Problematic Short Video Use and Anxiety in Chinese University Students: A Mediation Analysis of Leisure Boredom

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Abstract: This study aims to explore the relationship between problematic short video use and anxiety among university students, as well as the mediating role of leisure boredom in this association. A questionnaire survey was conducted to collect data. Instruments included a self-developed demographic questionnaire, the Problematic Short Video Use Scale for College Students, the Leisure Boredom Scale, and an anxiety questionnaire. Among the 442 questionnaires collected, those with abnormal response times or patterned answering were excluded, resulting in 413 valid responses, yielding a valid response rate of 93.439%. SPSS software was used to organize and analyze the data, and the results showed that: (1) Problematic short video (PSV) use significantly and positively predicted students' levels of anxiety; (2) PSV use significantly and positively predicted levels of leisure boredom; (3) Leisure boredom significantly and positively predicted anxiety; and (4) Leisure boredom played a significant mediating role in the relationship between problematic short video use and anxiety. Specifically, problematic short video use increased feelings of leisure boredom, which in turn heightened anxiety levels. The mediating effect accounted for 59.15% of the total effect. These findings highlight the importance of addressing university students' short video use behaviors and their potential negative impact on leisure experiences, in order to reduce mental health risks.

1. Introduction

1.1 Research Background and Significance

Short videos (SVs) refer to online video content with a duration ranging from a few seconds to several minutes, typically published and shared via social media platforms, video-sharing websites, and mobile applications. Due to their rich content, simple interactivity, and broad age appeal, SVs have gained widespread popularity among users [1]. According to the 53rd Statistical Report on China's Internet Development, as of December 2023, According to the latest data, the number of online video users in China has risen to 1.067 billion, an increase of 36.13 million since December 2022, accounting for 97.7% of all internet users. Among them, SVs users have reached 1.053 billion,

representing a growth of 41.45 million compared to the same period last year. representing 96.4% of all internet users [1]. SVs platforms—such as TikTok, Kuaishou, REDnote, and Bilibili—have become an integral part of daily life for university students [2]. However, an increasing body of research suggests that problematic SVs use may lead to various mental health concerns, with anxiety emerging as a particularly prominent issue [3,4]. This concern is especially relevant among university students, who are often faced with significant academic pressure and are still in the process of establishing their identity. For this population, problematic use of SVs platforms may further exacerbate anxiety levels.

Although previous studies have examined the relationship between problematic SVs use and anxiety, relatively little attention has been paid to how individual characteristics—particularly among university students—may influence this association. Iso-Ahola and Weissinger [5] defined leisure boredom as a subjective experience in which individuals perceive their current leisure activities as insufficient to meet their need for optimal arousal. When university students lack meaningful engagement during their free time, they are more likely to turn to SVss as a form of escapism and entertainment [6]. However, such reliance can lead to addictive behaviors, which in turn may exacerbate anxiety [4].

1.2 The Relationship Between Problematic Short Videos Use and Anxiety

Problematic SVs use is typically characterized by excessive consumption, lack of self-control, and interference with daily life activities [7].

Previous studies have confirmed that problematic use of social media and SVs platforms is closely associated with negative psychological states, particularly anxiety [3,8].

Several mechanisms may explain how SVs use contributes to anxiety. First, the time displacement effect suggests that time spent on SVss may replace time allocated for essential activities such as studying or socializing [9], thereby increasing stress and triggering anxiety. Second, psychological dependence on SVss—where individuals become highly reliant on instant entertainment—can also lead to heightened anxiety when such gratification is not readily available [10].

1.3 The Mediating Role of Leisure Boredom

Lepp et al. [6] found that individuals with higher levels of leisure boredom are more likely to turn to SVss as a form of entertainment. When individuals experience boredom, they may watch SVss to fill their time; however, this form of engagement is often passive and may lead to anxiety due to perceived time wastage and escapism.Existing research indicates that individuals experiencing leisure boredom tend to invest more time and energy in using SVss and are more prone to developing problematic usage patterns [11].

1.4 Research Objectives and Hypotheses

To gain a deeper understanding of how problematic SVs use influences individual anxiety, this study not only investigates their association but also tests the mediating effect of leisure boredom. Based on the above theoretical framework, the following hypotheses are proposed.

H1: Problematic SVs use significantly and positively predicts anxiety levels.

H2: Leisure boredom mediates the relationship between problematic SVs use and anxiety, such that problematic use increases leisure boredom, which in turn intensifies anxiety.

2. Research Methods

2.1 Participants

This study was conducted on an online platform with a random sampling method for college students across the country, employing a randomized sampling method through an online platform. We collected 442 questionnaire, after removing invalid responses due to abnormal completion times or repetitive answering patterns, 413 valid samples were retained, yielding a valid response rate of 93.439%. In terms of gender distribution, 53.511% were male (221 participants) and 46.489% were female (192 participants). Regarding place of origin, 56.659% (234 participants) were from urban areas, while 43.341% (179 participants) were from rural areas. As for educational background, 24.697% were junior college students (102 participants), 58.111% were undergraduates (240 participants), and 17.191% held a master's degree or higher (71 participants).

