Study on Sleep Procrastination Behavior and Psychological Prevention Strategies Among University Students During Vocational Awareness Internships

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Abstract: The concept of sleep procrastination is a newly introduced notion in the field of health behavior procrastination. It can be summarized as the behavior where individuals, without any external hindrances, still choose to delay their predetermined sleep time. With the rapid development of the socio-economic environment and the internet, people are increasingly going to bed later, making sleep procrastination more prevalent. However, psychological research on sleep procrastination in China remains significantly lacking. This study aims to investigate the current state of sleep procrastination behavior among college students during vocational awareness internships and propose psychological intervention strategies. Through an electronic questionnaire survey of 641 students majoring in Infant Care Services and Management from a vocational college in Weifang, Shandong Province, 541 valid responses were obtained after excluding invalid questionnaires. The results showed that the sleep procrastination behavior of the students was at a moderate to low level, with no significant impact from variables such as only-child status, gender, and place of origin. This study proposes intervention strategies for sleep procrastination behavior among college students through behavior intervention, psychological adjustment, and environmental optimization to improve sleep quality, overall quality of life, and academic performance in vocational awareness .
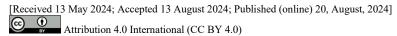
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Introduction

Sleep is fundamental to human health and normal functioning, being essential for human survival. Sleep can alleviate fatigue, restore physical strength, and enhance the individual's immune system. However, with the development of the socio-economic environment and increased social pressures, people's bedtime has been gradually delayed, leading to increasingly prominent sleep problems. According to the "China Sleep Research Report 2024," the sleep procrastination situation among Chinese residents has reached its most severe level in three years, with smartphone addiction identified as a primary factor causing sleep procrastination (China Sleep Research Report, 2024). Kroese (2014) found that 74% of Dutch adults experience sleep procrastination at least once a week, and the degree of procrastination is highly positively correlated with the severity of sleep deprivation[1]. In a study on university students, Ma et al. discovered that sleep procrastination behavior not only affects sleep duration but is also related to other dimensions of sleep quality (such as functionality). Prolonged sleep procrastination can lead to insufficient sleep, affect sleep quality, and trigger a series of health problems, increasing the risk of chronic diseases such as cardiovascular disease and diabetes, and even leading to anxiety and depression[2] (Irwin, 2015).

University students face significant academic and employment pressures, lack self-control, and have weak time management skills. Additionally, they find it hard to resist the temptations of pre-sleep activities and electronic devices, leading to the widespread occurrence of sleep procrastination behavior. Yang Huiting et al. (2016) found that sleep procrastination is prevalent among Chinese university students, with 7.7% being typical procrastinators (meeting all five manifestations of sleep procrastination) and 44.9% being atypical procrastinators (meeting more than three manifestations of sleep procrastination)[3]. This aligns with the global trend of increasing sleep procrastination behavior among young people (Kroese et al., 2016)[4]. This sleep procrastination behavior not only reduces university students' sleep quality but also has a significant negative impact on their academic performance and physical health. Studies have found that university students with a tendency to stay up late often exhibit noticeable procrastination in daytime activities and academic tasks (Asaoka et al., 2010; Digdon & Howell, 2008)[5][6].

Sleep procrastination behavior is a prevalent phenomenon, particularly among contemporary university students. Given the prevalence and potential harm of sleep procrastination behavior, this study explores the current status of sleep procrastination behavior and psychological intervention strategies among university students in the Weifang area. The aim is to provide a basis for improving university students' sleep quality and academic performance. This research is of significant theoretical and practical importance, as its findings can enrich the field of sleep procrastination research. The proposed psychological intervention strategies to address sleep procrastination can offer insights and guidance to those

troubled by sleep procrastination and provide a reference framework for future intervention research on sleep procrastination.

Literature Review
In 2014, Dutch scholars Kroese, de Ridder, Evers, and Adriaanse first introduced sleep procrastination into the field of health behavior procrastination. It refers to the phenomenon where individuals, without external hindrances, still fail to go to bed at the intended time. Kroese also identified three criteria for determining sleep procrastination behavior: delaying bedtime, lacking legitimate reasons for the delay, and facing foreseeable negative consequences.

