the addictive nature of digital engagement. Correlational analyses further revealed a moderate positive relationship between attention span and social media addiction, and a significant negative association between productivity and both attention span and social media dependence. These results suggest that while screen time may not impair cognitive performance, the quality and purpose of screen interaction play a critical role in shaping behavioural outcomes.

1. Introduction

Social Media is an online space where people are allowed to connect, communicate, and share content instantly with others, no matter their geographical location. It allows its users to express themselves, stay updated on events happening around the world, and build online communities. At its core, social media is built on the idea of user-generated content and real-time interaction, which allows it to become a powerful tool for social connections, self-expression, entertainment, and social change (Matikainen, 2015).

Social media functions as a global network where ideas, trends, news, and personal experiences can be exchanged and amplified. It offers convenience, connection, and entertainment at the user's fingertips. From work to education, communication to shopping, and even relaxation, social media provides the tools and abilities that make tasks faster and easier.

The use of social media has significantly amplified our dependence on screens as they have become our primary network to stay connected, work, and learn remotely (Gregersen et al, 2023). However, this reliance also stems from how digital tools are designed to keep us hooked, offering endless content and instant gratification. While screens are incredibly useful, it is important to recognize when dependence starts interfering with our mental health, relationships, or ability to enjoy our offline life (Xu et al, 2023).

This growing dependence on social media and digital platforms has blurred the line between productive screen use and harmful overuse. What initially began as a tool for connection or convenience can easily turn into a habit of doom scrolling, prompt response to notifications, and screen engagement throughout the day (Dominguez-Rodriguez et al, 2025). These platforms are meant to draw and hold users' attention, but many end up spending more time online than they had planned. Concern over the effects of prolonged screen time has grown as a result of this change in our daily routine, particularly as digital devices have become increasingly integrated into almost every facet of contemporary life.

This is a serious issue, particularly in light of the growing use of smartphones, tablets, desktops, and televisions for work, education, and entertainment. Adults and children alike frequently stare at screens for several hours every day, whether for social media, gaming, office work, schoolwork, or streaming media. Continuous exposure can negatively impact a person's physical and mental health, leading to problems like headaches, eye strain, poor posture, sleep disturbances, and short attention spans (Zheng, 2015).

Mentally, excessive screen time can cause anxiety, sadness, and loneliness, especially when people substitute virtual interactions for face-to-face ones. Children are especially affected by excessive screen time because it can

hinder their social development, creativity, and physical activity. It can also reduce family time, outdoor time, and hobby time (Oswald et al, 2020).

Although screens are helpful tools for learning and communication, the overuse of them has created an unhealthy balance in life. This makes it pivotal to practice digital well-being, setting limits, taking breaks, and choosing more meaningful screen activities to maintain a healthy lifestyle in a technology-driven world.

Overuse of screens affects the nervous system and brain. Long-term exposure to fast-paced digital content can overstimulate reward pathways in the brain, particularly those involving dopamine, a neurotransmitter associated with motivation and pleasure. The brain may find it more difficult to concentrate on tasks requiring prolonged concentration or delayed gratification as a result of this overstimulation, which can also shorten attention spans and increase impulsivity. This continuous digital stimulation may have an impact on sleep cycles, emotional control, and cognitive development in children and adolescents whose brains are still developing. Heavy screen time has been associated with higher levels of stress, anxiety, and trouble unplugging from digital devices, even in adults. This leads to a vicious cycle that erodes mental resilience and reinforces dependence (Nakshine et al., 2022).

Excessive screen time also causes a number of other health problems. In terms of psychology, it can result in conditions like anxiety, depression, and low self-esteem, which are frequently exacerbated by the pressure to uphold an idealized online persona or by continuously comparing oneself to others. Because too much screen time can shorten attention spans, affect memory retention, and limit critical thinking abilities, this addiction can also impede cognitive development, especially in young users. Since people frequently value virtual relationships over in-person ones, it can socially obstruct meaningful interactions and cause feelings of alienation and detachment.

Furthermore, a sedentary lifestyle brought on by extended social media use raises the risk of obesity and related health problems by making people physically unfit. Its detrimental effects are exacerbated on a mental level by impairing emotional resilience, encouraging a need for instant gratification, and interfering with sleep cycles. It takes deliberate effort to balance screen time with activities that enhance general physical, mental, and social well-being in order to address social media addiction.

Memory, attention, problem-solving, and decision-making are all important aspects of cognition, which is the mental process of gaining and using knowledge via experience, thought, and the senses. Learning, intellectual development, and efficient day-to-day functioning all depend on these cognitive capacities.

