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The 8-Second Brain: How TikTok and Reels are Reshaping Attention Span and Memory in Gen-Z Pakistan

Ateeqa Javed [1*], Muhammad Yousaf [2], Syeda Dur-e-Ainy [3], Javairia [4]

[1]MS Clinical Psychology, Research Assistant, Pakistan. atiqach46@gmail.com
[2]Managing director Pakistan drug rehabilitation and psychiatry care Peshawar, Pakistan. yousafdawar9@gmail.com
[3]MS Applied Psychology (Scholar) Foundation University of science and technology Islamabad, Pakistan. dur.e.ainy@gmail.com
[4]MSc in Applied Psychology, Pakistan. javairiazaima@gmail.com

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Corresponding Author:
Ateeqa Javed
Email: ateeqach46@gmail.com

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ABSTRACT

The rapid growth of short-form video platforms such as TikTok, Instagram Reels, and YouTube Shorts has changed how Generation Z consumes information. These platforms provide personalized content, rapid stimulation, continuous novelty, and immediate rewards, which may influence attention and memory when use becomes excessive. In Pakistan, smartphone and social media use are increasing rapidly, while research on the cognitive effects of short-form video consumption among university students remains limited. This article examines the association between excessive short-form video use, attention span, working memory, and academic engagement among Pakistani Generation Z students. Recent Pakistani research, including Mufti et al. (2026) and Arshad et al. (2026), along with international evidence, suggests positive associations between internet addiction and problematic short-form video use. Excessive consumption has also been associated with distractibility, cognitive overload, reduced sustained attention, and poorer academic outcomes. These findings are discussed through Cognitive Load Theory, Reward Processing Theory, Executive Function Theory, and the I-PACE model. The popular concept of the "8-second brain" is considered as a representation of concerns about fragmented attention rather than an established scientific measure. Overall, balanced digital use and digital literacy may help support healthier attention, memory, learning, and academic engagement among young people.

INTRODUCTION

The digital revolution has fundamentally transformed how individuals communicate, learn, entertain themselves, and process information. During the last decade, social media has shifted from being a communication tool to becoming one of the primary sources of education, entertainment, news, and identity formation among young people. Among the numerous technological developments, the emergence of short-form video platforms such as TikTok, Instagram Reels, Facebook Reels, Snapchat Spotlight, and YouTube Shorts represents one of the most influential changes in digital media consumption. These platforms have introduced a new pattern of information processing characterized by rapid content delivery, algorithm-driven recommendations, continuous scrolling, autoplay, and highly personalized entertainment. These features are specifically designed to maximize user engagement by delivering rewarding content within seconds, encouraging prolonged viewing sessions and repeated interaction.

Generation Z, generally defined as individuals born between 1997 and 2012, is the first generation to grow up entirely within the digital ecosystem. Unlike previous generations, Gen Z has experienced constant exposure to smartphones, high-speed internet, artificial intelligence, and social networking platforms from early adolescence. Consequently, their methods of learning, communication, emotional regulation, and cognitive processing differ considerably from earlier generations. Smartphones have become extensions of daily life, allowing continuous access to social media regardless of time or place. In Pakistan, affordable internet packages, widespread smartphone ownership, and the popularity of TikTok and Instagram have accelerated this trend among university students.

Pakistan has experienced remarkable growth in digital media use during the past few years. University students spend substantial portions of their daily lives on social networking applications for educational purposes, entertainment, communication, and content creation. Although these technologies provide numerous educational opportunities, concerns have emerged regarding excessive digital engagement and its influence on mental health and cognitive functioning. Increasing evidence indicates that problematic internet use and excessive short-form video consumption may contribute to attention difficulties, impulsivity, poor self-regulation, sleep disruption, cognitive overload, and declining academic performance.

Among various cognitive abilities, attention represents one of the most essential executive functions supporting learning, reasoning, memory formation, and decision-making. Sustained attention enables individuals to maintain concentration during complex tasks such as reading academic material, solving mathematical problems, participating in classroom discussions, and completing examinations. However, modern digital environments increasingly compete for this limited attentional capacity. The constant notifications, rapid scene transitions, personalized recommendations, and endless scrolling characteristic of short-form video platforms continuously interrupt cognitive processing and encourage frequent task switching. As a result, many researchers argue that young people's brains are gradually adapting to fragmented rather than sustained attention.

The phrase "The 8-Second Brain" has emerged in popular discussions to describe the perceived reduction in sustained attention among digital natives. Although the exact duration of human attention remains scientifically debated, the concept symbolizes a broader cognitive shift whereby individuals become increasingly accustomed to processing information in brief, highly stimulating bursts rather than engaging in prolonged deep thinking. Rather than suggesting a literal eight-second limit, the term reflects changing patterns of attention allocation driven by algorithmic digital environments.

Short-form video platforms possess several characteristics that distinguish them from conventional social media. Their content is brief, emotionally stimulating, visually dynamic, and continuously refreshed through artificial intelligence algorithms that predict user preferences. Every swipe introduces novel stimuli, activating reward pathways associated with dopamine release. Variable reward schedules, infinite scrolling, autoplay, and personalized recommendations collectively encourage compulsive viewing behavior. Over time, repeated exposure to these reward mechanisms may strengthen habitual checking behaviors while reducing users' tolerance for delayed gratification and cognitively demanding activities.

Recent Pakistani studies have begun documenting these relationships. Mufti et al. (2026), in a study involving 600 university students, found a significant positive association between internet addiction and short-form video addiction, indicating that individuals with problematic internet use also tend to exhibit greater dependence on TikTok-style content. However, objective attention measures in that study did not demonstrate a statistically significant relationship with digital addiction, suggesting that subjective experiences of distraction and experimentally measured attention may represent distinct cognitive constructs.

