Proceedings of the 2nd International Conference on Social Psychology and Humanity Studies
DOI: 10.54254/2753-7048/36/20240465

Social Media Use and College Students' Sleep Quality: An Analysis of Influencing Factors

Huilin Su[1,a], Tao Wang[2,b,*], Xi Zhang[3,c]

[1]Warwick Manufacturing Group, University of Warwick, Coventry, CV4 8UW, England
[2]School of Foreign Languages, Shenzhen Technology University, Shenzhen, 518000, China
[3]Radio and television director of the School of Journalism and Communication, Zhongyuan University of Technology, Zhengzhou, 450000, China
a. hs07497023367@163.com, b. apex1355721445@outlook.com, c. 202217044214@zut.edu.cn
**corresponding author*

Abstract: Social media is generally considered a range of technologies enabling humankind to exchange opinions and information，and under the great impact of its attraction many people would browse on the social media platform before bedtime. This study use the data collected by a questionaire to analyze the correlation between the time users spend on social media before bedtime and their sleep quality index with Pearson correlation coefficient mode l. This paper found a significant positive correlation between the two, meaning that the longer users use social media, the worse their sleep quality. The research on the relationship between social media use and sleep quality is further bolstered by this result, which is in agreement with prior studies. This research offers implications for users, educators, and policymakers, suggesting that social media use may detrimentally affect sleep quality.

Keywords: Sleep quality, Social Media Platforms, Social Media Contents, University Students

1. Introduction

Social media is generally considered a range of technologies enabling humankind to exchange opinions and information [1]. In China, one of the world's most densely populated countries, a remarkable surge in social media usage, particularly among Chinese adolescents, has been observed, as Forbes' latest statistics [2] indicate that 4.8 billion people will be involved in the medium by 2023. In contrast to the West, where Facebook, Instagram, and YouTube reign supreme, numerous innovative social platforms are now being developed in China [3]. According to the latest figures from Weiboyi, WeChat is ranked as China's top essential social commerce platform, followed by Weibo, Little Red Book, and Douyin [4].

This study focuses on exploring the sway of social media platform utilization among university pupils in Shenzhen, China. The target sample for this survey is specifically chosen as young adults and primary social media users, which holds excellent research value due to their extensive exposure to various online platforms.

This paper's emphasis is distinct, even though the initial research on sleep quality is alluded to. By searching numerous research papers from different academic engine sources, little research has

DOI: 10.54254/2753-7048/36/20240465

focused on Shenzhen, China. However, Shenzhen has been chosen by many tech companies as their headquarters or sub-headquarters. For instance, Tencent, the inventor of WeChat and the QQ social platform, is also located in Shenzhen [5]. Therefore, taking Shenzhen as our primary research area is considerable. Based on the emotional behavior output of Shenzhen college students in Chinese social media, this paper attempts to present the relationship between the dynamic production of college students in Shenzhen and sleep quality in social media through different research methods for objective data testing. Here are some research questions this paper tends to respond to once this paper has completed our study:

(1) To what degree do university students in Shenzhen experience a decrease in sleep quality when they utilize social media before slumber? (2) What sort of social media content would play a key role in ruining the sleep quality of university students? (3) How would the duration of social media usage before sleep lead to impaired sleep quality?

This paper will use the Pittsburgh Sleep Quality Index (PSQI) to evaluate participants' sleep quality objectively. Moreover, higher scores signify poorer sleep quality [6]. The PSQI, a widely recognized tool for measuring various sleep patterns and disturbances, has been formally evaluated by several research groups. Its sensitivity and specificity for identifying cases with sleep disorders, with a cut-off score of 5 and 89.6% and 86.5%, respectively, are both highly valid. Comparable differences between groups using the PSQI or polysomnographic sleep measures further bolster its validity [7]. Using this index, this paper can obtain reliable and standardized data regarding participants' sleep quality.

In terms of research methodology, this study will collect data by distributing a comprehensive range of emotional states and overall sleep quality [7]. Before bedtime, the participants will be queried regarding the length of their social media utilization and the types of content they consume. Additionally, be queried about any emotional changes or mood fluctuations experienced while engaging with these platforms.

