

# 大学生睡眠时长和绩点的 相关性研究



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# The relationship between student's GPA and their sleep length



**Research Proposal of Chongqing University**

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# **1 Introduction**

## **1.1 Background of the study**

Sleep is one of the most necessary routine in one's daily life. And it can influence students' development of cognitive and attention, which in turn affects their academic performance.

To help improve student's work efficiency and scores, numerous scientists have carried out study on the relationship between sleep quality and students' academic performance and study efficiency. It is found out that Poor sleep quality and sleepiness significantly contributed to the variance of dissociative symptomatology( Yavuz Selvi,2017),which does harm to academic performance. And disturbed sleep, aliveness and fatigue, all are interlinked with each other and are imperative factors having the potential to alter the academics of students. ( Asawa Kailash,2017).The first study to evaluate the independent contributions of SST and sleep to academic performance in a large sample of middle school students(Lewin Daniel S,2017) was conducted and discovered that Students with SST before 7:45 a.m. were at increased risk of decreased sleep duration, academic performance, and academic effort. The above studies have focused on the sleep quality and the effect it brings to academic in aspect of cognition and attention influence.

## **1.2 Purpose and significance of the study**

However, few studies have focused on exactly the length of time and the straightforward influence on students' GPA. This research, mainly conducted among the university students in Chongqing University, aimed to find out the exactly relationship between student's GPA and their sleep length. As is known to all, a person's sleep quality has a lot to do with his

sleep length. According to the National Sleep Foundation(NSF), teenagers should guarantee that they have sleep time between 7-9 hours everyday. Otherwise, it can greatly affect their physical and mental development. But sleep problem is one of the most serious problems among college students nowadays. Some suffer severe sleep disorder or disease and could not attain enough and sound sleep, which directly influence their academic performance. However, others stay up late to work hard on their study and profession, thus significantly cut down their sleep time, The first kind of students have short sleep time passively, but the second one volunteer to sleep less to improve their GPA, which is one of the most important indicators for evaluating a student's performance in universities. If this study can actually find out the relationship between students' GPA and their sleep length, it can be meaningful and helpful for students to decide how long they should sleep to attain the best scores. It can also prevent students from staying up too late to study, which cannot benefit their GPA but influence their physical health. Lack of sleep time can definitely influence one's concentration,academic performance and efficiency. But devoting more time to learning is beneficial to the improvement of one' s academic achievement. Thus, there must be a balance between the time college student should devote to sleep and study, with which students can both attain high sleep quality and get high scores.

### **1.3 Hypotheses or Research questions**

The author hypothesizes that having a sleep time which is recommended by professions, among 7~9 hours may be the best for students to get higher GPA. Too short will harm one's intellectual development while too long may decrease one's time that are spent in study, both of which is harmful to the enhancement of GPA.



## **Literature Review**

The research on the relationship between the lengthen of time and study or work efficiency began as early as 1913, when Terman Lewis M and Hocking Adeline made a research on the sleep of school children: Its distribution according to age, and its relation to physical and mental efficiency. Since then, the correlation between sleep quality and work efficiency has raised numerous researchers' interest and they have developed various methodologies to study on this topic, including comparing subjective and objective daily methods, novel Intrinsic Ignition Method and so on. And it is agreed widely that the sleep have close relationship with the study efficiency of work and study, which in turn has profound influence on one' s future development and career success.

### **2.1 Poor Sleep Quality Exacerbates Psychomotor Performance**

.Some studies have focused on how the sleep quality and length influences mental health and psychomotor performance, which can impact students' performance directly. It is quite necessary to define whether the sleep quality and length can influence students' mental as well as psychomotor performance. The relationship between them is evident with numerous studies( TokurKesgin Makbule;2021) have demonstrated this fact that Sleep quality had a full mediation role between MEQ score and mental health score and considering chronotype-focused measures to improve adolescents' sleep quality and psychosocial health is essential. The study made by Di Muzio Marco in 2020 shows that lower sleep quality (Pittsburgh Sleep Quality, PSQI > 5) can lead to lower attentional performance, which was associated with decreased performance in work. It

is also necessary to clarify the correlation between mental and psychomotor performance and students' academic performance. Various studies( Uji Masayo;2021) indicates that the lower levels mental health is related with in-creased academic stress, and low perceived social support. And others shows that Conclusions: Mental health impacts academic so that ongoing attention to mental health is vital to student well-being. Therefore, there is a strong relationship between sleep quality and psychomotor performance, then can influence academic performance.

## **2.2 Associations between sleep and academic performance**

The main goal of this research is to find out the associations between sleep and academic performance, which have always been a heated search topic around the world. It is widely accepted that poor sleep can result in poor academic performance as well as work efficiency. The study recently published by Musshafen Leslie in April 15th, 2021 indicated that sleep duration and sleep quality had negligible correlations with academic performance. While others( Rea-Sandin Gianna,2021) shows that increasing the quantity and quality of children's sleep could improve academic outcomes, particularly for children who have experienced socioeconomic disadvantage. There is also studies found out that mean short sleep duration, which results in poor sleep quality and greater sleepiness during the day, can causes poorer time management, lower work efficiency and more procrastination. The above studies shows that association between sleep and academic performance is quite obvious and worth great attention.