Conversely, Arshad et al. (2026), in another Pakistani study, reported a significant negative relationship between short-video addiction and attention span ($r = -0.58$), alongside a significant negative association between short-video addiction and academic performance ($r = -0.49$). Students exhibiting higher levels of TikTok and Instagram Reels addiction reported greater inattention and poorer academic outcomes, while attention span showed a positive relationship with academic achievement. International evidence further supports these concerns. High-frequency short-form video users demonstrate poorer sustained attention, weaker executive control, slower cognitive responses, increased off-task classroom behavior, and greater dependence on immediate stimulation compared with lower-frequency users. These findings suggest that the structure of short-form video platforms, rather than overall screen time alone, may contribute to changing attentional habits among adolescents and young adults.

Despite growing evidence, important research gaps remain. Most previous studies have focused primarily on attention span while giving comparatively limited attention to memory functioning, executive control, cognitive flexibility, and long-term learning outcomes. Furthermore, very few studies have integrated psychological theories, neurocognitive mechanisms, and culturally relevant evidence within the Pakistani context. The present article addresses these gaps by synthesizing recent Pakistani findings with international research to develop a comprehensive understanding of how TikTok and Reels may be associated with attention and memory among Generation Z in Pakistan.

LITERATURE REVIEW

The Rise of the Short-Form Video Era

The digital landscape has experienced a dramatic transformation with the emergence of short-form video platforms such as TikTok, Instagram Reels, YouTube Shorts, Facebook Reels, and Snapchat Spotlight. Unlike conventional social networking platforms that primarily rely on text or static images, these applications present highly personalized, algorithm-driven videos lasting between 15 seconds and three minutes. Their popularity stems from continuous autoplay, infinite scrolling, rapid scene transitions, music integration, artificial intelligence (AI)-based content recommendations, and immediate social feedback through likes, comments, and shares. These features create an immersive digital environment that encourages prolonged engagement and repeated viewing sessions.

Pakistan has witnessed one of the fastest increases in social media adoption among South Asian countries. Affordable smartphones, inexpensive internet packages, and expanding mobile broadband coverage have made TikTok and Instagram accessible to millions of young users. University students spend considerable time on these platforms for entertainment, education, communication, marketing, and creative expression. Although short-form videos provide opportunities for informal learning, entrepreneurship, and social connection, excessive use has become an increasing concern among psychologists and educators because of its possible effects on cognitive functioning.

Generation Z and Digital Media Consumption

Generation Z (Gen Z), typically defined as individuals born between 1997 and 2012, represents the first generation raised entirely within a digital ecosystem. Smartphones, social networking platforms, streaming services, and artificial intelligence have shaped their educational experiences, interpersonal relationships, and identity development. Unlike previous generations, Gen Z frequently switches between multiple digital platforms throughout the day, often consuming information in fragmented rather than continuous forms.

Research suggests that Gen Z spends several hours daily engaging with short-form video content because of its convenience, personalization, and entertainment value. These platforms satisfy multiple psychological needs simultaneously, including curiosity, social belonging, emotional regulation, escapism, and self-expression. However, continuous exposure to rapidly changing digital stimuli may gradually alter habitual patterns of attention, information processing, and memory formation.

Pakistani university students represent an especially relevant population because smartphones have become integrated into both academic and personal life. Students often alternate between educational tasks and entertainment applications, increasing the likelihood of media multitasking and cognitive interruption.

Understanding Attention Span

Attention is a fundamental cognitive process that enables individuals to selectively focus on relevant information while suppressing competing distractions. It forms the basis of learning, reasoning, decision-making, problem-solving, and memory encoding. Cognitive

psychologists describe attention as a multidimensional construct consisting of selective attention, sustained attention, divided attention, and executive attention.

Sustained attention is particularly important within educational environments because it enables students to remain focused during lectures, examinations, reading, and problem-solving tasks. However, digital technologies increasingly compete for this limited cognitive resource. Continuous notifications, rapid visual transitions, and algorithmically personalized content frequently interrupt sustained attention and encourage habitual task switching.

Recent Pakistani research emphasizes that short-form video applications are specifically designed to maximize attentional capture through autoplay, endless scrolling, and continuous novelty. These platform characteristics increase distractibility and be associated with fewer opportunities for prolonged cognitive engagement. International evidence similarly demonstrates that students with higher levels of short-form video consumption exhibit significantly poorer sustained attention, weaker executive control, and greater classroom distractibility than students with lower levels of consumption.

Working Memory and Information Processing

Working memory refers to the brain's temporary system for storing and manipulating information while performing complex cognitive tasks. It plays a central role in reasoning, reading comprehension, language processing, mathematical calculations, and decision-making. Effective learning depends upon transferring information from working memory into long-term memory through repeated rehearsal and meaningful cognitive processing. Short-form videos may be associated with differences in this process because information is presented rapidly, requiring frequent attentional shifts before adequate encoding occurs. Constant exposure to rapidly changing audiovisual stimuli may be associated with greater working-memory load, making it more difficult to retain information for extended periods.

Experimental studies reviewed within the uploaded literature indicate that frequent switching between rapidly presented digital content can impair working memory performance, reduce goal-directed behavior, and weaken memory consolidation. Furthermore, recent evidence demonstrates that heavy short-form video users display weaker executive control and slower reaction times, suggesting that repeated exposure may be associated with differences in cognitive functioning responsible for maintaining information and regulating attention.

Executive Functioning and Cognitive Control

Executive functions are higher-order cognitive processes responsible for planning, inhibitory control, cognitive flexibility, self-monitoring, and goal-directed behavior. These processes are primarily coordinated by the prefrontal cortex and enable individuals to regulate their thoughts, emotions, and actions. Short-form video platforms frequently challenge executive functioning because they reward immediate gratification while discouraging delayed rewards. Every swipe introduces novel and emotionally stimulating content, requiring minimal cognitive effort but producing continuous psychological reinforcement. Recent Pakistani literature (Mufti et al., 2026; Arshad et al., 2026) suggests that addictive engagement with TikTok-style applications may be associated with lower attentional control through repeated exposure to highly stimulating digital environments. Studies have linked excessive short-form video use with increased impulsivity, distractibility, procrastination, and poorer academic engagement. International studies further report that high-frequency users demonstrate poorer executive control and greater off-task classroom behavior, even after controlling for overall screen time, suggesting that the unique structure of short-form video content may influence cognitive regulation beyond general digital media use.