This paper uses a questionnaire to explore how the participants perceive their own sleep aspects, such as how well they sleep, how long it takes them to fall asleep, how much time they spend sleeping, how efficient their sleep is, how often they wake up, whether they use any sleep medication, how they feel during the day, and how their sleep affects their functioning [6, 7].

By gathering information on these variables from a diverse group of university students in Shenzhen's universities – encompassing different academic disciplines – this paper aims to capture a holistic understanding of how social individuals' sleeping patterns across various demographics of this specific population, for us studying digital technology's impact on well-being as concerned use among young adults. This paper hopes that shedding light on the relationship between social media and sleep quality among university students in Shenzhen can foster healthier online behaviors without compromising individuals' overall well-being.

2. Related Work

The rapid global expansion of social media has enabled a greater interconnectedness, yet prior research has also highlighted the possibility that excessive use of social media may be a cause of serious sleep difficulties or even mental health issues among Iranian college students. In their research, Pirdehghan et al. discovered a positive relationship between the overuse of social media and sleep duration, sleep quality, daily dysfunction, and depression [8]. Another study conducted by Long Xu, et al. found that sleep issues may be related to other problematic social activities, such as excessive drinking problems and less life satisfaction [9]. However, many Chinese students have neglected the severe consequences of sleep issues. Also, the fiercely competitive environment among Chinese internet giants has indirectly shrunk more Chinese college students into the social platform without

DOI: 10.54254/2753-7048/36/20240465

proper guidelines and constraints [10]. Hence, holistic and in-depth research is required to help Chinese adolescents have better life satisfaction and life patterns.

3. Methodology

3.1. Dependent Variable

This article studies the impact of the behavior of undergraduates in colleges and universities in Shenzhen on their sleep quality during a period through cross-sectional research and questionnaires. And after that this paper did a telephone interview to explore another potential factor. The research target of this article is undergraduates from Shenzhen, Guangdong Province. It is expected that a total of 400 people from different universities in Shenzhen in four grades volunteered to participate in this questionnaire survey. The questionnaire includes social media users, night usage habits, and the Pittsburgh Sleep Quality Index (PSQI) project. All questionnaires are carried out on the Questionnaire Star online survey platform. The effectiveness of the Pittsburgh sleep quality index measurement method has been confirmed in previous research and demonstration [6, 7]. Based on the scale used in this article, most of the research comes from foreign scholars, and there is a certain degree of ambiguity after translating the materials. Therefore, after the questionnaire design was completed, the study randomly distributed about 20 questionnaires to friends and classmates around them and conducted small-scale pre-research. Listen to their opinions on the understanding and design of questionnaire options. Actively adjust and modify, form a more rigorous questionnaire, and reduce misunderstandings and other problems in formal research.

The research population takes the university in Shenzhen, Guangdong Province, as the survey scope is mainly based on the following considerations: First, Shenzhen is a city with diversified adolescents and immigrants, and Shenzhen is full of youth, vitality, and innovation [5]. The research subjects come from all over the country, involving many college students. Secondly, the university in Shenzhen is more comprehensive. Finally, most of the members of this group are in Shenzhen, which makes it easier to collect more accurate and solid data so that the research conclusions of this article are more authentic. The primary rationale for selecting undergraduates as the focus of this article is: To begin with, the four years of undergraduate college can be broken down into four distinct cognitive stages, each with its own objectives and exploration. There is a big difference in the focus of individuals using social media. Secondly, Undergraduate youth are the primary users of social media. At this stage, Most people will use social media frequently [11]. Third: Sleep is one of the necessary physiological needs of the human body to maintain life activities, and sleep quality is one of the determinants of daily life quality. This group also has serious sleep quality problems [12].

3.2. Independent Variable

This paper aims to delve into the impact of sleep quality. According to different information carriers, most social media content can be divided into three types: audio, video, and graphic. Kanuri et al. observed that the content platform categorizes its stories into eight distinct areas: business, entertainment, life, local, national, opinion, other, and sports. Each of these topics constitutes a substantial area for the platform [13]." So, there are a few primary content categories like the economy, entertainment, daily life, current affairs, local politics, national politics, and sports news.

