

## **Impact of Digital Platforms on Human Cognition and Mental Health: An empirical study**

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### **Abstract**

As digital technology advances, digital platforms now play a big role in daily life. How people communicate, learn, and interact socially are all being affected by digital platforms. These platforms offer convenience and connect people worldwide, but overuse can harm cognitive skills and mental health. This study investigates the impact of digital platforms on human cognition and mental health through a survey of 392 young adults. The findings were analyzed using descriptive statistics and supported by relevant literature. The results reveal both benefits and drawbacks, highlighting the need for balanced digital habits to support cognitive and mental health.

Keywords: Digital platforms; Cognition; Mental health; Digital addiction

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### **1.0 Introduction**

In this modern era of significant technological advancements, digital platforms have taken deep root in human life. With phones and the internet in everyone's hands, individuals have become increasingly reliant on these digital technologies for education, communication, entertainment, and news access. Digital platforms like Facebook, TikTok, and other online services have significantly influenced how people talk, behave, learn, and process information. As a result, our physical world has expanded to a digital one, influencing human behavior.

Digital platforms are online infrastructures where we can interact, conduct transactions, or share content with others or worldwide. There are many types of digital platforms, including marketplaces such as eBay, Uber, and Amazon; search platforms such as Google; repositories such as YouTube and Wikipedia; communication platforms such as Snapchat and WhatsApp; community platforms such as Facebook and LinkedIn; and payment platforms such as PayPal. While having numerous benefits on our daily life, the widespread use in our daily life has raised some concerns about its negative effects on cognitive functions and mental health.

#### **1.1 Problem Statement**

Although digital platforms have many advantages, their excessive use today may negatively affect modern society. People have been using digital platforms so much that it has reduced their face-to-face communication and engagement in real-world activities. Researchers have demonstrated that excessive use of digital technologies can lead to addiction, which manifests as increased time spent online and a decline in the quality of personal social contacts (Spytska, L., 2025).

Digital addiction can cause huge problems with a person's mental health, like anxiety, depression, and sleep disturbances. There is also digital content that promotes continuous stimulation, which can intensify these effects. Thus, we would examine in depth the long-term negative influence that digital platforms might have on cognitive processes and mental health.

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## 1.2 Objectives of the Study

The objective of this study is to examine the impact of digital platforms on human cognition and mental health through survey-based empirical research supported by existing academic literature. This study helps us to analyze how extensive and unsupervised usage of digital platforms affects memory and creates mental health issues like anxiety and depression. In this study, we will see both positive and negative impacts of digital platforms on human behavior. Also, we seek to identify patterns and trends in recent research and to present the need for proper digital use to improve cognitive ability and mental health.

## 2.0 Literature Review

### 2.1 Cognitive Impact of Digital Platforms

Pediatric Neurology & Neurodevelopmental Disorders conducted a comprehensive literature search across multiple databases, such as PubMed, Embase, Scopus, and Web of Science, to assess cognitive domains such as attention, memory, executive functions, problem-solving skills, and social cognition. Incorporating over 157 peer-reviewed studies published between 2001 and 2024, they used strict inclusion and exclusion criteria to ensure scientific rigor (Clemente-Suárez, V. J, 2024). Chronic sensory overstimulation during brain development increases the risk of accelerated neurodegeneration in adulthood (Shanmugasundaram M and Tamilarasu A, 2023).

The cognitive impact of these media depends on the child's age, the type of programming (educational versus adult-oriented), the social context of viewing, and the particular type of interactive media (e.g., computer games) (Daniel R. Anderson, 2017). In 2015, Alzheimer's Disease International reported that an estimated 46.8 million people were living with dementia worldwide, with an associated cost of US\$818 billion, and the percentage of the world population aged over 60 years predicted to double by 2050 (Chinner A, 2018). Attentional overload occurs when the demands of the environment exceed an individual's attentional capacity (Lisiecka, A., Chomicz, D., & Lewicka-Zelent, A., 2023).

However, most studies referenced in the literature offer limited analyses of specific digital media components, often overlooking emerging technologies such as conversational artificial intelligence (AI) models and rapid information retrieval via search engines. Additionally, research on the relationship among digital media, cognition, and predisposing factors has several deficiencies (Eugénia Correia de Barros, 2024).