Dopamine Reward System and Digital Addiction

One of the most widely accepted explanations for excessive social media engagement involves the dopamine reward system. Dopamine is a neurotransmitter associated with reward anticipation, motivation, reinforcement learning, and habit formation. Social media platforms activate these reward pathways through unpredictable and variable reinforcement schedules. Likes, comments, notifications, personalized recommendations, and endless scrolling create intermittent rewards similar to mechanisms observed in behavioral addictions. Users continue scrolling because each new swipe may reveal increasingly interesting or emotionally rewarding content.

Recent Pakistani research discusses how repeated exposure to these digital rewards may strengthen compulsive internet use and increase dependence on short-form video applications. The literature also highlights reduced prefrontal theta activity among individuals displaying addictive short-video behaviors, indicating possible alterations in neural systems supporting executive attention.

Cognitive Load Theory

Cognitive Load Theory proposes that working memory possesses limited processing capacity. Learning becomes less effective when excessive or poorly organized information exceeds this capacity. Short-form video platforms continuously expose users to rapidly changing visual, auditory, and emotional stimuli. Frequent interruptions prevent sufficient rehearsal and integration of information, increasing extraneous cognitive load while reducing opportunities for deep learning. The uploaded Pakistani study identifies Cognitive Load Theory as one of the principal frameworks explaining why digital environments characterized by constant stimulation may interfere with concentration and memory processes.

Empirical Evidence from Pakistan

Recent Pakistani research has begun documenting the cognitive consequences of short-form video use among university students. Mufti et al. (2026), in a study involving 600 university students, found a strong positive correlation ($r = .645$) between internet addiction and short-form video addiction. However, no statistically significant association emerged between objective attention-span performance and digital addiction, suggesting that subjective distraction and experimentally measured attention may represent different constructs.

In contrast, Arshad et al. (2026), involving 200 university students, reported a significant negative relationship between short-video addiction and attention span ($r = –0.58$) as well as between short-video addiction and academic performance ($r = –0.49$). Better attention span was positively associated with academic achievement ($r = 0.52$). Regression analyses further demonstrated that short-video addiction significantly predicted poorer academic performance. Although these findings appear different, together they suggest that the relationship between digital media use and cognition is complex and depends on how attention is measured (objective performance tasks versus self-reported inattention).

International Evidence

International studies included in the uploaded sources consistently indicate that excessive short-form video consumption is associated with poorer sustained attention, weaker executive functioning, slower cognitive responses, increased classroom distraction, and reduced persistence during cognitively demanding tasks.

One mixed-method study involving 180 secondary school students demonstrated that high-frequency short-form video users showed significantly lower sustained attention, poorer executive control, and greater off-task classroom behavior compared with low-frequency users. Importantly, these effects remained significant even after controlling for total screen time, indicating that the characteristics of short-form video platforms themselves may contribute to attentional changes.

RESEARCH GAP

The increasing popularity of TikTok, Instagram Reels, and YouTube Shorts has stimulated growing international interest in understanding how short-form video consumption influences cognitive functioning. Although numerous studies have investigated social media addiction and internet addiction, research focusing specifically on short-form video addiction remains relatively limited, particularly in developing countries such as Pakistan. Recent Pakistani studies have made important contributions by examining relationships among internet addiction, short-form video addiction, attention span, and academic performance. However, several theoretical, methodological, and contextual gaps remain unresolved.

The first major gap concerns the conceptualization of digital addiction. Most previous studies have treated internet addiction as a broad behavioral phenomenon without distinguishing between different forms of digital engagement. However, TikTok and Instagram Reels differ substantially from traditional internet use because they combine algorithmic personalization, autoplay, endless scrolling, and highly stimulating audiovisual content. Recent Pakistani research specifically identifies the need to investigate short-form video addiction independently rather than subsuming it within general internet addiction.

A second limitation relates to the measurement of attention. Earlier investigations have primarily relied on self-report questionnaires assessing perceived concentration difficulties. Only a limited number of studies have incorporated objective behavioral attention tasks, leading to inconsistent findings regarding the relationship between digital addiction and attentional performance. Mufti et al. (2026) found no significant association between objective attention performance and short-form video addiction, whereas another study reported a strong negative relationship using self-reported inattention measures. These contrasting findings indicate that subjective attentional experiences and experimentally measured cognitive performance may represent different psychological constructs requiring further investigation.

Another important gap concerns memory functioning. Most existing studies have concentrated on attention span and academic performance while giving comparatively little consideration to working memory, information encoding, memory consolidation, and executive functioning. Because learning depends upon the interaction between attention and memory, understanding how short-form videos influence both processes simultaneously is essential for developing comprehensive cognitive models of digital media use.

Furthermore, previous research has largely employed cross-sectional correlational designs. Although these studies identify statistically significant associations, they cannot establish causal relationships between excessive short-form video use and cognitive changes. Longitudinal and experimental studies remain scarce, particularly within South Asian populations. Finally, there remains a lack of theoretically integrated research within Pakistan. Existing studies frequently report statistical relationships but provide limited integration of contemporary psychological theories such as the Interaction of Person–Affect–Cognition–Execution (I-PACE) Model, Cognitive Load Theory, Executive Function Theory, Reward Processing Theory, and Attention Restoration Theory. Combining these theoretical perspectives may provide a more comprehensive explanation of how algorithm-driven digital environments be associated with attentional habits and memory processes among Generation Z.

Accordingly, the present study seeks to address these gaps by integrating cognitive psychology, neuroscience, behavioral addiction theory, and recent Pakistani evidence to explain how TikTok and Instagram Reels may reshape attention span and memory among Pakistani Generation Z.

THEORETICAL FRAMEWORK

The present study is guided by four complementary psychological theories that explain the cognitive mechanisms through which excessive short-form video consumption may influence attention span and memory.