However, these skills may be progressively weakened in the context of excessive social media use. The brain is conditioned to value speed over depth by the continuous exposure to fast, fragmented digital content, which diminishes the ability to focus for extended periods of time and think critically (Cao et al., 2024). Over time, this shift not only weakens cognitive agility but also displaces enriching activities such as reading, complex problem-solving, or creative pursuits—that are essential for maintaining intellectual sharpness.

1.1. Understanding How Screen Time Affects Attention Span

The term "attention span" describes how long a person can focus on a particular task without getting sidetracked (Philips, 2016). It is a fundamental cognitive process that facilitates communication, learning, and the accomplishment of both easy and challenging tasks. Working memory, impulse control, and executive functioning are all directly related to attention span, which is largely controlled by the prefrontal cortex. People with a healthy attention span are better able to follow conversations, process information thoroughly, and take goal-oriented actions, which are essential in both professional and academic contexts. A decrease in attention span can be caused by a number of behavioral and environmental factors. The most prominent of these is the frequent exposure to multitasking and quick information processing, which are particularly prevalent in the digital age. The brain's attentional system is overloaded with notifications, multitabs, and rapid content consumption, which teaches it to anticipate constant novelty. Researchers refer to this as "attention fragmentation," a condition in which the brain finds it difficult to maintain sustained focus on a single task (Loh & Kanai, 2016). The brain becomes less effective at maintaining focus the more frequently people switch between tasks or stimuli. The increase in screen time, especially on computers, tablets, and smartphones, has fundamentally changed how people pay attention. The average human attention span dropped from 12 seconds in 2000 to just 8 seconds in 2013, according to a study by Bradbury (2016). This decline was mostly caused by an increase in the use of digital media. Infinite scroll, autoplay, and push notifications are features of platforms like social media and streaming services that train the brain to look for pointless information from these gadgets rather than focusing on long-term tasks. Over time, this design weakens focus by encouraging passive engagement rather than active engagement. Overuse of digital platforms and chronic multitasking are neurological problems in addition to behavioral ones. Excessive multitasking lowers grey matter density in the anterior cingulate cortex, a part of the brain essential for emotional regulation and attention control, according to functional MRI studies (Loh & Kanai, 2019). Furthermore, attention fatigue—a condition in which the brain becomes overstimulated and finds it difficult to reset, even during breaks can result from prolonged screen time. Digital content

can weaken the brain's innate ability to focus when it is shallow or does not provide cognitive challenges.

There are important applications to this attention span reduction. In academic settings, students may find it increasingly difficult to read long texts, concentrate during lessons, or complete assignments without frequent breaks. Similarly, in professional environments, fragmented attention can reduce productivity, increase errors, and impair the ability to engage in strategic thinking. The constant pull of digital devices often interrupts meetings, work tasks, and even conversations, leading to a culture of distraction. Addressing this growing concern requires conscious digital habits, regular breaks from screens, and the cultivation of mindfulness to rebuild attention control (Ishii et al., 2023).

1.2. Understanding the Effects of PRODUCTIVITY

One of the critical areas impacted by screen addiction is productivity. When individuals are distracted by notifications, social media updates, or streaming platforms, their ability to concentrate on tasks diminishes. This constant pull away from meaningful work creates a fragmented workflow, reducing overall productivity. Studies have shown that multitasking with digital devices not only impairs task completion but also increases cognitive load, leaving individuals mentally drained (Rosen & Cheever, 2013).

Productivity is the measure of how efficiently and effectively an individual can complete tasks and achieve goals within a set timeframe. It is not merely about output but also the quality of outcomes, decision-making capacity, and goal-oriented behaviour. Productivity is tightly linked to executive functions in the brain, including planning, prioritization, time management, and self-regulation. Optimal productivity requires uninterrupted mental effort, consistent motivation, and the capacity to manage distractions, attributes cultivated through discipline and cognitive clarity.

Prolonged screen exposure, particularly to non-purposeful digital activities like endless scrolling or binge-watching, undermines productivity by fostering habitual procrastination and reducing mental energy (Reinecke & Hofmann, 2016). Cognitive overload, a state in which the brain is bombarded with too much information, leads to fatigue, reduced decision-making capacity, and slower task execution (Ophir et al., 2009). Moreover, screen-based multitasking creates a false sense of efficiency while actually increasing errors and diminishing task quality (Rosen, Lim, Carrier, & Cheever, 2011). Neuroscience has confirmed that task-switching, commonly triggered by screen notifications and app hopping, causes significant time and cognitive losses due to the brain's need to reorient itself repeatedly, resulting in measurable productivity decline (Monsell, 2003).

