



A Study on the Relationship Between Sleep, Anxiety and Academic Performance of Applied Psychology Major in a University in Tianjin

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Abstract. To understand the sleep status of college students, study the connection between sleep status, fatigue and academic performance, and analyze the main factors affecting academic performance in sleep status. Using the method of random sampling, 54 undergraduate students in applied psychology were selected as the research objects. Pittsburgh Sleep Quality Scale (PSQI) and Self-Rating Anxiety Scale (SAS) were used to judge the sleep status and anxiety of undergraduates. Results: (1) There was no difference in the overall sleep status between boys and girls. (2) There was a positive correlation between sleep status and anxiety, a negative correlational statistics between sleep status and academic performance, and a negative correlational statistics between anxiety and academic performance. (3) The main sleep factors affecting academic performance were sleep disturbance, use of sleep medication and sleep efficiency. (4) The anxiety of college students has no mediating effect on sleep quality and academic performance.

Keywords: College student · Sleep status · Fatigue · Academic performance

1 Introduction

Sleep problems are common among college students, sleep plays an irreplaceable role in consolidating memory [1]. During sleep, newly learned information can be well protected and less disturbed, so as to achieve the effect of memory consolidation. There is an inseparable relationship between memory and learning. Lack of sleep will not only affect college students' attention, memory processing ability, cognitive control ability, but also increase the risk of anxiety in daily life. College students are in a special period of life, facing many pressures, which may turn into anxiety to a large extent [2]. Therefore, it's significantly vital to check the link between sleep status, anxiety and academic performance. Few studies have explored the correlation between the three at the same time. The purpose of this study is to explore the relationship between sleep status, anxiety and academic performance among college students, and the mediating role of anxiety between sleep status and academic performance.

2 Methods

2.1 Sampling Personnel

Using the method of random sampling, 56 questionnaires were distributed to freshmen to seniors in a university in Tianjin, and 54 valid questionnaires were collected, including 30 girls and 24 boys.

2.2 Data Collection Scale and Research Tools

The Pittsburgh Sleep Quality Scale (PSQI) contains 19 self-assessment items and 7 factors. The total score of PSQI is equal to the sum of the scores of 7 factors. The higher the total score of PSQI, the worse the sleep status. The scores of SAS items are added together to form the initial score, which is multiplied by 1.25, rounded to an integer, that is, the standard score is obtained. The higher the standard score of SAS, the more obvious the anxiety tendency. Among them, 50 to 59 are mild anxiety, 60 to 69 are moderate anxiety, and more than 70 are severe anxiety. The final examination scores of college students are selected as the examination scores of students, and the 100 point system is selected. Spss26.0 is selected as the statistical analysis tool for statistical analysis.

3 Research Results

3.1 Single Factor Test of Harman

For the collected data, Harman single factor was accustomed to check the common technique deviation. There were 5 factors with characteristic root greater than 1 extracted from the factor analysis results, and the maximum factor variance interpretation rate was 26.55% (less than 40%), so there's no serious common methodology deviation during this study.

3.2 Gender Differences in Sleep Status of College Students

Independent sample t-test showed that there was no difference between boys and girls in sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep medication and daytime dysfunction, but boys' sleep quality was better than girls' sleep quality, $t = 0.77$, $p = 0.003$. See Table 1 for detailed results.

3.3 Correlation Analysis of Sleep Status, Anxiety Status and Academic Performance of College Students

Pearson relation analysis was used to measure the relationship between sleep status, anxiety status and academic performance of college students. The correlation matrix of each variable is shown in Table 2. There is a pairwise correlation between College Students' sleep status, anxiety status and academic performance. There is a obvious positive correlation between sleep status and anxiety status, a obvious negative correlation between sleep status and academic performance, and a significant negative correlation between anxiety status and academic performance.

Table 1. Gender differences in sleep status

	Male(n = 24)	Female(n = 30)	t
Sleep quality	0.79 ± 0.16	0.93 ± 0.10	0.77*
Sleep latency	0.50 ± 0.16	0.47 ± 0.13	-0.16
Sleep duration	0.38 ± 0.16	0.40 ± 0.11	0.13
Sleep efficiency	0.42 ± 0.12	0.33 ± 0.15	-0.41
Sleep disturbance	0.96 ± 0.07	1.07 ± 0.05	1.23
Use of sleep medication	0.04 ± 0.04	0.10 ± 0.07	0.65
Daytime dysfunction	1.25 ± 0.18	1.53 ± 0.74	1.24

Note: * p < 0.05, ** p < 0.01, the following are the same

Table 2. Correlation matrix between sleep status, anxiety status and academic performance of college students