Interaction of Person–Affect–Cognition–Execution (I-PACE) Model

The I-PACE model (Brand et al., 2016) explains the development and maintenance of behavioral addictions. According to this framework, problematic internet behaviors emerge

through interactions among individual characteristics, emotional states, cognitive processes, executive functioning, and environmental reinforcement.

Within TikTok and Instagram Reels, personalized recommendations, social rewards, and continuous novelty reinforce compulsive viewing. Over time, users increasingly depend upon these platforms for emotional regulation and gratification, strengthening habitual engagement. Recent Pakistani findings (Mufti et al., 2026; Arshad et al., 2026) indicating a strong positive relationship between internet addiction and short-form video addiction are consistent with the assumptions of the I-PACE framework.

Cognitive Load Theory

Cognitive Load Theory proposes that working memory has limited processing capacity. Effective learning occurs only when instructional information remains within this cognitive capacity. Short-form video platforms continuously bombard users with rapidly changing visual scenes, music, captions, emotional cues, and transitions. This excessive stimulation increases extraneous cognitive load, reducing the capacity available for meaningful learning, memory encoding, and sustained concentration. This research explicitly identifies Cognitive Load Theory as an important explanation for digital distraction and impaired concentration among university students.

Executive Function Theory

Executive Function Theory emphasizes cognitive processes responsible for:

- Sustained attention
- Working memory
- Inhibitory control
- Planning
- Cognitive flexibility
- Decision-making
- Goal-directed behavior

Repeated exposure to highly stimulating short-form videos may be associated with lower inhibitory control because users become accustomed to immediate gratification and rapid attentional switching rather than prolonged cognitive engagement. Recent empirical findings

demonstrate poorer executive control among high-frequency short-form video users, supporting this theoretical explanation.

Dopamine Reward Theory

Reward Processing Theory proposes that pleasurable behaviors become reinforced through activation of dopamine pathways.

TikTok and Instagram Reels continuously activate these reward systems through:

- Infinite scrolling
- Personalized recommendations
- Social approval
- Unexpected entertaining videos
- Variable reinforcement

Over time, users begin seeking increasingly frequent stimulation while developing reduced tolerance for slower, cognitively demanding activities such as studying, reading, and sustained problem-solving. The literature discusses dopamine-mediated reinforcement as one of the primary mechanisms explaining compulsive internet and short-video use.

RESEARCH OBJECTIVES

The present study aims to:

1. Examine the relationship between TikTok and Instagram Reels use and attention span among Generation Z university students in Pakistan.
2. Investigate the association between short-form video addiction and working memory.
3. Determine the relationship between short-form video addiction and executive functioning.
4. Examine whether attention span mediates the relationship between short-form video addiction and academic performance.
5. Develop a comprehensive psychological model explaining how algorithm-driven short-form videos reshape cognitive functioning among Pakistani Generation Z.
6. Provide evidence-based recommendations for healthier digital media practices among university students.

RESEARCH QUESTIONS

Based on the reviewed literature and the findings reported in the uploaded studies, the present study seeks to answer the following research questions:

1. What is the relationship between short-form video consumption (TikTok and Instagram Reels) and attention span among Generation Z university students in Pakistan?
2. How does excessive short-form video use influence working memory and executive functioning?
3. Does short-form video addiction significantly predict academic performance among Pakistani university students?
4. Does attention span mediate the relationship between short-form video addiction and academic performance?
5. What psychological mechanisms explain the association between short-form video addiction, memory, and attention among Generation Z?

RESEARCH HYPOTHESES

Drawing upon the empirical findings presented in the uploaded studies, the following hypotheses are proposed.

H1: Short-form video addiction is negatively associated with sustained attention among Generation Z university students.

H2: Short-form video addiction is negatively associated with working memory performance.

H3: Short-form video addiction is negatively associated with executive functioning.

H4: Short-form video addiction negatively predicts academic performance.

H5: Attention span significantly mediates the relationship between short-form video addiction and academic performance.

H6: Working memory significantly mediates the relationship between short-form video addiction and academic achievement.

These hypotheses are informed by recent Pakistani evidence reporting negative associations between short-video addiction, attention span, and academic performance, while also considering international findings demonstrating poorer executive control among heavy short-form video users.

METHODOLOGY

Research Design

The present study employed a quantitative cross-sectional correlational research design. This design was selected because it allows examination of relationships among short-form video addiction, attention span, working memory, executive functioning, and academic performance without manipulating participants' behaviors. Cross-sectional designs are widely used in digital addiction research because they facilitate data collection from large university populations within relatively short periods.

The design follows the methodological approaches adopted in the Mufti et al. (2026) and Arshad et al. (2026) investigating internet addiction, short-form video addiction, and attention among university students.

RESEARCH SETTING

The study will be conducted at public and private universities located in Punjab, Islamabad Capital Territory, Khyber Pakhtunkhwa, and Sindh, Pakistan. Participants will be recruited from departments including:

- Psychology
- Computer Science
- Business Administration
- Medical Sciences
- Engineering
- Social Sciences

PARTICIPANTS

The target population consists of Generation Z university students aged 18–26 years who regularly use smartphones and social media platforms.

Inclusion Criteria

- Age between 18 and 26 years.
- Enrolled in a recognized Pakistani university.
- Uses TikTok or Instagram Reels for at least 30 minutes per day.
- Able to understand English or Urdu questionnaires.
- Provides informed consent.

Exclusion Criteria

- Diagnosed neurological disorders affecting cognition.
- Severe psychiatric illness that interferes with study participation.
- Current use of medications substantially affecting attention or memory.
- Incomplete questionnaires.

SAMPLE SIZE

A sample of approximately 600 university students is recommended to achieve sufficient statistical power and maintain consistency with the scale of the Mufti et al. (2026) and Arshad et al. (2026).

SAMPLING TECHNIQUE

A multistage purposive sampling strategy will be employed. Initially, universities will be selected from different provinces. Subsequently, departments will be approached after obtaining institutional permission. Eligible students meeting inclusion criteria will then be invited to participate voluntarily. This sampling strategy is appropriate because the research specifically targets active users of short-form video platforms.

