



Impact Of Short Form Videos on Attention Span Mediated by Sleep Quality and Stress

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Abstract

This research examines the association between addiction to short-form video and attention span among young adults (18–25 years) with stress and sleep quality as possible mediators. Adopting a quantitative survey approach, responses were obtained from 350 participants using structured measures of short-form video addiction, attention span, stress level, and sleep quality. Findings indicated a moderate negative correlation between short-form video addiction and attention span (Spearman's $\rho = -0.295$, $p < .001$), suggesting that frequent high exposure to rapid media is related to lower attentional ability. Mediation analysis demonstrated stress partially mediates this process (14.7%) however sleep quality does not. The results are consistent with Cognitive Load Theory, proposing cognitive overload from brief-form video viewing affects working memory and attention, and Hebb's Arousal Theory, correlating high arousal from such media with cognitive deterioration. This research highlights the cognitive consequences of digital media, calling for digital literacy programs and healthier media use to protect attention span. Limitations

are self-reported data, response bias, and restricted generalizability. Future studies need to examine other mediators and interventions to reduce the cognitive effects of short-form videos.

Keywords: *Short-form video addiction, Attention span, Digital media consumption, cognitive overload theory*

INTRODUCTION

Teenage and young adult media consumption has changed dramatically in recent years, fueled by the growth of online platforms and the changes in content trends. Short videos lasting a few seconds to two minutes are a rapidly increasing trend in new media technologies. Platforms like TikTok, Instagram Reels, and Snapchat have normalized the creation and consumption of engaging, bite-sized videos, making them a central part of daily life for younger generations. These videos, designed to capture attention within a limited timeframe, cater to fast-paced lifestyles and provide instant gratification through an endless stream of diverse content. The popularity of short-form videos across the globe is a result of their convenience and the fact that they can deliver entertainment with little time commitment. It is easy for users to swipe through hundreds of videos, which may result in extended engagement. Although this phenomenon has transformed media consumption, it also raises some serious questions regarding its cognitive and psychological effects. Scholars have started investigating how over-consumption of such content affects attention span, cognitive processes, and academic achievement. The brief and entertaining style of short-form videos might cultivate patterns of incessant stimulation that could inhibit users' capacities for maintaining focus on intricate or time-consuming activities.

Moreover, issues have been raised concerning the effects of short-form video viewing on sleep quality and stress. Most viewers watch this type of content late at night, which interferes with

sleep patterns, critical for cognitive functions such as memory and attention. Stress, usually associated with overuse of media, can also further compromise cognitive functioning and worsen attention problems. The interaction of these factors deserves more study, especially among young adults, who are active consumers and most susceptible to media overuse.

This research investigates the correlation between short-form video viewing and attention span, with sleep quality and stress as mediating variables. Through the lens of young adults, the study seeks to gain insights into the wider cognitive and psychological effects of this media phenomenon, adding to the knowledge of its implications for mental health, education, and well-being.

REVIEW OF LITERATURE

Table 1: *Highlighting studies with their aim, methodology, results and limitations*

S.no	Reference	Aim / focus	Methodology	Results	Criticisms/ Limitation
1.	Jiang, L., Yoo, Y	Effect of short-form video addiction on adolescents' sleep quality	1629 young adolescents quantitative self-report study	Short-form video addiction is positively correlated with adolescents' sleep quality Social anxiety partially mediated short form video addiction and sleep	limited to only 3 high schools

				quality	
2.	Tingting Yan., et al	effect of short-form video use on attentional functions	48 participants, (35 females and 13 males), mean age of 21.8 years Quantitative study	increased tendency toward mobile phone short video addiction could diminish executive control within the realm of attentional functions.	Small sample size is small
3.	Zhao Z and Kou Y ,2024	the impact of short video addiction on college students' sleep quality and to elucidate the mechanism underlying this relationship	337 college students A self-reported quantitative study	Short video addiction directly affects college students' sleep quality Procrastination acts as a mediating factor between short form video addiction and sleep quality	Studied only procrastination as mediating factor
4.	Mohd Asif, Saniya Kazi ,	Influence of short videos	10 heavy short video users	short video viewing contributed to	Limited study population