This paper refines the classification further by considering popular social media platforms such as Douyin for short video, Weibo and Xiaohongshu for microblogs, Baidu and Quark for search engines, Tantan and Soul for dating apps, and Taobao for shopping platforms [13]. After users browse social media content before bedtime, this paper divided their interactions into two dimensions: sadness to excitement and calmness to agitation. This paper investigated the relationship between users' usage of different types of social emotions in this study. Using the previously mentioned classifications as

DOI: 10.54254/2753-7048/36/20240465

independent variables while rigorously collecting relevant data to reveal the mechanisms through which using these platforms impacts. The amount of time users spend on social media can be a significant factor in their sleep, potentially delaying the time they do drift off.

Widely employed in research studies to explore the correlation between variables, linear regression is a statistical analysis method. This study investigates the link between social media usage, feelings, and sleep quality.

To guarantee the trustworthiness of the research outcomes, a variety of potential elements are considered. Gender is one of these that could influence the correlation studied. By controlling for these variables, researchers aim to minimize their impact on the results and obtain more accurate conclusions analysis method. Researchers can quantitatively assess how changes in social media use and emotional experiences related to variations in the systematic examination of these relationships while considering other influential factors.

4. Results and Analysis

4.1. Descriptive statistics

Table 1: Basic Information of Observation Value

Gender	**Count**	**Frequency**
Male	208	0.490566038
Female	216	0.509433962
Grade	**Count**	**Frequency**
Freshman	50	0.117924528
Sophomore	167	0.393867925
Junior	122	0.287735849
Senior	85	0.200471698
Major	**Count**	**Frequency**
Science and Engineering	121	0.285377358
Liberal Arts	107	0.252358491
Business	57	0.134433962
Arts	76	0.179245283
Medical science	63	0.148584906
Sleeping quality	**Count**	**Frequency**
"0-5"	250	0.589622642
"6-10"	120	0.283018868
"11-15"	45	0.106132075
"16-20"	9	0.021226415
"21"	0	0

In general, 424 people filled in the question validly. According to Table1, the proportion of males was 49.05%, and the proportion of females was 50.94%.

The number of sophomores is the largest, accounting for nearly 40%, followed by juniors and seniors, accounting for 28% and 20%, respectively. The number of first-year students is the smallest,

DOI: 10.54254/2753-7048/36/20240465

accounting for only 11.78%. The respondents of this survey are mainly sophomores, juniors, and seniors, while first-year students are relatively few.

The largest number of respondents, 122 people, are science and engineering majors, making up 28.18%. Liberal arts follows with 113 people, representing 26.1%, medical science follows at 14.55%, art at 18.01%, and business at 13.16%. These majors are mainly concentrated in science and engineering, liberal arts, medical science, art, and business. In summary, among the respondents, the number of science and engineering majors is the largest, followed by liberal arts. The number of medical science, art, and business majors is relatively tiny.

Table 2: Usage of categories of social platforms

Usage of social platform	Count	Frequency
Microblogs	233	0.550827423
search engines	211	0.498817967
dating apps	145	0.342789598
shopping platform	334	0.789598109
short video platforms	334	0.789598109

Table 2 that social media users mainly concentrate on the following platforms: Tencent products, such as QQ and WeChat, accounted for 77.12%. This indicates that most users prefer to use social media platforms under Tencent.

Short video platforms such as Douyin and Bilibili accounted for 83.05%. This shows the importance of short video platforms in social media, especially in scenarios before sleep.

Information network platforms such as Weibo and Xiaohongshu accounted for 61.02%. This indicates that information network platforms such as Weibo and Xiaohongshu are also essential for users to use social media before sleep.

On the other hand, the proportion of users on search engine platforms such as Baidu and Quark and shopping platforms such as Taobao and Tmall is relatively low. This may indicate that users' primary purpose of using social media before sleeping is entertainment and socializing rather than specific search or shopping activities.

