

The Influence of Short Video Viewing Time on the Undergraduate and Graduate Students' Inattention: The Mediating Role of Self-Control

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Abstract: This study adopts self-control as a mediating factor to explore the relations between China's undergraduate and graduate students' inattention and short video viewing time. SPSS was used to gather and analyze 157 valid responses in total. The findings show a strong positive relationship between inattention and daily short video viewing time. Both short video viewing time and inattention are shown to be negatively correlated with self-control. Regression analysis shows that extended short video viewing time considerably accelerates the attention deficit. These results imply that students' attention is negatively impacted by excessive short video watching, but that these effects are lessened by stronger self-control. Therefore, the use of short videos in family and educational contexts is advised to be restricted and self-control training strengthened. Limitations include small sample size and respondents being students mainly majoring in the arts and social sciences. This study offers advice for teachers, parents and students to take advantage of short video for education in a cautious manner.

1 INTRODUCTION

1.1 Research Background

Recently, with the development of internet technology, short videos have gradually become an important channel for university students to receive information and construct connection with the outside world. Short videos have a profound impact on university students' studies, daily lives, entertainment. While short videos offer a wealth of high-quality content and resources, their potential drawbacks cannot be ignored.

1.2 Literature Review

Chinese scholars have provided detailed insights into the definition, characteristics and the impact of short videos. Short videos are typically defined as videos lasting no longer than 5 minutes and are characterized by fragmentation, interactivity, richness, and embeddedness. According to surveys, 90% of

respondents watch short videos every day. The humorous content is the most popular genre. Short videos brought new methods for supporting youth development. However, there are also many problems in short-videos development, especially "three vulgarities", rumours and frauds. Additionally, the consumerism and pan-entertainment tendency are easy to affect the thoughts of young people. The importance of supervision and content regulation has become increasingly prominent to ensure that the content remains healthy and promotes positive values (Wang, 2020). The rise of short videos conforms to the contemporary trends, catering to university students' expressive needs and providing new channels for them to be unconventional or unorthodox. These platforms satisfy grassroots expression desires and meet the demand for personalized presentation. Features like "cross-temporal" communication and "clustered" connections fulfill students "social aspirations". Meanwhile, Wangxiao also points that the potential dangers of college students' network survival caused by the popularity of short videos mainly focus on

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"screen addiction" to reveal academic hidden dangers, for instance, "information cocoon effect" causes cognitive limitations. "Internet addiction" diminishes willpower. "Entertainment first" promotes blind value obedience. It is necessary to set up mainstream values and adapt to the Internet technology's developing trend to promote changes of pedagogy. Related departments should optimize and integrate resources to build a network communication pattern of "primary school platforms secondary institution sub-platforms+individual student auxiliary platforms". Additionally, institutional construction should be improved to strengthen the "safety net" for the online ecosystem (Wang, 2021). Although personalized content supply provides short-term satisfaction for short video users, this cultural barrier inevitably leads to self-isolation and a convergence of values. It is doing more harm than good for the formation of college students' positive values. Short videos users who generally show habitual swiping behavior and are influenced by curiosity, are often drawn to impactful content. This creates a desire to seek even more novel and sensational content, resulting in excessive addiction to short videos (Huang et al., 2019). Short video addiction is a new form of behavioral addiction where individuals develop a negative psychological dependence on short videos, leading to excessive and uncontrollable viewing. This addiction significantly impairs physical, mental, and social functioning.

Foreign scholars have also conducted abundant researches and elaborations in this field. Short videos are based on big data algorithms to accurately push exciting content to users, allowing them to watch videos that they're interested in at any time. When students watch short videos, it will be easier to develop an addiction to short videos if they experience a high level of immersion (a state of complete engagement and enjoyment), which further impairs their intrinsic motivation (learning driven by personal interest and passion) and extrinsic motivation (learning driven by external rewards). Addicted students may show lower enthusiasm and motivation for studying. Short video addiction can also lead to a decline in learning motivation and students' sense of well-being. Learning well-being refers to students' overall satisfaction and positive feelings about their learning experience (Ye et al., 2022). Users who are addicted to short videos may find it more difficult to maintain attention, attention deficit, or impaired ability to concentrate and deal with interference. As a booming form of entertainment, short videos are globally popular. Its fragmentation mode presents dense and attractive

information to users, which may lead to addiction and adverse effects. Research using eye-tracking technology during short viewing tasks and the Stroop test has shown that addicted users show lower interest and attention, more distracted behaviours, and more fixations with shorter average fixation time. It demonstrates that short video addicts have shorter attention span compared to the normal. With the increase of short video length, the attention level of short video addicts decreases and the number of distractions increases (Chen et al., 2023).

