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Short-Form Videography Exposure's Impact on the Cognitive Function and Academic Performance of High School Students

Mohamed Adam Abdel-Moneim Shamloul

Abstract: This study examined whether reducing high school students' exposure to short-form videography could impact their academic performance as well as cognitive function, specifically memory and attention. Twenty-four students participated in the study, including five students from each grade level, and a control group with one student from each grade. Participants completed cognition tests and a survey to assess any potential changes in their academic and cognitive performance after participating in the study. The study found no direct correlation between the variables. Individual improvements, consistencies, and declines were seen in academic performance and cognition. However, evaluating the data from the standpoints of each individual, grade level, and all the grades collectively revealed no significant changes in either of the variables arising from reducing exposure. Overall, the findings indicate that reducing short-form videography exposure does not significantly impact high school students' academic performance or cognitive function.

Keywords: Short-form Videography, Cognition, Academic Performance, Memory, Attention, Cognitive Function

In today's digital age, content found on social media platforms has an influence on various aspects of individuals' lives, particularly among high school students. Amidst the various forms of content integrated into these platforms, short-form videography has emerged as a dominant and rapidly evolving feature. Short-form videography refers to the creation and consumption of brief video content typically lasting a few minutes or even seconds (Cheng et. al, 2007). The current increasing popularity of short-form videography can be attributed to the growing prevalence of social media platforms that prioritize quick, engaging content, such as YouTube, TikTok, and Instagram. High school students often dedicate substantial amounts of time to consuming short-form videography found on popular platforms. Mustafa and Erdogan's (2017) study conducted with 217 high school students, male and female, revealed that about 80% reported engaging in some form of social media use for one to two hours every day. Given the ubiquity of these platforms in today's world, some studies have been conducted to explore how their content affects individuals' cognitive functions. Tian et al. (2021) concluded that frequent consumption of concise

video content may impact attention spans and information processing abilities among individuals. Still, a controversy exists around short-form videography and its effects on cognition. Wang et. al (2021), describes how exposure to short-form videography is a "diminutive" (p. 108), or minuscule aspect in regard to the external factors which play a larger role in the effects on cognitive abilities. Furthermore, ongoing research continues to explore the impact of short-form videography on academic performance, considering that the majority of short-form videography users are students. For instance, Zhu et al. (2022) found signs that students using short-form videos can experience a decline in academic tasks requiring deep comprehension. Currently, a wide range of research regarding media and videography and their effects on cognition exists; however, there is a deficit of research in the field specific to short-form videography.

Literature Review

Cognition

According to Bayne et. al (2019), cognition refers to the intricate mental processes and activities associated with acquiring, storing, and utilizing information. Cognition encompasses a broad range of mental functions, including "perception, attention, memory, language, problem-solving, and decision-making" (Collins and Greeno, 1996, p. 2). As these mental functions are pivotal for learning, cognition is a field that has been broadly studied throughout the years. Specifically, attention is a fundamental cognitive ability that plays an imperative role in processing information. Posner and Boies (1971) defined attention as the ability to selectively focus on specific material while simultaneously filtering out irrelevant details. The study of attention within the realm of cognition explores its various aspects, including the mechanisms that control the shifting of attention from one task to another. Similarly, memory, as a cognitive function, is the intricate process of understanding how information is retained and recalled. Different types of memory include short-term, long-term, and working memory, each contributing to the overall cognitive function (Assmann, 2006). The exploration of short-form videography's effect on the cognitive functions memory and attention is an emerging field, and few studies have explored the relationship. However, some research has employed experimental designs to investigate how exposure to short-form videos, particularly on social media platforms, may influence cognitive processes. For instance, a study by Xing et al. (2019), reveals a clear impact of rapid visual transitions of short-form videos on attentional focus and information retention. However, not all studies have supported the link between short-form videography and its effects on cognitive processes. For example, Lui et al. (2021) explain how the influence of short-form videography on cognitive processes like memory and attention may be "context-dependent" (p. 10). This indicates that factors such as media literacy and the specific circumstances of media use may have a greater influence on cognitive proficiency than the mere amount of exposure.

Academic Performance

Academic performance plays a key role in the lives of high school students, serving as a metric for their educational progress and future opportunities. Hezlett et al. (2004) describes how grades and achievements reflect a student's grasp of academic concepts and influence college admissions, career paths, and scholarship opportunities. Furthermore, memory and attention are pivotal cognitive functions that play a crucial role in academic performance for high school students. Owen et al. (2010) concluded that a strong memory facilitates the retention and recall of information, allowing students to grasp and apply concepts across various subjects. Moreover, the ability to demonstrate effective attentional control ensures sustained focus during classes and enhances the depth of understanding of concepts (Rosen, 2017). With that in mind, high school students often dedicate substantial amounts of time to consuming content found on popular social media applications. Additionally, in current times short-form videography is present in all of the most popular forms of social media; thus, it is highly likely that any engagement with these applications could lead to exposure to short-form videography. Therefore, the significant amount of time that high school students invest in consuming social media content can have implications for their academic performance.