These three abilities - cognition, attention, and productivity - are foundational to intellectual development,

academic success, and career effectiveness. When compromised by screen overuse, they not only affect individual performance but also shape long-term developmental outcomes, especially in young users (Liu, 2021). Therefore, conscious digital consumption and neurological preservation strategies are critical in the modern age (Wilmer, Sherman, & Chein, 2017).

The link between screen addiction and cognitive functions such as retention and memory is also noteworthy (Muppalla et al, 2023). Excessive screen time, particularly on social media, has been shown to damage memory retention (Kühn & Gallinat, 2015). The continuous consumption of screens can hinder the brain's ability to encode and recall long-term memories (Vogel & Machizawa, 2004). Furthermore, the habit of frequently checking devices disrupts deep work and learning processes (Levine, Waite, & Bowman, 2007). Each glance at a screen creates a cognitive interruption, making it challenging to maintain focus on tasks that require sustained attention (Zwarun & Miller, 2014).

This incessant need to check devices stems from a phenomenon known as "persistent digital engagement"(Evangelou et al, 2024). Notifications, pings, and alerts condition users to seek constant interaction with their devices. Over time, this behavior reinforces a dependency cycle, where the absence of stimuli from screens leads to restlessness and anxiety. This cycle not only impacts mental health but also diminishes the quality of in-person interactions and overall life satisfaction.

To better understand and address the effects of screen and social media addiction, it is crucial to delve deeper into how our digital habits influence various aspects of our lives, particularly productivity, cognitive functions, and memory retention. The way we interact with screens can impact our ability to focus, manage time, and complete tasks efficiently and on time, often creating a cycle of distraction. Cognitive functions, including problem-solving skills, critical thinking, and decision-making, may also be affected by the excess exposure to digital devices, and constant multitasking and information overload strain our mental processes. Additionally, the impact on retention and memory is significant; with excessive social media use, our capacity to absorb and recall information effectively has drained.

This paper aims to examine the time spent on social media and how it impacts cognitive processes such as attention and productivity.

2. Materials and Methods
2.1. Aim of the Investigation

To investigate how excessive screen time and social media use affect cognitive function, specifically productivity and attention span. The purpose of the study is to ascertain how extended use of digital devices affects mental

concentration, task effectiveness, and general academic and professional performance.

2.2. Objectives

To evaluate the relationship between productivity outcomes and social media addiction.

To assess the relationship between a shorter attention span and excessive screen time.

To investigate how social media use and screen addiction affect cognitive focus and productivity.

To find trends that relate to the extended use of digital devices to modifications in mental focus, multitasking skills, and task completion effectiveness

2.3. Hypothesis

H1: There is a significant difference in attention span scores across different levels of screen time.

H2: There is a significant difference in productivity scores across different levels of screen time.

H3: There is a significant difference in social media addiction scores across different levels of screen time.

H4: Social media addiction will be positively correlated with attention span.

H5: Social media addiction will be a significant predictor of productivity.

H6: Social Media addiction will be a significant predictor of attention.

It is predicted that higher levels of social media addiction will be associated with decreased productivity and altered attention span. Additionally, increased screen time is expected to lead to higher social media addiction, but will not directly impact attention span or productivity.

2.4. Sample and Sampling Technique

For the purposes of this study, a convenience sampling technique was utilized to collect data efficiently and accessibly. This non-probability sampling method was chosen due to its practicality and ease of implementation. The sample consisted of the first 49 respondents who voluntarily completed the form. In the sample, there were 4 students who were from the age range of 10-12, 23 students from the age range of 13-15, and 22 students from the age range of 16-18. In the study 51% of the respondents were female, 42.9% were male, and 6.1% were non-binary. 34.7% of the participants spent more than 6 hours on social media, 38.8% spent 4-6 hours on social media, and 26.5% of the students spent less than 3 hours on social media.

2.5. Research Design

The present study employed a quantitative correlational research design to examine the relationship between the variables of productivity, attention span, and screen time. Data was collected using standardized self-report surveys. The design facilitated correlational analysis, which was used to assess the strength and direction of associations between the variables.

