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The Masking Effect of Rumination on the Relationship Between Short-Video Addiction and Sleep Quality among College Students: A Generalized Mediation Analysis

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Abstract. Objective: The impact of short video addiction on sleep quality among college students has been debated, yet the cognitive mechanisms remain obscure, and the mediating function of rumination is yet to be validated. Methods: According to the response style theory, this research recruited 103 college students as subjects and employed the short video addiction scale, rumination scale, and Pittsburgh Sleep Quality Index (PSQI) to examine the mediating effect via the bootstrap method. Results: Short video addiction showed a highly positive association with rumination (r=0.379), whereas rumination exhibited a similarly robust positive association with sleep quality (r=0.300), where the indirect impact was manifest (effect value 0.0237, 95% CI excluding 0), whereas the direct impact was not significant, suggesting that rumination performed a complete intermediary function (masking effect). Conclusion: Short video addiction indirectly deteriorates sleep quality via inducing rumination, uncovering the underlying pathway of "behavior → cognition → physiology", and offering cognitive targets for psychological intervention within universities.

Keywords: Short video addiction, rumination, sleep quality, mediating effect, university students

1. Introduction

Within the context of swift information-technology advancement, short video has profoundly altered daily existence. The swift expansion of short video has transformed habitual ways of thinking and daily routines for modern youth as well as various other demographic categories. Subsequent to this trend lies the reorganization of the cognitive processes of these individuals. Considering sleep disorders as a primary example, which represent one of the most prevalent essential elements within medical psychiatric conditions, might serve as a means to identify the core causes of the problem and comprehend the primary conflicts and breakthroughs.

This cognitive reorganization manifests in various ways, wherein rumination stands out as a significant aspect since it has a strong link to melancholy.

Certain indicators manifest as internal strife, group pressure, stagnation, self-promotion, and circular reasoning.

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Conceptually, these problems, which are anticipated to emerge within diverse age groups, have gained more established terminology within modern society and seem to bear a particular mark of the present period. Unfortunately, while their terminology has permeated general conversation, the specific mechanisms driving these trends remain inadequately elucidated.

2. Literature review

As of December 2025, the population of online audiovisual consumers in China exceeded 1.099 billion, as per a recent study on the sector's progress. Among internet applications utilized by over 80% of users, short video remains the unique category exhibiting persistent growth in both adoption and viewer count. A Ministry of Education analysis utilized China Internet Network Information Center statistics and analyzed the utilization of short videos within academic environments. The 2025 survey results for young cadres within the Ministry of Education revealed that as of December 2025, across 75 universities directly affiliated with the Ministry and 14 co-established institutions with provincial governments, 99% of the evaluated schools possessed official short-video channels. This demonstrates that short videos have profoundly embedded themselves within campus culture, emerging as a vital medium for amusement and communal engagement for modern college students. The rationale for this phenomenon aligns with existing literature, which posits that short videos offer "immersive experiences," while simultaneously causing negative impacts like time consumption, physical exhaustion, mental imbalance, professional and academic dysfunction, and even serve as platforms for personal escapism. This excessive reliance on short videos is termed "short video addiction [1]." College students' consumption of short videos primarily satisfies the multifaceted demands for entertainment and leisure, interpersonal connection, knowledge gathering, etc., which serves as the primary motivation for why short videos can swiftly permeate college students' daily existence and become a vital component of the college ecosystem. Nevertheless, investigations suggest that extended exposure to blue light from monitors might inhibit melatonin secretion, disrupt circadian cycles, and thus hinder sleepiness. Consequently, the investigation of short-video addiction and sleep quality is crucial to elucidate this phenomenon and identify potential solutions [2].

