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From Scroll to Struggle: Social Media Usage and Its Impact on Malaysian Youth Attention and Academic Focus

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ABSTRACT

The rapid rise of TikTok as a dominant social media platform has intensified concerns regarding its effects on youth cognitive functioning and academic performance. This study examines how TikTok usage patterns, specifically frequency of use, usage timing, and habitual or impulsive engagement, affect sleep quality, attention span, and academic achievement among Malaysian youth. Using a quantitative design, data were collected through an online survey of 185 users aged 15–30 years and analyzed using correlation and multiple regression. The findings reveal that habitual or impulsive engagement generated the most detrimental effects, significantly reducing sleep quality (β = 0.296), attention span (β = 0.255), and academic performance (β = 0.296). Usage timing also negatively influenced sleep quality (β = 0.440), particularly when engagement occurred late at night. Moreover, sleep quality (β = 0.155) and attention span (β = 0.426) positively predicted academic performance, with the models explaining over 60% of the variance in key outcomes. The study concludes that unregulated and impulsive TikTok use compromises cognitive endurance and academic engagement, underscoring the need for digital literacy initiatives, sleep hygiene awareness, and self-regulation strategies to foster healthier and more balanced social media habits among youth.

Keywords: Academic Performance; Attention Span; Sleep Quality; Social Media Usage; TikTok Engagement

INTRODUCTION

TikTok has rapidly emerged as a dominant platform within Malaysia's digital ecosystem, with its user base projected to exceed 10 million by 2026 (Ng & Lee, 2024). Its exponential growth, particularly among Generation Z aged 19 to 25, reflects a significant shift in media consumption patterns characterized by short-form, fast-paced, and algorithmically curated content. Unlike global statistics that suggest a relatively balanced gender distribution (53.4% female; 46.6% male), TikTok usage in Malaysia demonstrates a male-dominant pattern, with 55.7% male and 44.3% female users (Digital Business Lab, 2024). As of January 2024, TikTok has become the most preferred social media platform in Malaysia, surpassing Facebook, with 21.9% of users ranking it as their top choice (Digital Business Lab, 2024). This growing popularity can be explained using Uses and Gratifications Theory, which posits that individuals actively select media to fulfil specific psychological and social needs, including entertainment, self-expression, and interpersonal connectivity. Beyond leisure use, TikTok has proven beneficial in marketing, branding, and business performance, especially during the COVID-19 pandemic (Kee et al., 2022b). The platform has also influenced digital consumerism, particularly brand preference and purchasing decisions, including those associated with popular fast-food chains such as McDonald's (Sadom et al., 2024).

Despite these advantages, researchers have raised concerns over the potential negative cognitive and academic consequences of excessive TikTok usage among youth. The platform's infinite scroll mechanism and algorithm-intensive content delivery have been associated with prolonged screen time, irregular sleep cycles, reduced well-being, and impaired attention span (Kee et al., 2025). Among university and college students, these behavioral patterns have increasingly been linked to lower academic focus and ineffective study habits. In addition, rising evidence has associated overuse of social media with psychological distress, cyberbullying, and suicidal ideation among Malaysian youth (Anwar et al., 2022a; Kee et al., 2022a). These adverse implications have also extended into organizational settings, where negative exposure and online harassment on social media platforms have been found to influence employee engagement and mental well-being (Anwar et al., 2022a; Anwar et al., 2022b).

Supporting this growing body of literature, Kee et al. (2025) revealed that prolonged smartphone screen time significantly disrupts sleep quality, psychological well-being, social behavior, and academic achievement among university students. These findings highlight a pressing need to further examine social media-induced cognitive distraction and its implications for learning performance.

This study aims to analyze the effects of TikTok usage on attention span and academic concentration among Malaysian students. Specifically, it investigates how usage patterns, including frequency, duration, and habitual or impulsive engagement, affect students' ability to sustain cognitive focus when completing academic tasks. Considering TikTok's increasing integration into the daily lives of youth, a deeper understanding of its psychological and educational implications is both timely and essential. By focusing on distinct usage dimensions rather than general screen time, this study offers a more nuanced perspective on the mechanisms through which digital behavior affects cognitive functioning. Moreover, it contributes empirical evidence on the mediating roles of sleep quality and attention span, areas that remain underexplored in the Malaysian context. The findings are expected to support educators, institutions, and policymakers in developing targeted interventions, such as digital literacy initiatives, sleep hygiene awareness, and self-regulation training, to mitigate the negative academic effects of excessive or impulsive TikTok use. Ultimately, this research provides valuable insights

into how contemporary social media environments shape youth learning experiences, highlighting both its academic relevance and practical significance.