Alongside proposing the concept of sleep procrastination, Kroese developed the corresponding "Sleep Procrastination Scale." This scale includes nine items scored using the Likert method, where numbers 1 to 5 represent "never" to "always." It also contains three reverse-scored items (e.g., "If I have to get up early, I will go to bed early"; "When it's time to turn off the lights and go to sleep, I do so immediately"; "When it's time to sleep, I can easily stop all activities unrelated to sleep"). The Sleep Procrastination Scale has demonstrated good reliability and validity. In China, Ma Xiaohan and colleagues revised the scale to ensure its applicability and reliability in the Chinese cultural context.

Sleep procrastination is a relatively unique form of procrastination. Traditional procrastination typically involves tasks individuals are reluctant to do, but sleep is rarely categorized as something people do not want to do. Therefore, an increasing number of researchers are becoming interested in studying sleep procrastination behavior. The formation of sleep procrastination is a complex system influenced by both subjective and objective factors.

Existing research indicates that insufficient self-control is the primary factor contributing to sleep procrastination behavior. The theory of limited self-control resources suggests that when self-control resources are depleted, individuals are more prone to various procrastination behaviors. Individuals with lower self-regulation capabilities are more likely to exhibit sleep procrastination behavior. Kamphorst (2018) explored the impact of self-regulation resources on sleep procrastination from a capability perspective. The study found that individuals who resisted more temptations during the day were more inclined to indulge themselves before bed, delay sleep, and thus develop sleep procrastination[7]. Exelmans and Van den Bulck (2018) also confirmed this phenomenon and further explained the complex relationship between self-control depletion and sleep procrastination behavior[8]. On one hand, individuals in a state of self-control depletion tend to go to bed earlier to reduce sleep procrastination. On the other hand, they are also more likely to indulge in the short-term gratification brought by immediate entertainment, which exacerbates sleep procrastination. This contradiction indicates that self-control depletion can both drive individuals to seek rest and induce procrastination behavior, forming a complex dynamic process. Kroese (2016) studied sleep delay behavior from the perspective of self-control, finding that individuals with poor self-control are more easily attracted by immediate temptations, unknowingly delaying their sleep time, resulting in insufficient sleep and regret upon waking the next day.

Exploring the formation of sleep procrastination from the perspective of self-control capability helps us better intervene in sleep procrastination behavior. Perhaps we can start from within ourselves, striving to improve self-control capabilities and learning to use appropriate self-control strategies to address sleep procrastination issues.

In modern society, with the development of internet technology and the enhancement of smartphone functionalities, mobile phones have become an indispensable part of people's lives. The fast pace of modern life means that people are busy with work during the day and only have personal time before bed. People often relax by engaging in activities such as social networking, playing games, and watching variety shows, compensating for the day's hardships. The various entertainment activities on mobile phones are highly addictive, causing people to lose track of time and delay sleep. The prevalence of social media increases the frequency of nighttime social activities among university students, which is a significant cause of sleep procrastination (Kroese et al., 2016). Sun Fengmei's research indicates that habitual delay in sleep is very common among university students, with most students browsing their phones before bed[9]. Foreign research also supports this finding. The use of mobile phones, computers, and other electronic devices at night significantly delays bedtime (Exelmans & Van den Bulck, 2016). Additionally, the blue light from electronic screens affects the normal secretion of melatonin, which is a major reason why adolescents worldwide are going to bed later (Tęgowska, 2014; Vollmer, Jankowski, Itzek-Greulich, & Randler, 2017).

Furthermore, researchers have identified other factors influencing sleep procrastination, such as family relationships. Studies have found that adolescents with poor family relationships are more likely to engage in sleep procrastination and experience depressive emotions. Procrastination behavior and negative emotions interact with each other. Guo et al. (2020) found that increasingly prevalent depressive symptoms among Chinese university students are closely related to sleep procrastination behavior. Sleep procrastination is considered a new significant predictor of insufficient sleep and can predict the occurrence of depressive symptoms.

Therefore, it is evident that sleep procrastination behavior is influenced by multiple factors, which also provides research directions for intervention strategies for sleep procrastination behavior. Intervention research on sleep procrastination in China mainly provides suggestions from a health maintenance perspective, with few intervention strategies proposed from a psychological perspective.

Intervention research on sleep procrastination abroad primarily includes learning self-regulation strategies and improving self-control capabilities to address sleep procrastination behavior (Kroese, 2014). Loft's research proposed using self-

regulation methods provided by psychological imagery techniques to improve sleep behavior. Additionally, scholars have proposed some intervention strategies based on circadian rhythm and self-determination theory[10].