Regarding the utilization of short-form videos and the mental well-being of adolescents, numerous prior research findings have verified that prolonged exposure to such content escalates the likelihood of experiencing depressive feelings, stress, and various detrimental psychological states. For instance, certain investigations have indicated that based on the resource protection theory, university students dedicate substantial physical and mental capital to mobile device engagement, where available resources to manage stress and daily challenges are limited, potentially leading to heightened anxiety [3]. Numerous empirical studies further indicate that excessive short-form video consumption exhibits a substantial positive correlation with degraded sleep conditions and the emergence of insomnia-related issues. For instance, research conducted by Cheng and Liu revealed that short video dependency directly impacts college students' restfulness, while simultaneously inducing indirect consequences through the amplification of inherent anxiety levels [4].

Nevertheless, an examination of current academic literature indicates that the mechanisms connecting short-video consumption and sleep issues are inadequately explored. Many investigations merely maintain a correlation-based verification, while they have not yet comprehensively identified the underlying pathways of short-video usage impacting college students' sleep disorders. For example, Gong and Ren's investigation demonstrated a substantial positive association between short-video dependency and rest quality [5].

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Several investigations concentrate on elucidating the mediating influence of cognitive components, including trait anxiety, as well as psychological stress, affect, cognition, and executive functions [6, 7]. Nevertheless, academic literature is notably limited concerning rumination, a particular cognitive bias highly linked to depression and prevalent among adolescents, which also offers scope for further investigation. According to the response style framework, people with elevated rumination tend to concentrate on negative elements continually. Consequently, when individuals with high rumination consume short clips, they might be more prone to become submerged within the cognitive stimulation triggered by these videos, which could exacerbate sleep disturbances. Therefore, this research hypothesized that rumination could function as a mediating factor in the association between short video addiction and sleep performance.

It is worth noting that several studies have focused on the cognitive functions of rumination. Specifically, earlier investigations revealed that short video dependency exhibits a substantial positive predictive influence on anxiety levels, which further utilizes rumination as an intermediary factor, suggesting that mobile phone addiction possesses a more potent influence on sleep quality through the direct route; within the indirect route, anxiety demonstrates a greater impact on sleep quality when rumination levels are elevated [3]. Similarly, certain researchers integrated rumination thinking into the theoretical framework for validation and discovered that rumination acted as a moderating element to adjust the direct impact (short video overuse sleep quality) and the initial half of the mediation pathway (short video overuse self-objectification) [8].

Nevertheless, a moderation proposal suggests that the association between short-video dependency and suboptimal sleep is more pronounced for people with elevated levels of rumination.

Within this context, according to response style theory, the mediation model appears more seamless, specifically suggesting that short-video obsession impacts sleep performance via heightened rumination.

A handful of previous investigations employing rumination as a mediating factor have presented their primary results within the aforementioned paper. For instance, a recent empirical study by Hung, Hung, You, and Smith directly confirmed that problematic short-video use significantly predicts sleep procrastination through the mediating role of rumination among college students, providing robust evidence for this cognitive pathway [9]. However, the disparity between low and moderate rumination regarding the primary and indirect pathways remains somewhat inconsistent with the anticipated expectations. Consequently, the current investigation aims to examine how rumination functions as a mediator in the connection between short video dependency and sleep efficiency, thus illuminating the internal cognitive process through which this dependency influences sleep among college students, and addressing the current gap in understanding the functional connections between these elements. It also clarifies the internal cognitive mechanisms influencing the process, and compensates for the absence of academic inquiry into the role path of the two within current scholarship.

Regarding its practical utility, the findings of this research could guide mental-health instruction at academic institutions and assist instructors in identifying elements causing sleep disturbances, developing more focused psychological support initiatives concerning short-form media consumption and maladaptive cognitive processing, assisting college learners in enhancing sleep consistency, alleviating internal cognitive conflicts, and boosting the comprehensive status of psychological well-being.

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3. Research questions and assumptions

Based on Figure 1, the conjecture suggests that the effect of short-video obsession on restlessness is mediated by rumination. As depicted in Figure 1, rumination is anticipated to play a mediating role.

