



Original Article

Disturbed Sleep Due to use Short-Form Video (SFV) on Social Media and Academic Achievement: The Mediating Role of Academic Burnout

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Abstract: Short-form video (SFV) platforms have become increasingly popular among students; however, their immersive features may lead to excessive use and addictive behaviors. This article examined the effect of sleep disturbance resulting from SFV use on social media on academic achievement and investigated the mediating role of academic burnout in this relationship. Data were collected from 520 students at Vietnamese universities. The results indicate that sleep disturbance associated with SFV use on social media has a negative effect on students' academic achievement. In addition, academic burnout was found to mediate this relationship. This study contributes to the existing literature by providing empirical evidence on the links among SFV-related sleep disturbance, academic burnout, and academic achievement among university students. The study also offers practical implications for developing policies and interventions aimed at improving academic performance and addressing mental health concerns related to social media use.

Keywords: Disturbed sleep, Short-form video, Academic burnout, Academic achievement.

1. Introduction

In the era of globalization and industrial revolution 4.0, education is considered the foundational step for all human activities [1]. Education not only plays a crucial role in the development of human capital but also in the ability of individuals to enjoy well-being and

better life opportunities [2]. Human capital, in particular, is a valuable resource for a country's economy and plays a key role in effectively managing resources [3]. Therefore, developing skills, knowledge, and accumulating experience are important for the comprehensive and effective development of human capital [1]. Moreover, education and academic achievement are essential for acquiring operational skills, building a foundation of basic knowledge, and acquiring new knowledge

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to meet job requirements [4]. Thus, it is important to understand the factors that influence student academic achievement and measure the environmental variables that impact student academic performance. Hence, it is important to understand the factors that influence student academic achievement and measure the environmental variables that impact student academic performance.

In today's era, social media is gradually becoming an indispensable tool for students. On the positive side, social networking sites can serve as platforms and tools to support students in learning, sharing knowledge with the community, and engaging in active collaborative activities [5]. However, improper use of social networks leads to problematic social media usage behavior and negative consequences [6]. Excessive use of social networks can adversely affect health, such as sleep quality and duration, work productivity, academic achievement, or other factors [7]. Furthermore, disturbed sleep can impair mental function, memory, and concentration [8]. Therefore, previous experimental studies have shown that students with irregular sleep-wake cycles, poor sleep quality, insomnia, and daytime sleepiness tend to have lower academic achievement [9].

Previous studies have also shown that social media use affects sleep quality and contributes to sleep disorders [10, 11]. However, most of these studies have focused on Facebook and Line [10, 12]. On the other hand, in recent years, a social networking site called TikTok, which has been gaining popularity among teenagers, has become an indispensable entertainment tool for young people [13]. The consequences of sleep disturbances caused by social media use in general, such as depression, exhaustion, and anxiety, have been documented [10, 14]. However, the impact of excessive SFV usage on sleep and the relation of this with academic burnout in the context of education has been relatively neglected. In addition, previous research has demonstrated a link between sleep disturbances caused by social media use and academic achievement [10].

However, most studies have focused on teenagers and college students and the results are still inconclusive. Therefore, investigating the effects of sleep disturbances caused by excessive SFV usage on social media on academic achievement, mediated by academic burnout, will contribute to the existing academic literature in educational psychology. Based on the research findings, we can propose solutions to help students use social media appropriately and leverage its benefits for learning. This, in turn, can help Vietnamese students achieve higher academic success and improve the quality of Vietnamese human resources.

2. Literature Review

2.1. Disturbed Sleep Due to Short-Form Video (SFV) on Social Media and Academic Achievement

Experimental studies have shown that problematic use of social media has an adverse impact on sleep quality, and this issue is increasingly common among adolescents [10, 11]. Indeed, Pirdehghan et al., [15] also noted that students spend an average of 7 hours per day on electronic devices, with 2 hours dedicated to social media. Furthermore, their study also revealed that 33.33% of adolescents, who sleep 6 hours or less, experience sleep disturbance. In addition, social media use and internet addiction are prevalent among young people, particularly among Vietnamese youth, with 85% exhibiting internet addiction behavior and 26.7% experiencing sleep difficulties [16]. Moreover, SFV platforms, especially TikTok, nowadays, are increasingly prevalent among students [13]. This is because TikTok uses AI algorithms that prioritize "For You" content, leading to absorption during usage and subsequently affecting sleep with poor sleep quality and shortened sleep duration [17].

