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## Sleep Soundly

**Mike Browne and Adam Saito**

*College students are constantly torn between a social life and an academic life. The erratic and crazy lifestyle that they live is one of a kind, and the things they do can greatly affect their grades. One of the things that many people believe is that better quality of sleep can lead to better grades in school. Through this experiment we tried to find statistical significance to support the hypothesis that lower sleep debt would relate to a higher GPA. We analyzed the surveys of 68 students, 39 women and 29 men, to rate sleep debt and record their associated GPA. After collecting the data we conducted a four-way ANOVA and failed to reject the null. We were unable to find a positive correlation between good sleep hygiene and GPA.*

There is no doubt that college student's work on an extremely erratic and normally unstable schedule during both the week and the weekend. Unfortunately, many people today, including the college student population, are not aware of how important it is to maintain good sleep hygiene. Sleep hygiene is commonly described as exhibiting behaviors that promote attaining healthy amounts of sleep and works to avoid situations that would conflict with attaining sleep (Mastin, Bryson, & Corwyn, 2006). Since awareness of sleep hygiene can be extremely important, it is something which should be emphasized more in our society today. The general population suffering from sleep deprivation is known to fall victim to accidents on the job site, loss of jobs and an incredibly increased rate of accidents in automobiles, as opposed to those without sleep deprivation (Brown, Buboltz, & Soper, 2006). Inadequate sleep hygiene is defined as a, "sleep disorder due to the performance of daily living activities that are inconsistent with the maintenance of good quality sleep and full daytime alertness," (Mastin et al., 2006, p.

223). Obviously this becomes a problem when the lifestyle of a typical college student is brought into perspective.

Student life across the country is typically recognized as one involving late nights, binge drinking and unhealthy sleeping patterns paired up with high levels of anxiety and stress (Brown, Buboltz, & Soper, 2002). This stereotype is supported by recent findings which suggest that poor sleep quality can lead to significantly higher levels of psychological distress (Brown, et al., 2002, p. 33). Examples include symptoms such as depression, anxiety, reduced physical health, difficulties carrying out simple mental processes and drug abuse (Brown, et al.). All of these variables are capable of affecting student performance, but even more factors weigh against a student's favor. From puberty into a person's early twenties, about 9.2 hours of sleep is needed every night to sustain a healthy sleep debt (Sadd, 2007). Unfortunately, in a recently performed study, only 11% of students surveyed met the criteria for good sleep quality, the rest of the sample had moderate-to-severe sleep complaints (Brown, et al.).

Moving forward, the question of what can be done to fix this problem quickly arises. Perhaps the highest priority of all sleep problems is variable sleep schedules, which account for the greatest amount of variance in grades when compared with mood, stress level, social support, hours worked, gender, and age (Brown, et al., 2006). It seems that a lack of information may also be playing a large role in the problem. Many have the misconception that one can make up missed sleep during the weekend, or those eight hours of sleep is equally sufficient regardless of when it occurs, this is not true; waking up at the same time every morning can prove very beneficial with regards to good sleep hygiene (Brown, et al., 2002). Findings suggest that sleep practices (i.e. routines) are strongly related to overall sleep quality. These same findings also support the notion that knowing what to do is only half the battle, actually using the information

proves to be more difficult and more important (Brown, et al., 2002). Overall, the best approach to attacking sleep problems should be a psychoeducational process, followed up by using a formed routine. Psychoeducation is a process where people are involved in a group, or one on one, meeting where general thoughts, facts and situations are discussed regarding a topic. The purpose of the meeting is to gain knowledge and gain a better understanding on a topic.

Although knowing what to do is half the battle, following through on the information and using it is equally, if not more, important.

The use of proper sleep hygiene seems to have a positive effect on a student's academic career as well as health in general. According to previous research, when subjects who received little sleep were compared to those with more sleep they tended to be less psychologically healthy (Kelly, 2004). Also, those who claim to have less sleep, report less creativity and lower grade-point averages than those who report longer periods of sleep (Kelly). Also, the time periods in which students are sleeping seems to have an effect on their performances. In one study, students with later wake up times in the morning were reported as having lower average grades in the first year of their college career (Banitt, 2002). Keeping this in mind, it does not take much critical thinking to relate grades to sleep patterns; one problem that many students are constantly battling is time management. With a routine and proper sleep cycle where you are waking up earlier, more time is available to study. It was found that studying has a very causal effect on student grade performance. It has been found that an increase in study effort of one hour per day caused first semester grade point averages to increase by .356 (Stinebrickner, 2007). Other activities that are made possible by early wake up and routine may also prove to be beneficial to grades in school. In one study a positive association was found between strength

training and GPA (grade point average) and also the following of spiritually-oriented subjects (Banitt).