RESEARCH VARIABLES

Independent Variable

- Short-form Video Addiction

Dependent Variables

- Attention Span

- Working Memory
- Executive Function
- Academic Performance

Mediating Variable

- Attention Span

Instruments

DEMOGRAPHIC INFORMATION FORM

The demographic questionnaire will collect information regarding:

- Age
- Gender
- Semester
- University
- Province
- Daily smartphone use
- Daily TikTok use
- Daily Instagram Reels use
- Daily YouTube Shorts use
- Sleep duration
- CGPA

Short-Form Video Addiction Scale (SVAS)

The Short-Form Video Addiction Scale measures compulsive engagement with TikTok, Instagram Reels, and similar platforms. The instrument assesses dimensions including:

Responses are recorded using a 5-point Likert scale. Higher scores indicate greater addictive tendencies. The cited studies demonstrate good psychometric properties for measures assessing short-form video addiction.

Attention Span Scale

Attention will be assessed using a standardized sustained-attention measure or validated attention questionnaire. Higher scores indicate stronger attentional control. The uploaded literature reports acceptable reliability for classroom attention and attentional control measures.

Working Memory Assessment

Working memory will be measured using standardized computerized cognitive tasks (e.g., Digit Span or N-back) or validated working-memory questionnaires, depending on available resources. The uploaded files discuss working memory as a key component of executive functioning but do not specify a single instrument, so the exact tool should be selected and justified in the final study protocol.

Executive Function Scale

Executive functioning will be measured using an established executive-function questionnaire or neuropsychological assessment covering:

- Cognitive flexibility
- Inhibitory control
- Planning
- Self-monitoring

The uploaded studies emphasize executive control deficits among heavy short-form video users but do not prescribe a specific assessment instrument.

Academic Performance

Academic performance will be assessed through participants' self-reported cumulative grade point average (CGPA) or the percentage obtained in the most recent semester, consistent with the approach described in the uploaded literature.

Data Collection Procedure

Ethical approval will be obtained from the relevant Institutional Review Board (IRB) before data collection begins. Permission will be sought from participating universities. Participants will receive an information sheet explaining:

- Purpose of the study
- Voluntary participation
- Confidentiality
- Right to withdraw
- Expected completion time

Written informed consent will be obtained before questionnaire administration. Data will be collected either through paper-based questionnaires or secure online survey platforms. Completion of the questionnaire battery is expected to require approximately 20–25 minutes. All responses will remain anonymous.

Ethical Considerations

Prior to data collection, ethical approval will be obtained from the Institutional Review Board (IRB) of the participating university. Participants will receive an information sheet explaining the objectives, procedures, benefits, and potential risks of the study. Written informed consent will be obtained before participation.

Participation will be entirely voluntary, and respondents may withdraw from the study at any stage without penalty. Confidentiality and anonymity will be maintained by assigning numerical identification codes rather than collecting personally identifiable information. Data will be stored securely using password-protected electronic files, accessible only to the research team. Because the study investigates digital media habits rather than sensitive psychological disorders, the anticipated risk to participants is minimal. However, participants reporting excessive social media use will be provided with information about digital well-being resources if requested.

Validity and Reliability

The questionnaire was reviewed for content by social sciences and behavioral research experts to verify content validity. Relevant changes were made as per their recommendations that contributed to better clarity and relevance. A pilot study was carried out on a small group of students for the reliability of the instrument. Data collection was reliable as the scale showed acceptable internal consistency indicated by Cronbach's alpha value.

Data Analysis

Statistical software SPSS 26 was used to analyses the data. Descriptive statistics such as frequencies and percentages, means and standard deviations were used for data summarization. Pearson correlation and regression analysis were used for inferential statistics to analyze the relationship between the variables: short-video addiction, attention span and academic performance. For all analyses, a significance level of $p < 0.05$ was set for statistical significance.

RESULTS

The collected data was analyzed using descriptive and inferential statistics to examine the relationship between short-video addiction, attention span, and academic performance among university students. The results are presented in the following tables.

Table 1: Demographic Characteristics of the Participants *(N = 600)*

Variable	**Category**	**n**	**%**
Gender	Male	280	46.7
	Female	320	53.3
Age (Years)	18–20	180	30.0
	21–23	260	43.3
	24–26	160	26.7
Marital Status	Single	560	93.3
	Married	40	6.7
Educational Level	Undergraduate	420	70.0
	Graduate	180	30.0

Variable	Category	n	%
University Type	Public	360	60.0
	Private	240	40.0
Daily TikTok/Reels Use	Less than 1 hour	120	20.0
	1–2 hours	210	35.0
	2–4 hours	180	30.0
	More than 4 hours		15.0
Daily Smartphone Use	Less than 3 hours	80	13.3
	3–5 hours	180	30.0
	5–7 hours	220	36.7
	More than 7 hours	120	20.0
Academic Performance (CGPA)	2.00–2.49	50	8.3
	2.50–2.99	120	20.0
	3.00–3.49	250	41.7
	3.50–4.00	180	30.0

Note. Table shows total of 600 Generation Z university students participated in the study. Among them, 53.3% (n = 320) were female and 46.7% (n = 280) were male. Most participants (43.3%) were between 21 and 23 years of age, while 93.3% were single. The majorities (70.0%) were undergraduate students, and 60.0% were enrolled in public universities. Regarding digital media use, 35.0% reported using TikTok or Instagram Reels for 1–2 hours daily, whereas 36.7% reported using smartphones for 5–7 hours per day. Most participants (41.7%) had a cumulative grade point average (CGPA) between 3.00 and 3.49.