The relationship between sleep disorders and baseline social media use behavior has been demonstrated in previous studies [10, 11]. First, using SFV causes the user to spend more time and alter sleep time leading to later bedtimes

[18]. Second, when using social media, users have to use electronic devices and are directly exposed to strong light, which causes biological disorders and makes it difficult to sleep [14]. Finally, because TikTok uses an AI algorithm that prioritizes users' favorite content, making users watch similar content, this increases emotional excitement and affects cognitive function, making users use makes it difficult to sleep [17].

The relationship between sleep disturbance and social media use behavior has been linked to consequences such as depression, anxiety, and low self-esteem [19]. However, within an educational context, the primary concern for educational psychologists is academic performance caused by social media use that disrupts sleep [10]. Therefore, the association between sleep disturbances caused by social media use for SFV and basic academic achievement has been demonstrated. Sleep is an essential aspect of human life and health, and it plays a crucial role in students' academic performance [20]. However, disturbed sleep due to SFV usage has been found to reduce cognitive function in students, and impair logical thinking and reasoning abilities [21]. This makes it difficult for students to complete assignments and then reduces their motivation to study. In terms of effectiveness, disturbed sleep caused by social media use has been found to increase daytime sleepiness in students [22]. Daytime sleepiness impaired students' alertness, cognition, and focus on learning [23]. This made students exhausted and reduced their ability to absorb knowledge, which impacted their academic performance. In addition to these effects, disturbed sleep due to SFV usage is associated with mental disorders and behavioral disorders [24]. It has been concluded that disturbed sleep is a chronic and prolonged condition that contributes to the development of mental disorders, particularly depression [24]. Experimental evidence has shown that 40% of individuals with insomnia and 46% of those with disturbed sleep have mental disorders [25]. Previous studies also agree on the relationship between depression and disturbed sleep [26].

These mental health issues further reduce students' ability, motivation, and learning needs, ultimately leading to poor academic performance. Research conducted by Vernon et al., [27] found that disrupted sleep due to social media use also decreases students' satisfaction with school. It impairs cognition and negatively affects various aspects of school life, including tardiness and sleeping through morning classes. Similarly, a study by Evers et al. [10] revealed that lower sleep quality and shorter sleep duration are associated with higher levels of exhaustion and lower academic performance in Taiwanese students. Taking these factors together, this study used disturbed sleep due to use SFV on social media to examine the associations with participants' academic achievement, with the following hypotheses:

H1: Disturbed sleep due to use of short-form video on social media is negatively related to academic achievement.

2.2. The Role of Academic Burnout

Excessive use of these SFV applications due to students' lack of self-regulation regarding entertainment features causes students to timestamp when using SFV and can easily lead to sleep disturbance, including reduced sleep quality and leading to exhaustion [17]. Sleep disturbance can cause biological disorders and impair cognitive function in students [21]. This means that memory capacity decreases, logical thinking decreases, and cognitive abilities decrease [21]. Consequently, college students may face challenges in meeting academic requirements and solving academic problems, which contributes to school burnout [16]. Furthermore, Liu et al., [28] demonstrated that staying up late makes students feel sleepier during the day and tired, resulting in insufficient energy to meet learning needs and reducing learning motivation. As a result, individuals may experience a lack of capacity, struggle to fulfill academic responsibilities, and encounter higher levels of burnout [29].

There is growing recognition that burnout is a common problem affecting university

students [30]. School burnout was defined as feeling exhausted from studying, having a cynical attitude and indifference toward one's studies, and feeling inadequate as a student [30]. School-related exhaustion refers to emotional states of pressure and chronic fatigue in studying; whereas school-related cynicism refers to an apathetic or distant attitude towards schoolwork in general, involves a lack of interest in one's school-related tasks and difficulties in perceiving its significance; while lack of school-related efficacy can be understood as diminished feelings of competence, decreased academic achievement, and lack of fulfillment in both individual schoolwork and the overall school environment [31]. Smith & Rose [32] have shown that burnout impaired cognitive abilities, memory, and logical thinking, affected the acquisition of knowledge in school, and reduced academic performance. Along with this, many studies support the negative association between school burnout and students' academic achievement and progress over time [31-35]. Indeed, there is a negative correlation between students' exhaustion levels and their grade point averages, as well as other measures of academic performance in university [36, 37]. Furthermore, Evers et al., [10] discovered a reciprocal relationship between school-related exhaustion due to excessive use of social media and academic achievement. Their findings revealed that the excessive use of social media increased sleep disturbances in high school students, leading to increased daytime sleepiness and exhaustion, which negatively impacted academic performance. Conversely, poor academic performance and unmet learning needs drove students to engage in online activities again. Therefore, this study used academic burnout to investigate the association between participants' academic achievement and disturbed sleep due to use of short-form video on social media with the following hypothesis:

H2: Disturbed sleep due to use of short-form video on social media is positively related to academic burnout.