LITERATURE REVIEW

Frequency of Use

TikTok has grown substantially in popularity among young adults, particularly university students. The Internet Users Survey 2022 in Malaysia reported that 49.7% of internet users actively use TikTok, compared to 40.9% who use Twitter (formerly known as X), reflecting the platform's rapid growth among younger demographics (Malaysian Communications and Multimedia Commission [MCMC], 2022). TikTok is currently one of the most popular platforms among Generation Z, with more than one billion active users globally as of September 2021, including an estimated 386.6 million users between 18 and 24 years old (MCMC, 2022). Zulkifli and Abidin (2023) further revealed that 68% of Malaysian university students use TikTok for four to six hours daily, with usage increasing significantly during weekends.

TikTok's technological features, such as endless scrolling, attractive audio elements, and personalized video recommendations, are designed to retain user engagement and stimulate repeated usage. Büchi et al. (2022) noted that these characteristics may lead to compulsive and habitual checking behavior. TikTok gains attention through continuous streams of user-generated content, and 62.7% of youth in Kuala Lumpur reportedly accessed TikTok more than ten times per day, particularly during transition periods such as study breaks or commutes (Zulkifli & Abidin, 2023). Persistent engagement throughout the day contributes to distraction from academic responsibilities. Moreover, excessive social media use while multitasking during study sessions has been found to impair academic focus (Sun & Cha, 2024). Late-night usage also negatively influences sleep quality, resulting in tiredness and reduced concentration. Students' attention spans become shorter due to prolonged exposure to fast-paced content, making it increasingly challenging to sustain concentration on academic tasks.

H1: The frequency of TikTok use influences the sleep quality of youth in Malaysia.
H6: The frequency of TikTok use influences the attention span of youth in Malaysia.
H7: The frequency of TikTok use influences the academic focus or performance of youth in Malaysia.

Usage Timing

Late-night TikTok usage has significant effects on cognitive functioning and sleep quality among Malaysian youth. Data shows that 71% of TikTok users engage with the platform after 10:00 PM, and late-night exposure has been linked with sleep deprivation and cognitive decline (Agarwal & Ananthakrishna, 2024). Ragupathi et al. (2020) found that Malaysian university students frequently use mobile phones before sleeping, which correlates with poor sleep quality and lower academic achievement. Excessive smartphone use at night disrupts melatonin production, as screen exposure for more than 30 minutes before sleep can reduce melatonin levels by approximately 23% due to blue-light interference with circadian rhythms (Alonzo et al., 2021). Blue-light exposure may also reduce REM sleep by up to 30%, impairing memory consolidation and psychological recovery (Exelmans & Van den Bulck, 2016).

Furthermore, 66% of Malaysian university students reported sacrificing one to two hours of sleep daily to continue using TikTok, resulting in fatigue, lower concentration, and poorer academic performance. Although many students perceive TikTok as a stress-relief tool, they remain unaware of its cognitive and emotional consequences (Agarwal

& Ananthakrishna, 2024). This contradiction highlights the urgency for digital literacy interventions to create awareness about the health risks linked to late-night social media engagement.

H2: Usage timing of TikTok influences the sleep quality of youth in Malaysia.
H5: Usage timing of TikTok influences the attention span of youth in Malaysia.
H8: Usage timing of TikTok influences the academic focus or performance of youth in Malaysia.

Habitual or Impulsive Engagement

TikTok's design is based on algorithmic content delivery, short-form videos, and instant rewards, which stimulate impulsive and habitual usage patterns among young adults. These features activate the brain's reward system, promoting compulsive engagement even without intentional usage goals (Montag et al., 2015). This behavior gradually develops into automatic engagement, where individuals turn to TikTok during stress or idle moments. Such compulsive behavior reduces self-regulatory control and may contribute to smartphone misuse (Li et al., 2020). Some Malaysian university students have reported losing control over their usage and experiencing concentration difficulties after extended engagement. Xie et al. (2023) found that students with lower self-control and higher impulsivity tendencies are more likely to procrastinate academically when excessively engaged with short-form video platforms.

Wegmann et al. (2020) highlighted that impulsivity, weakened executive functioning, and poor inhibitory control are cognitive vulnerabilities associated with habitual checking behaviors that create continuous usage loops. TikTok's endless scrolling and personalized content intensify these behaviors by reducing self-regulation and increasing habitual engagement, thus affecting attention management and daily responsibilities.