Digital dementia is a term used to describe the decline in cognitive abilities caused by excessive use of digital technology (Shanmugasundaram M and Tamilarasu A, 2023). The fascination of modern children with television and smart electronic devices leads to a reduction in the time spent on communication and play, which inevitably reflects in developmental outcomes (Veraksa N, Veraksa A, Gavrilova M, Bukhalenkova D, Oshchepkova E and Chursina A, 2021). The projected global decline in intelligence of approximately 1.28 I.Q. points for 2000–2050 is thought to be related to environmental rather than genetic causes, to have begun with Millennials, and to include Generation Z (J. Integr. Neurosci., 2022). Over time, it can reduce concentration on tasks that require critical thinking, such as deep learning or problem-solving.

Building on this idea, the cognitive effects of digital platforms are not uniform; they depend on human usage patterns and individual differences in interest. Digital tools support learning, skills, and emotional and cognitive development, but unbalanced or exclusive, unstructured use may negatively affect memory, critical thinking, and attention. So, balanced and guided use of digital platforms is beneficial while minimizing risks.

### 2.2 Impact on Mental Health

Mental illness is a worldwide public health concern, with an overall lifetime prevalence of ~14% and accounting for 7% of the global burden of disease (Gan DZQ, McGillivray L, Han J, Christensen H, and Torok M, 2021). Studies conducted by the National University of Singapore, using 144 interventions with 206 effect sizes, reported a moderate effect of DMHL interventions in enhancing distal mental health outcomes (standardized mean difference=0.42, 95% CI -0.10 to 0.73;  $P<.001$ ) and a large effect in increasing proximal mental health literacy outcomes (standardized mean difference=0.65, 95% CI 0.59-0.74;  $P<.001$ ) (Yeo G, Reich SM, Liaw NA, Chia EYM, 2024). Due to the significant increase in the number of young people experiencing mental health issues, ensuring their access to professional help is recognized as an important challenge (Lisiecka, A., Chomicz, D., & Lewicka-Zelent, A., 2023).

The major issues of using digital platforms are comparing oneself with others online, sleep disruption caused by the use of social media before bed, and increased stress and anxiety. The introduction of the social media platform may have contributed to more than 300,000 new cases of depression (J. Integr. Neurosci, 2022). For elderly individuals, certain physiological, psychological, and social vulnerabilities make them more susceptible to the effects of excessive use in a highly pervasive digital environment (Chen H, Zhao X, and Zhu Q, 2026).

The importance of further exploring trust issues related to digital monitoring and ensuring that end users have choices regarding the types of data that digital systems gather and share with mental health services (JMIR Hum Factors 2026). The crux of the challenges in implementing digital mental health lies in the efficacy and evaluation of existing studies (JMIR Ment Health, 2021). Continuous notifications, updates, messages, ads, and such things can create a sense of urgency, making digital users feel pressured to stay constantly connected.

It could be argued that digital platforms have the potential to support mental health awareness and to improve access to psychological resources. Some online communities can provide emotional support, information, new skills, and help manage stress. However, this effectiveness depends entirely on how humans use these platforms.

### 2.3 Research gap

Besides this increasing number of studies examining the impact of digital platforms on human cognition and mental health, several important gaps remain. First, most research focuses on digital platform use, including basic internet activities and social media. At the same time, limited attention has been paid to emerging advanced technologies, such as conversational AI and advanced information systems. For that reason, the cognitive and psychological effects of this new digital platform are not fully understood.

Secondly, many studies do not analyze specific factors, such as the duration of digital platform use or interaction patterns, and instead provide a broad overview of digital platforms. Therefore, it is difficult to identify the positive and negative aspects of digital platforms on cognitive development and mental health outcomes. Moreover, the limits of understanding long-term effects stem from the fact that much of the research is based on short-term data.

The lack of focus on individual differences is the key limitation. Factors like lifestyle, psychological condition, and age, which significantly affect individuals, are not consistently considered. For example, children, young people, and adults may experience individual, different cognitive and mental health outcomes.

Furthermore, although digital mental health has shown many promising results, it still appears insufficient in terms of its long-term effectiveness, ethical concerns, privacy, security, trust, and reliability. These challenges highlight the need for more comprehensive, user-centered research in this area.

## 3.0 Methodology

### 3.1 Research Design

This study adopted a quantitative empirical approach to examine the impact of digital platforms on human cognition and mental health.

A survey method was used because it helps collect data from a larger number of people within a short period of time. It is commonly used in studies of user behavior and digital engagement because it captures self-reported experiences and helps ensure more consistent responses, making it easier to compare and interpret the data.