In summary, this study will integrate the factors contributing to sleep procrastination behavior and, combined with the current status of sleep procrastination behavior among university students, propose intervention strategies from multiple dimensions such as behavior management, psychological adjustment, environment, and mental health from a psychological perspective.

1. Materials and Methods
1.1 General Information
From May to June 2024, a random sample of 641 students of higher vocational Infant Care Services and Management from a vocational college in Weifang, Shandong Province, ranging from freshmen to sophomore students, was surveyed using an electronic questionnaire. After excluding invalid questionnaires, 541 valid responses were obtained, with an effective rate of 84.4%. Among the respondents, there were 31 males (5.7%) and 510 females (94.3%).

Details are shown in the table below:

Table 1: Demographic Information (N=541)

Demographic Information		Percentage
Gender	Male	5.7%
	Female	94.3%
Grade	Freshman	51.4%
	Sophomore	48.6%
Only Child	Yes	12%
	No	88%
Place of Origin	Urban	20.9%
	Rural	79.1%

1.2 Survey Methods
Using a combination of literature review and questionnaire survey, this study investigated the sleep procrastination behavior of college students in a vocational college in Weifang, Shandong Province. Electronic questionnaires were distributed via the Questionnaire Star mini-program, and respondents answered by scanning the QR code. The questionnaire included basic information of the respondents and the Bedtime Procrastination Scale.

1.3 Research Instrument
The Bedtime Procrastination Scale (BPS) was developed by Kroese et al. This study used the Chinese version revised by

Ma Xiaohan et al. The scale has a single-factor structure with 9 items related to sleep procrastination behavior, using a

Likert 5-point scale to assess the frequency of each situation. Items 1, 4, 5, 6, and 8 are scored positively, while items 2, 3,

7, and 9 are scored negatively. The average score of the 9 items represents the scale score, with higher scores indicating

more severe sleep procrastination behavior. The Cronbach's α coefficient for the scale is 0.91.

1.4 Statistical Methods
SPSS 27.0 was used for data analysis. Percentages were used to describe the demographics of the study subjects in terms of gender, grade level, only-child status, and place of residence. Means and standard deviations were used for the statistical description of the scores on the Sleep Procrastination Scale. Independent sample t-tests were conducted to examine differences in sleep procrastination behavior across gender, grade level, only-child status, and place of residence, with $P < 0.05$ considered statistically significant.

2. Research Objectives
Describe the profile of the respondents in terms of gender, grade level, whether they are an only child, and place of residence.

Assess university students' performance in sleep procrastination behavior.

Examine differences in sleep procrastination behavior across the grouped variables.

3. Research Results
The results showed that the overall score for sleep procrastination among college students was (2.86±0.62), indicating a below-average level (Table 1). Independent sample t-test results showed no significant differences in sleep procrastination

scores based on gender, grade,whether the student was an only child, or place of origin (P>0.05) (Table 2).

Table 2: Status of Sleep Procrastination Behavior among College Students (N=541)
Current Sleep

Measure	M	SD
Sleep Procrastination	2.86	0.62

Table 3: Mean and Standard Deviation of Sleep Procrastination Across Different Demographic Variables (M±SD)

Variable		M	SD	P
Gender	Male	2.86	0.53	0.717
	Female	2.86	0.63	
Grade	Freshman	2.82	0.63	0.335
	Sophomore	2.90	0.61	
Only Child	Yes	2.82	0.58	0.721
	No	2.87	0.63	
Place of Origin	Urban	2.85	0.68	0.211
	Rural	2.87	0.61	

4. Discussion

In this study, the average score for sleep procrastination among university students was (2.86±0.62). According to the standard where a score of 3 represents a moderate level, this indicates that sleep procrastination among students at a vocational college in Weifang City is at a level slightly below moderate. This result is consistent with the findings of Li Wenfei (2023) and Dong Wei (2022) regarding sleep procrastination among Chinese university students[11][12], showing that the participants' sleep procrastination behavior is below the moderate level and not excessively severe. This suggests that while sleep procrastination exists among university students, it has not reached a level that significantly impacts their health and quality of life.

The study further explored the differences in sleep procrastination behavior across various demographic variables, including gender, grade level, only-child status, and place of residence. The results indicated that these variables did not have a significant impact on sleep procrastination behavior. This suggests that sleep procrastination is a widespread phenomenon not significantly influenced by these factors. This finding may be due to common underlying causes of sleep procrastination, which are primarily related to students' lifestyle habits, academic pressure, and social activities.