H3: Academic burnout is negatively related to academic achievement.

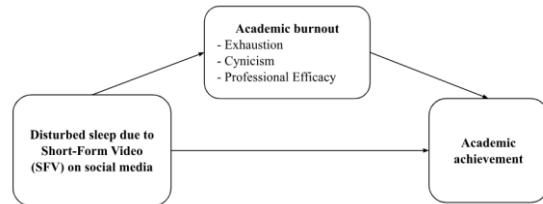


Figure 1. Conceptual framework.

3. Methods

3.1. Measures and Questionnaire Development

The measurements used in this study were adopted from previous studies and adjusted to fit the context of this study.

Disturbed sleep due to Short-Form Video (SFV) on social media: This construct was measured using an instrument adapted from Problematic Sleep due to Social Media by Tandon et al., [12]. It has two items: "How often do you watch short videos (on TikTok, Facebook, YouTube, etc.) when you wake up at night?" and "How often does watching short videos (on TikTok, Facebook, YouTube, etc.) reduce your sleep?". These items are rated on a 5-point Likert scale. The reliability of this 2-item measurement was 0.760, as measured by Spearman's coefficient.

Academic burnout: This study measured academic burnout using the Maslach Burnout Inventory-Student Survey (MBI-SS) by Schaufeli et al., [30]. It has 14 questions from the three dimensions of MBI-SS: i) Exhaustion (e.g., "I feel used up at the end of a day at university"); ii) Cynicism (e.g., "I have become less interested in my studies since my enrollment at the university"); and iii) Professional Efficacy (e.g., "I believe that I make an effective contribution to the classes that I attend"). These questions are scored on a 5-point Likert scale, with Professional Efficacy reversed. The Cronbach's alpha values for the three subscales were: Exhaustion 0.843, Cynicism 0.880, and Professional Efficacy 0.860.

Academic achievement: Academic achievement was assessed using two self-report items, GPA (Grade Point Average) on a 4.0 scale and how often the students attended classes.

Based on these instruments, a questionnaire comprising two sections was designed. Section 1 consists of questions to collect respondents' evaluations and perceptions regarding disturbed sleep due to SFVs on social media, academic burnout, and academic achievement. Section 2 includes demographic questions about the respondents, such as gender, major, academic year, and frequency of watching SFVs on social media before bedtime. As the survey targeted Vietnamese students, the items were adjusted according to the process outlined by Muñiz & Bartram [38]. Initially, the English version of the questionnaire was translated into Vietnamese. Bilingual researchers reviewed the translation process and some terms from the original scales were adjusted to fit the Vietnamese context. Subsequently, the questionnaire was back-translated into English to ensure consistency between the original and translated versions. A preliminary questionnaire was pilot-tested with a small sample of students, and the MBI-SS was further adjusted based on the test results.

3.2. Sample and Data Collection

The questionnaire was developed on the Google Form platform for the convenience of the survey process. Subsequently, the questionnaire was distributed online to students from universities in three fields: economics, engineering, and medicine in Vietnam. To reach as many students as possible, the questionnaire was shared on popular social media platforms among Vietnamese youth, such as Facebook and Messenger. A total of 1000 online survey forms were sent out to invite students to participate in the research. Out of these, 558 questionnaires have been answered, resulting in a response rate of 55.8%. After filtering out 38 invalid responses such as incomplete or unreliable answers, 520 survey responses were included in the analysis.

A majority of respondents (63.8%) were females, and 36.2% were males. Among the survey participants, 50.4% studied economics, 21.7% studied engineering, and 27.9% studied medicine. In addition to the academic year of their students, the study found that 36.5% of them were juniors, followed by seniors (26.3%), sophomores (21.5%), and only 15.6% of them were freshmen. Also, the study explored how frequently students watch SFVs before bedtime on social media. The majority of respondents (42.2%) said they watched SFVs before going to sleep often, while 29.2% said they did so always, and 21.9% said they sometimes did so. Meanwhile, 5.4% of the total respondents said they rarely do this, and 2.3% of students never watched SFVs before bedtime.