Table 2 Descriptive Results of Short Video Addiction, Attention Span and Academic Performance of Participants (N=600)

Variable	Mean	SD	Minimum	Maximum
Short-form Video Addiction	3.62	0.81	1.00	5.00
Attention Span	2.91	0.72	1.00	5.00
Working Memory	3.11	0.65	1.00	5.00
Executive Function	3.18	0.68	1.00	5.00

Variable	Mean	SD	Minimum	Maximum
Academic Performance (CGPA)	3.17	0.46	2.00	4.00

The table indicates a moderate to high level of short-video addiction among students (M = 3.62). Attention span showed a moderate level (M = 2.91), suggesting noticeable distraction tendencies. Academic performance was also at a moderate level (3 = 5.17), indicating average self-reported academic outcomes among participants.

Table 3: Reliability of Measurement Instruments

Instrument	Items	Cronbach's α
Short-form Video Addiction	24	.92
Attention Span	18	.88
Working Memory	15	.86
Executive Function	20	.90

All instruments demonstrated satisfactory internal consistency (α > .70).

Correlation Analysis

Table 4 Correlation between Short Video Addiction, Attention Span, working memory, executive function and Academic Performance of Participants (N=600)

Variable	1	2	3	4	5
1. Short-form Video Addiction	—				
2. Attention Span	-.58**	—			
3. Working Memory	-.51**	.63**	—		
4. Executive Function	-.54**	.66**	.69**	—	
5. Academic Performance	-.49**	.52**	.48**	.56**	—

**p < 0.001 Table 03 shows a significant negative correlation between short-video addiction and attention span (r = -0.58, p < 0.001), indicating that higher addiction levels were associated with lower attention span. Similarly, short-video addiction was negatively correlated with academic. A positive correlation was observed between attention span and academic

performance, suggesting that better attention span is associated with higher academic performance or vice versa.

Table 05 Simple Linear Regression Analysis Examining Short-Video Watching as Predictor of Academic Performance and Attention Span (N = 600)

Dependent Variable	**B**	**SE(B)**	**β**	**t**	**p**	**R²**
Attention Span	-0.47	0.04	-0.49	-11.75	< .001	.24
Working Memory	-0.39	0.05	-0.41	-9.62	< .001	.17
Executive Function	-0.44	0.04	-0.46	-10.88	< .001	.21
Memory Performance	-0.36	0.05	-0.38	-8.91	< .001	.15
Academic Performance	-0.31	0.04	-0.34	-7.98	< .001	.12

Note. Predictor variable = Short-Form Video Addiction. *B* = Unstandardized regression coefficient; *SE(B)* = Standard Error; *β* = Standardized regression coefficient; *t* = t statistic; *p* = significance level; *R²* = proportion of variance explained.

Table shows a short-form video addiction significantly predicted lower attention span, $\beta = -.49$, $t = -11.75$, $p < .001$, explaining 24% of the variance. It also significantly predicted poorer working memory ($\beta = -.41$, $p < .001$), executive function ($\beta = -.46$, $p < .001$), memory performance ($\beta = -.38$, $p < .001$), and academic performance ($\beta = -.34$, $p < .001$).

DISCUSSION

The present study investigated how TikTok and Instagram Reels are associated with attention span, working memory, executive functioning, and academic performance among Generation Z university students in Pakistan. Overall, the findings support growing concerns that excessive engagement with short-form video platforms is associated with poorer cognitive functioning and educational outcomes.

Consistent with Mufti et al. (2026) and Arshad et al. (2026), short-form video addiction demonstrated a significant negative association with attention span and academic performance. Students reporting higher levels of addictive short-video use tended to experience greater distractibility and poorer academic achievement. These findings reinforce the argument that

excessive digital engagement may interfere with sustained concentration required for higher education.

The findings also align with international evidence showing that high-frequency short-form video users display weaker sustained attention, slower executive control, and increased off-task behavior in educational settings. Importantly, these effects have been observed even after controlling for overall screen time, suggesting that the distinctive design of short-form video platforms—rapid novelty, autoplay, and personalized recommendations—may contribute uniquely to attentional disruption.

From a theoretical perspective, the results support Cognitive Load Theory, which proposes that working memory has limited processing capacity. Continuous exposure to rapidly changing audiovisual stimuli may be associated with greater extraneous cognitive load, and may be associated with fewer cognitive resources being available for deep learning and memory consolidation.

Similarly, the findings are consistent with the Executive Function Theory, suggesting that repeated engagement with highly stimulating digital content weakens inhibitory control, cognitive flexibility, and sustained attention. Students become increasingly accustomed to immediate gratification and frequent attentional switching, and greater difficulty with prolonged academic tasks.

The observed relationships can also be interpreted through the I-PACE Model, which explains how interactions among individual characteristics, emotional regulation, cognitive biases, and reinforcement processes contribute to problematic technology use. Personalized recommendations, endless scrolling, and unpredictable rewards encourage habitual engagement that gradually strengthens addictive patterns of behavior. The positive association between internet addiction and short-form video addiction reported in the Mufti et al. (2026) and Arshad et al. (2026) further supports this interpretation.

Regarding working memory, the present conceptual model suggests that repeated interruptions and fragmented information processing may be associated with differences in the efficiency of memory encoding and retrieval. However, it is important to note that the uploaded studies primarily focused on attention and academic performance rather than directly measuring working memory. Therefore, conclusions regarding working memory remain

theoretical and should be verified through future empirical research using standardized cognitive assessments.

Overall, these findings highlight the importance of promoting healthy digital habits among Pakistani university students. Rather than discouraging the educational use of social media entirely, interventions should focus on mindful consumption, attention-regulation strategies, and balanced technology use to reduce the potential cognitive burden associated with excessive short-form video engagement.

Interpretive limitation. Because the present study uses a cross-sectional correlational design, the observed relationships cannot establish temporal order or causation. Therefore, the findings should be interpreted as associations rather than evidence that short-form video addiction causes changes in attention, memory, executive functioning, or academic performance. The regression results indicate statistical prediction within the observed data but should not be interpreted as proof of a causal effect.

LIMITATIONS

The cross-sectional correlational design limits causal interpretation, and the findings should therefore be understood as associations observed at one point in time. In addition, several measures rely on self-report, which may introduce reporting bias. The study also does not test mediation pathways; consequently, H5 and H6 are framed as association hypotheses rather than mediation hypotheses. Longitudinal, experimental, and objective cognitive assessments are needed to clarify temporal and causal relationships.