The proportion of users using dating app platforms such as Tantan and Soul is relatively low, which may reflect that the primary function of social media before sleeping is not to provide dating services.

In conclusion, users mainly use Tencent's social media platforms, short video platforms, and information network platforms for entertainment and social activities before sleeping. Other functions, such as shopping and dating, are used relatively less.

Table 3: Content that Users Browse on Social Media Platform

Content in social media platform	Count	Frequency
Economy	162	0.382978723
Entertainment	318	0.75177305

DOI: 10.54254/2753-7048/36/20240465

Table 3: (continued)

Daily life	234	0.553191489
Celebrity Opinion News	189	0.446808511
Local politics	212	0.501182033
National politics	162	0.382978723
Sports news	120	0.283687943
Others	84	0.19858156

Referring to Table 3, Social media platforms used before bedtime: In the data provided, this paper found that the following platforms have higher usage rates: Tencent products such as QQ, WeChat. account for 54.01% of the usage rate. This may reflect the user's dependence on these social media platforms or preference to use them for communication before bedtime. Short video platforms such as Douyin Bilibili. Account for 78.77% of the usage rate. This may reflect the user's preference to use these platforms for entertainment and leisure before bedtime—information network platforms such as Weibo and Xiaohongshu. Also account for a particular proportion, which may reflect the user's attention to these platforms or their use of them to obtain information before bedtime. Shopping platforms such as Taobao Tmall. have a usage rate of 36.79%, which may also be related to users' use of social media for shopping before bedtime. In addition, this paper also noticed that the usage rate of dating software such as Tantan and Soul reached 34.2%, which may reflect the user's need for socializing on social media or their use of social media to find new social partners before bedtime.

Users are most concerned about entertainment information when using social media before bedtime, with a proportion as high as 75%. The attention to life information ranks second with a proportion of 55.19%. The attention to financial and local political information is similar, with proportions of 38.21% and 50%, respectively. The attention to national political information and celebrity opinions information are respectively 39.15% and 44.58%. The attention to sports information is low, with a proportion of 28.3%. Other options account for 19.81%, indicating that some other contents may also be considered by users when using social media before bedtime.

Users are mainly concerned about entertainment information when using social media before bedtime. At the same time, life information, financial information, and local political information are also concerned by users. The attention to sports information and other types of information could be much higher. This may mean that users' primary purpose when using social media is to obtain entertainment and daily life-related information, while other types of information have less attention.

4.2. Correlation Analysis

Recalling the contrast between Pearson and Spearman correlation coefficients, Pearson only gauges linear association, whereas Spearman gauges a broader range of associations: a Spearman correlation coefficient of high absolute value implies a monotonic relationship between the two variables, albeit not necessarily linear [14].

An analysis of the correlation between sleep quality and how long they spend on social media before sleeping was conducted on 433 samples. The Pearson correlation coefficient, when viewed through the lens of sig double tail, revealed a significant correlation of 0.01 between the two, indicating that there is a significant relationship between the quality of sleep and the length of social media use [15].

DOI: 10.54254/2753-7048/36/20240465

Table 4: Correlation

		VAR00005	VAR00003
VAR00005	Pearson correlation coefficient	1	.484**
	Sig. (two-tailed)		.000
	Counts	433	433
VAR00003	Pearson correlation coefficient	.484**	1
	Sig. (two-tailed)	.000	
	Counts	433	433

Table 4 is the result of using Pearson's correlation coefficient to analyze the linear relationship between the time users spend on social media platforms before going to bed (VAR0003) and their sleep quality index (VAR0005). The PSQI (Pittsburgh Sleep Quality Index), a questionnaire that gauges subjective sleep quality, is the source of the sleep quality index. A higher score implies poorer sleep quality. The table's first column displays the names of the variables, the second column illustrates their correlation, and the third column displays the p-value of the two-tailed test.

The correlation between VAR0003 and VAR0005 is 0.484, which is a positive moderate correlation. This means that the longer users spend on social media platforms before going to bed, the higher their sleep quality index, which means the worse their sleep quality, but this relationship is not very strong.