2.6. Instrumentation

Social Media Addiction Scale - Student Form (Sahin, 2018): The Social Media Addiction Scale Student Form was developed by Şahin (2018) to measure the degree of social media addiction among students. This scale consists of 29 items, each rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The survey assesses four areas of concern in regard to social media addiction: virtual tolerance, virtual communication, virtual problem, and virtual information. The Social Media Addiction Scale – Student Form (Şahin, 2018) demonstrated excellent reliability (Cronbach's α = 0.93; subscales = 0.81–0.86; test–retest = 0.94) and strong validity, with factor analyses supporting a four-factor structure explaining 53.16% of variance (KMO = 0.96, Bartlett's χ^2 = 12,680.88, p < 0.001), and subsequent cross-cultural adaptations confirming good fit indices.

The Attention Control Scale (ACS) (Derryberry and Reed, 2002): This questionnaire was used to assess a participant's ability to focus and shift attention voluntarily. The ACS is composed of 20 survey items, each rated on a 4-point Likert scale ranging from 1 (Almost Never) to 4 (Always). The scale measures two main aspects of attentional control: focused attention (the ability to maintain attention on tasks) and shifting attention (the ability to flexibly redirect attention when needed). The Attention Control Scale (Derryberry & Reed, 2002) shows good reliability (Cronbach's α ranging from 0.88 to 0.93; test–retest r = 0.74–0.93).

Productivity Assessment Questionnaire: A 9-item questionnaire was developed specifically for this study to assess respondents' productivity levels in relation to their daily routines and task management. Each item was rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The scale measured various aspects of productivity, including goal-setting, time management, task completion efficiency, and the ability to maintain focus during work or study periods.

Items were designed to be concise, behaviour-oriented, and reflective of both the participants' qualitative and quantitative productive nature. An example of an item from the productivity scale is "I create a daily or weekly schedule for my tasks." The 9-item Productivity Assessment Questionnaire was specifically developed for this study to capture aspects of productivity, including goal-setting, time management, task completion, and focus. While formal reliability and validity have not yet been established, the items were designed based on theoretical and practical considerations of productivity.

2.7. Data Collection Procedure

A Google Form was created online to ensure effective and timely response collection in order to gather data for this study. The majority of the form was made up of multiple-choice questions designed to investigate how screen time affects focus and productivity. 49 responses in all were collected. All of the responses were automatically collated into a Google Sheets document once the data collection phase was over. The responses were then sorted and examined using a program called Data Tab in order to identify any significant trends in the respondents' responses.

2.8. Ethical Considerations

Throughout the entire data collection process, ethical issues were carefully taken into account. The goal of the study and how to fill out the survey were explained in detail to the participants. Prior to participation, informed consent was acquired to make sure participants understood that their participation was entirely voluntary. Furthermore, no personally identifiable information was gathered, and all responses were kept confidential. These steps were taken to respect ethical research norms and safeguard each participant's rights and privacy. Keeping in mind that the study was conducted among minors, all the participants had parental supervision while filling out the survey.

2.9. Statistical Tests Used

To analyze the data and look at the correlations between the variables, a number of statistical tests were used. The Data Tab was used to arrange and compile the responses that were gathered. We performed statistical tests like regression, correlation, and Analysis of Variance (ANOVA).
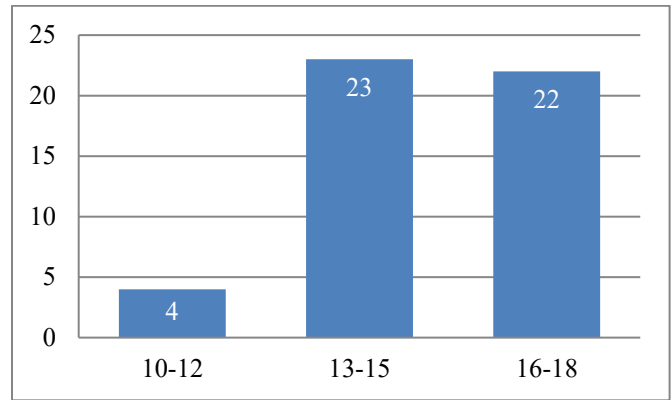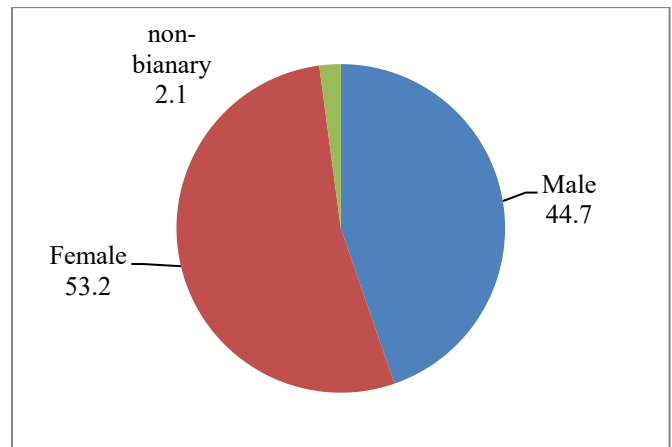
3. Results