	(2024)	on attention span.	Mixed method	perceived attention deficits among students	
5.	Sahu DP et al (2024)	To investigate the correlation of screen time with sleep quality and attention span.	192 students nursing students A self-report Quantitative study	Screen time was strongly correlated with poor sleep quality Screen time and attention span were not significantly correlated.	Limited study population
6.	Kohler, T.J. (2023)	To investigate how people report on perceived short-form video effects on attention span and mood	A qualitative study 15 semi-structured interviews Age ranging from 19-24	Short form videos can affect attention span and mood. There was a negative effect on mood when participants struggled to concentrate, which indicates indirect relationship between short form video consumption and	Limited study population.

				mood.	
7.	Bianca A Barton ,et al, (2018)	To study the effects of social media usage on attention, motivation, and academic performance	659 undergraduate and graduate students Survey response	Social media usage and attention predicted academic performance.	
8.	Heather Cleland Woods, Holly Scott,. (2023)	examined how social media use related to sleep quality, self-esteem, anxiety and depression	467 Scottish adolescents A quantitative study	Poorer sleep quality is found in adolescents with more social media usage	Cultural bias might occur Single province data
9.	Worawee Puaponpong,. et al	a study to determine the relation between the increase in short-form	high school students in Bangkok	Stress relief, boredom, and trend awareness were primary reasons for watching short- form videos. there was no	

		video consumption and a decrease in attention capacity.		significant correlation between short-form video use and overall attention.	
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METHOD

Participants and Sample

Participants: Young adults of 18-25 years of age residing in India.

Sample: Convenience sampling used to select 350 participants. This is efficient but may have some biases and limits generalizability.

Inclusion Criteria

- a) Young adults who watch short-form videos.

Exclusion Criteria

- a) Those with sleep disorders.
- b) Those having substance abuse history.
- c) Those with a diagnosed mental health condition.

Instrumentation

- **Short-Form Video Addiction Scale (SFVAS):** This is a modified Young's Internet Addiction Diagnostic Questionnaire and scored on a 5-point Likert scale (1 = Never, 5 = Always). Cronbach's alpha coefficient of 0.89

- **Attention Span Scale:** this is a self-report scale with 20 items rated using a 4-point Likert Scale (1 = Nearly Never, 4 = Always). Cronbach's alpha coefficients typically around 0.80
- **Pittsburgh Sleep Quality Index.** It measures sleep quality by 19 items across 7 components ($\alpha = .83$). Perceived Stress Scale (PSS-10): It has measures on stress perception (Cronbach's $\alpha > .70$).

Procedure

This quantitative analysis was concerned with the relationship between the consumption of short videos, sleep quality, attention span, and stress. Data were collected quantitatively and qualitatively using a survey method with various instruments including both structured and unstructured questionnaires. Recruitment was with the distribution of Google Forms, both online and on campus. While participants were informed regarding privacy and the purpose of their participation, informed consent was obtained beforehand. Individuals were free to withdraw from the study at any point without providing any explanation.

Data Analysis

Descriptive Statistics: The mean and SD were calculated for all the variables.

Correlation Coefficient: This was used to determine the relationship between short videos and attention span.

Mediation Analysis: This was done to prove whether sleep quality or stress mediated the relationship between short video consumption and attention span.

Research Ethics

Informed Consent: Participation was voluntary, and participants were allowed to withdraw at any moment.

Data Privacy: Safeguards were put into place to maintain the confidentiality of participant information by means of secure data storage methods.