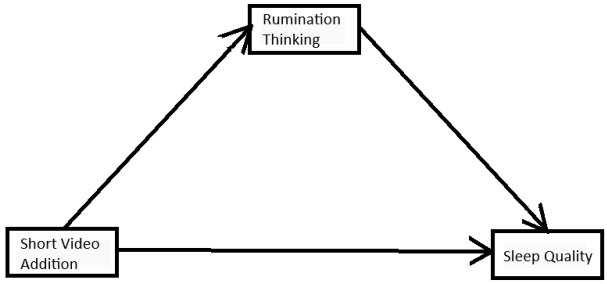


Figure 1. Hypothesized mediation model

H1: Short video consumption exhibits a substantial positive prognostic impact on undergraduate students' restlessness levels (i.e., the greater the degree of dependence, the higher the PSQI score, and the poorer the rest quality).

H2: Brief video dependence exhibits a substantial positive forecasting impact on ruminant cognition (i.e., the greater the level of dependency, the higher the probability of generating ruminant thinking).

H3: Ruminating excessively is markedly and positively linked to undergraduate students' sleep health scores (i.e., more ruminating is correlated with worse sleep quality).

H4 (central claim): rumination acts as a mediating mechanism linking short video addiction with sleep quality among college students. That is, short video addiction both directly impacts sleep quality while concurrently influencing this via the enhancement of rumination.

4. Method

This research selected Chinese undergraduate students as the primary subjects. A total of 103 students were recruited through online surveys utilizing convenience sampling. The survey form was hosted at the link https://v.wjx.cn/vm/h4RNuJf.aspx#. The instruments employed throughout this investigation comprised the short video dependency evaluation form by Chenhailiang et al. , the rumination scale (RRS) generated by Nolen-Hoeksema, the Chinese version adjusted by Han Xiu and Yanghongfei , and the Pittsburgh sleep quality index (PSQI) updated by Liuxianchen et al. The statistical assessment was performed using SPSS 27.0 and Process Macro, encompassing basic method deviation evaluation, summary statistics and validity evaluation, correlation research, bootstrapped mediation effect examination, and robustness checks with gender and academic level as control factors.

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5. Result analysis

The statistical results are described in Table 1.

Table 1. Descriptive statistics

	N	minimum value	Maximum	average value	standard deviation
Total score of short video addiction (score range: 17-85)	103	17.00	85.00	60.3981	13.67289
Total score of rumination (score range: 22-88)	103	22.00	88.00	55.4078	14.55580
Total score of sleep quality (score range: 0-21)	103	2.00	15.00	7.0971	2.93229
Number of effective cases (in columns)	103				

The findings from the mediation examination are presented in Table 2.

Table 2. Correlation

		Total score of short video addiction (score range: 17-85)	Total score of rumination (score range: 22-88)	Total score of sleep quality (score range: 0-21)
Total score of short video addiction (score range: 17-85)	Pearson correlation	1	.379**	.131
	Significance (two tailed)		.000	.188
	Number of cases	103	103	103
Total score of rumination (score range: 22-88)	Pearson correlation	.379**	1	.300**
	Significance (two tailed)	.000		.002
	Number of cases	103	103	103
Total score of sleep quality (score range: 0-21)	Pearson correlation	.131	.300**	1
	Significance (two tailed)	.188	.002	
	Number of cases	103	103	103

**At 0.01 level (two tailed), the correlation was significant.

Short video dependency exhibited a highly positive association with rumination ($r = 0.379$, $P < 0.001$), while rumination showed a strong positive relationship with sleep quality ($r = 0.300$, $P =$

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0.002); however, short video addiction showed no significant correlation with sleep quality (r = 0.131, P = 0.188).

The following is process mediation verification.