Television and Video Games

Examining traditional forms of media such as television and video games can serve as a valuable contextual background and offer comparative benchmarks for investigating short-form videography's effects on cognitive function and academic performance. Over the past few decades, numerous studies have delved into the impact of video games and television on cognition, to reveal the complex relationship between screen-based media and mental processes. Today, many high school students regularly engage with television and video games, which makes them susceptible to the potential impacts of these forms of media. Bowers (2013) identified and reported that the accessibility of streaming services and gaming platforms has contributed to a common screen culture. Additionally, research suggests that certain types of video games can enhance cognitive abilities such as attention, visual-spatial skills, and problem-solving. According to Unsworth et al. (2015), action-oriented games have been associated with improved reaction times and enhanced spatial awareness. However, video games' effects on cognitive processes may vary based on factors like the genre of the game and the duration of play. Some studies suggest there is a negative link between the use of video games and the cognition of individuals. Carnagey and Anderson (2015) indicated that the often fast-paced nature of video games may lead to cognitive fatigue and hinder the development of essential cognitive skills. Similarly, the influence of television on cognition has been a longstanding focus of inquiry. Belch (1982) concluded that extended and passive television viewing has been linked to potential negative consequences, such as "reduced attention spans and influence on social behavior" (p. 57). However, further research emphasizes how the content of television programming significantly influences its impact on viewers. Visual stimulation through educational content can improve comprehension and enhance critical thinking skills, leading to improvements in academic achievement (Gaddy 1986).

Gap in Knowledge

All in all, exploring the effects of short-form videography on cognitive function and academic performance is essential, as the content on the social media applications where these videos are found is becoming more widespread. The proposed research question is "Does reduced exposure to short-form videography within the social media applications, YouTube, TikTok, and Instagram, in alignment with prior interaction, affect the cognitive function, and academic performance of high school students?" Zhou et al. (2022) describe that although studies exist on the broader effects of social and digital media on cognition among adolescents, there is a lack of research specifically dissecting the influence of short-form videography. Most existing literature tends to generalize the impact of social media as a whole, overlooking the subtle variations that might arise from differences in content format, duration, and platform-specific features. Additionally, most current research explores the effects of more traditional forms of media on cognition and academic performance, rather than those of emerging media formats. Existing research on the correlation between short-form videography, academic performance, and cognition is still relatively limited in scope and often provides preliminary insights rather than definitive conclusions (Yang et al., 2023). The current gap in knowledge fails to provide a nuanced comprehension of the platform-specific interplay. Therefore, this study aimed to understand the potential relationships and impacts of these media platforms on the cognitive abilities and academic outcomes of high school students and help fill a gap in the literature.

Methods

Research Approach and Methods

This study used a mixed-methods approach to investigate the relationship between reduced short-form videography exposure, cognitive function, and academic performance of high school students. To assess the participants' cognitive changes, numerical data was needed as it provided an objective measure used to identify patterns. Additionally, qualitative data was needed to create comparisons with and validate the quantitative data collected during the experiment. Similarly, a 2023 study by Ellithorpe et al. used a mixed methods approach. The researchers explored

problematic media use and its relationship with addictive behaviors and health outcomes. This study employed a qualitative measure through the "Qualtrics" survey, a measurement instrument used to gain insights regarding participants' previous and current social media use. Another quantitative measure was provided by the Internet Addiction Test (IAT) which quantified the participants' addictive social media behavior.

The methods utilized included a pre-test and post-test, along with a survey administered to participants upon completion of the study. First, the quantitative method involved pre- and post-tests for both memory and attention using the CogniFit platform, a tool designed to quantify various cognitive abilities. The attention assessment evaluated participants' concentration by displaying images of mountains and cities, gradually increasing the speed at which images were presented. Participants were required to quickly press the spacebar when a city picture appeared and refrain from pressing it for mountain pictures. This test measured selective attention by requiring focus on specific stimuli and sustained attention by assessing the ability to maintain focus as the speed increased, providing a comprehensive assessment of the participants' attention control. The memory test assessed participants' working, short-term, and spatial memory. In this test, a series of different numbers appeared on the screen. The user was then required to memorize the series to recall it later, with the series progressively increasing in length until an error was made. This test measured memory by evaluating the ability to retain and manipulate information over short periods. The participants completed each of these tests once at the beginning and once at the end of the week.

Finally, participants completed a post-study survey. The survey included open-ended and multiple-choice questions regarding participants' subjective experiences concerning their cognition and academic performance (Appendix A, C, E). Likewise, a 2012 study by Andreassen et al., centered around the development and validation of the Bergen Facebook Addiction scale (BFAS), utilized similar methods. First, a qualitative measure was administered in the form of a self-report questionnaire with questions regarding demography and Facebook activity. Subsequently, a quantitative measure was utilized in the form of the BFAS which quantified participants' neuroticism and openness, providing the researchers with reliable data related to problematic Facebook use.