3.3. Analysis Plan

The data analysis involved two steps: i) Preliminary Analysis: The dataset was examined using Descriptive statistics such as means, standard deviations, kurtosis, skewness, and Pearson correlations; and ii) Structural Equation Modeling (SEM). SEM was first tested for model fit using the criteria suggested by Hu and Bentler [39], which are: $\text{Chi-square}/\text{df} \leq 3$, $\text{GFI} (\text{Goodness of Fit Index}) \geq 0.95$, $\text{CFI} (\text{Comparative Fit Index}) \geq 0.95$, $\text{TLI} (\text{Tucker-Lewis Index}) \geq 0.95$, $\text{RMSEA} (\text{Root Mean Square Error of Approximation}) \leq 0.06$, $\text{PCLOSE} (\text{p-value for Close Fit}) \geq 0.05$. After confirming that SEM satisfied the model fit requirements, the analysis proceeded to incorporate the proposed structural models and examine the relationships specified in the conceptual framework.

4. Results and Discussion

4.1. Preliminary

The descriptive statistics, such as mean, standard deviation, kurtosis, skewness, and Pearson's correlation coefficients for the dataset are shown in Table 1. For the statistical analysis to be valid, the measures and indicators should

follow a normal distribution, with skewness values between -3 and +3 and kurtosis values between -10 and +10 [40]. The analysis results indicate that all the variables have skewness values below 3 and kurtosis values below 10,

which means that they are normally distributed and can be used in the structural equation model.

A preliminary questionnaire was pilot-tested with a small sample of students, and the MBI-SS was further adjusted based on the test results.

Table 1. Descriptive statistics and Pearson correlation

No	Mean	SD	Skewness	Kurtosis	1	2	3
1. Academic achievement	3.6077	0.91178	-1.139	1.080	1		
2. DSSM	2.7452	1.03549	0.280	-0.587	-0.204**	1	
3. Academic burnout	3.1033	0.66476	-0.290	-0.042	-0.232**	0.177**	1

4.2. Structural Equation Model

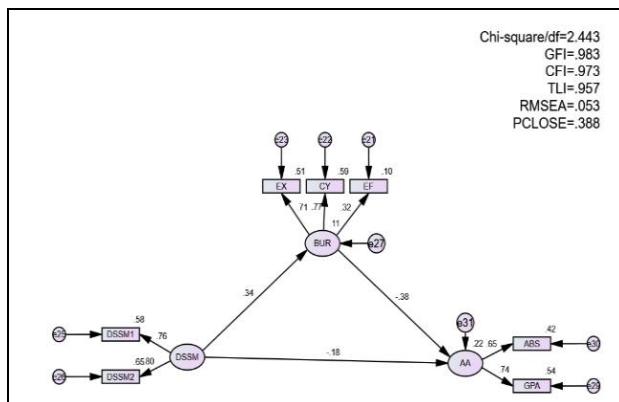


Figure 2. Structural equation model (Standardized).

As shown in Figure 2, the structural model fits the data well. The model fit indices were: Chi-square/df = 2.443, GFI = 0.983, CFI = 0.973, TLI = 0.957, RMSEA = 0.053, PCLOSE = 0.388.

Analysis results show that disturbed sleep has a strong and negative impact on academic achievement (H1: $\beta = -0.179$; p-value < 0.01).

This result agrees with previous research [41] on lower academic achievement as sleep duration decreases, students with good sleep quality have higher academic achievement. For example, disturbed sleep causes impaired memory and low ability to concentrate causing students to alienate and lose interest in learning at school [42].

Table 2. The results of the hypothesis testing (Standardized)

Hypothesis		Estimate	S.E	C.R	P-value	Conclusion
H1	DSSM \rightarrow AA	-0.179	0.053	-2.766	**	Supported
H2	DSSM \rightarrow BUR	0.336	0.021	4.316	***	Supported
H3	BUR \rightarrow AA	-0.378	0.261	-4.300	***	Supported

In addition, in the results reported in this study, disturbed sleep caused by using SFVs on social media was positively and significantly affected by academic burnout ($H_2: \beta = 0.336$; $p\text{-value} < 0.001$). This is consistent with previous studies, social media use leads to burnout at school [43] and sleep disturbance leads to academic burnout [44]. Because, disturbed sleep caused by the use of SFVs leads to a decrease in the amount of time spent sleeping, insufficient resources to meet learning demands, and increased learning demands have caused increased burnout at higher levels [28]. Research results also show that academic burnout has a strong and negative impact on academic achievement ($H_3: \beta = -0.378$; $p\text{-value} < 0.001$). This finding reinforces the research results of Salmela-Aro et al., [43] that academic burnout leads to students losing interest and reducing motivation to learn [45] and this affects future learning outcomes.