H3: Habitual or impulsive engagement with TikTok influences the sleep quality of youth in Malaysia.
H4: Habitual or impulsive engagement with TikTok influences the attention span of youth in Malaysia.
H9: Habitual or impulsive engagement with TikTok influences academic focus or performance among youth in Malaysia.

Sleep Quality

The negative effects of TikTok usage on sleep quality are closely associated with academic decline. Many Malaysian students experience academic setbacks due to insufficient sleep caused by late-night TikTok use. Samaha and Hawi (2016) stated that sleep deprivation weakens cognitive functioning, which is essential for academic success. Students who sleep fewer than six hours due to excessive social media usage tend to score approximately 30% lower on academic assessments. Chronic sleep deprivation adversely affects the prefrontal cortex, an area responsible for decision-making, memory, and problem-solving. Lim and Dinges (2010) also found that inadequate sleep reduces working memory capacity by up to 40%, negatively affecting cognitive task performance. Murad et al. (2023) highlighted that sleep deprivation among Malaysian students negatively affects cognition, academic performance, attendance, and well-being. Extensive use of social networking platforms for non-academic purposes also leads to distraction and reduced sleep duration (Kolhar et al., 2021).

H10: Sleep quality influences the attention span of youth in Malaysia.
H11: Sleep quality influences the academic focus or performance of youth in Malaysia.

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Attention Span and Academic Focus or Performance

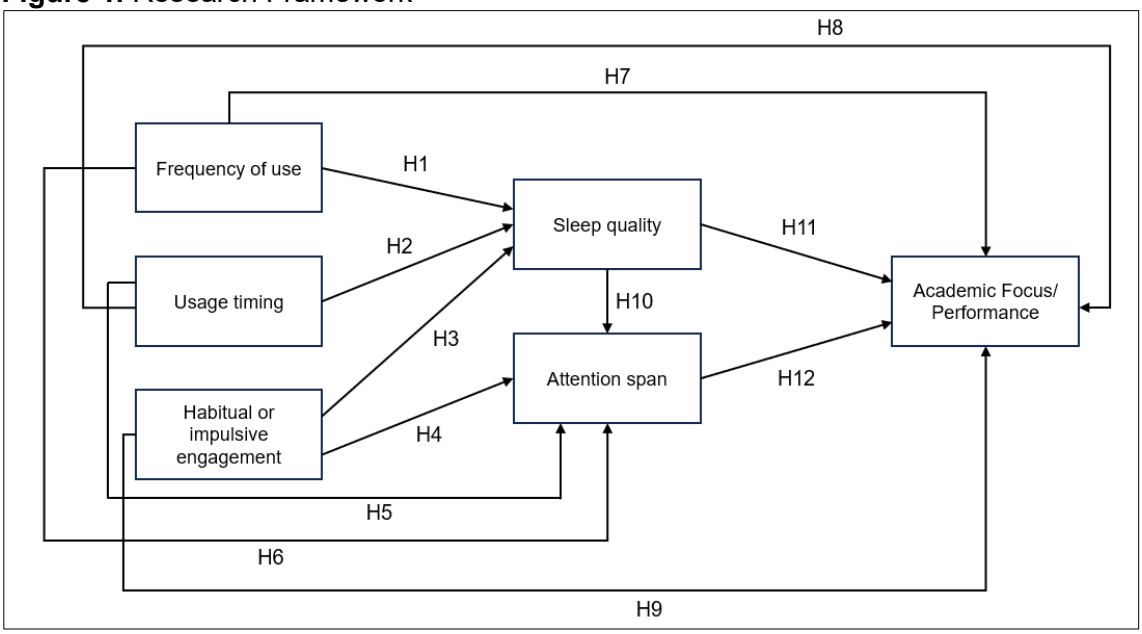
TikTok's rapid, short-form content significantly reduces attention span among youth, making it difficult to maintain focus on academic tasks for extended durations. Opara et al. (2025) found that frequent exposure to fast-paced TikTok content results in cognitive overload, reducing concentration levels during learning activities. This reduction in sustained attention may develop gradually and lead to diminished academic achievement, particularly for assignments requiring continuous mental effort. Excessive online engagement also causes emotional instability and shorter attention spans, making it harder for students to participate in academic activities. Maulida et al. (2025) further revealed that overstimulation disrupts cognitive processing and has been associated with reduced attention span and behavioral disturbances, including aggression. These findings collectively suggest that prolonged TikTok usage affects cognitive habits that have long-term academic implications.