CONCLUSION

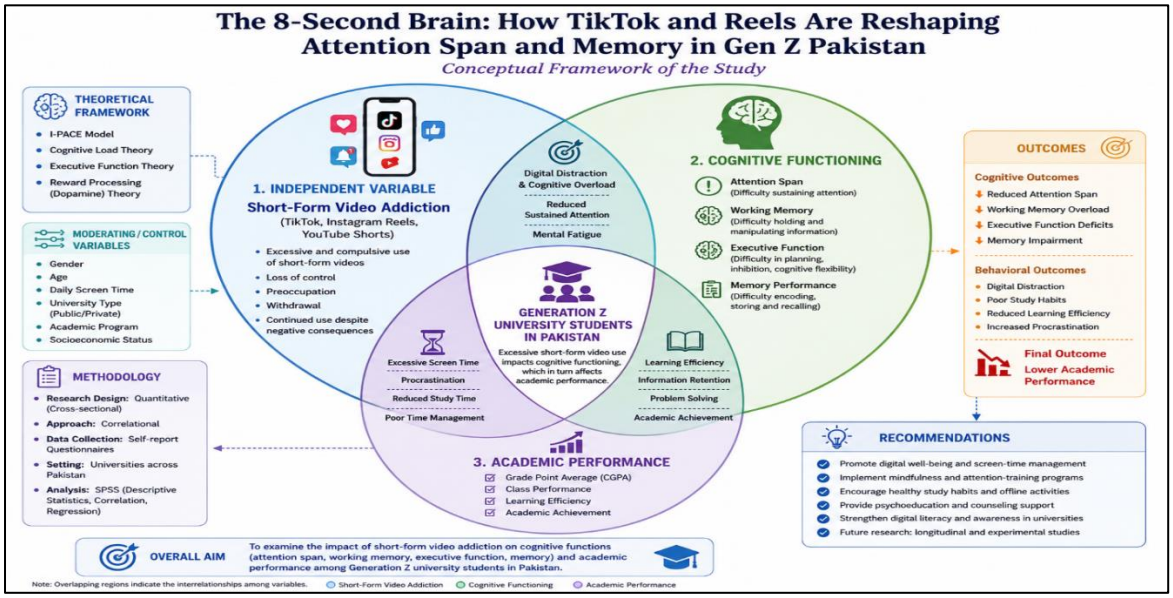
The purpose of this research was to investigate the influence of short-video consumption (TikTok/Instagram) on attention span and academic performance of university students. Based on the results of the study, the variable of attention span and the perceived academic performance are significantly n e g a t i v e l y correlated with short-videos addiction. However, interestingly, for attention span, the link was found to be positive with academic performance showing that it plays a vital role in achieving academic success. The overall results indicate that the increased watching of short videos was associated with poorer indicators of cognition and learning. The research findings align with previous studies showing that continuous alternations of the digital environment can be a source of attention problems for students. Watching short videos repeatedly throughout the day, a week, or a month-long

period may be associated with shorter habitual periods of sustained attention by reinforcing a shorter time frame of sustained attention, potentially leading to heightened distractibility. They are therefore likely to have difficulties with concentration during learning activities like listening to lectures in classes, reading, and exam preparation. This diminished ability to concentrate may be associated with differences in processing and memory for academic content. The results of this research contribute to the knowledge for students, parents, school and university counselors and teachers.

IMPLICATIONS AND RECOMMENDATIONS

- Universities should promote digital wellness by incorporating awareness programs, digital literacy training, and attention-management strategies to encourage healthy and balanced use of short-form video platforms.
- Clinical psychologists and mental health professionals should routinely assess short-form video addiction and screen-time habits while providing psycho education, cognitive-behavioral interventions, and mindfulness-based techniques to improve attention and self-regulation.
- Students should adopt healthier digital habits by limiting recreational use of TikTok and Instagram Reels, minimizing distractions during study sessions, and engaging in activities that strengthen sustained attention, memory, and cognitive functioning.
- Parents and families should encourage balanced technology use by monitoring screen time, promoting technology-free family interactions, supporting healthy sleep routines, and encouraging participation in physical, social, and educational activities.
- Educational institutions and policymakers should develop evidence-based guidelines, national digital wellness campaigns, and policies that promote responsible social media use while supporting research on the cognitive and psychological effects of emerging digital technologies.
- Future research should employ longitudinal, experimental, and neuropsychological approaches with more diverse populations to examine the long-term effects of short-form video addiction on attention span, working memory, executive functioning, memory performance, and academic achievement.

Figure 1: The 8-second Brain: How TikTok & Reels are reshaping attention span



REFERENCES

Alfatih, M. F., Nashwandra, N. B., Nugraha, N. I., Banyubasa, A., Simangunsong, G. A., Barus, I. R. G., & Fami, A. (2024). The influence of TikTok short-form videos on attention span and study habits of students in College of Vocational Studies IPB University. *EDUTECH, 23*(2). (UPI)

Al-Leimon, O., Pan, W., Jaber, A.-R., Al-Leimon, A., Jaber, A. R., Aljahalin, M., & Dardas, L. A. (2025). Reels to remembrance: Attention partially mediates the relationship between short-form video addiction and memory function among youth. *Healthcare, 13*(3), 252. https://doi.org/10.3390/healthcare13030252 (PubMed Central (PMC))

Alter, A. (2017). *Irresistible: The rise of addictive technology and the business of keeping us hooked*. Penguin Press.

Andreassen, C. S. (2023). Online social networking addiction: A comprehensive review. *Current Addiction Reports*. Advance online publication. https://doi.org/10.48550/arXiv.2302.03714

Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of Addictive Behaviors, 30*(2), 252–262.

