



The Influence of Short-Duration Video Content on *Short-Term* Memory in Junior High School Students

(A Study of 30 Students at Yayasan Irtiqo Kebajikan)

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Abstract. The increasing consumption of short-form video content, such as TikTok, Instagram Reels, and YouTube Shorts, has raised concerns regarding its impact on cognitive functions, particularly short-term memory. This study aimed to examine the effect of short duration video exposure on short-term memory performance among students at Yayasan Irtiqo Kebajikan. An experimental method with a two-group design was employed, consisting of an experimental group that watched short duration videos for 180 seconds and a control group that received no video exposure prior to the memory test. The participants were 40 students selected through random sampling. Short-term memory was measured using the ME Test, a subtest of the Intelligenz Struktur Test (IST), which assesses the ability to recall a series of words. The results of statistical analysis indicated a significant difference between the experimental and control groups ($p < 0.05$), with the experimental group demonstrating lower short-term memory scores. These findings suggest that exposure to short-form video content may negatively affect individuals ability to store and process information in short-term memory, highlighting the importance of managing digital media consumption among children and adolescents.

Keywords: Cognitive Function; Digital Media; Experimental Study; Short-Form Video; Short-Term Memory

1. INTRODUCTION

In this digital age, almost every aspect of life is currently connected to digital media, including the entertainment and education sectors. One of the most prominent trends among teenagers is the increasing consumption of short-form videos thru platforms like TikTok, Instagram Reels, and YouTube Shorts. Short-form videos refer to audiovisual content presented in a short duration and designed to convey a message quickly, concisely, and engagingly (Hamedeko, 2025). Its main characteristics can be seen in the fast pace of content presentation, intense transitions between scenes, and the use of attention-grabbing elements such as background music, concise text, and visual effects.

From a cognitive psychology perspective, the rapid and rich presentation pattern of stimuli has the potential to influence attentional processes because it encourages immediate but relatively short-lived attentional engagement, and can increase the tendency for focus shifting when stimuli change rapidly. As a consequence, exposure to short-form videos becomes relevant to study as a potential stimulus that may influence information processing stages, particularly encoding and memory retention, especially in adolescents who have a high intensity of digital media use in their daily lives (Aziz, 2025). Through the short, concise, and fast video format, it becomes a unique attraction because it can provide instant entertainment in a short amount of time. However, behind this easy access to information, concerns have arisen regarding its long-term impact on cognitive abilities, particularly memory.

Received: Agustus 15 2024; Revised: September 18, 2024; Accepted: Oktober 29 2024;

Published: Oktober 31 2024

To address this concern, it is essential to examine the cognitive mechanisms underlying memory processing in the context of rapid digital media consumption. According to the Information Processing Theory proposed by Atkinson and Shiffrin, (1968), human memory consists of three interrelated systems: sensory memory, short-term memory (STM), and long-term memory (LTM). STM functions as a temporary storage system with limited capacity and duration, retaining information for approximately 15–30 seconds with a capacity of about 7 ± 2 units (Miller, 1956). The transfer of information from STM to LTM requires sustained attention and active rehearsal. However, repeated exposure to fast-paced and fragmented stimuli, as commonly experienced when consuming short-form videos, may disrupt attentional stability and reduce the efficiency of encoding processes. Consequently, information may remain at the STM level without being adequately consolidated into long-term memory.

Previous empirical studies have provided insights into the relationship between digital media use and cognitive functioning. For instance, Petryński, Staszkiwicz, and Szyndera (2019) reported that excessive engagement with digital media is associated with diminished attentional control and reduced short-term memory capacity. Although these findings highlight the potential cognitive risks of intensive digital media use, existing research has largely focused on general media usage patterns rather than experimentally examining the specific effects of short-form video exposure.

Moreover, empirical studies investigating this issue within school-based settings, particularly in developing countries such as Indonesia, remain limited. Data from a survey of teenagers aged 13–17 shows that video-based platforms like YouTube and TikTok are among the most used, with nearly half of teenagers reporting that they are almost always active on social media or online (Pew Research Center, 2024). Other findings, particularly among adolescent girls, also indicate high usage duration, with daily time potentially exceeding two hours on certain platforms, making short-form video consumption a potential dominant part of device usage routines (Common Sense Media, 2023). This finding reinforces the urgency of research on short-form video exposure in middle school adolescents, as intensive consumption habits are potentially linked to the cognitive processes underlying memory performance in a learning context. This gap in the literature underscores the need for experimental research that directly examines the impact of short-form video consumption on short-term memory among adolescent students.