Table 3. Main analysis of mediating effect test (no covariate)

path	Effect value	Boot standard error	BootLLCI	BootULCI	Proportion of effect (%)
Total effect	0.0281	0.0212	-0.0139	0.0700	—
Direct effect	0.0043	0.0221	-0.0395	0.0482	—
Indirect effect	0.0237	0.0112	0.0055	0.0500	84.34%

Acknowledgment: The bootstrap sample size is set at 5000; LLCI and ULCI represent the bounds of the confidence range, respectively. In the primary evaluation, the confidence interval of the total effect and direct impact includes zero, while the confidence interval of the indirect impact does not include zero, suggesting that rumination exhibits a notable mediating role and represents a total mediating role (masking effect); The proportion of influence is computed as the ratio of indirect impact to the total impact.

Based on Table 3, the overall impact of short video addiction on sleep quality is not apparent; short video addiction exhibits a substantial positive predictive role toward rumination; rumination demonstrates a strong positive predictive influence on sleep quality; the indirect effect of rumination is notable, whereas the direct effect is not statistically significant.

Table 4. Robustness test of mediating effect (with covariates)

Total effect	0.0337	0.0214	-0.0087	0.0761	—
Direct effect	0.0115	0.0218	-0.0319	0.0549	—
Indirect effect	0.0222	0.0107	0.0052	0.0459	65.87%

As presented in Table 4, covariates such as Q1 gender, Q2 academic level, and Q3 field of study are incorporated into the framework as explanatory factors and re-evaluated. Findings reveal that the indirect impact remains robust, while the primary effect is still non-significant. Such findings suggest that the masking-effect finding remains reliable following the inclusion of demographic factors in the model.

6. Discussion

Based on the mediation analysis methodology presented by Wen Zhonglin, if the indirect influence is identified as meaningful, it is mandatory to further identify the precise nature of the mediation impact through integrating the outcomes of the initial evaluation; if the preliminary findings meet the prerequisites for identifying the masking mechanism, the rationale should rely on masking analysis, and the impact should be assessed as the masking effect within the comprehensive final research outcomes [10].

Rumination serves as a concealment of mediation, representing a type of indirect mediation, regarding the connection between university students' short-video dependency and rest quality, that is, short-video dependency mediates this relationship through the induction of rumination. This finding demonstrates that the impact of short-video dependency on rest quality is a form of "hidden" damage - seemingly disconnected, yet it is actually mediated indirectly via the cognitive process of

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rumination. The direct effect C ≈ 0 implies that short-video dependency itself does not directly harm rest, but indirectly influences it by stimulating rumination. According to the avoidance theory, short-video dependency offers individuals a short-term escape route from reality, but once cessation is achieved, the repressed negative feelings resurface, causing an increase in rumination. Rumination, as a state of cognitive arousal, can extend sleep-onset latency and diminish sleep efficiency. Consequently, this research uncovers the covert transmission pathway of "behavior (addiction) → cognition (rumination) → physiology (sleep)".

The proposed mediation framework is validated by prior research. Numerous investigations have established a substantial association between short video obsession and nocturnal rest. Conversely, the overall impact found within this research failed to attain statistical significance, diverging from the anticipated findings of previous studies. This gap might stem from multiple causes. Initially, the sample size of this investigation is modest (n=103), and limited analytical power might cause the aggregate influence of short video addiction on restfulness to fail to attain a significant threshold. Second, the use of convenience recruitment could lead to inadequate participant diversity, thereby restricting the comprehensive display of the genuine linkage among these variables. Furthermore, the influence of short video obsession on restfulness might primarily be mediated via mechanisms like rumination, while the primary effect remains rather weak. Lastly, restfulness might also be influenced by elements not integrated into this model, such as educational stress, work routines, and mental conditions, thereby diminishing the direct link between short video obsession and sleepiness.