Additionally, self-reported symptoms of ADHD (attention deficit/hyperactivity disorder self-rating scale), depression, and hostility are correlated factors in adolescent Internet addiction. Internet addiction may be a complex psychological problem entangled with multiple mental health symptoms. Studies have also found that gender plays an important role in the relationship between Internet addiction and mental symptoms. Hostility is an important feature of male Internet addiction and may stem from gaming behaviors or online conflicts. There is a significant correlation between ADHD symptoms and depression in female adolescents, but hostility and social anxiety do not show a significant correlation. Female Internet addicts are more likely to be influenced by introverted psychological problems (such as depression). Internet addicts tend to show higher levels of attention disorder and behavioral impulse tendencies. The fast pace and constant stimulation of the Internet may have intensified these symptoms. Long-time Internet using may become a way of escaping real-world issues, further exacerbating feelings of depression. Internet addicts may avoid face-to-face social interactions, relying more on social networking, which causes the symptoms of social fear to worsen. Male internet addicts may develop hostility and even show aggressive behavior due to online competition or conflict. Yen suggests enhancing mental health screenings, conducting psychological assessments for Internet addicts, and paying special attention to the potential risks of ADHD and depression. Scholars should guide the healthy use of the Internet and educate teenagers to arrange Internet surfing time in a reasonable way to avoid addiction. Aiming at internet addicts, psychologists are supposed to consider their mental symptoms comprehensively to design personalized intervention plans. For males, the public should focus on hostility management and emotional guidance, while for females, emotional support should be provided and social skills development fostered (Yen et al., 2007). The phenomenon of overuse of short video applications is

common, but it may be different in diverse cultural contexts. Excessive use of short video applications may negatively impact on college students' social skills and mental health. Zhang N and others' study offers an international perspective on understanding the excessive use of short video applications and their impact on university students, emphasizing the need for further research and intervention in different cultural settings.

1.3 Research Topics

1.3.1 Research Gaps

Scholars have made detailed studies on the definition, characteristics, functions, and impacts of short videos, providing valuable references for explaining their influence on adolescents. These studies also provide important foundations for this research. However, the academic community has yet to explore the impact of short video viewing duration on the undergraduate and graduate students' attention, using self-control as a mediating variable.

1.3.2 Research Questions

The fragmented nature of short videos fundamentally conflicts with the high levels of attention and long-term systematic training required for effective learning. As adults with a certain degree of self-control, will the undergraduate and graduate students (who are, respectively, the junior college students, university undergraduates, postgraduates and doctoral students) experience a decrease in attention when facing a variety of short videos? How does self-control work in this relationship? In addition, what strategies can effectively enhance students' self-control and attention? Given that prolonged short video viewing has become a widespread phenomenon, this study focuses on the undergraduate and graduate students. Through the design of a survey and data collection, which aims to investigate the relationship between short video viewing duration and the students' inattention, with self-control as a mediating factor. This study analyzes the generation and mode of action of this influence and weighs the advantages and disadvantages and attempts to identify feasible solutions and preventive measures. The goal is to guide students toward adopting positive strategies when engaging with short videos.