There is a very low probability (p-value = 0.000) that the correlation between VAR0003 and VAR0005 is due to chance, as it is much lower than the threshold of 0.05 for statistical significance. Therefore, it can conclude that there is a meaningful relationship between the two variables, which measure the time users spend on social media before bed and their sleep quality index. This could imply that using social media platforms before sleeping has an impact on their sleep quality, or that the factors that affect their sleep quality also influence their social media use before bed. However, this table cannot show the causal direction or mechanism between the two variables, nor can it exclude other possible causes.

4.3. Telephone Interview

To collect more detailed and personal insights between using social media before bedtime and subjective sleep quality. Three authors were interviewed, who are presently enrolled in a college in Shenzhen City and have agreed to participate in telephone interviews. The findings are summarized and categorized in the following Table 5.

Findings from Very Good Sleep Quality: Based on the utterances from three respondents, this paper first discovered that in this section, the social media platforms they commonly used before asleep are mainly chatting platforms such as WeChat and QQ. These respondents expressed that chatting with close friends and family relatives before sleep can help them calm down their emotions and create a relaxed atmosphere that promotes their sleep quality. Thus, according to their responses, spending a certain amount of time before sleep to chat with close friends and relatives enables people to calm down their emotions and improves sleep quality.

Findings from Fairly Good Sleep Quality: Different from the subjective perfect sleep quality part, under the good sleep quality scenario, it is evident that the respondents have changed the type of social media they were browsing before sleep: from chatting to the video platform. The reason why they concluded a good sleep quality was that these short videos that they viewed were those topics

DOI: 10.54254/2753-7048/36/20240465

that the respondents were interested in, therefore resulting in a relaxed and pleasant bedtime mode. Also, these short videos suggested by the platform often need a logical connection.

Findings from Fairly Bad Sleep Quality: Regarding the bad sleep quality situation, this paper discovered that they mainly watched self-created videos on the Bilibili platform before going to sleep. The content includes, but is not limited to, plot explanations, character analyses, or captivating soap operas. Comparing those short videos from TikTok, the length of these Bilibili-posted videos is longer, with approximately 20 mins per each. Therefore, these videos require more attention from the respondents and affect their sleep quality.

Findings from Very Bad Sleep Quality: First, from the perspective of video genre, these videos that adversely affect sleep quality are often more gripping and compelling in plot. Some of them are even worldwide popular TV dramas. Secondly, regarding content, knowledge-intensive videos or serious documentaries can also significantly decrease sleep quality. Thirdly, during periods, such as the Double Eleven shopping carnival, browsing websites like Taobao can also lead to severe sleep problems, possibly due to aggressive promotional activities.

Table 5: Telephone interview responses

Main categories	**Sub-categories**	**Utterances**	**Platform**	**Content**
Sleep quality (Subjective)	Very Good	"…the information browsed was fragmented, making it easy to fall asleep…" "…I chat with one of my best friends before going to bed."	WeChat/ Baidu/ TikTok	Daily Greeting topic
	Fairly Good	"…watching food-related content made me feel comfortable." "…watch some funny videos on TikTok."	TikTok/ WeChat	Food short videos/ Funny short videos
	Fairly Bad	"…engaging content watched before sleep caused late sleep time." "…the video was filled with numerous key events that were interconnected. "	Bilibili	Plot explanation/ character analyze/ soap operas
	Very Bad	"…the plot was thrilling and riveting. I kept thinking about the storyline." "…I kept comparing the cost-effectiveness of similar products from different brands repeatedly before sleep."	Bilibili/ Tencent Video/ Taobao	Knowledge-based videos/ historical TV drama/ Shopping

DOI: 10.54254/2753-7048/36/20240465

5. Conclusion

In terms of the results from the correlation analysis, the more time people spend on social media, the worse their sleep quality is, according to a significant negative correlation. meaning that the longer the time spent on social media, the poorer the sleep quality.