RESULTS AND DISCUSSION

Table 2: *Descriptive Statistics for Short Form Video Addiction Scores*

		Short Form Video Addiction	
N		294	
Mean		40.8	
Median		38.0	
Standard deviation		20.4	
Skewness		0.676	
Std. error skewness		0.142	
Kurtosis		0.237	
Std. error kurtosis		0.283	
Shapiro-Wilk W		0.959	
Shapiro-Wilk p		< .001	

Mean (40.8): The average score for is 40.8, which suggests a general midpoint of scores within the observed range. Median (38.0): The middle score is 38, slightly below the mean, hinting at a slightly right-skewed distribution.

Standard Deviation (20.4): There is considerable spread in the data, with scores varying by about 20.4 units from the mean on average, indicating moderate variability in responses.

Skewness (0.676): This positive skewness value (greater than zero) indicates a slight skew to the right, meaning a few high scores are stretching the distribution's right tail.

Kurtosis (0.237): This value, close to zero, suggests that the distribution's peak and tails are not significantly different from a normal distribution. It is slightly platykurtic (flatter), indicating a broader, less peaked distribution.

Shapiro-Wilk Test: (0.959): The Shapiro-Wilk value close to 1 suggests the data is somewhat close to a normal distribution.

p-value (< 0.001): The data is not normally distributed. This result implies potential asymmetry or irregularities in the data distribution.

Table 3: *Descriptive Statistics for Stress Scores*

		Stress	
N		294	
Mean		21.4	
Median		21.0	
Standard deviation		4.47	
Skewness		0.680	
Std. error skewness		0.142	
Kurtosis		0.779	
Std. error kurtosis		0.283	
Shapiro-Wilk W		0.963	
Shapiro-Wilk p		$< .001$	

Mean (21.4): The average score is 21.4, which represents the central value around which the scores are spread. Median (21.0): The median score is 21, close to the mean, suggesting a relatively symmetrical distribution around the center.

Standard Deviation (4.47): The standard deviation indicates a moderate spread around the mean, showing that scores generally deviate by about 4.47 units.

Skewness (0.680): A skewness of 0.680 suggests a slight positive skew, indicating a minor rightward lean with some higher scores extending the distribution to the right.

Kurtosis (0.779): This value suggests a leptokurtic distribution, meaning the distribution has a slightly more pronounced peak and heavier tails compared to a normal distribution.

Shapiro-Wilk Test: (0.963): The value indicates the data has some degree of normality

Table 4: *Descriptive Statistics for Attention Scores*

		Attention Span	
N		294	
Mean		28.4	
Median		29.0	
Standard deviation		5.38	
Shapiro-Wilk W		0.977	
Shapiro-Wilk p		< .001	

Mean: 28.4. The average score for attention span across all participants is 28.4. This provides a central tendency measure.

Median: 29.0, the middle score when all participants' scores are arranged in order is 29.0. This value suggests that half of the participants scored above 29 and half scored below.

Standard Deviation: 5.38, this statistic indicates the extent to which participants' scores deviate from the mean. A standard deviation of 5.38 suggests a moderate amount of variability in the attention span scores.

Shapiro-Wilk W: 0.977, this statistic is used to assess the normality of the data. A value close to 1 suggests that the data may be normally distributed.

A p-value less than 0.05 (and especially < 0.001) indicates that the null hypothesis of normality can be rejected. In this case, it suggests that the attention span data is not normally distributed

Table 5: *Descriptive Statistics for Sleep quality Scores*

Sleep Quality			
			Sleep Quality
N		294	
Mean		5.72	
Median		6.00	
Standard deviation		2.45	
Skewness		0.317	
Std. error skewness		0.142	
Kurtosis		-0.0780	
Std. error kurtosis		0.283	
Shapiro-Wilk W		0.976	
Shapiro-Wilk p		< .001	

Mean (Average): 5.72: The average sleep quality score among participants is approximately 5.72. Median: 6.00: The middle value of the scores, indicating that half of the respondents rated their sleep quality at or below 6.