H12: Attention span influences academic focus or performance among youth in Malaysia.

Conceptual Framework

The study framework model is depicted in Figure 1.

Figure 1. Research Framework



RESEARCH METHOD

Sample and Procedure

The target respondents for this research consisted of individuals with diverse demographic backgrounds in terms of age, gender, and occupation. The primary respondents were individuals who had experience using the TikTok application. Data were collected through an online survey using a structured questionnaire distributed to selected TikTok users across Malaysia. A total of 185 responses were obtained from active TikTok users, representing the final sample size for this study.

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Measures
This study aimed to examine how TikTok usage influences attention span and academic focus among youth in Malaysia. All constructs were measured using a five-point Likert scale ranging from 1 for strongly disagree to 5 for strongly agree. The measurement items for each variable are presented in the Appendix.

Demographic Information
The first section of the questionnaire collected demographic information, including gender, age group, occupation, TikTok usage experience, and usage patterns. All demographic data were gathered through multiple-choice questions.

Dependent Variable: Academic Focus and Performance
A five-point Likert scale was used to measure the effects of TikTok usage on academic focus and performance. One of the sample items was “My academic performance has declined due to excessive TikTok usage.”

Independent Variables
A twelve-item scale was developed to assess three key constructs, namely frequency of use, usage timing, and habitual or impulsive engagement. Exploratory factor analysis results indicated that all items loaded appropriately on their respective constructs. Example items included “I open TikTok multiple times throughout the day” to represent frequency of use, “I usually scroll TikTok before going to bed” to represent usage timing, and “I open TikTok without thinking, out of habit” to represent habitual or impulsive engagement.

Mediator Variables
An eight-item scale was used to measure the mediating variables involving sleep quality and attention span. These mediators were used to explain the indirect effects of TikTok usage on academic focus and performance. All items were measured using a five-point Likert scale, and factor analysis confirmed that each item accurately represented its intended construct. Example items included “Using TikTok late at night makes me feel tired the next day” to represent sleep quality and “I lose track of time when scrolling TikTok” to represent attention span.

RESULTS

Table 1. Summary of Respondents’ Demographic Information (N = 185)

Characteristics	Frequency	Percentage (%)
Gender		
Female	115	62.2
Male	70	37.8
Age Group		
15 to 18 years old	27	14.6
19 to 24 years old	114	61.6
25 to 30 years old	44	23.8
Occupation		
High school student	24	13
Pre-university student	25	13.5
Unemployed	4	2.2
University/Diploma student	98	53
Working (Full-time)	34	18.4
TikTok Usage Experience		
Not sure	4	2.2

Yes	181	97.8
Duration of TikTok Usage		
Less than 3 months	10	5.4
3 to 6 months	19	10.3
7 to 12 months	35	18.9
More than a year	121	65.4
Average Daily Usage Time		
Less than 1 hour	14	7.6
1 to 2 hours	42	22.7
3 to 4 hours	51	27.6
More than 4 hours	78	42.2
Weekly App Opening Frequency		
Less than 1 day	16	8.6
1 to 3 days	37	20
4 to 6 days	42	22.7
Everyday	90	48.6

Based on the demographic data presented in Table 1, the majority of the 185 survey respondents are female (62.2%) and primarily fall within the 19 to 24 age group (61.6%), indicating a predominantly youth-based population. In terms of occupation, most participants are university or diploma students (53.0%), followed by full-time working individuals (18.4%), high school students (13.0%), and pre-university students (13.5%). A significant majority of respondents (97.8%) reported having used TikTok, either the Chinese (Douyin) or international version, with 65.4% having used the platform for more than one year. Regarding daily usage duration, 42.2% of respondents spend more than four hours on TikTok, followed by 27.6% who use it for three to four hours and 22.7% who use it for one to two hours. Most respondents (48.6%) open the application every day, indicating a high level of engagement with the platform, while others access it four to six days per week (22.7%), one to three days per week (20.0%), or less than one day per week (8.6%). These findings highlight a highly active and digitally engaged student population that regularly interacts with TikTok, suggesting strong familiarity and habitual usage patterns among young users. This demographic insight is essential in understanding behavioral patterns and content consumption trends on social media platforms such as TikTok.

