The Effects of Sleep Deprivation on High School GPA

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Abstract

Sleep is a necessary component of a fit lifestyle and contributes to bodily healthy and cognitive function. This study addresses the link between nightly sleep habits and student GPA. Two hundred students completed questionnaires on which they were asked (1) how many hours of sleep they got the previous night, (2) how many hours of sleep they averaged on a school night during the last week, and (3) how many hours of sleep they averaged on non-school nights for the last week. Students also provided their GPA. T-tests showed a positive correlation between average amount of sleep per night in the last week and GPA, indicating that sleep in a key factor in student performance.

Introduction

Sleep isn’t just necessary for survival—it’s also one of the most important aspects of a healthy lifestyle. Along with a healthy diet and exercise, consistent, high-quality sleep improves health indicators like level of healthy cholesterol (Xang 2002), blood pressure (Wells et al. 2001), and weight (Barton 1999). Although the mechanism for these improvements is unclear, what is obvious from the research is that sleep plays a key role in the body’s ability to maintain itself.

It’s also long been known that sleep is required for mental well-being as well. Those who are well-rested consistently perform better on cognitive tests (Asher and MacMullan 1985; Barton 1999) and show better reflexes and processing skills (A. Martin et al. 2006). In fact, subjects who are sleep deprived often do worse in driving simulations than those over the legal limit for intoxication (A. Martin 2006). In more extreme cases, sleep deprivation has long been used a torture technique to punish and/or illicit information (Card 1977).
Despite the known importance of sleep, high school students in the U.S. still only get an average of six hours a night (C. Martin 2011). This study will explore the effects of this sleep deprivation by looking at the relationship between high school students’ amount of sleep and GPA.

Materials and Methods

Two hundred students from George Washington High School filled out questionnaires about their sleep habits. Students were asked (1) how many hours of sleep they got the previous night, (2) how many hours of sleep they averaged on a school night during the last week, and (3) how many hours of sleep they averaged on non-school nights for the last week. Students were then asked to provide their cumulative GPA for the year.

A two-tailed, paired t-test was performed to determine whether there was a correlation between sleep habits and GPA.

Results

The average amount of sleep the previous night was 5.3 hours. The average of the regular amount of sleep students got per school night was 6.5 hours. The average amount of sleep on a non-school night was 9.2 hours. The average GPA for all students was 2.7. The distribution of GPAs provided by students was statistically similar to actual GPAs provided by the school administration, indicating that student reporting was accurate.

T-tests showed no correlation (p = .1527) between hours of sleep the previous night and GPA and non-school night sleep habits and GPA (p = .1440). There was however a mild correlation between average sleep on a school night and GPA (p < .05).
Discussion

The results from the study were mixed. Statistical tests showed a correlation between student’s reported average night of sleep and GPA, indicating that students who get more sleep have higher grades. It is not clear from the study whether this is a cause and effect relationship. It’s possible that students who put more effort into their schoolwork are more likely to make sure to get to bed early, although this study, combined with previous work demonstrating the cognitive effects of sleep deprivation, suggest that the students unable to get enough sleep will likely have poor grades.

This correlation did not exist for the amount of sleep reported for the night before the survey. This is likely because a the variation in a single night of sleep is too high to provide any useful information. Average reported sleep over the course of the week is a more reliable statistic. Similarly, sleep on non-school nights did not correlate with GPA, most likely because the variation in reported amounts was very high.

Larger studies would need to be done to discover whether this effect can be seen in student populations across schools. This study suggests that the officials at George Washington High School would do well to consider changing policies to help students get more sleep. Moving the school start time later and limiting nightly homework would both give students the time they need to get enough sleep, which would boost learning and GPA throughout the school.
Cited References