Specifically, modern university students often engage in problematic social media use in the evening, such as online chatting and watching videos, which can disrupt their sleep rhythms and affect their normal sleep schedule. These activities are usually highly engaging, causing students to extend their screen time unconsciously, thereby delaying their bedtime. According to Dong Wei (2022), addiction to short videos has a significant positive correlation with sleep procrastination; that is, the more addicted students are to short videos, the stronger their sleep procrastination. According to cognitive dissonance theory, to achieve internal balance, individuals may continue immersing themselves in videos, delaying their sleep time. They might also alter their cognition, believing that since they have already missed their intended sleep time, it is acceptable to continue delaying bedtime.

Additionally, most university students live in shared dormitories, where entertainment activities or non-quiet sleeping environments can also contribute to later bedtimes. For example, collective entertainment activities, study discussions, or other noise among dormitory members can interfere with an individual's sleep. This phenomenon is also widely supported in the literature.

Although the study results show no significant differences between grade levels, detailed analysis revealed that sophomore students had higher sleep procrastination scores compared to freshmen. This may be because sophomores, being in the middle stage of their studies, may not have clear plans for the future and are more susceptible to internet addiction. Facing academic pressure without clear goals and plans, they often seek short-term entertainment and relaxation, such as prolonged phone use, leading to delayed sleep. In contrast, freshmen, who have just entered university, might be more cautious in adapting to the new environment and study methods, and have not yet developed significant

procrastination habits.

Overall, this study highlights the prevalence of sleep procrastination among university students and its underlying causes. It emphasizes the importance of self-management skills, establishing a reasonable sleep schedule, and improving students' lifestyle habits and dormitory environment.

5. Preventive Measures

5.1 Behavioral Interventions

Establish a Regular Sleep Schedule: Encourage university students to create and adhere to a regular sleep schedule to establish good sleep habits. Specifically, students should be advised to wake up and go to bed at the same time every day, even on weekends, to help the body form a stable biological clock. By doing so, they can avoid the chaos of irregular sleep patterns caused by excessive relaxation on weekends. Additionally, reducing nighttime entertainment or electronic device use, especially within an hour before bedtime, can effectively minimize disruptions to falling asleep.

Set Bedtime Rituals: Implementing simple bedtime rituals, such as taking a hot bath, reading, or listening to soft music, can help the body and mind gradually enter a state of rest. Bedtime rituals can help students detach from their busy daily activities, gradually relaxing their minds and bodies to prepare for deep sleep. Taking a hot bath, in particular, can facilitate rapid sleep onset by first raising and then lowering body temperature.

Limit Nighttime Activities: Reduce excessive social activities and entertainment at night to avoid delaying bedtime. Students should be encouraged to minimize outings after dinner and avoid participating in overly intense or exciting social activities. Instead, they could engage in light leisure activities, such as walking or mild exercise, to better prepare for sleep.

5.2 Psychological Adjustments

Stress Management: Provide stress management courses or workshops to help students learn techniques for coping with stress, such as meditation, deep breathing exercises, and mindfulness practices, thereby reducing sleep procrastination caused by academic or life stress. Regularly organize stress relief lectures and workshops, inviting professional counselors to offer personalized advice and guidance, helping students master effective stress management methods.

Emotional Regulation: Offer psychological counseling or emotional support groups to help students deal with negative emotions such as anxiety and depression, reducing their impact on sleep. Schools can establish counseling centers, regularly hold mental health lectures and group discussions, and encourage students to actively participate. Sharing and communicating with peers can effectively alleviate emotional stress and improve psychological well-being.

5.3 Environmental Optimization

Optimize the Sleep Environment: Ensure that dormitory lighting, temperature, and noise levels are conducive to sleep. Recommend tools such as blackout curtains and earplugs to improve the sleep environment. Additionally, maintaining a tidy dormitory, reducing unnecessary light sources and noise, and placing relaxing items like aromatherapy and comfortable bedding can create a good sleep atmosphere.

Reduce Electronic Device Usage: Advise avoiding the use of phones, computers, and other electronic devices within an hour before bedtime to reduce the interference of blue light with sleep. Students can try placing electronic devices away from the bed or using apps to limit nighttime usage, thereby reducing the negative impact of electronic devices on sleep.