Subject Selection and Sampling Procedure

The participants of this study consisted of 24 high school students from all grades (9-12). These students were divided into four groups for each grade level, each containing five students. There was also a control group consisting of four students, with one student from each grade level, who were not required to reduce their short-form videography exposure. Since this study involved human participants, it was approved by the IRB (institutional review board) at the respective schools. All of these students had actively used the short-form videography features across the applications, YouTube, TikTok, and Instagram for a daily average of about two and a half hours. Verification of their daily active usage of these features for the specified duration was ensured through their signed agreements to participate in the study. These students were chosen due to their extensive use of these platforms and their potential susceptibility to the effects of short-form videography on cognition and academic outcomes. Also, focusing on this demographic ensured a sample representative of all high school students which allowed for analysis of potential differences in results and experiences across grade levels. The sampling procedure of this study can be classified as purposive sampling because this study intentionally selected participants based on specific criteria, such as being a high-school student and having a certain level of short-form videography exposure. Additionally, the study design emphasized placing an equal number of students in each group for simplicity.

Validity

Internal validity was secured through triangulation as data was collected in two different forms. Quantitative data was collected from the cognition tests and qualitative data was gathered through the post-study survey. The study also demonstrated content validity through the post-study survey as the questions included reflected the content domain. For example, a question in the section regarding cognitive function was, "Did you notice any changes in your ability to focus on a singular task?" Such questions addressed the

key areas and topics relevant to the study, which certified that the survey items comprehensively measured the study's phenomena.

Experimental Design

In this research investigation, data was obtained through multiple facets. First, each participant was required to complete and record their scores for both the attention and memory tests on the CogniFit platform at the beginning of the study. This established a baseline measurement of the cognitive performance among participants before reduced exposure to short-form videography. Next, participants were asked to restrict their access to the applications YouTube, TikTok, and Instagram to one hour per day in total for all three applications, starting the next day. This significant, one-and-a-half-hour reduction created an opportunity for potential changes in cognition and academic performance to be revealed. A week later the participants were asked to repeat the same two tests on the CogniFit platform and complete the post-study survey. The control group was not instructed to complete the post-study survey as their answers would not provide relevant data for comparison.

Data Analysis

A statistical analysis technique was used to compare the participants' scores on the cognition tests before and after reducing their exposure. This technique could reveal significant associations between the duration of short-form videography exposure and cognitive function. The post-study survey was utilized to analyze results by employing thematic analysis to identify recurring patterns, themes, or unique perspectives expressed by participants. The open-ended questions offered in the post-study survey provided useful insights that could be compared with each participant's scores on the cognition tests.

Table 1

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, TikTok, and Instagram on the Cognition Test (Memory and Attention) Scores of Freshman (9th Grade) Participants

Participants	Memory Test Score (Pre-study)	Memory Test Score (Post-study)	Difference	Attention Test Score (Pre-Study)	Attention Test Score (Post-Study)	Difference
Participant 1	80%	81.5%	+1.5%	81%	81%	-
Participant 2	85%	87%	+2%	83.68%	86.03%	+2.35%
Participant 3	61.75%	62.35%	+0.6%	75%	81%	+6%
Participant 4	80%	80%	-	62.05%	64%	+2.05%
Participant 5	90%	91%	+1%	63.02%	64.04%	+2.02%

For the freshmen, the average score on the memory test at the beginning of the week was about 79% compared to 80% at the end. The average score on the attention test at the beginning of the week was about 73% compared to 75% at the end.

Table 2

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, TikTok, and Instagram on the Cognition Test (Memory and Attention) Scores of Sophomore (10th Grade) Participants

Participants	Memory Test Score (Pre-study)	Memory Test Score (Post-study)	Difference	Attention Test Score (Pre-Study)	Attention Test Score (Post-Study)	Difference
Participant 1	80%	70%	-10%	87%	%88	+ 1%
Participant 2	60%	60%	-	69.9%	70.18%	+0.28%
Participant 3	70%	70.14%	+0.14%	81%	76%	-5%
Participant 4	85%	89.5%	+4.5%	85.06%	83.48%	-1.58%
Participant 5	70%	70%		66.67%	66.67%	

For the sophomores, the average score on the memory test at the beginning of the week was about 73% compared to 72% at the end. The average score on the attention test at the beginning of the week was about %78 compared to 77% at the end.

Results

Table 3

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, TikTok, and Instagram on the Cognition Test (Memory and Attention) Scores of Junior (11th Grade) Participants

Participants	Memory Test Score (Pre-study)	Memory Test Score (Post-study)	Difference	Attention Test Score (Pre-Study)	Attention Test Score (Post-Study)	Difference
Participant 1	90%	85%	-5%	87.23%	%84.71	- 2.52%
Participant 2	80.25%	80.25%	-	77.17%	81.01%	+3.84%
Participant 3	60%	60%	-	93.77%	90.16%	+3.61%
Participant 4	60.50%	60.50%	-	88.06%	82.6%	-5.46%
Participant 5	70%	90%	+20%	90%	90%	-

For the juniors, the average score on the memory test at the beginning of the week was about 72% compared to 75% at the end. The average score on the attention test at the beginning of the week was about 86% compared to 87% at the end.