Based on these theoretical and empirical considerations, the present study aims to examine the effect of short-form video exposure on short-term memory among junior high school students at Yayasan Irtiqo Kebajikan. It is expected that students exposed to short-form

video content will demonstrate lower short-term memory performance compared to those who are not exposed prior to memory testing. By adopting an experimental approach, this study seeks to provide empirical evidence regarding the cognitive consequences of short-form video consumption in educational contexts.

The findings of this study are expected to offer several advantages. First, this research contributes to the existing literature by addressing a notable gap concerning the experimental examination of short-form video exposure and short-term memory in adolescent populations. Second, the study provides context-specific evidence within Indonesian school settings, enhancing the ecological validity of research on digital media and cognition. Finally, the results are expected to inform educators, parents, and policymakers about the cognitive implications of short-form video consumption, thereby supporting the development of effective digital literacy programs and healthier screen time management strategies for adolescents.

2. METHOD

Research Design

This study uses a quasi-experimental design with a Posttest-Only Control Group Design model. A quasi-experimental design is a research design used to test the effect of a treatment on the dependent variable when random assignment of participants to groups is not fully possible. One form of quasi-experiment is the posttest-only control group design, which compares the results of measuring the dependent variable only at the final stage (posttest) between the experimental group and the control group (Putra and Sari, 2024). The experimental group receives the treatment, while the control group does not, and then both are measured after the procedure is complete to assess differences in results between the groups. This study employed a quasi-experimental design using a Posttest-Only Control Group Design. Two groups were involved in the study: an experimental group and a control group. The experimental group was exposed to a short video with a duration of 180 seconds, while the control group did not receive any video exposure. The participants' memory performance was measured after the treatment using the ME subtest of the IST, and the posttest scores were used to compare the effects of the treatment between the two groups.

Participants

The participants of this study consisted of 30 junior high school students from the Irtiqo Kebajikan Foundation aged 12-15 years. The students were divided into two equal groups: 15 students in the experimental group and 15 students in the control group. Group assignment was

conducted based on existing classes and was non-random, therefore this study adopted a quasi-experimental approach.

The experimental group received the treatment in the form of a 180-second short video before completing the ME test. In contrast, the control group did not receive any video exposure and completed the ME test directly using the same procedure as the experimental group.

Ethical Considerations

Ethical considerations are one of the crucial aspects of research. This is because the participants are school-aged adolescents, who are a group with special protection interests in psychological research (Himawan, 2022). Additionally, this study involved the administration of stimuli in the form of video exposure, which could potentially affect participants' attention, mood, and momentary psychological state. Therefore, systematic efforts were needed to minimize the risk of discomfort and ensure that participation was voluntary and based on adequate understanding. By adhering to proper ethical considerations, this research will safeguard the well-being of participants and enhance the credibility of the research findings.

This research was conducted with reference to the principles of psychological research ethics, including informed consent, data confidentiality, and participant protection. Before data collection, the researcher obtained permission from the foundation and provided research information to the participants, including the purpose, procedures, duration of activities, and the participants' rights. Participation is voluntary and participants can withdraw at any time without consequence. Participant identities are protected using codes, and all data is reported in aggregate form to maintain anonymity. The stimuli used were considered for their suitability for adolescents, and the research was conducted under supervision to minimize potential discomfort. After the procedure is complete, the researcher provides a brief explanation (debriefing) of the general research purpose and offers participants the opportunity to ask questions.

Instruments

The instrument used in this study was the ME subtest (Memory Test) of the Intelligenz Struktur Test (IST) developed by Amthauer. The ME test serves as a measurement tool for the dependent variable, reflecting participants' ability to recall the information provided. Therefore, the scores obtained represent the level of memory retention at the time of measurement (Hakiki and Agung, 2018). The use of the ME test in this study will position memory measurement as the main indicator for comparing results between the experimental and control groups after exposure to the stimulus.