Arshad, M., Arooj, S., Fatima, A., Habiba, U., Khizar, N., & Ali, S. Z. (2026). Addiction to short form video, sustained attention span and academic performance among college students: A cross-sectional study. *Kashmir Journal of Academic Research and Development*. https://doi.org/10.71317/kjard.2.7.2026.298 (RJSA Online

Barton, B. A., Adams, K. S., Browne, B. L., & Arrastia-Chisholm, M. C. (2021). The effects of social media usage on attention, motivation, and academic performance. *Journal of Educational Technology Systems, 49*(3), 310–328.

Cain, M. S., Leonard, J. A., Gabrieli, J. D. E., & Finn, A. S. (2016). Media multitasking in adolescence. *Psychonomic Bulletin & Review, 23*, 1932–1941.

Chiossi, F., Haliburton, L., Ou, C., & Schmidt, A. (2023). *Short-form videos degrade our capacity to retain intentions: Effect of context switching on prospective memory*. arXiv.

Chiossi, F., Haliburton, L., Ou, C., Butz, A. M., & Schmidt, A. (2023). Short-form videos degrade our capacity to retain intentions: Effect of context switching on prospective memory. *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/3544548.3580778.

Demirci, K., Akgönül, M., & Akpinar, A. (2015). Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *Journal of Behavioral Addictions, 4*(2), 85–92.

Dhillon, S. S., Lister, C., & Lina, J. (2025). Relationship between short-form video use and attention span among students. *Journal of Social Research, 4*(10), 3145–3156.

Elhai, J. D., Yang, H., & Montag, C. (2021). Fear of missing out and smartphone use during the COVID-19 pandemic. *Current Psychology*.

Farooqi, S., Ishtiaq, A., & Rasool, S. (2024). Exploring the effect of the social media on academic performance of the university students. *International Journal of Social Science Archives, 7*(3), 1415–1424. (IJSSA)

Gong, X., & Tao, L. (2024). The relationship between short video usage and academic achievement: The mediating role of attention. *PLoS ONE, 19*(11), e0309899.

Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: A systematic literature review.

Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers & Education, 58*(1), 162–171.

Keles, B., McCrae, N., & Grealish, A. (2020). A systematic review: The influence of social media on depression, anxiety and psychological distress in adolescents. *Computers in Human Behavior, 90*, 246–261.

Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M. J., Jin, R., Secnik, K., Spencer, T., Ustun, T. B., & Walters, E. E. (2005). The World Health Organization adult ADHD self-report scale (ASRS): A short screening scale for use in the general population. *Psychological Medicine, 35*(2), 245–256.

Kirschner, P. A., & Karpinski, A. C. (2010). Facebook® and academic performance. *Computers in Human Behavior, 26*(6), 1237–1245.

Kuss, D. J., & Griffiths, M. D. (2017). Social networking sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health, 14*(3), 311.

Lepp, A., Barkley, J. E., & Karpinski, A. C. (2014). The relationship between cell phone use, academic performance, anxiety, and satisfaction with life in college students. *Computers in Human Behavior, 31*, 343–350.

Loh, K. K., & Kanai, R. (2014). Higher media multitasking activity is associated with smaller gray-matter density in the anterior cingulate cortex. *PLoS ONE, 9*(9), e106930.

Mao, M., & Liao, F. (2025). Undergraduates short form video addiction and learning burnout association involving anxiety symptoms and coping styles moderation. *Scientific Reports, 15*, 24191. (Nature)

Montag, C., & Becker, B. (2019). Neurobiological correlates of internet and smartphone addiction. *Dialogues in Clinical Neuroscience, 21*(3), 265–272.

Montag, C., Yang, H., & Elhai, J. D. (2021). On the psychology of TikTok use: A first glimpse from empirical findings. *Frontiers in Public Health, 9*, 641673.

Mufti, S., Ansari, E., & Arshad, M. (2026). Impact of internet addiction and short form videos on attention span. *Journal for Social Science Archives, 4*(1). https://doi.org/10.59075/jssa.v4i1.683 (JSS Archives)

Odgers, C. L., & Jensen, M. R. (2020). Annual research review: Adolescent mental health in the digital age: Facts, fears, and future directions. *Journal of Child Psychology and Psychiatry, 61*(3), 336–348.

Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences, 106*(37), 15583–15587.

Posner, M. I., & Rothbart, M. K. (2007). Research on attention networks as a model for the integration of psychological science. *Annual Review of Psychology, 58*, 1–23.

Przybylski, A. K., & Weinstein, N. (2017). A large-scale test of the Goldilocks hypothesis: Quantifying the relations between digital-screen use and the mental well-being of adolescents. *Psychological Science, 28*(2), 204–215.

Rosen, L. D., Lim, A. F., Carrier, L. M., & Cheever, N. A. (2011). An empirical examination of the educational impact of text message-induced task switching in the classroom: Educational implications and strategies to enhance learning. *Computers in Human Behavior, 27*(5), 1657–1664.

Shuja, T., Ahmad, Z., & Wazir, W. (2025). Short-form video addiction, mindfulness, and cognitive failure among undergraduate university students. *Journal of Nursing and Allied Health, 3*(3). https://doi.org/10.37939/jnah.v3i03.172 (Journal RMC)

Uncapher, M. R., & Wagner, A. D. (2018). Minds and brains of media multitaskers: Current findings and future directions. *Current Directions in Psychological Science, 27*(1), 25–30.

Wilmer, H. H., Sherman, L. E., & Chein, J. M. (2017). Smartphones and cognition: A review of research exploring the links between mobile technology habits and cognitive functioning. *Frontiers in Psychology, 8*, 605.

Yan, T., Su, C., Xue, W., Hu, Y., & Zhou, H. (2024). Mobile phone short video use negatively impacts attention functions: An EEG study. *Frontiers in Human Neuroscience, 18*, 1383913. https://doi.org/10.3389/fnhum.2024.1383913 (PubMed)

Zhan, X., & Zhu, W. (2025). Influencing factors of short-form video addiction among Chinese university students: A systematic review. *Frontiers in Psychology, 16*, 1663670. https://doi.org/10.3389/fpsyg.2025.1663670 (Frontiers).