Sleep deprivation in college students leads to a diminishment in motivation, ability to retain information, and shortened attention span which combined leads to lower academic performance. While some students may resort to caffeine or substance use to increase productivity, others experience burnout and consequently suffer from sleep deprivation. Increased stress and screen time both aggravate this situation. We hypothesize that there is a relationship between work demands related to a student’s choice of major and poor sleep quality and quantity. A 35-question survey was administered to 70 college students at Philadelphia University in March 2017 using Typeform, an online survey tool. Average response time was six minutes. The majority of the respondents were female (56%) and were either freshmen or sophomores (56%). Questions measured sleep quantity and quality, screen time before sleep, substance use and rate of screen time, level of stress, and satisfaction with academic performance. Incomplete surveys and students with diagnosed sleep disorders were excluded from analysis (n = 5). Demographic information such as major, year in college, gender, were used to compare sleep behavior. Each student’s answers were scored based on the Pittsburgh Sleep Quality Index (PSQI) in which any value over 5 is categorized as poor sleep quality. Results indicated that students studying in the architecture program had statistically higher scores compared to those in the Physician Assistant Program (1.91 vs. 1.73, p = 0.003571). In addition, design majors sleep significantly fewer hours per night compared to science majors (14.9 vs. 16.70, p = 0.002727). While this is a small survey in proportion to the total student population of 2,798, it indicates that outreach to improve sleep strategies tailored to specific majors may be worth exploring further.

While sleep is a necessity for optimal mental, emotional, and physical health, many college students are among the most sleep deprived. This can be for many reasons; the most common are stress level, sleep quality, and electronic use before sleep. Stress levels can increase heart rate and messing thoughts may preoccupy the mind before falling asleep, thus decreasing the likelihood of achieving effective sleep (Hall, 2000). Subsequently, stress levels, daily academic workload, and screen time before sleep are major sources contributing to decreased sleep efficiency. The data obtained from survey questions regarding the effects of caffeine use, screen time before bed, and drug use add not show any disparity between the majors or grade levels. These factors are already scientifically proven to negatively affect sleep quality and the majority of the respondents reported to have partaken in at least one, if not more, of the listed sleep-inhibiting activities or substances. In a sleep study that compared the correlation between college students’ sleep quality and alcohol intake it was concluded that the higher weekly alcohol intake, the lower quality of sleep for the student (Kenney, P flawed, & Ladire, 2014). In another study done by Hershner and Cherwin it was found that caffeine and stimulants affect students’ quality of sleep. Students utilizing caffeine and stimulants for college and work appear to be more stressed and sleep deprived than those who do not. These drugs increase the time it takes someone to fall asleep and also suppress REM sleep. The stages of REM sleep are crucial to learning and if students are not sleeping long enough, they lose a portion of sleep dedicated to learning and memory. Students who consistently receive less than 8 hours of sleep are eliminating the crucial first 2 hours of REM sleep (Buysse, Brown, & Saper, 2017). Additionally, researchers found the effects of caffeine last for 5–7 hours which suggests that caffeine consumed could impair someone’s ability to fall asleep later that night. Caffeine, on the other hand, increases heart rate and can lead to sleepiness in the morning, the previous night’s sleepiness correlates with difficulties falling asleep, repeated awakenings, or waking up too early. Melatonin is suppressed by light and the light projected from screens increases inflammation and stressors prior to bedtime (Dunin-Borkowski, Boulos, Brown, & Casler, 2000). Therefore, the use of technology before bed encourages late bedtimes and insufficient sleep. In order to counteract this, people can utilize a yellow light filter, found in many settings and apps, as it is on a warmer spectrum and is easier for the eyes to process.

Spreading awareness of studies on the brain in regards to the relationship between sleep quality and all of the inhibitory factors would be beneficial in increasing the overall quality of sleep attained by students at Philadelphia University, and could apply to students at other colleges as well. Universities should offer resources for those students who are struggling with time management and sleep deprivation. According to the University of Minnesota Journal of Psychology, sleep deprivation can include a negative correlation with grade point average. In order to combat this, they suggest that aspiring students should become more aware of specific ways to utilize sleep habits (Lowry, Dean, & Manders, 2010). Students should be informed about the blue light filters, efficient study habits, and healthy alternatives to caffeine.