This subway is used to measure participants' short-term memory capacity, specifically their ability to retain information for a short duration and retrieve it through recall and reproduction of stimulus sequences, such as numbers or words, in a specific order. In its execution, participants are asked to retain the information they have just received and then repeat it after a short time interval, thus this subtest assesses accuracy, consistency, and the capacity for immediate information retention. Short-term memory ability is part of cognitive function that supports various learning activities, as it plays a role in temporarily retaining information while individuals are understanding, reasoning, and solving problems.

Procedure

The research procedure began with a preparation stage, during which the researcher conducted a preliminary survey and observed activities at the foundation. The study was carried out at the Irtiqo Kebajikan Foundation, located in Rempoa, South Tangerang, Banten, Indonesia.

After obtaining research permission from the school authorities, the researcher conducted an initial screening process to identify participants who met the research criteria. From a total of 30 eligible students, participants were assigned into two groups based on their existing classes: an experimental group and a control group, each consisting of 15 students.

The next stage was the experimental implementation. On the scheduled day, the experimental group was exposed to a short video stimulus with a duration of 5 minutes. Immediately after watching the video, the participants completed the ME subtest (Merkaufgaben) of the Intelligenz Struktur Test (IST). In contrast, the control group did not receive any video exposure and completed the ME subtest directly under the same procedures, time allocation, and room conditions as the experimental group.

After all participants completed the test, the researcher collected the answer sheets and conducted scoring in accordance with the standard scoring guidelines of the ME subtest of the IST. The total scores obtained by each participant were then used for comparative analysis between the experimental and control groups to determine the effect of short video exposure on students' memory performance.

The final stage of the research involved the closure of the study, in which the researcher expressed appreciation to all participants by providing small gifts as a token of gratitude. All research procedures were conducted in accordance with research ethics principles, including maintaining participant confidentiality and ensuring that participation was voluntary.

In this study, testing of the influence of specific variables was conducted to assess the cause-and-effect relationship more controllably compared to a correlational approach. In the

context of this research, exposure to short-duration videos is a relevant variable to test because this type of stimulus is increasingly consumed by adolescents in their daily activities and has the potential to influence basic cognitive processes, particularly attention and information encoding (Ali, 2025). When participants' attention is divided or information processing capacity is overloaded during stimulus exposure, the quality of memory formation and recall performance can decline.

To minimize the influence of confounding variables, this study applied standardization of implementation conditions to both the experimental and control groups. All data collection sessions were conducted within a relatively similar time frame and in similar classroom environments to minimize differences in participants' physical and psychological conditions due to situational factors. Instructions to participants were given in a structured and consistent manner to both groups, including provisions against discussion during the treatment and scale completion to prevent information contamination between participants.

The stimulus video will be played using consistent devices and audio settings, and the room conditions will be ensured to be relatively conducive by minimizing distractions such as noise and traffic in and out of the classroom. Additionally, the time interval between stimulus exposure and measurement (posttest) was kept the same for all participants to reduce variations in exposure effects due to differences in time lag. These efforts are made to increase internal validity, so that the observed differences in memory scores can be more readily attributed to the research treatment rather than other external factors.

3. RESULTS AND DISCUSSION

Levene's test for homogeneity of variance showed that the assumption of equal variances between groups was not met ($p < 0.05$). Therefore, the difference in mean memory scores between the experimental and control groups was analyzed using Welch's independent samples t-test (equal variances not assumed). The results of Welch's t-test showed a significant difference between the two groups, $t(28) = 6.88$, $p < 0.001$, indicating that exposure to the stimulus in this study was associated with differences in memory performance among participants.

The results indicate a clear difference in short-term memory performance between the experimental and control groups. Students who were exposed to short-form video content prior to the memory task demonstrated lower short term memory performance compared to students who did not receive video exposure. This finding suggests that short form video exposure has a measurable effect on short term memory among junior high school students.

Descriptive analysis showed that the control group ($N = 15$) achieved higher short term memory scores ($M = 12.80$, $SD = 1.26$, $Median = 13.00$) than the experimental group ($N = 15$), which obtained lower scores ($M = 6.47$, $SD = 3.34$, $Median = 7.00$). The mean difference between the two groups was 6.33, indicating a substantial disparity in short-term memory performance.