2.2 Instruments

2.2.1 Sociodemographic Characteristics

Part 1 of the questionnaire aimed to gather participants' sociodemographic background information, covering aspects such as gender, ethnicity, age group, place of household registration, family economic status, relationship status, educational level, and field of study.

2.2.2 Boredom Proneness Questionnaire for College Students (BPQ)

This study adopted the Boredom Proneness Questionnaire for College Students (BPQ) developed by Huang Shihua et al.[12] which was adapted from the Boredom Proneness Scale (BPS) originally developed by Farmer and Sundberg. The BPQ was modified to align with the cultural context of Chinese college students and is suitable for assessing boredom proneness in this population. The questionnaire contains 30 items, rated on a 7-point Likert scale. It comprises two main dimensions: external stimulation and internal stimulation. The dimension of external stimulation includes four sub-factors: tension, constraint, monotony and loneliness. The internal stimulation dimension includes two subfactors: creativity and self-control. Items 17 through 24 (i.e., items 17, 18, 19, 20, 21, 22, 23, and 24) are reverse scored.

2.2.3 Problematic Short Video Use Questionnaire

This study employed the Problematic Short Video Use Questionnaire developed by Zhao Haiyu et al. [13]. The scale consists of 20 items designed to assess problematic behaviors associated with short video use. It includes three primary dimensions: compulsive use, loss of control, and social avoidance. Responses are rated on a 4-point Likert scale, with higher scores indicating a greater level of problematic short video use. In the current study, the Cronbach's alpha coefficient for the scale was 0.867, which indicates good internal consistency.

2.2.4 Zung Self-Rating Anxiety Scale

The Zung Self-Rating Anxiety Scale, developed by Zung et al.[14], comprises 20 items and uses a 4-point scale to assess the frequency of anxiety symptoms. The response options are: (1) "a little of the time", (2) "some of the time", (3) "a good part of the time", and (4) "most or all of the time". Among the 20 items, 15 are negatively worded and scored from 1 to 4, while the remaining 5 are positively worded and reverse scored from 4 to 1 (Items 5, 9, 13, 17, and 19). The raw score upper limit for the normal range is 40, and the standardized score upper limit for normal is 50.

2.3 Data Analysis

SPSS 26.0 was used to analyze the data. Firstly, descriptive statistics were carried out to summarize the basic characteristics of variables. Pearson correlation analysis was then conducted to examine the relationship between problematic short video use, leisure boredom, and anxiety. Subsequently, mediation analysis was conducted using Model 4 of the PROCESS macro for SPSS, with problematic short video use as the independent variable (X), leisure boredom as the mediator (M), and anxiety as the dependent variable (Y). The bootstrap method was applied with 5,000 resamples to estimate the 95% confidence interval (CI). If CI does not contain zero, the mediating effect is considered to be significant.

3. Results

Table 1 An analysis of the correlation between problematic short video use and anxiety (N = 413)

	Gender	Age	Place of Origin	Educational Background	Problematic Short Video Use	Anxiety
Problematic Short Video Use	-0.053	0.006	-0.058	-0.032	—	—
Anxiety	-0.055	-0.200***	-0.048	0.018	0.470***	—
Leisure Boredom	-0.057	-0.019	-0.094	-0.132**	0.620***	0.567***

Note:***P<0.001,**P<0.01,*P<0.05

As shown in Table 1, Pearson correlation analysis revealed a significant positive correlation between problematic short video use and anxiety (r = 0.470, p < 0.001), indicating that individuals with higher levels of problematic short video use tend to experience higher levels of anxiety. Similarly, leisure boredom was significantly positively correlated with problematic short video use (r = 0.620, p < 0.001), suggesting that individuals with higher levels of leisure boredom are more likely to engage in problematic short video use. In addition, a significant positive correlation was also found between leisure boredom and anxiety (r = 0.567, p < 0.001), implying that leisure boredom may indirectly increase anxiety by influencing short video use.

Regarding control variables, age was negatively correlated with anxiety (r = -0.200, p < 0.001), indicating that younger individuals tend to report higher anxiety levels. Moreover, a significant negative correlation was observed between education level and leisure boredom (r=-0.132, p<0.01), suggesting that individuals with higher educational attainment experience lower levels of leisure boredom.

To further explore the underlying mechanism of the significant positive effect of X (problematic short video use) on Y(anxiety), this study introduced M (leisure boredom) as a mediating variable and constructed a structural equation model for in-depth analysis. The mediation effect was tested using Model 4 of the PROCESS macro in SPSS, and the mediating role of M (leisure boredom) between X and Y was verified based on the Bootstrap method proposed by Hayes.