Table 2. Descriptive Analysis, Cronbach's Coefficient Alpha, and Zero-Order Correlations of All Study Variables

Variables		1	2	3	4	5	6
1	Frequency of Use	0.830					
2	Usage Timing	0.778**	0.811				
3	Habitual of Impulsive Engagement	0.833**	0.810**	0.823			
4	Sleep Quality	0.687**	0.756**	0.735**	0.842		
5	Attention Span	0.745**	0.732**	0.780**	0.815**	0.858	
6	Academic Performance	0.723**	0.746*	0.787**	0.772**	0.831**	0.860
M		3.93	3.79	3.86	3.86	3.83	3.76
SD		0.79	0.85	0.85	0.87	0.87	0.90

Note. N=185; **p < 0.01; Diagonal entries in bold indicate Cronbach's coefficient alpha

Table 2 presents the descriptive statistics, reliability values, and correlation coefficients for each study variable. The diagonal values in bold represent Cronbach's alpha coefficients, which indicate the internal consistency of the measurement scales used in the study. The Cronbach's alpha values for each variable are as follows: Frequency of Use (0.830), Usage Timing (0.811), Habitual or Impulsive Engagement (0.823), Sleep Quality (0.842), Attention Span (0.858), and Academic Performance (0.860). All scales demonstrate high reliability, as each value exceeds the minimum acceptable threshold of 0.70. Overall, the results indicate that the variables are positively correlated, showing meaningful relationships among frequency of use, timing of use, habitual or impulsive engagement, sleep quality, attention span, and academic performance.

Table 3. Summary of Regression Analysis

Variables		Sleep Quality	Attention Span	Academic Performance
1	Frequency of Use	0.098	0.189**	0.098
2	Usage Timing	0.440***	0.006	0.440
3	Habitual of Impulsive Engagement	0.296**	0.255**	0.296**
4	Sleep Quality		0.493***	0.155*
5	Attention Span			0.426***
R^2		0.618	0.746	0.618
F Value		97.556	131.902	97.556
Durbin-Watson Statistic		1.900	1.992	1.900

Note. N=185: *p < 0.05, **p < 0.01, ***p < 0.001.

Table 3 presents the regression results examining the relationship between the dependent variable, academic performance, and several independent variables, which include frequency of use, usage timing, habitual or impulsive engagement, sleep quality, and attention span. Regression analysis was conducted to validate the proposed hypotheses.

Frequency of use was found to significantly influence attention span (H6; $\beta = 0.189$, $p < 0.01$), but did not show a significant effect on sleep quality (H1; $\beta = 0.098$) or academic performance (H7; $\beta = 0.098$), leading to the rejection of hypotheses H1 and H7. This indicates that while increased TikTok usage frequency is associated with higher attention span, it does not meaningfully impact sleep quality or academic performance.

In addition, usage timing significantly influenced sleep quality (H2; $\beta = 0.440$, $p < 0.01$), but did not significantly affect attention span (H5; $\beta = 0.006$) or academic performance (H8; $\beta = 0.440$). Thus, hypothesis H2 is accepted, whereas hypotheses H5 and H8 are rejected. These results suggest that using TikTok during late or inappropriate hours considerably disrupts sleep patterns; however, its influence on attention span and academic performance appears limited, indicating that these outcomes may be driven by other contributing factors.

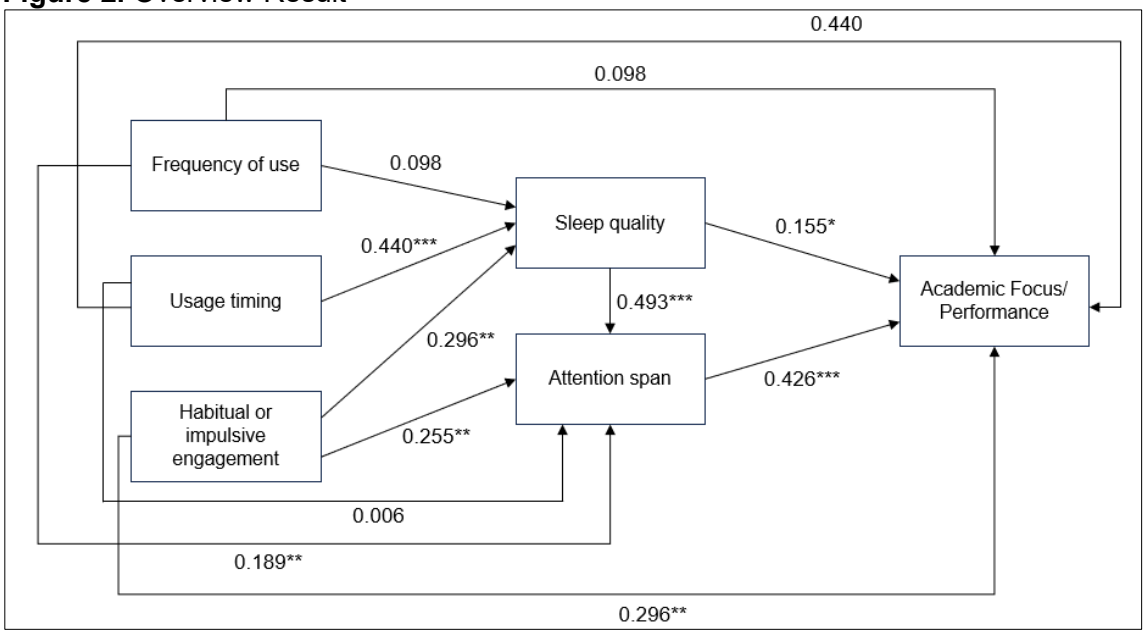
Furthermore, habitual or impulsive engagement was found to significantly predict all three outcome variables, including sleep quality (H3; $\beta = 0.296$, $p < 0.01$), attention span (H4; $\beta = 0.255$, $p < 0.01$), and academic performance (H9; $\beta = 0.296$, $p < 0.01$). The acceptance of hypotheses H3, H4, and H9 suggests that habitual or impulsive TikTok usage adversely affects sleep quality, reduces attention span, and decreases academic performance, indicating its broad negative implications on users' well-being and academic success.