Furthermore, the bootstrap method with a 95% confidence interval was employed to assess the mediating role of academic burnout. The results show that academic burnout plays a mediating role in the relationship between the DSSM and academic achievement ($\beta = -0.127$; $p\text{-value} < 0.001$). Disturbed sleep can increase academic burnout [46] leading to an inability to meet academic demands due to reduced logical thinking ultimately affecting academic achievement [21]. Thus, besides directly affecting academic performance, academic burnout has the potential to transform the impact of disturbed sleep caused by social media use on academic performance.

5. Conclusions and Policy Implications

5.1. Conclusions

This study found the relationship between disturbed sleep due to social media use (DSSM) and academic achievement by examining students' school burnout. These findings align with previous studies that have demonstrated the negative effects of sleep disorders on academic performance [47-49]. The results

indicated that disturbances caused by social media use lead to reduced bedtimes, insufficient resources to meet study demands, and this, in turn, leads to increased levels of burnout [28]. These findings reinforce the research of Salmela-Aro et al., [43], which suggested that school burnout results in decreased interest and motivation to learn [45], ultimately impacting future learning outcomes. Additionally, Morre & Meltzer [50] discovered that sleep-related information processing in the brain affects cognitive and emotional performance throughout the day. Therefore, sleep disturbance due to social media contributes to students' exhaustion at school and negatively impacts students' academic performance.

Theoretical contributions

Most previous studies have primarily focused on the impact of general social media use on disturbed sleep [11]. However, this study goes further by examining the effects of using SFVs on social media on sleep quality. It also explores the relationship between these effects and academic achievement, with school burnout as a mediator. Given the rapid development of information technology and the widespread use of social media devices, this study is pioneering and crucial. The authors hope that these contributions will encourage further research on the impact of excessive SFV consumption on the health and academic performance of students.

Practical contributions.

The research findings indicate that excessive use of SFVs by students can lead to sleep disturbance, which in turn affects academic achievement. Specifically, the study reveals that using SFV, which reduces sleep duration and quality, is a significant predictor of school burnout and low academic performance [10]. In addition, the results show that sleep disturbance due to SFV usage is a contributing factor to school burnout and greatly impacts the health of students as well as all users of SFV. This is because the addictive and disruptive nature of SFV usage on social media, characterized by repetitive notifications, hinders daily activities and reduces sleep time

and quality. Based on these findings, the authors provide recommendations to address the excessive use of SFV among students. They suggest establishing a balanced approach to SFV consumption to mitigate its negative effects on the academic achievements of Vietnamese students.

5.2. Implications

For students and their parents

The diverse nature of entertainment and the immersive experience provided by SFV have led to the emergence of a new challenge: excessive use of SFVs. Research indicates that this excessive use harms the quality of sleep and academic achievement of learners. However, students often underestimate the seriousness of these consequences for their learning. While students are legally adults, it is still important for parents to actively understand their usage habits and explain the importance of using these platforms in a balanced manner to avoid excessive behaviors. Furthermore, it is recommended to promote a healthy balance between work, rest, and study for student users, to prevent study overload and sleep disorders caused by excessive use of SFV platforms. Students should also be encouraged to selectively use social networks and choose educational content to facilitate their learning process.

For educators.

Moreover, the results of the study indicated a positive relationship between school burnout and academic achievement. To effectively mitigate this issue, practical teaching solutions should be implemented. Teachers are encouraged to adopt a learner-centered teaching approach and utilize innovative teaching strategies. This will help create a meaningful learning environment for students, ensuring they have a positive school experience. In addition to traditional lectures, teachers can also leverage social media platforms to share knowledge. By integrating valuable information into videos shared on social networks, students can easily access educational content.

At the same time, to prevent students from excessively consuming SFVs as their primary

leisure activity, schools should organize more leisure activities and student clubs that promote physical and mental well-being. These initiatives will divert students' focus from addictive behaviors and foster positive interpersonal relationships among peers.

For platform operators.

Furthermore, given the detrimental impact of problematic short video usage on students, platform operators have a responsibility to prevent students from engaging in such behavior. So, they need to design and develop preventive and control mechanisms to fulfill their corporate social responsibility.

5.3. Research Limitations and Future Study

Some limitations that were present in this study should be noted and can be addressed in future studies. First, the survey subjects were students, and differences were found between majors. Therefore, future studies should investigate a larger sample size that is evenly distributed across industries to measure the most accurate results. Additionally, there is a gender gap between male and female students, which also affects research results regarding awareness of burnout and depression. Hence, in the future, researchers should continue to investigate to demonstrate the results more clearly. Finally, this study only surveyed data horizontally (time in time) and did not clearly see changes in process effects. Future studies can conduct longitudinal research to get research results better.

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