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What are the Effects of Oversleeping on Students?

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RSCH 202: Intro to Research Methods

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Abstract

This study strives to develop a deeper understanding and provide a detailed analysis of how students' sleeping habits impact their productivity levels. The main objective of this research is to find out if having more than nine hours of sleep would cause any effects on students' productivity. The student productivity will be measured in terms of grades and meeting assignment deadlines. In order to include local and private (inclusive of overseas) universities located in Singapore, a stratified sampling method will be applied to the whole population of university students in Singapore. A questionnaire survey will then be designed specifically for our selected sample size of students to investigate the relationship between oversleeping and productivity level. A two-factor ANOVA test with replication and a regression test analysis will hence be conducted on the survey results. With the limited current literature review on the effects of oversleeping, this study aspires to bring light to this topic and assess if long sleeping is beneficial or detrimental for university students. The findings from this study will be able to assist university students to shape their lifestyle in order to study at their optimum level. Universities will also be able to amend their policies with the help of more research on long sleeping, providing students with a better study-life balance.

Keywords: Oversleeping, Students, Productivity, Regression, ANOVA

What are the Effects of Oversleeping on Students?

University students constantly have numerous activities in and outside of school, such as chasing tight assignment deadlines, having working commitments, and building a strong social presence. In order to fulfill these requirements, students are always under immense pressure. They end up being sleep-deprived on weekdays, which would lower their cognitive abilities and productivity in school. To account for the amount of sleep loss on weekdays, the students tend to oversleep during the weekends, leading to an unhealthy sleep cycle over time (BioSpectrum Asia, 2020). Instead of achieving eight sufficient hours of sleep daily, they end up sleeping five hours a day and 10 hours the next day.

On the other hand, there is another type of students who are able to oversleep on account of having way too much time on hand or purely out of exhaustion from school and life issues. In fact, according to Mattress Inquirer's survey conducted on 1038 people (2021), up to 36% of millennial respondents claimed to oversleep multiple times a week. With a combination of having unhealthy sleep cycles, being incapable of planning out their initial schedules due to abrupt changes in lifestyle, and/or having inadequate knowledge on healthy stress management, many often slip into a habit of excessive sleeping to "sleep away the pain".

This leads to the question of whether university students with more or less than sufficient sleep would have better productivity in school. This is especially important to those who will likely be moving into the workforce after graduation. Not being able to understand how productivity is interlinked to their sleep could bring negative effects into their later stage of life.

Literature Review

Through extensive research, we have found out that there are several factors affecting the productivity of university students. These factors include sleep, study environment at home, distractions, motivation, time management and overwork.

Sleep

When it comes to well-being and brain function of the adolescent population, sleep has always played a critical role. The US National Sleep Foundation recommends a sleep duration of 8 hours for college students to maintain peak mental and physical health (Wallis, 2020). Insufficient sleep in the student years has been tied with a wide range of adverse outcomes, affecting their lifestyle. Not only mental and physical health, other main areas of daytime functioning that could be affected by chronic sleep restriction are cognitive and academic performance, and risk-taking behaviours. According to Alfonsi et al. (2020), applying sleep restriction protocols has demonstrated the worsening of several neurocognitive functions, such as memory, attention, and executive functions, as a consequence of sleep deprivation. More specifically, the major hindrance would be circumstances requiring multi-tasking skills that were frequently faced by young people. Naturally, these harmful effects on cognitive functioning impair their academic performance. Studies have also described a positive relationship between inadequate sleep and engagement in risk-taking behavior in adolescents (Alfonsi et al., 2020). Insufficient sleep was linked heavily to greater vehicle accidents, smoking, physical violence, unsafe sexual activity in the adolescent population. Notably, the nature of the relation between sleep, cognition and behaviour are often affecting each other. Therefore, by intervening on sleep patterns of students could engender positive outcomes on functioning areas and eventually improve the students' productivity (Alfonsi et al., 2020).

Study Environment at Home

Home study environment is well-known to have a heavy influence on students' productivity and their academic performance. It is one of the critical aspects of students' life as it sets the foundation for learning and determines their cognitive abilities, academic achievement, college readiness, and emotional growth. Parents' educational background, occupational status, parental involvement, and their parenting style (authoritarian, demanding and permissive parenting styles) are also part of the students' home study environment (Dzever, 2015).

With a positive home study environment, university students are able to clear their assignments on time before attending class the next day or next week. Home study environment and student academic achievement are also positively related as a positive home environment would allow students to study better, resulting in better academic grades (Jain & Mohta, 2019). However, undergraduates with a poor study environment at home would be more likely to end up with more assignment backlog as they are unproductive at home. This accumulation of assignments will cause the students to be unable to catch up in their classes the following day. Hence, having a negative impact on their productivity in school.