Table 4

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, TikTok, and Instagram on the Cognition Test (Memory and Attention) Scores of Senior (12th Grade) Participants

Participants	Memory Test Score (Pre-study)	Memory Test Score (Post-study)	Difference	Attention Test Score (Pre-Study)	Attention Test Score (Post-Study)	Difference
Participant 1	70%	70%		88.78%	%84.31	- 4.47%
Participant 2	60%	62.3%	+2.3%	75%	75%	-
Participant 3	90%	90%	-	73.87%	78.8%	+4.93%
Participant 4	60.52%	61%	+0.48	89.97%	90.14%	+0.17%
Participant 5	80%	75%	-5%	75.6%	76.6%	+1%

For the seniors, the average score on the memory test at the beginning of the week was about 72% compared to 72% at the end. The average score on the attention test at the beginning of the week was about 81% compared to 81% at the end.

Table 5

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, Tik-Tok, and Instagram on the Cognition Test (Memory and Attention) Scores of Control Group Participants (Note: Control Group consisted of one participant from each grade level)

Participants	Memory Test Score (Pre-study)	Memory Test Score (Post-study)	Difference	Attention Test Score (Pre-Study)	Attention Test Score (Post-Study)	Difference
Participant 1 (Freshman)	53%	53.5%	+0.5%	86.78%	%86	- 0.78%
Participant 2 (Sophomore)	67%	60%	-7%	75%	78%	+3%
Participant 3 (Junior)	87.5%	92.52%	+5.02%	83.87%	82.5%	-1.37%
Participant 4 (Senior)	65%	65%		90%	90%	

For the control group, the average score on the memory test at the beginning of the week was about 66% compared to 69% at the end. The average score on the attention test at the beginning of the week was about 84% compared to 84% at the end.

Table 6

T-Test Results for Freshmen

Measure	Mean Difference	Standard Deviation	T- Value	P - Value	Significance
Memory Test Scores	1.02%	0.78%	2.94	0.042	Significant ($p < 0.05$)
Attention Test Scores	2.48%	2.18%	2.55	0.063	Not Significant

Table 7

T-Test Results for Sophomores

Measure	Mean Difference	Standard Deviation	T- Value	P - Value	Significance
Memory Test Scores	-1.07%	5.35%	-0.45	0.677	Not Significant
Attention Test Scores	-1.06%	2.40%	-0.99	0.378	Not Significant

Table 8

T-Test Results for Juniors

Measure	Mean Difference	Standard Deviation	T- Value	P - Value	Significance
Memory Test Scores	3.00%	9.75%	0.69	0.529	Not Significant
Attention Test Scores	-1.55%	3.60%	-0.96	0.391	Not Significant

Table 9

T-Test Results for Seniors

Measure	Mean Difference	Standard Deviation	T- Value	P - Value	Significance
Memory Test Scores	-0.44%	2.72%	-0.37	0.733	Not Significant
Attention Test Scores	0.33%	3.35%	0.22	0.838	Not Significant

Table 10

T-Test Results for Control Group

Measure	Mean Difference	Standard Deviation	T- Value	P - Value	Significance
Memory Test Scores	-0.37%	4.96%	-0.15	0.891	Not Significant
Attention Test Scores	0.21%	1.94%	0.22	0.841	Not Significant

The results of the freshmen's data indicated a slight improvement in memory test scores, with a mean increase of 1.02% ($t = 2.94$, $p = 0.042$). While there was a positive trend in attention test scores (mean increase of 2.48%), this change was not statistically significant ($t = 2.55$, $p = 0.063$). In contrast, for sophomores, juniors, seniors, and the control group, no significant changes were observed in either memory or attention test scores. This suggested that reducing exposure to short-form videography did not have a uniform impact across all grades.

Cognition Test Key Findings

To be more specific, the average score for both the attention and memory tests at the beginning of the week, for all participants, was 74%. However, the average scores at the end of the week were about 74% and 76% respectively. Before decreasing exposure, attention scores (excluding the control group) ranged from 62.05% to 93.77%. After reducing exposure, scores remained relatively stable, ranging from 60% to 90.16%. Similarly, memory scores ranged from 60% to 90% before and 60% to 91% after decreased exposure. Therefore, participants' scores on the cognition tests revealed no significant changes from the beginning to the end of the week. To go more in-depth, the quantitative data showed scattered changes in participants' cognition test scores. When evaluating the data from the standpoint of the individual grade levels, some grades saw slight increases, while others had decreases in their overall scores, and some saw no changes at all. For ex-

Figure 1

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, TikTok, and Instagram on the Overall Academic Performance of the Freshman Participants

ample, the participants in the juniors' cohort exhibited a 3% increase on average in their scores on the memory test, while the seniors had no change at all. Collectively, the freshman participants exhibited a 1% increase in their scores on the attention test whereas the sophomore participants showed a 1% decrease. It is important to note from the perspective of the individual participants from each grade level, this same trend of slight increases, decreases and consistency was portrayed. However, some individual participants exhibited significant changes. For instance, one sophomore participant had a 10% decrease in their score on the memory test, while one of the juniors saw a 20% increase. However, these changes conflict significantly with the overall trend observed in the study, suggesting that they may be outliers influenced by factors specific to these individuals.

Survey Results

The qualitative data from the post-study survey revealed varying opinions regarding participants' subjective experiences in terms of their cognitive function. For example, a freshman participant reported "I have been able to memorize things quicker and with less dedicated focus." Others, however, did not perceive any significant changes in their cognition as evidenced by their responses (Appendix B, D). Additionally, participants had variations in their answers to the multiple-choice questions regarding their cognitive function (Appendix A, C). Still, the underlying trend among all participants' answer choices suggests minuscule improvements or no change with respect to memory and attention.