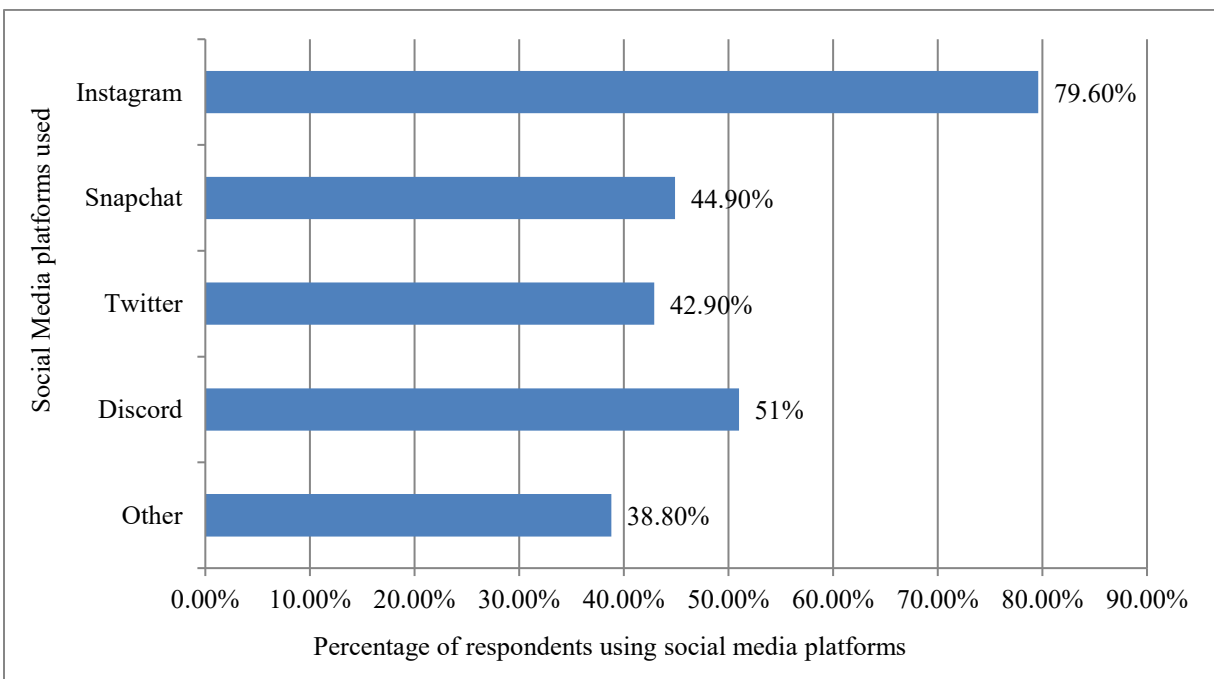**Fig. 1 Age of respondents**

Fig. 2 Range of gender respondents

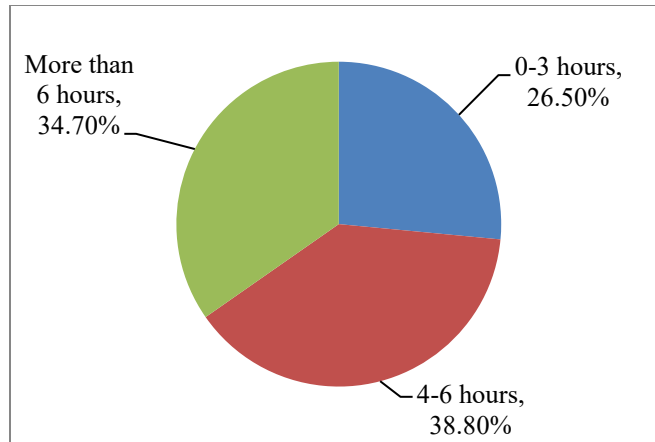**Fig. 3 Type of social media platform used by respondents**