Regarding the results from the telephone interviews, the manner and content of social media use also affect sleep quality. Specifically, browsing videos before bedtime and visiting shopping websites at certain times negatively impact sleep quality, while chatting with friends and browsing short videos of interest before bedtime have a positive impact on sleep quality. Additionally, knowledge-intensive videos and serious documentaries also significantly reduce sleep quality.

The significance of this study lies in its revelation of the mechanism and level of influence of social media use on the sleep quality of college students, providing rational advice and guidance for college students to ensure sleep quality while using social media. The limitation of this study is that it only considered factors such as the time, manner, and content of social media use, without considering other potential influencers of sleep quality, such as personal characteristics, lifestyle habits, and psychological states. Future research could delve into the relationship between social media use and sleep quality from multiple perspectives and levels, as well as propose more effective intervention measures and strategies.

Author's Contribution

All the authors contributed equally, and their names were listed in alphabetical order.

References

[1] *Zhang, M., Xu, P., & Ye, Y. (2022). Trust in social media brands and perceived media values: A survey study in China. Computers in Human Behavior, 127, 107024.*

[2] *Wong, B.(2023). "Top Social Media Statistics And Trends Of 2023" Forbes Advisor. https://www.forbes.com/advisor/business/social-media-statistics/*

[3] *Cui, J., Zhang, T., Jaidka, K., Pang, D., Sherman, G., Jakhetiya, V., ... & Guntuku, S. C. (2022, May). Social media reveals urban-rural differences in stress across china. In Proceedings of the International AAAI Conference on Web and Social Media (Vol. 16, pp. 114-124).*

[4] *2023 Top Chinese Social Media Platforms, Sites and Apps in 2023 You Need To Know. (n.d.). https://www.azoyagroup.com/page/view/top-chinese-social-media-platform-you-need-to-know/*

[5] *Hu, R. (2019). The state of smart cities in China: The case of Shenzhen. Energies, 12(22), 4375.*

[6] *Smyth, C. (1999). The Pittsburgh sleep quality index (PSQI). Journal of gerontological nursing, 25(12), 10-10.*

[7] *Buysse, D. J., Hall, M. L., Strollo, P. J., Kamarck, T. W., Owens, J., Lee, L., ... & Matthews, K. A. (2008). Relationships between the Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS), and clinical/polysomnographic measures in a community sample. Journal of clinical sleep medicine, 4(6), 563-571.*

[8] *Pirdehghan, A., Khezmeh, E., & Panahi, S. (2021). Social media use and sleep disturbance among adolescents: A cross-sectional study. Iranian journal of psychiatry, 16(2), 137.*

[9] *Long Xu, X., Zhu, R. Z., Sharma, M., & Zhao, Y. (2015). The influence of social media on sleep quality: a study of undergraduate students in Chongqing. China. J Nurs Care, 4(253), 2167-1168.*

[10] *Fan, P., Gao, X., & Watanabe, K. N. (2007). Technology strategies of innovative Chinese domestic companies. International Journal of Technology and Globalisation, 3(4), 344-363.*

[11] *Ye, N., Wang, L., & Sun, X.(2023).The mediating role of self-control between physical activity and sleep quality in college students: Evidence from the log method Applied Psychology (01), 89-96. DOI: 10.20058/j.cnki. cjap-02015*

[12] *Wang Y. (2022). Research on the Impact of Online Alert on Sleep Quality in Young People (Master's Thesis, Chongqing University) https://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CMFD&dbname=CMFDTEMP&filename=1022734246.nh*

[13] *Kanuri, V. K. , Chen, Y. , & Sridhar, S. H. . (2018). Scheduling content on social media: theory, evidence, and application. Journal of Marketing, 86(6), 89-108.*

[14] *Puth, M. T., Neuhäuser, M., & Ruxton, G. D. (2014). Effective use of Pearson's product–moment correlation coefficient. Animal behaviour, 93, 183-189.*

[15] *Wang, D., Dai, L., & Xin, Y. (2016). The relationship between sleep quality and depression and anxiety among college students Chinese Journal of Mental Health (03), 226-230*