Motivation

When it comes to university students' productivity and their overall academic performance, the level of motivation and interest the students have for their education degree or subjects plays a big crucial role. Students can be given the best education and living conditions and yet have little to no interest in what they are currently studying. According to Wijaya and Bukhori (2017), motivated students will have a stronger desire to actively learn and participate in class. With a driven personality, university students will thus be more productive. On the other hand, unmotivated students tend to display lower levels of interest in the subject they are

studying, resulting in lower productivity. Therefore, the level of motivation and interest strongly affects one's productivity. Ultimately, there is an extremely high correlation between motivation and productivity as it determines the level of interest one has for the particular task at hand.

Distractions

Over the last decade, browsing social media has become an increasingly habitual activity in students' lives, providing many benefits and some drawbacks. Although social media is not harmful to an extent, it has caused a distraction to many users as they have dedicated so much of their time and effort to social media (Hilliard, 2021). According to Angelastro (2015), when students have free time outside of their curriculum, they usually turn to their smartphones and computers instead of working on homework or studying for tests and quizzes. The internet's distractions have led to students procrastinating instead of doing their assignments, leaving it till the very last minute. The constant use of social media can eventually lead to a slew of personal issues, including disregarding school commitments and negatively affecting unproductivity and performance (Hilliard, 2021).

In addition to electronic devices, the background noises can be a significant impediment to studying at home, especially when sitting in a quiet environment that can make background noises stand out much more. Interruptions can come from the television or family members, and these distractions can potentially disrupt students' learning environment, causing them to be unproductive in their studies (Botros, 2020). While studying at the comfort of one's home, students will wear comfortable clothing and sit in their beds with laptops while doing revisions. This can interfere with focus because many people psychologically equate the bed with resting. Hence, even when studying at a desk, staring at a bed affects student attention and disrupts focus (Botros, 2020).

Time Management

It is well-known that university students constantly have various activities in and outside of school, such as assignments, work commitments, and networking events. Thus, it is detrimental for students to have good time management.

According to a literature review written by Tanner (2017), students with better time management are usually associated with greater academic performance, higher productivity, and lower levels of anxiety. However, many undergraduates may find it hard to balance their studies and their day-to-day lives. This is because they may have commitments outside of school such as tuition, work, and their personal interests. These after-school activities can take up a lot of time that could otherwise be spent on assignments and revisions. As a result, undergraduates are forced to pull all-nighters in order to finish their workload, causing them to lose focus in class the next day.

According to Adams and Blair (2019), students with better perceived control of time had better cumulative grade point average. Hence, it is important for students, especially those with multiple commitments, to have a good control of their time in order to have effective time management. This would in turn allow them to be more productive with their studies and activities.

Overwork

It is well-known that universities are giving out assignments to students on a daily or weekly basis. Even worse, most assignments may come with tight deadlines, forcing university students to study productively with a limited amount of time. A study conducted by Levy (2019) concluded that too much homework is defined as more than two hours of homework. Any

significant amount of homework that exceeds more than two hours is considered counterproductive for students.

Overworking is an extremely general term, for some individuals, it is the total number of hours put into work in a week; for others, it can be the number of tasks accomplished. It gradually causes one to make mistakes due to additional stress and exhaustion, which would lead to more mistakes being made (Lassiter, 2018). Overworking eventually leads to diminishing results, which causes more mistakes to occur. This would mean more time is required to correct these mistakes causing one to be unproductive, when such tasks could have been completed with 100% (Lassiter, 2018).

Key Findings of Literature Review

In short, we have discovered that besides sleep, there are many other factors affecting productivity of university students. First of all, sleep plays a critical role in university students' ability to maintain top mental and physical health. Insufficient sleep has been known to have harmful effects on cognitive functions that impairs academic performance. Therefore, we aim to further explore the amount of sleep university students receive on weekdays and weekends, and to find out if the lack of or excess amount of sleep does have an impact on their productivity. Next, home study environment also plays a part in influencing students' productivity and academic performance. We noticed that a poor home study environment can create negative results on students' productivity. Students ended up not being able to complete any assignments, leading to an accumulation of work on the following day. Studying at home can also be challenging due to the interruptions by family members, distractions by the television, and the psychological temptation of the bed. The internet at home can also cause distractions, resulting in students procrastinating for their assignments and disregarding school commitments. Studies

have also shown that motivation and interest also affect one's productivity in school. Thus, we would also need to take into consideration students' level of motivation and interest towards their course of study. This is to find out if there is any high correlation between motivation and productivity. Not only is time management essential for adults, but also for students as studies have proven that students with better time management are strongly associated with higher academic productivity. Therefore, we plan to examine if students with better management (in terms of the number of hours they spend on their assignments) have higher productivity. Lastly, research has shown that university students are constantly being overworked and that overworking ultimately results in a decrease in productivity. Hence, we seek to find out if students are being overworked and whether it affects their productivity.