Fig. 4 Amount of time spent on social media by the respondents

Table 1. ANOVA value for time spent on social media and attention

	n	M	S.D.	F	p	η2
0-3 hours	13	48.38	4.74	0.34	.712	0.01
4-6 hours	19	48.37	14.72			
More than 6 hours	17	51.82	17.12			

A one-way ANOVA was conducted to determine whether attention scores varied based on the amount of time participants spent on social media. The results indicated no statistically significant difference in attention scores among the three groups: those who spent 0–3 hours (M = 48.38, SD = 4.74), 4–6 hours (M = 48.37, SD = 14.72), and more than 6 hours (M = 51.82, SD = 17.12) on social media per day, $F(2, 46) = 0.34$, $p = .712$, $\eta^2 = .01$. These findings suggest that time spent on social media did not have a significant effect on attention span, and the observed differences in mean scores were minimal and likely due to random variation.

Table 2. ANOVA values for screen time and productivity

	n	M	S.D.	F	p	η2
0-3 hours	13	27.23	6.95	1.68	.198	0.07
4-6 hours	19	23.05	7.77			
More than 6 hours	17	21.82	9.64			

A one-way ANOVA was conducted to examine whether productivity scores differed based on the amount of time spent on social media. The analysis revealed no statistically significant difference in productivity across the three groups: participants who used social media for 0–3 hours (M = 27.23, SD = 6.95), 4–6 hours (M = 23.05, SD = 7.77), and more than 6 hours (M = 21.82, SD = 9.64) per day, $F(2, 46) = 1.68$, $p = .198$, $\eta^2 = .07$. Although there was a downward trend in productivity with increased screen time, the differences were not statistically meaningful. The effect size was small, indicating that screen time had only a minor influence on productivity in this sample.

Table 3. ANOVA values for Screen time and social media addiction

	n	M	S.D.	F	p	η2
0-3 hours	13	49.23	13.98	7.96	.001	0.26
4-6 hours	19	68.58	21.06			
More than 6 hours	17	76.82	19.89			

The results in Table 3 showed a statistically significant difference among the three groups: participants who spent 0–3 hours (M = 49.23, SD = 13.98), 4–6 hours (M = 68.58, SD = 21.06), and more than 6 hours (M = 76.82, SD = 19.89) per day with $F(2, 46) = 7.96$, $p = .001$, $\eta^2 = .26$. The effect size indicates a large effect, suggesting that increased screen time is strongly associated with higher levels of social media addiction. These results support the hypothesis that screen time significantly impacts social media addiction.

Table 4. Correlation between attention, social media addiction, and productivity

		Attention Scale	Social Media Addiction	Productivity
Attention Scale	r	1	0.39	-0.4
	p		.006	.004
Social Media Addiction	r	0.39	1	-0.31
	p	.006		.032
Productivity	r	-0.4	-0.31	1
	p	.004	.032	

According to Table 4, there is a significant moderate positive correlation between attention and social media addiction ($r = 0.39$, $p = .006$), which means that with an increase in social media addiction, attention also increases. And a significant moderate negative correlation between attention and productivity ($r = -0.40$, $p = .004$). There is a significant moderate negative correlation between social media addiction and productivity, which indicates that when social media addiction increases, productivity shows a decline, and vice versa ($r = -0.31$, $p = .032$).

These results suggest that higher social media addiction is linked to lower productivity, and higher attention scores are associated with higher social media addiction but lower productivity. However, it is essential to note that these are not causal but rather correlational findings. This pattern may reflect a hyperfocus effect, where individuals become highly absorbed in engaging in digital activities, resulting in elevated attention scores in this specific context, even though overall productivity declines.

Table 5. Linear regression analysis predicting productivity from social media addiction

Model	B	Beta	S.E.	t	p	R2
Constant	31.64		3.76	8.42	<.001	0.09
Social Media Addiction	-0.12	-0.31	0.05	-2.21	.032	

As shown in Table 5, the overall model was significant $p = .032$, and explained approximately 9% of the variance in productivity ($R^2 = .09$). The regression coefficient for the Social Media Addiction Scale was statistically significant, $B = -0.12$, $SE = 0.05$, $t = -2.21$, $p = .032$, indicating that higher levels of social media addiction were associated with lower levels of productivity. The constant was $B = 31.64$, $SE = 3.76$, $t = 8.42$, $p < .001$. These findings suggest that as social media addiction increases, productivity significantly decreases.