The magnitude of the treatment effect was assessed using Cohen's d and yielded a value of 2.51, which falls within the category of a very large effect size. This result indicates that the difference between the experimental and control groups is not only meaningful in statistical terms but also substantial in practical terms. Therefore, exposure to short-form video content appears to exert a strong negative influence on students' short-term memory performance.

The present study aimed to examine the effect of short-form video exposure on short-term memory among junior high school students at Yayasan Irtiqo Kebajikan. In line with the research objective, the findings demonstrate that students who were exposed to short form video content prior to the memory task exhibited lower short-term memory performance than those in the control group. Consistent with the proposed theoretical framework, it was expected that exposure to short-form video content would lead to reduced short term memory performance due to increased attentional demands and limited encoding efficiency.

From a theoretical standpoint, these findings can be explained by the Information Processing Theory proposed by Atkinson and Shiffrin (1968). Within this framework, short term memory serves as a temporary storage system with limited capacity and duration, relying heavily on sustained attention and rehearsal processes. The fast-paced, visually intensive, and continuously changing nature of short-form video content is likely to disrupt attentional continuity, thereby impairing the encoding and maintenance of information in short term memory. Characteristics such as rapid scene changes, prominent audiovisual elements, and a barrage of stimuli can make attention more easily distracted and difficult to maintain steadily on a single object or piece of information. When attention is not optimally maintained, the information processing at the initial stages, including the selection of relevant stimuli and encoding, will be less effective. As a result, the information received is at risk of not being adequately stored, leading to a decline in short-term memory capacity to retain and organize information over short time intervals (Fauzi and Safitri, 2022).

In addition, the findings are consistent with Cognitive Load Theory, which emphasizes that working memory capacity is limited, making it susceptible to performance decline when receiving stimuli that are too dense and complex within a short period of time. This has the potential to increase extraneous cognitive load, which is cognitive load that arises not from the

complexity of the material to be learned, but rather from the way the stimulus is presented, which is less supportive of efficient information processing (Wicaksono and Utomo, 2025). When extraneous load increases, cognitive resources that should be allocated to core processes such as selecting relevant information, processing meaning, and encoding into short-term memory are instead absorbed by processing peripheral stimulus features. This condition can disrupt the formation of stable mental representations and reduce the effectiveness of temporary information storage in working memory. As a result, the participants' ability to retain and reproduce information after video exposure decreased, which was reflected in the ME IST subtest scores of the experimental group compared to the control group.

The results of this study are in line with previous empirical findings on digital media use and cognitive functioning. Ophir, Nass, and Wagner (2009) reported that individuals with high levels of media multitasking exhibit poorer attentional control and memory performance. Similarly, Cain et al., (2016) and Uncapher and Wagner (2018) found that intensive digital media use among adolescents is associated with impairments in attention and memory. More specifically, Zhang, Zhou, and Yuan (2021) demonstrated that short form video consumption is linked to reduced attentional capacity and memory performance due to continuous attentional shifting. The present study extends this body of research by providing experimental evidence within a school-based Indonesian context.

The very large effect size observed in this study indicates that the impact of short-form video exposure is substantial and meaningful in practical terms. Short-term memory plays a critical role in learning processes, including comprehension, instruction following, and problem solving. Therefore, a significant reduction in short-term memory performance may have important implications for students' academic functioning, particularly in classroom settings that require sustained attention and information retention.

From a developmental perspective, early adolescence at the middle school age is a crucial transitional phase in cognitive development because various executive functions, such as sustained attention, working memory, inhibitory control, and self-regulation, are still in the process of maturation. During this period, the ability to maintain focus for longer durations and manage distractions is not yet fully stable, making adolescents more susceptible to being distracted by interesting and rapidly changing stimuli. In the context of media use, exposure to instant, fast, and entertainment-oriented digital content can promote shallower information processing patterns, which is the tendency to process information at a superficial level (e.g., simply paying attention to visual features/short text) without deeply changing its meaning. This pattern has the potential to reduce deeper cognitive processes such as elaboration, information

organization, and association formation, which are crucial for long-term memory retention and conceptual understanding.