2 RESEARCH METHODOLOGY

2.1 Sample Description and Research Process

Through stratified sampling, this study distributed questionnaires to junior college students, undergraduate students, postgraduate students and doctoral students of different colleges and universities in China. It is expected to investigate 120 samples, of which 30 are junior college students, 30 are undergraduates, 30 are master students, and 30 are doctoral students, without limiting the conditions such as region and family. Two surveys were conducted in this study, namely pre-survey and a formal survey, and SPSS software was used to analyze the frequency, mean value, regression process, intermediary effect and the influence of sample difference on attention. During the pre-survey, 124 sample data were collected to test the reliability and validity of the scale, and the data showed that the scale adopted in this study met the standard. During the formal survey, a total of 180 samples were collected, of which 157 were valid, including 49 males and 108 females, 20 junior college students, 55 undergraduates, 36 postgraduate students, 46 doctoral students, 101 majored in humanities and social sciences, 1 natural sciences major, 21 engineering and technology students, 7 medical students, and 25 art students. There is no significant difference in reliability and validity between the two surveys, and the analysis results are consistent, indicating that the research results of this study are credible.

2.2 Measurements

2.2.1 Self-Control Scale

The Self-control Scale, developed by June P. Tangney et al., George Mason University, in 2018, was used to assess adult self-control ability. Self-Control Scale (SCS) includes multiple dimensions, including impulse suppression, emotional control, habit and behavior control, focus and attention control, decision-making ability, and persistence and perseverance. The Scale is scored by Likert Scale and contains 36 items, among which 20 items are scored in reverse, the higher the score is, the weaker the self-control ability is; 16 items are scored in forward, the lower the score is, the stronger the self-control ability is. This paper uses the Brief Self-Control measure, with a total of 13 items. 9 items are negatively scored, indicating that the higher the score,

the weaker the self-control.4 items are scored positively, which means the higher the score, the stronger the self-control. Cronbach α coefficient of this scale is high (generally > 0.80) (Tangney et al., 2018).

2.2.2 Inattention Self-Report Scale

The Inattention Self-report Scale, compiled by Kessler et al., in 2005, was used to study attention deficit hyperactivity disorder in adults. This scale conforms to the DSM-IV diagnostic criteria and mainly includes the following six core dimensions: Concentration duration, task organization, attention to detail, task persistence, ease of distraction, and forgetting tendency. The Inattention Self-report Scale uses the Likert Scale and includes 9 questions such as "How often are you distracted by activities or noise around you?" The questions are all positively scored, and the higher the score, the worse inattention is. Cronbach α coefficient of this scale is relatively high (generally > 0.80) (Kessler et al., 2005).

3 RESULTS

3.1 Results of Reliability and Validity Analysis

This study analyses the reliability of Self-control and In-attention scales. The Cronbach's alpha for the Self-control scale was 0.819, while for the Inattention scale, it was 0.794, both reflecting good reliability. MO and Bartlett tests were used to verify the validity of the self-control scale and In-attention scale. Among them, the KMO value of the self-control strength table was 0.842, and the KMO value of the concentration decline scale was 0.848, both indicating good data validity.

3.2 Descriptive Statistics

This study conducted a statistical analysis on 157 valid samples of short video streaming duration data, among which, The number of people who watch short videos for less than 30 minutes every day accounts for 17.83%, the number of people who watch short videos for more than 30 minutes and less than 1 hour accounts for 24.84%, the number of people who watch short videos for more than 1 hour and less than 2 hours accounts for 26.75%, the number of people who watch short videos for more

than 2 hours accounts for 30.57%, and the number of people who watch short videos for more than 2 hours accounts for the highest proportion. In terms of majors in the sample universities, 64.33% of students and postgraduates majored in humanities and social sciences, more than half of the total sample. Engineering and technology accounted for 13.33%, art accounted for 15.92%, and other majors accounted for less than 5%. Male samples accounted for 33.33% and females 66.67%.

3.3 Results of Correlation Analysis

In this study, the Pearson correlation coefficient between the independent variable (Time spent watching videos per day) and the dependent variable (Inattention) is 0.168, and the p-value is 0.035, which is less than 0.05, indicating a significant positive correlation between the independent variable and the dependent variable. In this study, the Pearson correlation coefficient between the independent variable (Time spent watching videos per day) and the intermediary variable (Self-control) was -0.259, and the p-value was 0.001, which was less than 0.01, indicating a significant negative correlation between the independent variable and the dependent variable. In this study, the Pearson correlation coefficient between the intermediate variable (Self-control) and the dependent variable (Inattention) was -0.641, and the p-value was 0.000, which was less than 0.01, indicating a significant negative correlation between the independent variable and the dependent variable. The study also verified that the major, gender and grade of the undergraduate and graduate students were not significantly correlated with the decrease of time spent watching short videos daily and inattention.