Table 6. The regression between social media addiction and attention

Model	B	Beta	S.E.	t	p	R2
Constant	33.38		5.94	5.62	<.001	0.15
Social Media Addiction	0.24	0.39	0.09	2.87	.006	

A simple linear regression was conducted to examine whether social media addiction significantly predicts attention scores. The overall model was significant with $p = .006$ and explained approximately *15% of the variance in attention ($R^2 = 0.15$). The regression coefficient for social media addiction was statistically significant, $B = 0.24$, $SE = 0.09$, $t = 2.87$, $p = .006$,* indicating that for every one-point increase on the Social Media Addiction Scale, attention scores increased by 0.24 points. While this positive relationship may seem counterintuitive, it may reflect a hyperfocus effect in which adolescents become highly engaged in stimulating digital environments, resulting in higher attention scores in these contexts.

this may be the complex and multidimensional nature of attention, which is shaped not only by screen time but also by factors like sleep, environment, and individual neurological differences.

Studies by Uncapher and Wagner (2018) found that media multitasking is more damaging to attention than overall screen time. Similarly, Cain and Gradisar (2010) argued that screen content and timing, especially near bedtime, disrupt cognitive alertness, more so than total usage duration. Ophir et al. (2009) also indicated that cognitive overload due to multitasking, not screen time alone, is what affects attentional control. This indicates that the type and context of screen use may be more critical than the quantity.

4. Discussion

The data collected on attention span and social media shows no statistically significant difference across different levels of screen time, with a very small effect size. This suggests that variations in screen exposure do not directly impact attention capacity within this sample. One reason for

A possible reason why higher social media addiction scores were associated with higher attention scores in this sample could be due to a phenomenon known as "digital hyperfocus" (Ishii et al., 2023).

Some individuals, particularly adolescents, may become highly engaged or mentally absorbed when interacting with stimulating digital environments like social media. This focused engagement can mimic sustained attention, especially in short bursts or when the task aligns with their interests (e.g., scrolling, reacting, or gaming). This shows that the study was able to achieve its outcome of exploring the effects of screen addiction on impacts attention span of a participant.

The data collected for social media addiction and screen time indicate a statistically significant and large difference in social media addiction scores across different levels of screen time. This demonstrates that greater screen exposure is closely associated with higher levels of social media dependency. One potential explanation is the reinforcing design of social media platforms, which utilize variable rewards and algorithmic engagement loops to sustain attention and create habit-forming behaviors. Research by Andreassen et al. (2012) shows that individuals with more screen exposure are at a higher risk of developing symptoms of social media addiction. Furthermore, Ballara (2023) emphasizes that the immediate rewards from social interactions and digital validation reinforce repeated usage. Turel and Serenko (2012) suggest that excessive screen time lowers self-regulation, thereby accelerating compulsive engagement. This addresses the objective of identifying patterns linking prolonged digital device use with higher risks of social media addiction.

The analysis between productivity and screen time reveals no significant variation in productivity levels across different screen time groups, with a small effect size. This suggests that screen exposure alone may not strongly influence productivity. A likely reason is that screen time can include both productive (e.g., reading, researching) and unproductive activities (e.g., doomscrolling), which may cancel each other out in aggregate analysis. As highlighted by Gazzaley and Rosen (2016), multitasking with screens tends to reduce task performance efficiency, but the impact varies based on task type and user control. Lepp et al. (2015) reported that increased mobile phone use predicted academic impairment, but only when associated with non-instrumental screen activities. Additionally, Rosen et al. (2013) found that interruptions from screen notifications, rather than screen time duration itself, were a key factor in reduced output. Thus, the data imply that how screens are used is more important than how long they are used in predicting productivity. This shows that the objective of evaluating productivity outcomes was only partially achieved, as usage patterns proved more influential than total duration.

The correlation data between attention spans, productivity, and social media addiction shows a moderate positive relationship between attention and social media addiction, a moderate negative relationship between attention and productivity, and a similar negative correlation between social media addiction and productivity. The positive link between attention and addiction is somewhat counterintuitive but may reflect hyperfocus behaviors, where individuals become deeply immersed in online content despite generally poor attention regulation. Montag et al. (2015) documented this pattern in smartphone users who oscillated between distraction and fixation. The inverse relationship between attention and productivity suggests that greater susceptibility to digital distractions impairs sustained task execution, echoing the findings of Junco (2012). Similarly, Meier and Reinecke (2020) concluded that increased social media engagement directly reduces cognitive resources available for goal-directed tasks. These patterns underscore the idea that digital environments fragment attention, which in turn undermines productivity, even if users are not consciously aware of the impairment. This fulfills the objective of exploring the combined effects of screen addiction and social media use, as the results reveal complex and sometimes contradictory interactions across variables.