7. Conclusion

This study examined the mediating role of rumination in the link between short-video addiction and sleep quality among college students, grounded in response style theory. A sample of 103 undergraduates completed validated measures of short-video dependence, rumination, and sleep quality (PSQI). Bootstrap mediation analysis revealed that the total and direct effects of addiction on sleep were non-significant, while the indirect effect via rumination was significant (effect = 0.0237, 95% CI excluding zero), indicating full mediation—a masking effect. This supports a "behaviour → cognition → physiology" pathway: excessive short-video consumption does not directly impair sleep but rather promotes ruminative thinking, which in turn prolongs sleep onset and reduces efficiency.

These findings carry practical implications for university mental health services. Instead of merely restricting screen time, interventions should target maladaptive cognitive processes. Programs such as mindfulness-based training and emotion-regulation groups may help students break the cycle of negative rumination triggered by compulsive viewing. Educators and counsellors are encouraged to identify students with high ruminative tendencies early and provide tailored support.

Theoretically, this research extends response style theory into the domain of digital media addiction, being one of the first to empirically validate rumination as a complete mediator between short-video overuse and sleep disturbances. Practically, it provides actionable cognitive targets for improving sleep quality and overall psychological well-being among undergraduates. By illuminating the hidden mechanism, this study fills a notable gap in the literature and offers a basis for developing more focused psychological interventions in higher education settings.

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References

[1] Pan, J., Zhao, X., Lv, C., & Zhang, Y. (2024). Short video addiction: A new type of internet addiction. *Journal of Hangzhou Normal University (Natural Science Edition), 23*(6), 611–619. https://doi.org/10.19926/j.cnki.issn.1674-232X.2023.12.211

[2] Lundh, L. G., & Broman, J. E. (2000). Insomnia as an interaction between sleep-interfering and sleep-interpreting processes. *Journal of Psychosomatic Research, 49*(5), 299–310. https://doi.org/10.1016/S0022-3999(00)00150-1

[3] Wang, J., Liu, W., & Li, Q. (2021). Mobile phone addiction and sleep quality of college students: The role of anxiety and rumination. *Chinese Journal of Clinical Psychology, 29*(5), 1060–1063, 1068. https://doi.org/10.16128/j.cnki.1005-3611.2021.05.034

[4] Cheng, Y., & Liu, H. (2024). The effect of short video addiction on sleep quality in college students: A moderating mediating effect. *Chinese Journal of Health Psychology, 32*(2), 251–257. https://doi.org/10.13342/j.cnki.cjhp.2024.02.018

[5] Gong, Z., & Ren, P. (2025). The relationship between short video addiction and sleep quality in college students. *Journal of Jilin Normal University of Engineering and Technology, 41*(6), 90–96.

[6] Ding, J., Sun, Y., & Zhang, X. (2026). The relationship between short video addiction and sleep quality in college students: The mediating effect of psychological stress. *Psychological Monthly, 21*(11), 63–65. https://doi.org/10.19738/j.cnki.psy.2026.11.017

[7] Yang, S., Dong, T., Wang, X., Lyu, S., & Song, B. (2026). The influence of short-form video dependence on sleep levels: Mediating effects of emotional, cognitive, and executive components. *Behavioral Sciences, 16*(7), 1232. https://doi.org/10.3390/bs16071232

[8] Liu, S., Zhang, S., & Wang, X. (2026). Effects of mobile phone short video overuse on sleep quality: Based on variable-centered and person-centered analysis. *Chinese Journal of Health Psychology, 34*(2), 308–314. https://doi.org/10.13342/j.cnki.cjhp.2026.02.029

[9] Hung, L.-C., Hung, M.-T., You, Y., & Smith, C. S. (2026). Problematic short-video use and sleep procrastination among college students: The mediating roles of anxiety and rumination. *Current Psychology, 45*(15), 1. https://doi.org/10.1007/s12144-026-09867-z

[10] Wen, Z., & Ye, B. (2014). Mediating effect analysis: Method and model development. *Advances in Psychological Science, 22*(5), 731–745.