Research Question

What are the effects of oversleeping on students?

Theoretical Framework

The main objective of this research study is to perceive the effects of oversleeping on students' productivity in school. Through multiple scholarly sources and findings, it has been proven that sleep plays a vital role when it comes to an individual's performance and productivity. Many studies have proven that having inadequate sleep among students would negatively impact their mental and physical health, academic performance, and behavior. However, the investigation of the effects of oversleeping on students was limited. Thus, the purpose of this research is to discover whether having hypersomnia would also negatively affect students' productivity.

Hypothesis

The null hypothesis (Ho) is that oversleeping will have no impact on the student's level of productivity.

The alternate hypothesis (HA) is that oversleeping will have a difference on the student's level of productivity.

Data

The type of data to be collected for the above hypotheses will be primary data. Survey will be created and sent to the selected sample size. Analysis will be done to see if there is any interaction between a student's level of productivity with the hours of sleep in a week. Data analysis will include statistical tests such as ANOVA Test and Regression Test.

Population and Sample

Population for our research will be all the university undergraduates in Singapore, which includes six local universities and 28 private and/or overseas universities (QS Top Universities, 2021). Given practical considerations, our sample size will include one local university and five private and/or overseas universities instead. According to the university's student population, the chosen universities will be National University Singapore (NUS) for local university and Kaplan, Singapore Institute of Management (SIM), PSB Academy, LASALLE College of the Arts, and Embry Riddle Aeronautical University as private and/or overseas universities. Stratified random sampling (SRS) will be practised due to the vast difference in student populations across the different universities, this allows a more accurate representation of the universities as we will only consider 5% of the student population across the universities. As the sample size of each school is still considered large, a minimum response of 30 students will be collected from the mentioned universities in our sample size. This will be capped at 5% of the university's student population.

Variables And Measures

Dependent Variable

Our dependent variable of this research will be the level of productivity of students, mainly based on their academic performance, health and behavior.

Independent Variable

The amount of sleep during weekdays will be defined as the key independent variable. Other independent variables that are included in our survey will be the amount of sleep during weekends and the average number of hours spent on school work within a week. These

independent variables are chosen as the purpose of this research is to find out the effects of oversleeping on students' level of productivity in school.

Control Variables

Control variables would include age, gender, degree of study (current), other commitments aside from school, family income background, level of stress management, and personal health level.

Level of Stress Management

Students who are overly stressed and distracted are unable to concentrate. This can result in students quitting school. According to the Fall 2010 Executive Summary by American College Health Association (2010), 25 percent of students believe stress contributed to their poor grades or inability to complete courses. Hence, by understanding students' level of stress management allows us to have a gauge of the students' abilities and factor them into consideration.

Personal Health Level

Healthy students have been associated with better academic performances. In a study conducted by National Center for Chronic Disease Prevention and Health Promotion (2014), student abilities in academic achievement improve with health - academic performance, student behavior, cognitive skills, and attitude. Research has also shown that health problems increase the likelihood of students failing to complete their education, causing them to lose concentration, drop out, and be more likely to fail in the academic workplace (Shaw et al., 2015). Hence, it is important to understand students' health levels so as to factor their effects on productivity.

Measures to Collect Our Independent Variables

One way to collect the primary data will be to create a survey and reach out to student committee's of the mentioned universities in Singapore. The survey will include asking the respondents how much time they have slept on both weekdays and weekends, as well as the time spent on their assignments. A small incentive can be provided when a submission is considered complete with all points being filled up. By doing so, we are able to gain a large sample size, which will result in a better representation of the students across the entire Singapore's student population.

Research Methodology

There are many different types of quantitative data collection methods that can be used to collect our primary data. These include surveys, face-to-face interviews, polls, longitudinal studies, and experiments. We decided to conduct a survey questionnaire for our research as it was the most practical option given the short time frame of our research and easiest to reach students from various institutions and backgrounds. This ensures that we get a good sample out of the entire population of university students in Singapore.