Also, quantitative design improves the study's reliability by reducing reliance on subjective analysis and focusing on observable patterns in responses. It supports the main objective of this research, which is to examine the impact of digital platforms on cognition and mental health through empirical evidence.

### 3.2 Data Collection

The data was collected through an online survey questionnaire distributed to participants via their Gmail accounts, QR codes, and messaging services. This distribution approach was chosen for its convenience and its ability to reach more people, especially those active on digital media.

The target audience for this study was primarily students and young adults aged 18 to 27, as this group tends to be more active on digital platforms in their daily lives. A total of 392 participants took part in the survey, providing sufficient data to observe general patterns in their behavior. This sample size was considered sufficient to provide an overall idea, although it may not fully represent all groups.

The research instruments used in this study were a simple, structured questionnaire, well-designed to collect data aligned with the research objective. The questions included various types, such as multiple-choice and closed-ended questions. These questions were designed to evaluate various aspects of user behavior, including time spent on digital platforms, screen time, and level of engagement.

Also, the questions were made simple and easy to understand so people would not get confused and could answer properly. The survey was kept fairly short to encourage more participation and reduce response fatigue. Before it was shared, the questionnaire was reviewed to ensure it would collect the appropriate data for the study.

### 3.3 Data Analysis

The survey data were analyzed using simple descriptive statistics to interpret the responses. First, the responses were organized and grouped by the questionnaire's variables. Thus, making it easier to understand what the data showed and helped us identify patterns more clearly later.

To analyze the data, we used basic methods such as frequency distributions and percentage analysis to identify patterns in user behavior, which makes the data easier to understand and explain.

The results are displayed in tables and charts, making everything clear and easy to understand. We presented the data visually, which helped us highlight key patterns, such as user behavior and response distribution.

Through this analysis, the study identified important patterns in digital platform usage, user engagement, and possible signs of digital addiction. These results form the foundation for the next sections, where everything is discussed and explained in more detail.

## 4.0 Findings

#### 4.1 Key Findings

The examination of the collected data revealed several important findings regarding digital platform usage. First, most participants fall within the 21-23-year age group, followed by those aged 24-27 and 18-20. This confirms that participants primarily belong to the young adult category, which was one of the study's objectives.

Table 1. Demographic Distribution (Age)

Age Group	Frequency	Percentage
18-20	120	30.8%
21-23	140	35.9%
24-27	130	33.3%
Total	390	100%

(Source: from author)

Regarding screen time, a large proportion of participants reported spending 4-6 hours daily on social media, while a small fraction reported spending more than 6 hours. Only a small percentage observed using digital platforms for less than 2 hours per day. This shows that most users are spending a lot of time online.

Table 2. Daily Screen Time

Screen Time	Frequency	Percentage
Less than 2 hours	50	12.8%
2-4 hours	110	28.2%
4-6 hours	130	33.3%
More than 6 hours	100	25.6%
Total	390	100%

(Source: from author)

When looking at social media preferences, Instagram was the most used platform, followed by TikTok and YouTube. This shows that platforms that provide short, visually engaging content are more popular among young adults.

Table 3. Most Used Digital Platforms

Platform	Frequency	Percentage
Instagram	140	35.9%
TikTok	120	30.8%
YouTube	80	20.5%
Others	50	12.8%
Total	390	100%

(Source: from author)

Also, almost half of the participants responded that they felt attached to social media, while a larger number said that they sometimes feel addicted. Only a small number of individuals reported no signs of addiction. This shows that many users are aware of how much time they spend on social media.

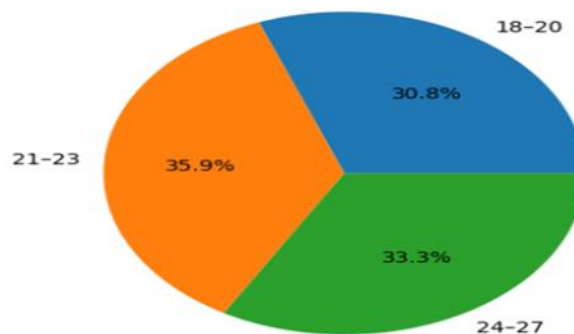


Fig. 1: Age Distribution of Respondents  
(Source: from author)

The given Figure 1 shows that most participants are aged 21 to 23 (35.9%), followed by 24 to 27 (33.3%) and 18 to 20 (30.8%). This means most are young adults who use digital platforms the most.