Survey Results (Academic Performance)

In the post-study survey questions, participants provided varied responses regarding changes in their academic performance. For example, in the open-ended questions, some participants reported improvements in their overall academic performance, while others reported no changes at all (Appendix F). Those who did report improvements mentioned that reducing exposure to short-form videography allowed them to dedicate more time and attention to their studies and even noted increases in individual grades in specific classes. However, students did not specify that changes in their cognitive function after reducing exposure were the reasons for these changes. The same trend could be seen for the multiple-choice questions.

Figure 2

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, TikTok, and Instagram on the Overall Academic Performance of the Sophomore Participants

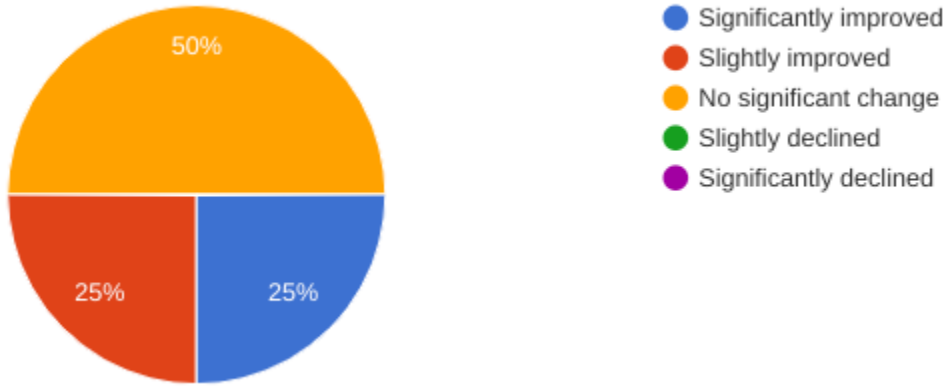
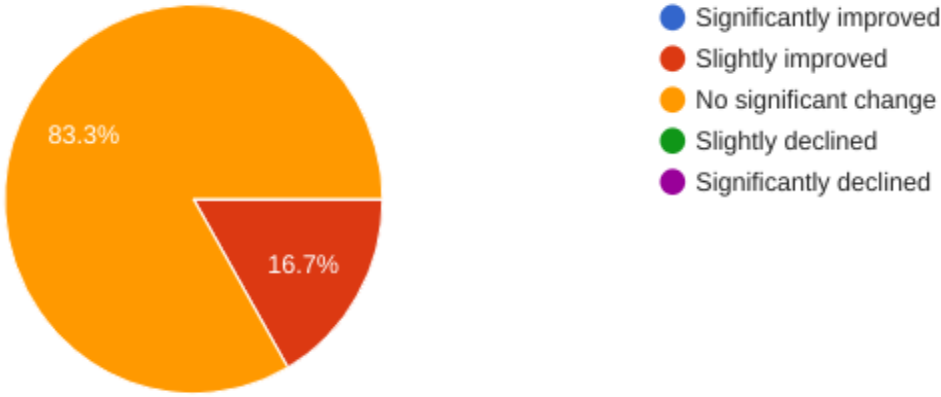


Figure 3

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, TikTok, and Instagram on the Overall Academic Performance of the Junior Participants



For example, in the figures above the question asked was, "Did you notice any differences in your overall academic performance over the course of the week?" Now, 100% of the freshman participants (Figure 1) reported that they saw slight improvements, while 60% of the senior participants selected, "no significant change" (Figure 4).

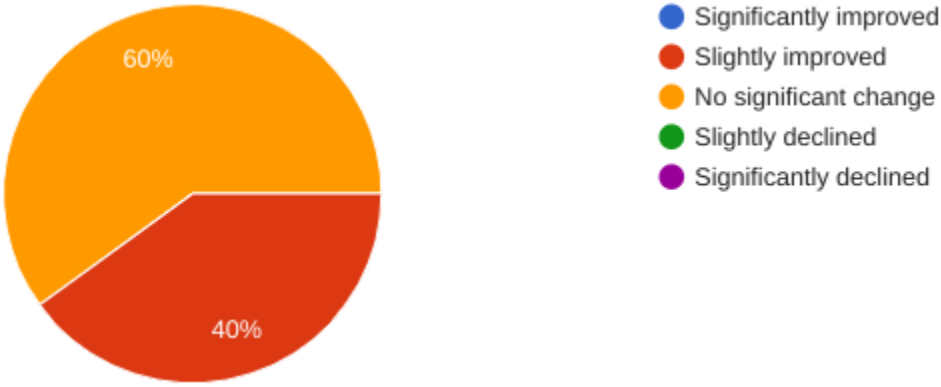
Discussion

The Meaning of the Results in the Context of this Study

The quantitative data showed that there was not much improvement in cognitive function after re-