5.4 Education and Advocacy

Promote Healthy Sleep Education: Use lectures, posters, social media, and other channels to educate students on the importance of healthy sleep and methods to prevent sleep procrastination. Schools can regularly invite sleep experts for special lectures, utilize social media platforms to publish healthy sleep knowledge, and create promotional posters and brochures to distribute to students, enhancing their awareness and importance of healthy sleep.

Raise Awareness of the Dangers of Sleep Procrastination: Inform students about the long-term health risks associated with sleep procrastination, such as cardiovascular diseases and depression, to motivate them to improve their sleep habits. By sharing case studies and scientific data, help students understand that sleep procrastination affects daily life and learning and poses serious threats to physical health, motivating them to proactively improve sleep habits and establish healthy routines.

6. Conclusions

This study explored the current state of sleep procrastination behavior among university students, contributing to the psychological research in this field. The main conclusions are as follows:

Level of Sleep Procrastination: Sleep procrastination behavior among university students is at a slightly below moderate level. Although sleep procrastination is common among students, it is not severe.

Demographic Variations: No significant differences in sleep procrastination behavior were found across various demographic variables, including gender, grade level, only-child status, and place of residence. This suggests that these factors do not have a substantial impact on sleep procrastination.

Intervention Strategies: Based on the factors contributing to sleep procrastination, this study proposes intervention strategies in four areas: behavioral interventions, psychological adjustments, environmental optimization, and education and awareness. These strategies aim to help improve sleep procrastination behavior among university students.

REFERENCES

[1] F. M. Kroese, D. T. de Ridder, C. Evers, and others, "Bedtime procrastination: A new area of procrastination explored," *Frontiers in Psychology*, vol. 5, p. 611, 2014. doi: 10.3389/fpsyg.2014.00611.

[2] M. R. Irwin, "Why sleep is important for health: A psychoneuroimmunology perspective," Annu. Rev. Psychol., vol. 66, no. 1, pp. 143-172, 2015. doi: 10.1146/annurev-psych-010213-115205.

[3] H. Yang, M. Xin, Y. Zhang, and X. He, "A survey on the status of bedtime procrastination among college students in Hangzhou," *China Health Nutrition*, vol. 26, no. 019, pp. 274-274, 2016.

[4] F. M. Kroese, C. Evers, M. A. Adriaanse, and D. T. de Ridder, "Bedtime procrastination: A self-regulation perspective on sleep insufficiency in the general population," *Journal of Health Psychology*, vol. 21, no. 5, pp. 853-862, 2016. doi: 10.1177/1359105314540014.

[5] S. Asaoka, Y. Komada, K. Fukuda, T. Sugiura, Y. Inoue, and K. Yamazaki, "Exploring the daily activities associated with delayed bedtime of Japanese university students," Tohoku J. Exp. Med., vol. 221, no. 3, pp. 245-249, 2010.

[6] N. L. Digdon and A. J. Howell, "College students who have an eveningness preference report lower self-control and greater procrastination," Chronobiol. Int., vol. 25, no. 6, pp. 1029-1046, 2008.

[7] B. A. Kamphorst, S. Nauts, D. T. D. de Ridder, and J. H. Anderson, "Too depleted to turn in: The relevance of end-of-the-day resource depletion for reducing bedtime procrastination," Frontiers Psychol., vol. 9, p. 252, 2018.

[8] L. Exelmans and J. Van den Bulck, "Self-control depletion and sleep duration: The mediating role of television viewing," Psychol. Health, vol. 33, no. 10, pp. 1251-1268, 2018.

[9] F. M. Sun, L. Zhu, C. H. Hu, and X. Chen, "Investigation and analysis of late-night sleep patterns among college students," Sci. Educ. Writ., no. 12, pp. 154-155, 2016.

[10] M. H. Loft and L. D. Cameron, "Using mental imagery to deliver self-regulation techniques to improve sleep behaviors," Ann. Behav. Med., vol. 46, no. 3, pp. 260-272, 2013.

[11] D. Wei, "The impact of short video addiction on sleep quality among college students: The chain mediation role of self-regulation and sleep procrastination," Master's thesis, Jilin University, 2022.

[12] W. L. Wenfei, "The influence of conscientiousness on sleep procrastination behavior: The chain mediation role of time management self-monitoring and mobile phone dependence," Master's thesis, Harbin Normal University, 2023.