When the habit of consuming these fast-paced stimuli becomes consistent, adolescents can become accustomed to a fragmented and rapidly shifting attention pattern, leading to difficulties when they need to meet academic demands that require sustained concentration, deep reading, and systematic information processing. In learning situations, for example, students are required to resist distractions, retain temporary information in working memory, and integrate new information with prior knowledge. As shallow processing patterns become increasingly dominant, there is a risk that students will experience a decrease in the effectiveness of their learning strategies, difficulty maintaining focus on complex material, and greater ease of forgetting information that requires deep processing.

In terms of theoretical contribution, the present findings do not contradict existing memory theories but rather extend the applicability of the Information Processing Theory and Cognitive Load Theory within contemporary digital media environments. Specifically, short form video content may function as a persistent source of extraneous cognitive load, thereby limiting the efficiency of short-term memory processes in adolescent learners. This study thus confirms and contextualizes established cognitive theories within the rapidly evolving landscape of digital media consumption.

Despite its contributions, this study has several limitations. The relatively small sample size limits the generalizability of the findings, and individual differences such as habitual media use, motivation, and emotional states were not controlled. Future research is encouraged to employ randomized experimental designs with larger samples and to examine potential moderating variables, such as digital media usage intensity and attentional capacity. Additionally, future studies may compare different types of short form video content, such as educational versus entertainment oriented videos, to further elucidate their differential cognitive effects.

Overall, this study provides empirical evidence that short form video exposure can negatively affect short-term memory among adolescents. These findings highlight the importance of managing digital media consumption in educational contexts and support the development of digital literacy initiatives and screen time management strategies aimed at promoting adolescents' cognitive health.

Images and Tables

Table 1. Table Independent Sample T-Test.

		Statistic	df	p	Mean difference	SE difference
Kel_Kontrol	Student's t	6.88 ^a	28.0	<.001	6.33	0.921

Table 2. Table Group Descriptives.
Group Descriptives

	Group	N	Mean	Median	SD	SE
Kel_Kontrol	1	15	12.8	13.0	1.26	0.327
Kel_Eksperimen	2	15	6.47	7.00	3.34	0.861

4. CONCLUSION

This study aimed to examine the effect of short duration video exposure on short-term memory among junior high school students at Yayasan Irtiqo Kebajikan. Based on the results of data analysis and discussion, it can be concluded that exposure to short duration videos has a significant negative effect on students short-term memory abilities. Students who were exposed to short duration videos demonstrated lower short-term memory performance compared to those who did not receive the treatment.

The main findings of this study indicate that the characteristics of short duration videos, which are fast-paced, concise, and rich in visual stimulation, have the potential to increase cognitive load and disrupt attentional processes and information encoding. Thus, this study contributes to the advancement of knowledge in the fields of cognitive psychology and educational psychology by providing empirical evidence on the impact of digital media on basic cognitive functions, particularly among early adolescents in the Indonesian educational context.

The scientific contribution of this study lies in providing empirical evidence that the consumption of short duration videos is not merely related to entertainment aspects but also has significant cognitive implications. From a practical perspective, the findings of this study may serve as a basis for educators and parents in managing digital media use among junior high school students, particularly in regulating the duration and intensity of video consumption so as not to interfere with learning processes and information retention. Therefore, schools and educators can consider managing the use of gadgets and the consumption of short-form videos

in situations that require concentration, such as before lessons, before doing homework, or before exams.

Additionally, teenagers are advised to take a break (cooling-off period) from exposure to short videos before studying to optimize attention and information processing. This implication is not intended to prohibit the use of digital media, but rather as a basis for implementing more adaptive and targeted usage strategies to support cognitive function and learning effectiveness.

5. ACKNOWLEDGMENT

The authors would like to express our gratitude to Yayasan Irtiqo Kebajikan for granting permission, cooperation, and support that enabled this study to be conducted successfully. The authors also sincerely thank all junior high school students of Yayasan Irtiqo Kebajikan who willingly participated as research subjects and contributed cooperatively throughout the data collection process.

In addition, the authors would like to extend their appreciation to the lecturer of the Experimental Psychology course for the guidance, supervision, and constructive feedback provided from the research planning stage through the completion of this manuscript. The authors also thank all parties who offered assistance, support, and contributions, both directly and indirectly, during the research process.

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