Figure 4

The Effect of Reduced Exposure to Short-Form Videography across the Social Media Platforms YouTube, TikTok, and Instagram on the Overall Academic Performance of the Freshman Participants



ducing short-form videography exposure. Based on the average percent changes in cognition test scores for each grade level and all the grades collectively, there were instances of slight improvements in both memory and attention. However, the results could be misleading because the control group, whose exposure remained the same, exhibited similar results (see Table 5). In fact, the control group's average percent change for the memory test was 3%, which was higher than that of any of the other groups. Additionally, the control group saw no change in their attention test scores, similar to the senior group (see Table 4). Regarding the qualitative data, the most selected answers to the multiple-choice questions, and the responses to the open-ended questions regarding cognition revealed an unclear trend due to the diverse range of answers. This made it challenging to discern a clear pattern. It is important to note that a bulk of individuals reported slight improvements or steadiness. However, the cognition test scores of students who declared improvements did not align with these self-assessments. When evaluating the academic performance of participants across all grade levels, there was a clear trend of two varying options. One was participants expressing slight improvements, while the other was indications of no changes. Across all grade levels, some participants reported slight improvements in grades for individual classes, while others noted enhancements in their overall academic performance, including reduced stress related to academic responsibilities (Appendix F). It is crucial to note the similarities observed when analyzing the average percent changes for all grade levels together and when examining the percent changes for each grade individually. Despite differences in the magnitude of changes, both approaches revealed a similar trend of varied results from the tests and survey responses. This consistency underscores the complexity of the effect of the relationship between the variables, suggesting that the effects are multifaceted and vary among individuals. Considering the findings from the quantitative and qualitative data, a clear relationship cannot be drawn between reducing short-form videography exposure and improved memory, attention, and academic performance. These results most closely align with a study by Wise (2018), which examined the effect of reducing screen time on the cognitive function of children. This study involved 4520 children ages 8-11 who all spent time on screens for about two hours a day. A cognition test was administered to the children, assessing, "language abilities, episodic memory, executive function, attention, working memory, and processing speed" (par 10). Wise found that children whose screen time was reduced by up to 50% still did not see any significant changes in their overall cognitive performance, as their test scores remained the same. In Wise's study, parents and guardians were surveyed regarding their children's academic endeavors.

Implications and Limitations

Although these results did not entirely support the studies conducted and theories made, this study helps to fill gaps in the research by specifically examining the effects of reduced short-form videography exposure on various facets of high school students' lives. Previous studies have explored the impact of more traditional forms of media, such as television and video games, on cognition and academic performance in individuals. This study focuses on a new and emerging type of media—short-form videography—and its effects on a specific age group, high school students. Despite unclear results, reducing exposure could be beneficial. This knowledge may allow for changes in various aspects of education, media consumption guidelines, and recommendations. Educators may incorporate media literacy classes into their curriculum to help students critically analyze and manage their media consumption habits. Parents and policymakers may advocate for more balanced "media diets" that include limited exposure to short-from videography, considering its potential impacts.

Several limitations in the study should be acknowledged. Insufficient participant numbers could have presented a significant limitation. The number of participants used could have affected the statistical ability to detect significant effects or relationships between the variables studied. This could have resulted in inconclusive results that failed to provide meaningful insights to the research question. A more diverse sample could provide a more robust understanding of the impacts of reduced short-form videography exposure. Next, a time constraint represented a limitation due to its potential impact on the depth of data collection and analysis. With limited time available for conducting the study, participants may have lacked time to adapt to reduced usage patterns. Therefore, the observed cognitive changes may not accurately reflect the long-term outcomes of reduced exposure to short-form videography. There may have been limitations that affected data collection. Firstly, while efforts were made to ensure the validity and reliability of the measurement instruments, there were constraints associated with these measures. For example, an important component of this study was self-reported data, which is known to be subjective and prone to bias. In the survey, participants could have provided answers they perceived as more socially desirable, provided incomplete responses, or omitted certain details. Additionally, the cognition tests themselves may not have been sensitive enough to detect subtle changes in cognitive function, leading to variability in the results. Furthermore, the participants' familiarity with the test on their second attempt may have influenced their performance, potentially altering the results.

Alternative Explanations and Further Research

While the results demonstrate that reducing short-form videography exposure has little to no direct effect on the cognition and academic performance of high school students, other factors may have caused this. To elaborate, Klahr and & Wallace (2022) reiterate the difficulty of finding correlations between forms of media and cognitive development. The authors explain how factors such as individual differences in learning styles, external influence, and natural fluctuations in cognitive abilities play a pivotal role in determining this connection. Thus, due to the lack of larger, more restrictive experimental controls in this study, various outside factors ultimately led to weaker data. A 2017 study by Kostyrka-Allchorne et al. attempted to determine the effect of television exposure on children's behavior and cognition. They found that variations in IQ levels among the participants in the experimental and control groups may have influenced the data, as IQ levels can vary widely among individuals regardless of age. Regarding academic performance, the allocation of more time to academic endeavors due to the reduction of short-form videography exposure could have led to changes in academic performance. Participants may have consciously or unconsciously dedicated more time and effort to their studies during the time of the study, leading to improvements in academic performance. This indicates that reducing short-form videography exposure and potentially enhancing memory and attention may not have been the primary reasons for changes in academic performance.