Variable	Sleep status	Anxiety state	Academic record
Sleep status	1		
Anxiety state	0.318*	1	
Academic achievements	-0.320*	-0.298*	1

3.4 Regression Analysis of Sleep Status, Anxiety Status and Academic Performance

In order to further explore the prediction of sleep status on academic performance, multiple linear regression analysis was carried out in this study. Sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep medication and daytime dysfunction were included in the regression equation. The results of multiple linear regression analysis showed that sleep efficiency, sleep disturbance, use of sleep medicine and daytime dysfunction had a negative predictive effect on college students' academic performance, and sleep quality had a positive predictive effect on college students' academic performance, among which sleep efficiency had the most significant negative predictive effect on college students.

3.5 Mediating Effect of Anxiety on Sleep Status and Academic Performance

Taking sleep status as independent variable, academic achievement as dependent variable and anxiety status as intermediary variable, Spss26.0, and repeated sampling for 5000 times to calculate the 95% confidence interval. The results showed that anxiety had no significant mediating effect on academic performance in sleep, and there was no mediating effect (Tables 3 and 4).

Table 3. Regression analysis between sleep status and academic performance (n = 54)

Independent variable	B	SE	t	p
Sleep quality	0.33	0.09	2.26*	0.029
Sleep efficiency	-0.58	0.10	-3.91	0.001
Sleep disturbance	-0.36	0.04	-2.82	0.007
Use of sleep medication	-0.28	0.05	-2.10	0.041
Daytime dysfunction	-0.36	0.11	-3.07	0.004

Table 4. Breakdown of total effect, direct effect and intermediary effect

	Effect	BootSE	BootLLCI	BootULCI
Indirect effect	-0.317	0.252	-0.899	0.766
Direct effect	-1.137	0.897	-2.984	0.494
Total effect	-1.454	0.970	-3.440	0.314

4 Conclusions

4.1 Gender Differences in Sleep Status of College Students

The results of this study show that there's no distinction within the overall sleep status between male and female college students, but the sleep quality of male college students is better than that of female college students [3]. Referring to the relevant literature, there is no difference in the overall sleep status between male and female students, and there are differences in different sub factors affecting the overall sleep status between men and women. Women have more problems of poor sleep quality than men (references cited). Female college students should pay more attention to sleep quality than male college students, appropriately increase exercise [4], pay attention to diet at night, do not eat too much at night, do not listen to too intense dynamic music, listen to more light music, and it is best not to be too exciting before going to bed.

4.2 Relationship Between Sleep Status, Anxiety Status and Academic Performance of College Students

The research in this article shows that the worse the sleep status of college students, the more likely they are to have anxiety. The worse their sleep status, the worse their academic performance, the more likely they are to have anxiety, and the worse their academic performance. Studies have shown that anxiety patients often have sleep disorders [5]; poor sleep status was a predictor of decline in academic performance and subjective learning concentration [6]; the students with high emotional intelligence have low educational anxiety, that makes them higher maintain their mental state, psychological feature ability and educational performance [7]; negative emotions such as anxiety and depression have

an important impact on academic performance and attendance [8]. Multiple regression analysis further showed that the lower the sleep efficiency, the worse the academic performance, the more serious the sleep disorder, the worse the academic performance, the more frequent the use of hypnotic drugs, the worse the academic performance, the more serious the daytime dysfunction, and the worse the academic performance. College students should pay more attention to sleep and anxiety, and timely self-regulation, which has a certain positive effect on the improvement of academic performance.

4.3 Mediating Effect of Anxiety on Sleep Status and Academic Performance

The research in this article shows that anxiety does not play a mediating role between sleep status and academic performance. The scale used to collect anxiety data in this study is aimed at the overall anxiety. There is no separate list of learning anxiety dimensions and no separate measurement of learning anxiety. In the mediating role of health anxiety and psychoneurotic symptoms in vanity and web gristle in community samples, the short-term health anxiety scale was used to measure the dimensions of health anxiety [9]. In the study of the mediating result of social anxiety and social sensitivity on vanity and mobile addiction, the social anxiety self-awareness scale was used [10]. In the study of jealousy and social media use anxiety in social media addiction and burnout, it is pointed out that the specific anxiety scale used in the social media platform is not the general anxiety scale for research evaluation [9]. This paper does not use the scale of learning dimension, but this paper uses the general anxiety scale, it's Self-Rating Anxiety Scale.

Authors' Contributions

This article was written by Chen Haoran and revised by Professor Sun Ruishan.

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