Additionally, significant positive associations were found between sleep quality and attention span (H10; β = 0.493, p < 0.001), as well as sleep quality and academic performance (H11; β = 0.155, p < 0.05). These findings suggest that better sleep quality enhances cognitive focus and academic functioning. Lastly, hypothesis H12 was supported, indicating that attention span significantly influences academic performance (H12; β = 0.426, p < 0.001), likely because improved cognitive focus facilitates more effective learning, memory retention, and task completion.

With regard to explanatory power, the R^2 results indicate that 61.8% of the variance in sleep quality and academic performance and 74.6% of the variance in attention span are explained by the predictor variables in the model. Additionally, all three models were statistically significant (F = 97.556 for sleep quality, F = 131.902 for attention span, and F = 97.556 for academic performance). Overall, the results demonstrate that both the frequency and timing of TikTok usage can influence sleep, attention, and academic performance, although mere usage frequency presents limited direct effects. Out of the twelve hypotheses proposed, eight were supported through regression analysis, indicating meaningful explanatory power within the hypothesized model.

The summary of the analysis with the hypothesized model is illustrated in Figure 2 below.

Figure 2. Overview Result



DISCUSSION

This study aimed to rigorously examine the effects of TikTok usage patterns, namely frequency of use, usage timing, and habitual or impulsive engagement, on sleep quality, attention span, and academic performance among Malaysian youth, with particular focus on the mediating roles of sleep quality and attention span. The findings contribute significantly to understanding how specific behavioral dimensions of TikTok use shape cognitive and academic outcomes, highlighting that the context and nature of engagement are critical determinants of youth academic performance rather than screen time alone.

This study aligns with theoretical and empirical literature indicating that academic and cognitive outcomes are not solely determined by the amount of time spent on social

media, but are instead influenced by underlying behavioral patterns. According to Yim & Kwon (2021) and Lugonzo et al. (2023), excessive and addictive social media usage can impair concentration and reduce academic outcomes, while Barley et al. (2022) and Whelehan et al. (2020) suggest that late-night usage disrupts sleep patterns, which negatively influences learning. Cuong et al. (2025) further emphasize that time spent on non-academic digital activities reduces the time available for academic tasks, demonstrating the indirect influence of time utilization on academic success. Impulsive or habitual engagement reflects deeper self-regulation challenges, which may lead to academic procrastination (Elhai et al., 2017). By integrating these three behavioral constructs, this study advances beyond traditional screen-time perspectives and offers a nuanced understanding of how digital behavior impacts academic outcomes.