Paving a pathway for future studies, the results of this study leave a plethora of questions to be answered by additional research. One suggestion would be to take a long-term approach to understanding the connection between reduced short-form videogra-

phy exposure, cognitive function, and academic performance. A long-term approach allows changes in cognition and academic performance to develop over time, providing a more comprehensive understanding and more accurate results. Additionally, by tracking participants over an extended period, researchers can determine if any improvements observed immediately following the intervention are maintained or if there are any delayed effects. It may also be beneficial to request participants to provide proof of their daily usage of the platforms for only an hour each day. This additional step could ensure the integrity and accuracy of the study's findings. Another suggestion would be to determine the effect of reduced exposure on other cognitive functions such as logical reasoning, intuition, and judgment. This would allow researchers to gain a more complete understanding of the phenomena. For example, exploring the effects on logical reasoning could help determine if reduced exposure leads to improved critical thinking skills, interpersonal skills, and empathy. As demonstrated, there is much room for further research on this emerging form of media, if placed in a larger context and studied over a longer period.

Conclusion

This study and its results showcase an unclear correlation between reduced short-form videography exposure across the social media applications YouTube, TikTok, and Instagram on the cognitive function and academic performance of high school students. The data showed various outcomes regarding cognition including improvements, declines, and stasis. However, this could be misleading because the control group, who had no changes in their exposure, exhibited identical outcomes. Concerning academic performance, the participants who reported change consistently stated that they saw improvements. However, the majority of participants stated they exhibited no noticeable changes, leaving a discrepancy in the results. There were several limitations and alternative explanations for the data gathered in this study, potentially explaining why the results did not show a clear relationship between the variables. This study used quantitative and qualitative data to fill gaps in the existing body of knowledge regarding the effects of an emerging form of media. Specifically, it investigated whether reducing its exposure for one week would improve a high school student's cognitive abilities and academic performance. This study tested two of the ten cognitive functions; the other eight key functions, with their complexities, could also potentially be impacted by short-form videography. As short-form videography is a new and rapidly developing feature, the use of this form of media will continue to proliferate. Therefore, for people of all ages, there could be impacts on various other facets of their lives including, social awareness and mental health. Further research may create a new path toward improving the cognitive well-being of many and the cultivation of new techniques to limit short-form videography's impact on academic performance.

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Appendix A

Post-Study Survey Questions Regarding Attention (Note: Questions from appendices A, C, and E are part of one survey administered to participants which was divided into sections)

On a typical school day, how often have you found yourself easily distracted during classes or study sessions over the week?

Given Options: (Much Less), (Slightly Less), (No Significant Change), (Slightly More), (Much More)

How has your attention span throughout your classes and during the rest of the day changed over the week?

Given Options: (Much Better), (Slightly Better), (No Significant Change), (Slightly Worse), (Much Worse)

Which strategies or techniques have you used over

the past week to regain your focus when your attention drifts during classes or study sessions? (Select all that apply)

Given Options: (Taking Short Breaks), (Deep Breathing Exercises), (Re-reading Material), (Using Meditation Techniques), (None of The Above)

How has your frequency of engaging in activities that require sustained focus and attention, such as studying, completing assignments, or reading, changed over the past week?

Given Options: (Much More Often), (Slightly More Often), (No Significant Change), (Slightly Less Often), (Much Less Often)

Have specific subjects or topics been easier to pay attention to during classes or study sessions over the past week?

Given Options: (Yes, they have become more engaging), (No, there has been no change),

(No, they have become less engaging)

Over the week, have you experienced more frequent restlessness, fidgeting, or difficulty sitting still during prolonged periods of attention-demanding tasks?

Given Options: (Yes, much more frequently), (Yes, slightly more frequently), (No Significant Change), (Yes, slightly less frequently), (Yes, much less frequently)

How have you noticed changes in your attention span day over the past week? If you experience variations between morning, afternoon, and evening, please specify the changes.

Open-Ended Question

Appendix B

Responses to Open-Ended Question on Attention Section of Post-Study Survey

Question: How have you noticed changes in your attention span day over the past week? If you experience variations between morning, afternoon, and evening, please specify the changes.

Freshman Responses:

"No, I always stay locked in."

"No."

"I have a higher attention span during the morning."

"I feel like it is better in the afternoon."

"I have finally been able to come home and do homework without having distractions."

Sophomore Responses:

"My attention span has been a lot longer as I limit distractions. In the morning, I don't pick up my phone and do more productive things the rest of the time."

"Overall, my attention span got longer as the days went by."

"No significant changes have been noticed."

"Before I struggled to pay attention during classes that were confusing and it lost my attention when I fell a little behind or had disinterest.'

"I haven't noticed a change."

Junior Responses:

"Yes, my attention span in the morning (during school) has slightly decreased; however, my attention time in the afternoons have increased."

"Sometimes I have the urge to look at my phone, but then I remember the study, and thus I do not look at shorts, TikTok, etc. Thus, I believe that my attention span has increased."

"Since I had limited time on my social media apps, I felt like I had to pay attention to the lesson being taught, which helped me a lot. This made my attention span better when put in out-of-classroom situations as well, such as listening to friends or talking with my family."

"I didn't notice any change."

"No."