The effect that a routine and a proper sleep cycle have on academic performance brings us to the purpose of our study. The purpose of this study is to record the sleeping habits and GPA of students on Lindenwood campus in order to determine whether or not there is a correlation between the two variables. A previous study conducted within the graduate students at Ohio University found that when hours of sleep are increased, GPA also increases (Kandell, 2004). Additionally, when hours of sleep decreased, GPA also decreased (Kandell). We plan on surveying students on a wider range than just hours of sleep alone, and further supporting Kandell in his research. Through this extensive survey we predict that there will be a positive correlation between good sleep hygiene and Grade Point Average. We are investigating further into whether or not there is a correlation because we notice that many students lack efficient sleep, and/or complain about not getting enough. Keeping this in mind it could prove valuable to find any correlation that may be between this and GPA.

### Method

#### *Participants*

For this study, we obtained participants from the Human Subject Pool at Lindenwood University. Since we did not collect enough participants through the HSP alone, we went to two different classrooms at the start of class to collect data from those students in the course. The participants who were recruited through the HSP received a receipt obtain extra credit for volunteering for our study in their psychology, sociology, and anthropology classes. The participants surveyed from classrooms did not collect any compensation for participating. We collected data from 68 participants. Thirty-nine were women and 29 were men. Another

demographic we obtained was class standing, with 26 freshmen, 18 sophomores, 13 junior, and 11 senior. Four surveys had to be discarded from being analyzed due to the fact that those four participants were in their first semester at Lindenwood University and did not have a GPA.

### *Materials*

A questionnaire (see Appendix A) was used in our research. The questionnaire was a standardized survey that was used in a previous study by Stanley Coren (1996). The survey asked about the participants' sleep patterns and how they felt when they woke up in the morning. We added additional questions to the questionnaire in order to obtain data about the participants' GPA. Two, informed consent forms were given to each participant as soon as they sat down for the survey. They were instructed to read over the form and sign both copies. One form was kept for our records and the other the participant kept for their records. We conducted the surveys in the psychology lab located in the basement of Young Hall. Two different rooms were used and they both contained two chairs and a table.

### *Procedure*

The participants met the researchers in the psychology lab. Upon arriving the subjects were told about the research that was being conducted and the purpose. They also filled out consent forms stating that they are willing to participate in the study. Since no participants were under the age of 18, we did not need to obtain consent from a legal guardian, although the HSP does have signed parental consent for students that are under 18 years old. After completing the necessary paperwork to conduct the study, the participants were given the survey and as much time as needed to complete it. After a relatively quick process of completing the survey, the subjects were then debriefed about the study. The surveys were then taken by the researchers and scored according to the system used by Coren (1996). The system required the researchers to

count the number of, “yes,” responses which correlated to the different levels of sleep deprivation. The levels ranged from, “none” to “severe.” Each participants score was then compared to their grade point average.

### Results

The means (M) score for sleep habits was, 8.29, with a standard deviation (SD) of, 2.516. The mean score for sleep can be described as the average participant having large sleep debt. The mean for GPA was, 3.1215, with a SD of, .51020.. The results were run using a Pearson Correlation and a one tailed test was done to find a significance between sleep debt and GPA ( $r = -.108$ ,  $n = 68$ ,  $p < .05$ , sig. 1-tailed = .190). An inverse relationship was found.

### Discussion

The results from our experiment failed to support our hypothesis. Originally we predicted that there would be a positive correlation between good sleep hygiene (i.e. low sleep debt) and grade point average. Although there was a weak correlation between the two, we failed to find significant statistical evidence supporting our hypothesis. In actuality we found a negative correlation between good sleep hygiene and grade point average, the poorer the sleep hygiene of a subject was the higher their GPA was.