3.4 Results of Regression Analysis

Linear regression analysis was performed in this study. As shown in Figure 1 and Table 1 & 2, the results of regression analysis show that the independent variable (Time spent watching short videos per day) has a significant positive impact on the dependent variable (Inattention).

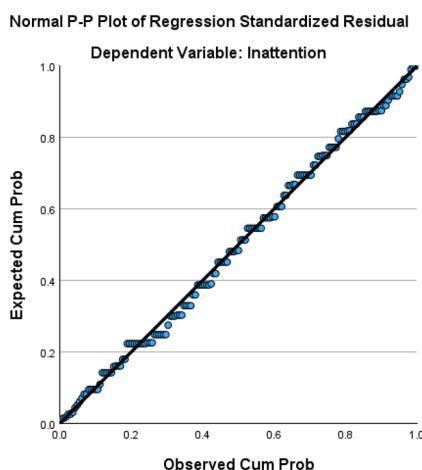


Figure 1. Normal P-P plot of regression standardized residual (Photo/Picture credit: Original).

Table 1. Variables entered/removed.

Model	Variables Entered	Variables Removed	method
1	Time spent watching video per dayb		Enter

- a. Dependent Variables: Inattention
b. All requested variables enter

Table 2. Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.168a	.028	.022	.46724	.028	4.500	1	155	.035	2.104

- a. Predictors: (Constant), Time spent watching videos per day
b. Dependent Variable: Inattention

3.5 Results of Mediating Effect Analysis

(Self-control) between the independent variable and the dependent variable, and the analysis results show that this mediating effect does exist.

As shown in Table 3 and Table 4, this study conducted a model test on the mediating variable

Table 3. Effect analysis process summary.

Effect	Item	Effect	SE	t	p	LLCI	ULCI
Direct Effect	Time spent watching videos per day – Dependable Variable (Inattention)	0.001	0.028	0.031	0.975	-0.054	0.055
Process of Indirect Effect	Time spent watching videos per day— Mediating Variable (Self- control)	-0.138	0.041	-3.339	0.001	-0.218	-0.057
	Mediating Variable(Self-control) -- Inattention	-0.523	0.052	-10.006	0.000	-0.626	-0.421
Total Effect	Time spent watching short video per day- Inattention	0.073	0.034	2.121	0.035	0.006	0.140

Table 4. Model testing of mediation effects.

	Mediating Variable (Self-control)	Dependable Variable (Inattention)	Dependable Variable (Inattention)
Constant	3.763** (31.377)	2.352** (23.523)	4.322** (20.408)
Independent variable (Time spent watching video per day)	-0.138** (-3.339)	0.073* (2.121)	0.001 (0.031)
Mediating variable (Self-control)			-0.523** (-10.006)
Sample Size	157	157	157
R ²	0.067	0.028	0.411
Adjusted R ²	0.061	0.022	0.403
F Value	F(1,155)=11.152, p=0.001	F(1,155)=4.500, p=0.035	F(2,154)=53.744, p=0.000

4 DISCUSSION

4.1 Comparison with Previous Studies

Today, with the rapid development of internet technology, internet addicts show a higher tendency of attention disorder and impulsive behaviour, and addiction to watching short videos (more than 2 hours a day) is one of the manifestations of internet addiction (Pan et al., 2024). Long-term use of the internet can become a way to escape real-world problems, while aggravating depression. Internet addicts may tend to avoid face-to-face interpersonal interactions and rely more on online socializing, leading to increased social phobia symptoms. Male internet addicts, on the other hand, may provoke hostility or even exhibit aggressive behaviour due to online competition or conflict (Yen et al., 2007). This paper further explains the harm of internet addiction by verifying the relationship between the daily watching time of short videos and the decreased attention of the students. Therefore, this paper suggests that students' mental health screening should be strengthened, and mental health assessment should be conducted for students with internet addiction, with particular attention to the potential risks of ADHD and depression. The healthy usage of short videos for teaching and entertainment should be guided to avoid the decline of students' attention. Previous studies have shown that watching short videos for a long time is related to students' personality characteristics, and it is also affected by parents' neglect of their children. Consistent with many previous research results, self-control is significantly negatively correlated with watching short videos for a long time, that is, the stronger the