The path coefficients among the three variables—X, M and Y —are illustrated in Figure 1.
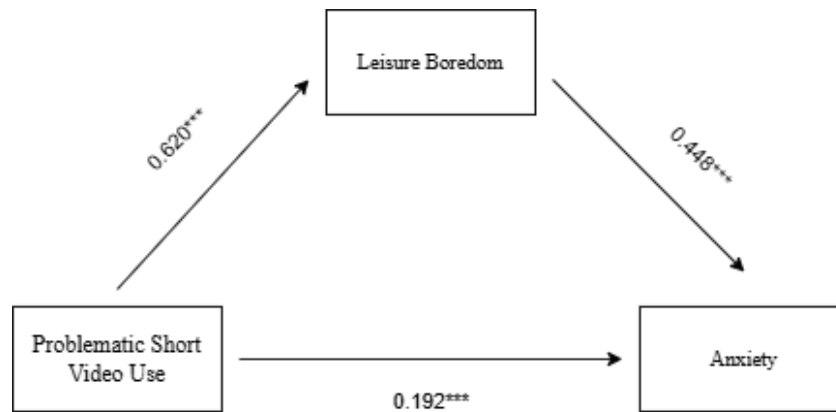
Figure 1 Path coefficients among problematic short video use, leisure boredom and anxiety.
Note:***P<0.001,**P<0.01,*P<0.05. Same notation applies hereafter.

Table 2 Decomposition of Total, Direct, and Indirect Effects

	Effect Value	Se	LLCI	ULCI	Effect Size
Total Effect	0.470	0.044	0.384	0.555	
Direct Effect	0.192	0.051	0.092	0.292	40.85%
Indirect Effect	0.278	0.038	0.206	0.354	59.15%

According to Table 2, The 95% confidence intervals generated by the Bootstrap method indicated that neither the direct effect of X on Y nor the indirect effect through the mediating variable M included zero, suggesting that both effects are statistically significant. Specifically, the direct effect of X on Y was 0.192, accounting for 40.85% of the total effect (0.470), while the indirect effect through M was 0.278, representing 59.15% of the total effect. These results suggest that M plays a substantial mediating role in the relationship between X and Y.

4. Discussion

This study examined the impact of problematic short video use on anxiety among university students and further explored the mediating role of leisure boredom. The results revealed a significant positive correlation between problematic short video use and anxiety, indicating that frequent use of short video platforms may elevate anxiety levels among university students. This finding is consistent with previous research[3,8], thereby supporting the first hypothesis.Moreover, problematic short video use significantly predicted higher levels of leisure boredom, which in turn significantly predicted greater anxiety. This confirms the mediating role of leisure boredom in the relationship between problematic short video use and anxiety, thus supporting the second hypothesis of the study. Specifically, excessive reliance on short videos for leisure may gradually reduce students' motivation to engage in more meaningful and diverse recreational activities, thereby intensifying their experience of boredom during free time [6]. As a negative emotional state, leisure boredom may lead individuals to feel empty, restless, and increasingly anxious [12]. Therefore, the present study identifies a clear psychological pathway: problematic short video use increases leisure boredom, which in turn indirectly raises the risk of anxiety among university students. These findings have several practical implications. First, universities should recognize the risks associated with excessive short video use among students, acknowledging that such behavior not only directly affects mental health but may also exert broader psychological effects through mediating mechanisms. Second, greater attention should be paid to the quality of students' leisure time. Universities should encourage students to participate in meaningful and structured leisure

activities to reduce psychological problems associated with leisure boredom. Finally, concepts such as "digital detox" and "positive leisure" can be integrated into mental health education, helping students develop healthy digital media habits, improve time management, and enhance emotional regulation abilities, thereby promoting psychological well-being.

Although the mediating role of leisure boredom was confirmed in this study, future research should further explore other potential influencing factors, such as individual differences, personality traits, or emotion regulation strategies, to better understand the mechanisms underlying the impact of short video use on students' mental health.

5. Conclusion

This study found that problematic short video use significantly and positively predicted anxiety levels among university students. Leisure boredom played a significant mediating role in this relationship, indicating that problematic short video use may indirectly increase the risk of anxiety by enhancing students' experience of leisure boredom. Therefore, helping university students regulate the frequency of short video use, improve the quality of their leisure time, and reduce engagement in meaningless leisure activities may serve as an effective strategy to alleviate anxiety.

6. Limitations and Future Directions

Given the relatively limited sample size of this study, caution should be exercised when generalizing the findings. Future research could expand both the sample size and its representativeness to enhance the robustness of the results. Moreover, as this study adopted a cross-sectional design, it cannot establish causal relationships between variables; therefore, experimental or longitudinal designs are recommended for future investigations.

Additionally, the moderating variable in this study was relatively narrow, focusing solely on leisure boredom. Future studies may consider incorporating other psychological factors, such as self-control or self-efficacy, to broaden the theoretical framework. Surveys of populations with diverse cultural and educational backgrounds are also recommended to further explore the relationship between problematic short video use and mental health in order to improve the generality of the findings.

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