Despite the benefits of the blue light filters and the respondents’ majors, the overall poor quality of sleep can be partially attributed to actions including but not limited to caffeine consumption, stress levels, daily academic workload, and screen time before bed without a blue light filter. According to the findings, college students overall display a lack in quantity and quality of sleep. In tandem with other studies, it has been found that a way to combat the culture of sleep-deprivation would be to arm students with the resources necessary to gain better sleep habits.

Materials and Methods

Seventy-one undergraduate students enrolled in Philadelphia University participated in a 35 question sleep survey through an online survey generator, Typeform. The survey consisted of three main parts: the Pittsburgh Sleep Quality Assessment (PSQI), quality of life, and demographics. The PSQI questions, which focused on sleep habits, were asked in reference to the past month. The participants scaled each question from 0-3. Subjects then answered questions regarding their level of stress, substance intake, and the use of screens before sleep. Participants gender, ethnicity, major and year in college was collected.

- A total of 70 students were administered the survey designed for this study which included both the PSQI and many original questions designed by the researchers.
- The survey included 35 questions and took the respondents an average of approximately six minutes to complete.
- Of the respondents, 74% were female while 26% were male. The respondents reported their race as White/Caucasian (72%), Asian/Pacific Islander (2%), Black/African American (10%), and Hispanic/Latino (8%).
- The majority of the respondents were freshmen (43%), while sophomores accounted for 37%, and seniors accounted for only 10% of all surveyed.
- Thirty-six of the students were enrolled in science majors while the remaining thirty-four were enrolled in design majors. The most common majors reported by respondents were Physician Assistant with 26% and Architecture 14%.
- The disparity between hours of sleep per night was statistically significant in showing that science majors attain more sleep than design majors.
- Using the Pittsburgh Sleep Quality Index (PSQI), it was found that architecture majors attain a lesser quality of sleep compared to Physician Assistant majors.
- A total PSQI score of 5 or greater is considered poor quality sleep. 88% of the architecture and Physician Assistant students reported to have “poor quality sleep”.
- 94% of the respondents used a screen device prior to going to sleep and only 50% of those use a blue light filter.

The results yielded from our study directly supported the hypothesis that design and architecture majors, on average, sleep a little less or more than science majors and also attain a lower quality of sleep. Although the science majors attain a greater quality of sleep than design majors, almost all of the respondents to the survey at large were classified to have “poor sleep quality” according to the criteria of the Pittsburgh Sleep Quality Index (PSQI).

The data obtained from survey questions regarding the effects of caffeine use, screen time before bed, and drug use did not show any disparity between the majors or grade levels. These factors are already scientifically proven to negatively affect sleep quality and the majority of the respondents reported to have partaken in at least one, if not more, of the listed sleep-inhibiting activities or substances. In a sleep study that compared the correlation between college students’ sleep quality and alcohol intake it was concluded that the higher weekly alcohol intake, the lower quality of sleep for the student (Kenney, P flawed, & Ladire, 2014). In another study done by Hershner and Cherwin it was found that caffeine and stimulants affect students’ quality of sleep. Students utilizing caffeine and stimulants for college and work appear to be more stressed and sleep deprived than those who do not. These drugs increase the time it takes someone to fall asleep and also suppress REM sleep. The stages of REM sleep are crucial to learning and if students are not sleeping long enough, they lose a portion of sleep dedicated to learning and memory. Students who consistently receive less than 8 hours of sleep are eliminating the crucial first 2 hours of REM sleep (Buysse, Brown, & Saper, 2017). Additionally, researchers found the effects of caffeine last for 5–7 hours which suggests that caffeine consumed could impair someone’s ability to fall asleep later that night. Caffeine, on the other hand, increases heart rate and can lead to sleepiness in the morning, the previous night’s sleepiness correlates with difficulties falling asleep, repeated awakenings, or waking up too early. Melatonin is suppressed by light and the light projected from screens increases inflammation and stressors prior to bedtime (Dunin-Borkowski, Boulos, Brown, & Casler, 2000). Therefore, the use of technology before bed encourages late bedtimes and insufficient sleep. In order to counteract this, people can utilize a yellow light filter, found in many settings and apps, as it is on a warmer spectrum and is easier for the eyes to process.

The members of the freshman honors biology group would like to thank all the Philadelphia University students who completed the PhilaU Sleep Survey. Lastly, they would like to thank the Philadelphia University Honors Students Association.