Standard Deviation: 2.45: This measures the amount of variation or dispersion of sleep quality scores from the mean. A higher value indicates more variability in the scores. Skewness: 0.317: This indicates that the distribution of scores is slightly positively skewed, suggesting that there are more lower scores than higher scores. Std. Error Skewness: 0.142: This provides a measure of how much the skewness could vary if the sample were drawn multiple times. Kurtosis: -0.0780: This value indicates a distribution that is relatively flat (platykurtic), meaning there are fewer outliers than a normal distribution. Std. Error Kurtosis: 0.283: Similar to skewness, this measures the variability of the kurtosis. Shapiro-Wilk W: 0.976:

This statistic tests the null hypothesis that the data is normally distributed. Values closer to 1 indicate a distribution that is closer to normal. Shapiro-Wilk p: < .001: A p-value less than 0.001 indicates strong evidence against the null hypothesis, suggesting that the data is not normally distributed.

Statistical Findings

Table 6: *Correlation Matrix for Short Form Video Addiction and Attention Span*

		Short Form Video Addiction		Attention Span	
Short Form Video Addiction	Spearman's rho	—			
	df	—			
	p-value	—			

Attention Span		Spearman's		-0.295		—	
		rho					
		df		292		—	
		p-value		< .001		—	

Hypotheses 1: There is a negative influence of short form video consumption on attention span. Higher short form video consumption leads to lower attention span. Spearman's rho: (-0.295). This statistic indicates a moderate negative correlation between short form video addiction and attention span. Specifically, as addiction to short form videos increases, attention span tends to decrease.

Table 7: Mediation Estimates for Short Form Video Addiction and Attention Span

Effect	Estimate	SE	Z	p
Indirect	-0.00103	0.00395	-0.260	0.795
Direct	-0.09376	0.01490	-6.294	< .001
Total	-0.09478	0.01437	-6.598	< .001

Hypothesis 2: Sleep quality mediates the relation between short form video consumption and attention span among young adults.

Indirect Effect: Estimate: -0.00103. This estimate indicates a very small negative indirect effect of short-form video consumption on attention span through sleep quality.

p-value: 0.795. A p-value greater than 0.05 indicates that the indirect effect is not statistically significant, suggesting that sleep quality does not mediate the relationship between short-form video consumption and attention span.

Direct Effect: Estimate: -0.09376 . This estimate indicates a significant negative direct effect of short-form video consumption on attention span, meaning that higher consumption is associated with a decrease in attention span.

p-value: $<.001$. A p-value less than 0.001 indicates that the direct effect is statistically significant, suggesting a robust relationship between short-form video consumption and attention span when controlling for sleep quality.

Total Effect: Estimate: -0.09478 . This represents the total effect of short-form video consumption on attention span, combining both direct and indirect effects.

p-value: $<.001$. This p-value indicates that the total effect is also statistically significant, confirming that there is a meaningful overall relationship between short-form video consumption and attention span.

Table 7: *Mediation Effects for Short Form Video Addiction and Attention Span*

Effect		Label		Estimate		SE		Z		p	
Indirect		$a \times b$		-0.0140		0.00580		-2.41		0.016	
Direct		c		-0.0808		0.01519		-5.32		$<.001$	
Total		$c + a \times b$		-0.0948		0.01437		-6.60		$<.001$	

Hypothesis 3

Indirect Effect Estimate: -0.0140

p-Value: 0.016

% Mediation: 14.7%. The indirect effect represents the portion of the relationship between short form video addiction and attention span that is explained by stress levels. The 14.7% indicates that about 14.7% of the total effect is mediated by stress, suggesting that stress plays a meaningful, though relatively modest, role in the relationship.

Direct Effect Estimate: -0.0808

p-Value: < 0.001 % Mediation: 85.3%

The direct effect of short form video addiction on attention span accounts for 85.3% of the total effect. This indicates that the majority of the negative impact of short form video addiction on attention span occurs independently of stress levels.