These results contradicted previous findings which supported the idea that good sleep habits have a significant and direct correlation to GPA (Kandell, 2004). This may suggest that there are more specific details which attribute to sleep health and sleep patterns which can affect grade point average and effectiveness in the academic setting. Further studies may also want to look into specific sleep habits such as pre-bedtime rituals or post-sleep rituals.

Unlike previous sleep debt studies, we used a standardized sleep debt survey which did not record actual sleep time. On the opposite end of the spectrum, maybe sleep and grade point

average have a much simpler link to one another as opposed to more detailed. Perhaps specific sleep habits have nothing to do with it, and as long as you are attaining a certain average amount of sleep daily, academics do not suffer. It is possible that poor sleep habits at night, supported by napping throughout the day is equally as sufficient as proper sleep at night. This would support previous research which reported that individuals who reported fewer hours of sleep also reported overall low grade point average and less creativity (Kelly, 2004).

One of the previously supported theories which our experiment contradicts is the idea that a variable sleep schedule is the worst possible scenario in relation to performance. Through our survey, variability and quality of sleep were two of the main factors while measuring sleep debt. Contrary to other resources, sleep variability does not seem to play a large factor in the academic setting or with GPA, which was proposed by Brown et al (2006).

Our research seems to work against many previous notions and concepts of sleep and mental abilities, which obviously brings about the idea that perhaps there are some flaws. First and foremost a wider variety of subjects would have been better suited for our study. Many students were those seeking extra credit in classes, which would most likely bring studious subjects to our survey. Studious people are already inclined to having good grades, so perhaps all of those students with poor grades did not find it worth their time to come out and take the survey. This would definitely affect the results of a study like ours, greatly influencing the average GPA. Another problem that seemed to arise during the process of surveying was the questionnaire itself. We used a previously created standardized test, slightly modified. While testing several subjects they mentioned that some of the questions could not be answered with a simple yes or no. This could have of course greatly affected our results.



Overall we learned a lot from the project, including how to improve it at a later point in time. With additional research and some adjustments to the survey, perhaps more accurate results could be collected. The theory that sleep greatly affects grades in school is yet to be proven or disproved, and until a perfectly designed research experiment can be put forth, we will not be able to tell for certain which are the best sleep habits for attaining the best grades.

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## Appendix A

## Survey

1. Do you usually need a loud alarm clock to wake up in the morning?  
Yes                      No
2. Do you usually hit the snooze button to get a few extra minutes more of sleep when the alarm goes off in the morning (or simply turn off the alarm and try to catch a bit more sleep)?  
Yes                      No
3. Do you find that getting out of bed in the morning is usually a struggle?  
Yes                      No
4. Do you sometimes sleep through the alarm?  
Yes                      No
5. Do you sleep longer on the weekends than you normally do during the week?  
Yes                      No
6. On vacations and holidays do you sleep longer than you normally do on regular workweeks?  
Yes                      No
7. Do you often feel that your “get-up-and-go” has gotten up and gone?  
Yes                      No
8. Do you find that it is more difficult to attend to details on routine chores than it used to be?  
Yes                      No
9. Do you sometimes fall asleep when you had not intended to?  
Yes                      No
10. Do you sometimes find yourself getting very sleepy while you are sitting and reading?  
Yes                      No
11. Do you sometimes find yourself getting very sleepy or dozing off when you are watching TV?  
Yes                      No

12. When you are a passenger in an airplane, car, bus or train and the trip lasts over an hour without a break, do you commonly find yourself getting very sleepy or dozing off?

Yes                      No

13. Do you tend to get sleep when you are sitting quietly at a public meeting, lecture or in a theater?

Yes                      No

14. Have you sometimes found yourself getting extremely sleepy with the urge to doze off when you drive and are stopped for a few minutes in traffic?

Yes                      No

15. Do you drink more than four cups of coffee or tea (containing caffeine) during the day? (Remember to count refills; also count extra large take out cups as two cups.)

Yes                      No

16. What is your current GPA here at Lindenwood University?

\_\_\_\_\_.

17. What is your sex?

MALE                      FEMALE

18. What year are you here at Lindenwood University?

Freshman      Sophomore      Junior      Senior      Graduate