#### 4.2 Trend and Patterns

According to our survey, several clear trends and patterns emerge. One clear trend is the high level of daily engagement on social media, with most users spending long hours online playing games and watching content tailored to their tastes. This can be seen as social media has become a necessity in daily routines.

Another pattern is frequently checking their most-used media throughout the day to avoid missing any updates; many respondents reported checking their devices 20 to 50 times or more. This suggests a habit-forming behavior in which users feel the need to stay constantly connected.

It is also clear that platforms with short-form, interactive content, such as TikTok and Instagram, are more popular among users, aligning with current digital trends. This could be one reason users tend to spend more time on digital platforms.

Overall, the patterns observed in the data show a strong connection between high usage, often interaction, and possible signs of digital addiction. These trends will be analyzed in greater detail in the next section.

## 5.0 Discussion

### 5.1 Interpretation of Findings

In this study, we find a strong relationship between digital platform usage and its impact on human cognition and mental health. These things have been observed particularly among young adults aged 21-23 years. It suggests that people in the developing stage are much more engaged in digital platforms. As this age group is crucial for cognitive development and more prone to emotional effects, they become more vulnerable to the effects of excessive digital consumption. Our data shows that people spend 4 to 6 hours on digital platforms, which can cause cognitive fatigue, leaving the brain unable to focus on complex tasks. This suggests that greater exposure to digital platforms may lead to superficial information processing rather than deep cognitive thinking. People's preference for platforms like Instagram and TikTok shows how short, visually stimulating content has taken root in people's consciousness. This type of content may reinforce instant-gratification behavior, conditioning users to seek quick rewards. This can reduce patience and concentration over time. These findings also show that participants feel more attached to or addicted to social media. Frequently checking platforms shows a pattern linked to psychological dependency. Overall, we can see that widespread use of digital platforms contributes to cognitive challenges and mental health concerns.

### 5.2 Comparison with Literature

**Screen time:** Participants' daily screen time is 4-6 hours or more. These align with prior research highlighting the risks of prolonged digital exposure. Likewise, the frequent checking behavior reported in this study backs the idea of fragmented attention and diminished capacity for sustained focus as identified in earlier cognitive research.

**Digital Platforms:** Previous studies indicate that fast-paced media, such as TikTok, Instagram, and Facebook, can negatively affect attention span and decision-making abilities. The current data reinforce this perspective by interpreting that it plays an important role in shaping user cognition.

Furthermore, in contrast to the existing literature, which establishes direct links between digital media use and mental health issues, the present study does not empirically measure these psychological outcomes; instead, it focuses on behavioral patterns associated with health issues.

## 6.0 Conclusion and recommendations

This study looked at how digital media affects human thinking and mental health. Most participants reported spending a lot of time on digital platforms, usually between 4 and 6 hours each day, and interacting with them often. These results suggest that people, especially those aged 21 to 23, are becoming more dependent on digital media in their daily lives.

These findings are similar to earlier studies. It shows that excessive unstructured digital media use can lead to problems such as attention overload and difficulty focusing. Short and visually appealing platforms like Instagram Reels and TikTok point to a trend of quick content consumption, which may affect how people pay attention and process information. People's feelings of attachment and frequent checking are also similar to what previous research has found. Based on these results, people should try to use digital media more mindfully and in moderation, for example, by setting screen-time limits and reducing screen use before bed.

As a recommendation, Schools and universities should teach about and warn students about digital addictions to help them understand the risks and use digital media responsibly. Platform developers should also add features such as usage tracking and notification controls to support healthier habits. Researchers should use direct psychological assessments and long-term studies to understand better how digital media affects cognition and mental health over time. The survey findings provide empirical evidence that supports concerns raised in previous literature regarding excessive digital platform usage and its effects on cognition and mental health.

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## Paper Contribution to Related Field of Study

This empirical study examines how digital platforms affect human cognition and mental health among young adults. Using survey data from 392 respondents, the study identifies patterns of digital platform usage and highlights their potential effects on attention, memory, sleep, and mental health. It highlights how excessive use of digital platforms and digital content may influence attention, memory, sleep, and mental health. At the same time, the study also recognizes the positive function of digital platforms in communication and access to information. The findings may help raise awareness of healthier, more balanced digital habits.

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