Effects of TikTok Usage Frequency on Sleep Quality, Attention Span, and Academic Performance (H1, H6, H7)

The regression findings revealed that frequency of use positively influences attention span but does not significantly affect sleep quality or academic performance, supporting hypothesis H6 but rejecting H1 and H7. These results align with the broader argument that mere exposure to a digital platform is not sufficient to generate adverse cognitive or academic consequences unless it is accompanied by problematic, emotionally driven, or dysregulated usage tendencies (Yim & Kwon, 2021). This suggests that students who use TikTok frequently, but in a deliberate, regulated, or goal-oriented manner, may still retain the capacity to maintain cognitive control and avoid substantial disruptions to their sleep or academic functioning. In some cases, mindful and purposeful engagement may even facilitate rapid information scanning and visual processing due to the platform's visually stimulating content format (Nasir et al., 2021), potentially providing a surface-level boost to attentional responsiveness. Thus, the findings imply that frequency of use alone may not be inherently harmful; rather, its impact becomes detrimental when combined with maladaptive behavioral patterns such as compulsive scrolling, emotional dependence, or late-night engagement that directly interfere with rest, concentration, and task completion.

Impact of TikTok Usage Timing on Sleep, Attention, and Academic Outcomes (H2, H5, H8)

In contrast, usage timing demonstrated a significant detrimental influence on sleep quality, supporting H2, but did not significantly impact attention span or academic performance, resulting in the rejection of H5 and H8. These findings support previous research indicating that late-night screen exposure disrupts melatonin production, alters circadian rhythms, and diminishes overall sleep hygiene (Chang et al., 2015; Hu et al., 2017). The physiological effects of using stimulating digital content before bedtime, such as heightened cognitive arousal and prolonged sleep latency, offer a clear explanation for why timing of use is strongly associated with reduced sleep quality. However, the weak associations with attention span and academic performance suggest that the cognitive and academic consequences of late-night usage may not manifest in isolation but are instead shaped by multifactorial influences such as individual study habits, coping skills, learning strategies, daily routines, and environmental supports (Cain & Gradisar, 2010). This indicates that even when sleep disruption occurs, its downstream effects on attention and academic functioning may depend on additional variables, including students' ability to compensate through effective time management, structured study schedules, or high intrinsic motivation. Overall, the findings highlight that timing of use is a critical but not singular determinant of cognitive and academic outcomes, emphasizing the complex and interactive nature of youth digital behavior.

Influence of Habitual or Impulsive TikTok Engagement on Sleep, Attention, and Academic Performance (H3, H4, H9)

Habitual or impulsive engagement exhibited the strongest negative effect, significantly reducing sleep quality, attention span, and academic performance, thus supporting hypotheses H3, H4, and H9. These results align with Elhai et al. (2016), Qin et al. (2020), and Rouleau et al. (2021), who found that compulsive and impulsive social media usage is associated with self-regulation deficits, psychological distress, procrastination, and cognitive inefficiency. The consistency between these findings and prior research highlights that the issue is not merely time spent on the platform but the compulsive, reflexive nature of engagement that disrupts cognitive processing and daily routines. This underscores the role of TikTok's design features, such as algorithmic content delivery, infinite scrolling, rapid video transitions, and instant feedback loops, in reinforcing habitual checking behaviors and shaping users' reward-seeking patterns. Such design characteristics amplify impulsive usage tendencies by continuously stimulating users' attention, making it more difficult to disengage and contributing to fragmented focus, delayed bedtime, and diminished cognitive endurance. Consequently, habitual or impulsive engagement emerges as a central behavioral mechanism through which TikTok use undermines both cognitive functioning and academic performance, revealing the deeper psychological vulnerabilities associated with unregulated digital consumption.

Role of Sleep Quality as a Predictor of Attention Span and Academic Performance (H10, H11)

Additionally, sleep quality was positively associated with both attention span and academic performance, supporting hypotheses H10 and H11. This corresponds with research showing that sleep quality plays a crucial role in learning, concentration, and academic outcomes (Clark & Landolt, 2017; Lo et al., 2016). The strengthened association found in this study affirms that adequate, restorative sleep is a fundamental cognitive resource that supports sustained attention, efficient information processing, and active academic engagement. Poor sleep is consistently linked to weakened working memory, diminished alertness, and slower cognitive processing, all of which hinder students' ability to absorb information, follow instructions, and perform effectively in academic settings. Within the context of digital media use, the findings suggest that the biological and behavioral consequences of disrupted sleep function as an indirect pathway through which problematic or late-night TikTok engagement affects academic performance. The results show that students with better sleep quality exhibit stronger attentional control and, consequently, higher academic achievement, positioning sleep as a mediating mechanism that connects daily digital habits to broader educational outcomes. This pattern highlights the importance of managing evening or nighttime screen exposure, as good sleep hygiene can help mitigate the cognitive strain caused by excessive digital use. Overall, the findings emphasize that improving sleep quality may be a highly effective intervention for enhancing cognitive functioning and academic success among youth in environments dominated by short-form video consumption.