Senior Responses:

"Has not changed significantly, but I actually paid attention in school more this week!"

"It has increased, especially with reading as I know have less of a distraction."

"No notable change."

"Yes, I seemed to be more focused in the morning."

"My attention has stayed the same."

Appendix C

Post-Study Survey Questions Regarding Memory

How satisfied are you with your current memory and focus abilities during school activities compared to last week?

Given Options: (Much Better), (Slightly Better), (No Significant Change), (Slightly Worse), (Much Worse)

Do you believe that your memory and focus have had a significantly different impact on your academic

performance and success in school compared to a week ago?

Given Options: (Strongly agree, it has significantly improved), (Agree, it has improved), (Neutral, no significant change), (Disagree, it has declined), (Strongly disagree, it has significantly declined)

On a typical school day over the past week, how often have you found yourself experiencing memory lapses or difficulties in remembering information during classes or study sessions compared to the previous week?

Given Options: (Much More Often), (Slightly More Often) (No Significant Change), (Slightly Less Often), (Much Less Often)

How has your memory/ability to retain information changed over the past week?

Given Options: (Much Better), (Slightly Better), (No Significant Change), (Slightly Worse), (Much Worse)

How often have you engaged in activities that require sustained memory and focus, such as studying, completing assignments, or reading, over the past week compared to the previous week?

Given Options: (Much More Often), (Slightly More Often) (No Significant Change), (Slightly Less Often), (Much Less Often)

Please specify if there have been any feelings or changes you have noticed in your memory over the past week.

Open-ended Question

Appendix D

Responses to Open-Ended Question on Memory Section of Post-Study Survey

Question: Please specify if there have been any feelings or changes you have noticed in your memory over the past week.

Freshman Responses:

"N/A."

"I have been able to memorize things quicker and with less dedicated focus."

"Better memory."

"I feel like my memory was better."

"Nothing much, other than I have been more focused on school/"

Sophomore Responses:

"I have been remembering my chemistry terms a lot better and understanding math when I usually did not."

"Better Mood."

"No significant changes have been noticed."

"I feel more awake and ready to learn in the early morning classes. My grades are thriving more than they were before because I'm completing the class work and understanding the tests."

"I've become better at remembering the smaller things."

Junior Responses:

"My memory has stayed relatively the same throughout the week; however, I did notice some slight decreases."

"I feel a little better (in general), and I want to continue not using short-form content!"

"I feel like I have retained information a lot better."

"none."

"n/a."

"n/a."

Senior Responses:

"no."

"N/A."

"No."

"My short-term memory has improved."

"n/a."

Appendix E

Post-Study Survey Questions Regarding Academic Performance

On a scale from 1 to 5, how would you rate your overall academic performance in the past week, with 1 being very poor and 5 being excellent?

Given Options: 1-5 Scale

Is there a grade in a particular class that has changed in the past week which you think can be attributed to modifications in exposure to short-form videography.

Open-ended Question

How has your GPA or overall grades changed compared to the past week?

Given Options: (Significantly Improved), (Slightly Improved), (No Significant Change), (Slightly Declined), (Significantly Declined)

How many hours per week, on average, do you spend studying or doing school-related work outside

of class compared to the past week?

Given Options: (Much More), (Slightly More) (No Significant Change), (Slightly Less), (Much Less)

How have your experiences of stress related to your academic responsibilities changed over the past week compared to the past week?

Given Options: (Significantly Reduced), (Slightly Reduced), (No Significant Change), (Slightly Increased), (Significantly Increased)

Are there specific academic subjects or courses that you find particularly challenging or where you believe you need additional support compared to the past week?

Given Options: (Yes, I have become more proficient in these subjects), (Yes, I still need additional support), (No, there have been no significant changes)

Did you notice any differences in your overall academic performance over the course of the week?

Given Options: (Significantly Improved), (Slightly Improved), (No Significant Change), (Slightly Declined), (Significantly Declined)

Appendix F

Responses to Open-Ended Question on Academic Performance Section of Post-Study Survey

Question: Is there a grade in a particular class that has changed in the past week which you think can be attributed to modifications in exposure to short-form videography.

Freshman Responses:

"My precalc grade has gotten better."

"Yes, my math grade has slightly improved."

"My AP Human Geography grade went up by 4%."

"no."

"All of my grades have become significantly better."

Sophomore Responses:

"My APUSH grade went from 77 to 83 which is a huge difference."

"Drivers Ed- I got motivated to do work in the class Because I had nothing better to do; my grade went higher."

"No, there has not."

"Math for sure because I am understanding the topic and am willing to ask questions to fully comprehend. Also, ELA because before I struggled to read the pages that were due but now I have read and finished the rest of the book with ease."

"I believe that my chemistry grade going up could have been because of this."

Junior Responses:

"No."

"No. YouTube has no affect directly on my grades, just on my productiveness/time management."

"Yes, my AP world grade went up a lot of points this week, which I think is a direct cause from me limiting my screen time and actually studying for the tests."

"yeah."

"Brit lit."

"n/a."

Senior Responses:

"I stopped sleeping and getting distracted in AP psych so maybe that!"

"N/A."

"Yes, my grade in physics."

"ELA has gotten better."

"no."