self-control, the shorter the watching time (Gong, 2024; Wang et al., 2022). This paper further confirms that self-control plays a significant mediating role between short video-watching duration and inattention. Therefore, this paper suggests that special attention should be paid to individuals who watch short videos for a long time during the educational process and self-control improvement training should be carried out. The phenomenon of overuse of short video apps is universal, but it may vary in different cultural contexts. Overuse of short video applications may have a negative impact on students' social skills and mental health (Yen et al., 2007).

4.2 Suggestions for Teaching Practice

The undergraduate and graduate students are mentally mature and have stronger self-control compared with students under the age of 18. However, the conclusion of this study shows that the longer Chinese undergraduate and graduate students watch short videos per day, the greater the decline of their attention, and self-control plays an intermediary role between them. This not only provides reference value for the use of short videos as teaching media in the teaching environment of the undergraduate and graduate students, for the entertainment methods of the students after class, but also for the use of electronic entertainment and educational products in family and school education of underage students, especially for the viewing time of short videos. Based on the research results, this paper suggests that, whether in family education or school, students should try to limit the time of watching short videos every day, otherwise students' concentration will decrease significantly. Educational methods that can

control or reduce the length of short video watching are recommended. This paper also suggests that educators and policymakers should pay attention to the differences in the overuse of short video apps by student groups in different cultural contexts. In addition, measures should be taken in school and home educational settings to develop healthy short video-viewing habits among students, and further studies could be conducted on the relationship between different cultural contexts, students' short video-watching time, and inattention.

4.3 Limitations and Future Prospects

The limitations of this study include the limited size of samples (only 157), and most undergraduate and graduate students are majoring in humanities and social sciences. It is suggested to expand the size and diversity of samples in future studies. To further verify the conclusions of this study, it is suggested to conduct related research on underage students. Watching short videos is only one of the electronic education methods, and other electronic education methods can be studied in the future to observe the impact of electronic education on the growth of students. Students' inattention is one of the factors that affect learning. In the future, Future research can also study how electronic education, including watching short videos, has an impact on students' learning habits, emotional fluctuations, comfort, and identity and personality formation. In addition, methods of intervention to reduce the frequency of short video usage by students could also be studied.

5 CONCLUSION

The purpose of this study was to explore whether the independent variable (Chinese undergraduate and graduate students watching short videos per day) has a significant negative correlation with the decline of the dependent variable (Inattention), and whether self-control plays a mediating role between them. Quantitative research method was adopted in this study. 200 questionnaires were sent out to the undergraduate and graduate students at different stages, and the total valid sample size was 157. SPSS software was used for data analysis. The results of this study are as follows: the Pearson correlation coefficient of the independent variable and the dependent variable is 0.168, the p-value is 0.035, and the linear regression coincidence rate of the two is 95%. In this study, the results of the mediation effect model test of the intermediary variable (Self-control)

between the independent variable and the dependent variable are as follows: this intermediary effect path exists. The results show that there is a significant positive correlation between the duration of watching short videos per day and the decline of attention of Chinese undergraduate and graduate students, and self-control plays an intermediary role between the two. The intermediary variable and the independent variable have a significant negative correlation. In other words, the longer Chinese undergraduate and graduate students watch short videos daily, the more serious the decline in attention; conversely, the shorter the time spent watching short videos, the lower the decline in concentration. The stronger the individual self-control, the shorter the time of watching short videos, the lower the degree of attention decline. On the contrary, the worse the individual self-control, the longer the time to watch short videos, the higher the degree of attention decline. In the context of the current popularity of short video entertainment and the gradual development of electronic education methods, the results of this study are intended to provide a reference for the use of electronic entertainment and education products for students in family and school educational background, especially the length of watching time of short videos, and will also serve as a reminder for teachers and parents to seek educational methods to improve the decline of students' attention.

AUTHORS CONTRIBUTION

All the authors contributed equally and their names were listed in alphabetical order.

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