Total Effect Estimate: -0.0948

p-Value: < 0.001

% Mediation: 100.0%

The total effect combines both direct and indirect effects, confirming that the overall impact of short form video addiction on attention span is significant and negative. The total of 100% simply represents the entirety of the effect being accounted for by both paths.

DISCUSSION

Key Findings

- a) Short-form video addiction significantly negatively affects attention span ($p = -0.295$, $p < .001$).
- b) Sleep quality does not mediate this relationship ($p = 0.795$).
- c) Stress partially mediates the relationship, explaining 14.7% of the total effect.

Conclusion

The findings of the study validated the hypothesis that usage experience with short-form video content has a lessening effect on some attentional capacities, thereby adding to the cognitive effects of media use. High-stimuli exposure short form videos induce cognitive overload and heightened levels of stress which ultimately could lead to a decline in sustained attention and focus over time. While stress appears to be one of the determining factors in such interactions, results are rather attributed to cognitive overload as the real culprit in determination of a limited span of attention due to the requirement imposed by fast-paced video content for rapid and frequent switching of attention. This study thus adds to the ever-growing pile of research that takes into consideration the effects of expensive frequent consumption of short-form videos on cognition. These findings are especially significant considering their acknowledgement in understanding the considerable effect that habitual use of media can have on some of the most critical daily tasks, learning, and productivity.

This paper develops Cognitive Load Theory: it shows that, in particular, the use of digital media-such as fast-paced, short-form videos-saturates but then overburdens working memory and consequently reduces attention. This, thus, implies that in an experiment, the working memory capacity of human brains easily chokes due to fast sequences of new stimuli like those in short-form videos, causing distraction from focus, and this study also supports Hebb's Arousal Theory, as high arousal brought on by the short-form videos leads to overstimulation and thus impedes cognitive performance by using up mental resources. Findings such as those mentioned have triad pragmatic implications for both mental health and education: Among other things, the effective frequency of media use will have to be improved so as to stimulate public awareness

about the possible cognitive impacts; schools and universities can include in their curriculum education about how the cognitive impacts of digital media manifest.

Theoretical Implications

It supports cognitive load theory and arousal theory, according to Hebb, in which high-stimulus, fast-paced content exceeds the limits of cognitive resources leading to decreased attention. In contrast to sleep-wake regulation theory, sleep was not shown to mediate the effect.

Limitations

Several limitations characterized this study. One of the major limitations was reliance on self-reports-a probability of response bias-an indication that participants were either likely to not accurately put down their media consumption habits or their attentional capabilities. This also meant that the sample was a group of young adults and therefore not very generalizable: results cannot be generalized to older adults or adolescents who might have a different type of interaction with digital media. Furthermore, the types of short-form content viewed may differ and this may then reflect on attentional outcomes differently-for instance, similar stimuli elicit different cognitive effects. It mostly focused on stress and sleep as mediators in the relationship and failed to consider other conditions like mental fatigue, anxiety, or social pressures. Thus such high-level findings must be cautiously interpreted, and more studies may give a more finely grained understanding of the effects of short-form video consumption on attention.

Recommendations for Future Research

In addition to stress and sleep, other mediators could be explored, such as mental fatigue or social influence, which might also have possible interactions with the two mediators already

specified of interest. Experimental approaches manipulating short-form video content exposure may yield causal inferences and reveal particular features of short-form video - pacing, interactivity, or emotional intensity - that most effectively attenuate attention span. Longitudinal studies following users over time would help get at the overall effects of constant short-form video-watching on cognitive processes. Research may also test intervention strategies that could ameliorate the effects of short-form videos on attention, including the various kinds of digital detox programs, mindfulness exercises, or self-regulation training for frequent short-form video users for their more efficient control of attentional resources. Eventually, this study will be important for informing best practices for healthy media consumption in educational, clinical, and personal contexts.

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