## 2.3 Summary

To sum up, student's sleep duration and quality can influence their academic performance and work efficiency in several aspects, including mental and psychomotor health, cognitive dissonance and behavior disorder and so on. But those above studies mostly use students in junior high school as research subject, while others mainly tried to find out the sleep length for early child development. It is difficult to find a survey mainly concentrated on college students, who have more complex factors to influence their academic health, including different mental conditions, unfamiliar environment, mature intelligence and ideology and so on. Thus, different sleep length and quality may have different influence on them compared with teenagers at other age periods. Besides, while the need for sleep increases in college students with the effect of physiological and hormonal changes, they have highlighted the serious sleeping problems compared to childhood and adulthood or reduced their sleep time voluntary to be outstanding in academic performance. Therefore, the author believes that it is quite necessary to make such a research which can provide useful guidance for college students who desire to achieve academic success while attaining good mental and physical health.

Past studies mainly use long term data, varies from 2~4 years, to find out the influence sleep duration and quality on academic performance and development. By using questionnaire, data collected from actigraph and diagrams, it is possible to demonstrate the relationship between them more clearly. Therefore this study is aimed at achieving the goals by addressing the following research questions:



(1)What is your GPA in the pass terms? How long do you sleep everyday (including at night and at noon)? How do you evaluate your sleep quality.

(2)Do you suffer various behavior or cognitive disorders? How do you feel when you sleep less then your normal sleep time, does it impact your work efficiency?

### **3 Research design / methodology**

The research was carried out mainly among students in Chong Qing University in June 2021, which mainly through Internet. There are several kinds of questionnaire developed by researches from various countries, which aimed at finding the quality of the subjects' sleep quality as well as work efficiency. In this study, the author mainly used Sleep Quality Survey Scale (PSQI), Anxiety Index Scale (SAS) and self-made scales to analyze the survey results with statistical methods, observe students' sleep quality and analyze influencing factors. The survey was mainly carried out by analyzing data collected from the questionnaire designed by the author and answered by the students in Chong Qing University from different grades, which guarantee the accuracy and universality of the research conclusion.

#### **3.1 The questions in the questionnaire are as follows**

1. Grade
2. Generation
3. Age
4. Your average GPA
5. Your average sleep length (hours. Include at night and at noon)?
6. When do you go to sleep at night?
7. How do you evaluate your sleep quality (excellent, good, medium, bad)?
8. How much time do you spend on studying everyday (hours)?
9. How do you evaluate the influence between your sleep length and learning efficiency (very strong, strong, medium, irrelevant)?

### 3.2 Analysis methodology

By referring to the methodologies used by other researches, including PSQ, SAS and pilot studies, the author developed a self-made scales to analyze the survey results with statistical methods, which mainly includes a format developed by the author.

For question 7 and 9, the author divided the answer into 4 ranks, and set them to score 1, 0.75, 0.5, 0.25. For example, if your answer for 7 is excellent, then 1 will be assigned to the question, while 0.25 will be assigned to your answer if your answer is irrelevant for question 9.

The format is as follow:

X = Sleep length (got from question 5)

Y = Study hour (got from question 8)

A = assignment point a (got from question 7)

B = assignment point b (got from question 9)

$$\text{Final score} = [(X / 24) * a] / [(Y / 24) * b]$$

$$\text{Correlation score} = \text{GPA} * \text{Final score}$$

Students with higher correlation score are considered his sleep length is more relevant to his GPA. Then the percentage of high correlation, medium correlation and low correlation students was worked out to test the hypothesis of this study.

The limitation of the study is that there may be other factors influence different students' GPA, including family and growth background, mental maturity and so on. The factors are not considered in this study, but they can have influence to the outcome to a certain extent.

## **4 Proposed timeframe**

2021.6.12 — — 2021.6.15      Preparation for the study, including questionnaire designed and analysis methods.

2021.6.15 — — 2021.6.25      Distribute questionnaires and collect data

2021.6.25 — — 2021.6.30      Data analysis by using the self-designed methodology.

2021.6.30 — — 2021.7.3      Reach the conclusion and finish the research paper.

## **5 Expected outcome**

It is expected that the number of high correlation students will make up for the main position of the students in the survey, while there may be few students with medium correlation or even low correlation, which are quite uncommon in our daily life and cannot meet with scientific logic and theory. By making such survey, it is expected to reach a conclusion that sleep length do correlate with students' GPA, which mainly by influencing the work efficiency, the focus of attention and physical and mental health. And it is also expected that students' with average sleep time for 7-8 hours, with study time about 10 hours everyday can get the highest GPA, which make a perfect balance among sleep, study and entertainment. Nowadays, with the phenomenon of rolling inside spread widely in the whole society, especially among college student. And the result can help improve student's work efficiency and scores while ensuring that they can get enough sleep time, which can reduce the rate of sudden death, health problem and mental disorder in college students. The result of the study aimed to provide a balance between the time college student should devote to sleep and study, with which students can both attain high sleep quality and get high scores.

## **6 Feasibility analysis**

The foundation of the study based on numerous studies made by previous researches, which aimed to find out the relationship between work efficiency and sleep quality and length. There are researches which have found out that Poor Sleep Quality Exacerbates Psychomotor Performance, while others discovered strong evidence that there are associations between sleep and academic performance. All these researches have lay a solid foundation for this studies, which hypothesis that there exists a suitable sleep time which can benefit the college student's GPA. Before the study, several necessary preparation was made, including the evaluation system of the sleep quality and length, the methodology previous researchers used to analyze such relationship and question, the mental condition and current study situation of college students and so on. All these factors can have influence on this study, which has considered most of them carefully. However, there do exist limitations in this study, including the number of surveys is not wide enough, the students are all from Chong Qing University so cannot represent all college students. What's more, the methodology was designed by the author, which may not be accurate and perfect enough to describe the whole situation. So it is expected that future researchers can make further development on this topic.

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