Influence of Attention Span on Academic Performance (H12)

Finally, attention span significantly influenced academic performance, supporting hypothesis H12, which is consistent with studies linking attentional stability with academic achievement, memory retention, and task completion (Alloway & Alloway, 2010). This finding further emphasizes that attention is a fundamental cognitive mechanism that allows learners to process information efficiently, remain engaged during instruction, and complete academic tasks accurately. When attention is weakened, due to digital distractions, cognitive overload, or habitual multitasking, students struggle to sustain focus, which undermines comprehension and academic performance. Within the context of TikTok usage, the results indicate that changes in

attention span act as a key pathway through which digital behavior affects academic outcomes. Youth with stronger attentional control can better manage impulses, avoid online distractions, and direct cognitive resources toward learning, resulting in higher academic achievement. In contrast, diminished attention contributes to procrastination, fragmented learning, and ineffective study habits. These insights underscore the need to strengthen attentional skills through structured study routines, reduced multitasking, and mindful media consumption. Overall, the strong link between attention span and academic performance highlights attention as a central factor in determining academic success in today's digital environment.

Research Implications

Beyond theoretical relevance, the findings highlight important practical implications. Instead of focusing solely on screen time restriction, the results emphasize the need for behavioral awareness among youth, particularly regarding impulsive and late-night usage. Educational institutions may integrate digital and media literacy programs that teach self-regulated and purposeful engagement, as well as strengthen sleep hygiene and impulse control. These approaches can be incorporated into student wellness programs and curriculum interventions to improve digital discipline, cognitive health, and academic performance. Policymakers and educators may also develop awareness campaigns focusing on preventing compulsive digital behaviors rather than merely limiting exposure time. Overall, a multi-layered strategy involving digital literacy, self-regulation training, and sleep management is essential for safeguarding academic success in the era of pervasive short-form video platforms.

CONCLUSION

This study provides empirical insights into the relationship between TikTok usage patterns and academic outcomes among Malaysian youth, with a specific focus on the mediating roles of sleep quality and attention span. By analyzing distinct behavioral constructs such as frequency of use, timing of use, and habitual or impulsive engagement, the research offers a comprehensive perspective that goes beyond conventional measures of screen time.

The findings indicate that habitual or impulsive engagement with TikTok exerts the most detrimental effects, significantly impairing sleep quality, reducing attention span, and lowering academic performance. Late-night usage was also found to disrupt sleep patterns, although its direct impact on attention and academic performance was less pronounced. Notably, while the frequency of TikTok use was positively associated with attention span, it did not significantly influence sleep quality or academic outcomes. This suggests that the nature, purpose, and context of engagement play a more critical role than usage volume alone. Furthermore, the study confirms that both sleep quality and attention span serve as key mediating factors that substantially influence academic performance.

These findings have practical implications for educators, institutions, and policymakers. Efforts to address the academic consequences of social media should not solely focus on reducing screen time but also emphasize promoting healthy digital habits, self-regulation, and awareness of the cognitive impacts of impulsive or poorly timed usage. Initiatives such as media literacy programs, sleep hygiene education, and time management training may enhance students' ability to maintain academic focus in increasingly digital learning environments.

Overall, the study highlights the importance of cultivating balanced and intentional social media use among youth. Future research is encouraged to explore additional psychological and behavioral mediators, employ longitudinal research designs to assess causal relationships, and expand demographic representation to enhance generalizability. With a deeper understanding of these digital behaviors, stakeholders can better support the cognitive and academic development of students in the digital age.

LIMITATION

There are several limitations to this study that should be acknowledged. Firstly, the sample comprised 185 respondents, which may be insufficient to fully generalize the findings to the broader Malaysian youth population. The age distribution was mostly within 15 to 30 years, which may not reflect the perspectives of younger adolescents or older youth groups. Secondly, the sampling method relied on online dissemination via social media platforms such as WhatsApp, Instagram, and Telegram, which may have resulted in self-selection bias, as individuals who are more active online were more inclined to participate. Additionally, the use of self-reported data may have introduced social desirability bias or inaccuracies in participant responses. Future research is encouraged to adopt a larger and more representative sample, include non-users and wider age segments, and consider longitudinal approaches to examine long-term effects associated with TikTok usage.

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DECLARATION OF CONFLICTING INTERESTS

The authors declare that there are no potential conflicts of interest concerning the publication of this work. They affirm that this manuscript is original, has not been published elsewhere, and is not currently under consideration for publication in any other venue.

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