The data collected to show the relation between social media addiction and productivity shows that social media addiction leads to lower levels of productivity, explaining around 9% of the variance in performance outcomes. The regression coefficient is negative, which suggests that as addiction increases, productivity tends to decline. This is likely due to the cognitive burden that occurs due to constant digital engagement, which limits deep work and increases mental fatigue. Duke and Montag (2017) explain how habitual use of platforms like Instagram and TikTok leads to repeated task-switching, undermining task efficiency due to shorter attention spans. Similarly, Reinecke et al. (2017) found that problematic social media use disrupts work routines, making it harder to return to focused tasks. Twenge et al. (2018) emphasize that screen addiction also reduces motivation and executive functioning, both of which are necessary for productivity. The data support the interpretation that social media addiction is not merely a passive habit but a behavioral interference that actively erodes work-related outcomes. This directly shows the correlation between social media addiction and productivity outcomes.

5. Conclusion

This paper aimed to examine the impact of excessive screen time and social media use on key cognitive processes among adolescents, with particular attention to attention span and productivity. Using a survey-based design, data were collected to explore correlations between patterns of digital engagement and cognitive outcomes. By linking theoretical discussions on screen addiction with empirical evidence, the literature review talks about the importance of fostering mindful and purposeful digital habits. The implications extend beyond individual well-being, offering insights for educators, parents, and policymakers in shaping healthier digital practices for adolescents in an increasingly technology-driven society.

This study investigated the relationship between screen time and social media addiction and how it impacts cognitive functions in adolescence, such as attention spans and productivity. The findings also showed a correlation between social media, productivity, and attention span. A moderate negative correlation was observed between social media addiction and productivity, indicating that increased screen dependency may hamper a person. Conversely, attention span showed a moderate positive correlation with social media addiction, suggesting that the nature of the digital content or the individual's adaptability to screen use might produce cognitive outcomes. Regression analysis showed that higher time spent on social media significantly predicts lower productivity.

5.1. Limitations of the Study

1. The present study has a small sample size of 49 respondents, which reduces the generalisability of the findings.
2. The study has utilized a convenience sampling technique, which entails a non-representative sampling. Participants were recruited through Google Forms and social media platforms, which introduces sampling bias. This approach may over-represent certain demographics (e.g., tech-dependent, urban adolescents) and under-represent others, reducing the study's external validity. To improve the sampling techniques, future researchers should employ stratified sampling in the selection of participants to ensure broader representation across age groups, regions, and socioeconomic backgrounds. Additionally, the use of self-reported measures may not fully capture the complexity of the studied constructs and is susceptible to bias. Hence, a lab experiment can help remove the self-report bias.
3. The study relied on self-reported data to measure attention span, productivity, and social media use. Such responses are vulnerable to response bias.
4. The study did not control for potentially influential factors like sleep patterns, mental health status, academic workload, or type of screen content (educational vs. recreational), all of which could influence cognitive outcomes.
5. The variables "productivity" and "attention span" were measured using scales, but the definitions and contexts in which these cognitive abilities were assessed may not fully capture their complexity or variability in real-life settings.
6. While screen time was examined, the study did not differentiate between types of devices (smartphones vs. laptops) or platforms (Instagram vs. YouTube), which could have varying impacts on cognitive outcomes.
7. The statistical relationship between attention and social media addiction was counterintuitive in nature and requires further exploration to analyse a causal pattern.

5.2. Future Recommendations

Based on the findings, future researchers should incorporate a different approach towards participant sampling to ensure greater generalizability of the findings. Furthermore, researchers can look at the role of various other cognitive factors and the type of social media usage to study the relationship between them. It is recommended that adolescents adopt conscious digital consumption habits, prioritizing purposeful screen use, such as educational and skill-building activities, over passive scrolling and binge-watching. Parents should play a proactive role by creating set times for screen usage, encouraging offline hobbies, and creating screen-free zones at home to support focus and cognitive development. Educational institutions can integrate digital literacy programs into the curriculum, teaching students how to manage distractions, improve attention control, and balance online and offline learning. Policymakers should consider guidelines that promote healthy screen usage patterns for young people, including awareness campaigns on the risks of excessive non-purposeful screen time and incentives for technology platforms to design features that support sustained attention rather than fragmenting it.

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