We will be reaching out to the various student committees of the universities, with their help, we will be able to reach out to a larger pool of students through their social media platforms since a large number of students spend most of their time on social media. We will also be sharing it with our peers from NUS, ERAU, SIM, Kaplan, Laselle and PSB Academy. In our survey, attached in Appendix A, we will have questions regarding the stated independent variables. These include hours of sleep, year of study, university or institute of study, and factors affecting productivity. Our dependent variable is the level of productivity.

As for gathering quantitative data, like year of study against the level of productivity to find out if productivity is affected by overwork, assuming that the amount of workload for a Year 3 student with advanced modules is greater than that for a Year 1 student with beginner modules, we will be using regression analysis and two-factor ANOVA test to see the relation between these 2 factors. This will help us to determine if the independent variable (year of study) has any impact on the dependent variable (level of productivity). These tests will also be used to analyze the relationship between multiple independent variables and level of productivity simultaneously.

Data Analysis

Based on the data collected through the survey, a two-factor ANOVA Test would be the best statistical test to observe the relationships between multiple variables to the level of productivity felt by the university students. Since there are multiple variables that can influence a student's productivity level such as the number of hours spent on school work in a week, the average number of hours a student sleeps during the weekdays and weekends, a two factor ANOVA test without replication should be used as the survey is only being conducted once with the same pool of students. With the use of the two factor ANOVA test without replication, we are also able to see if any of the variables have a significant impact on the student's productivity based on the P-value. The two factor ANOVA test without replication will allow us to observe the relationship between two variables such as the average number of hours spent on school work in a week and average the number of hours a student sleeps during the weekday and observe how it affects the student's productivity level.

Another statistical test that we will be conducting would be the regression test. The regression test will provide us with information such as the coefficient and the p-value which helps us determine which independent variable is significant or not. For this survey, the dependent variable (Y) would be the level of productivity faced by students, while the independent variables are the average hours spent on school work, average hours of sleep during the weekdays and the average hours of sleep during the weekends. In addition, the test will provide us with the R square value which we can determine the Goodness-of-Fit of the test whether it is higher or lower than 98%. The equation $Y = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \epsilon_0$ is used in the regression test to see how the independent variables affect the dependent variable Y. β_0 represents all of the control variables mentioned above. Independent variable χ_1 represents

the average number of hours slept during weekdays, while independent variable χ^2 represents the average number of hours slept during weekends, lastly, the independent variable χ^3 represents the average number of hours spent on school work in a week.

Preliminary Results

Survey Questions

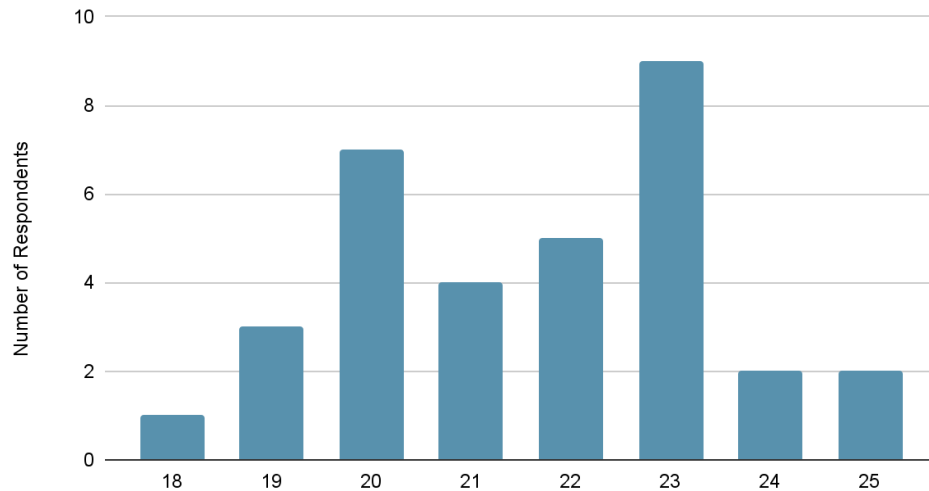
As part of the research, we have come up with a survey to collect data (refer to Appendix A for the survey questions) on current university students.

Survey Results

The following figures show the results of our survey (refer to figures 1 to 10).

Figure 1

Results of the Age of Respondents



Note. Number of respondents aged 18 = 1, number of respondents aged 19 = 3, number of respondents aged 20 = 7, number of respondents aged 21 = 4, number of respondents aged 22 = 5, number of respondents aged 23 = 9, number of respondents aged 24 = 2, number of respondents aged 25 = 2, total $N = 33$.

Figure 2

Distribution of the Gender of the Respondents

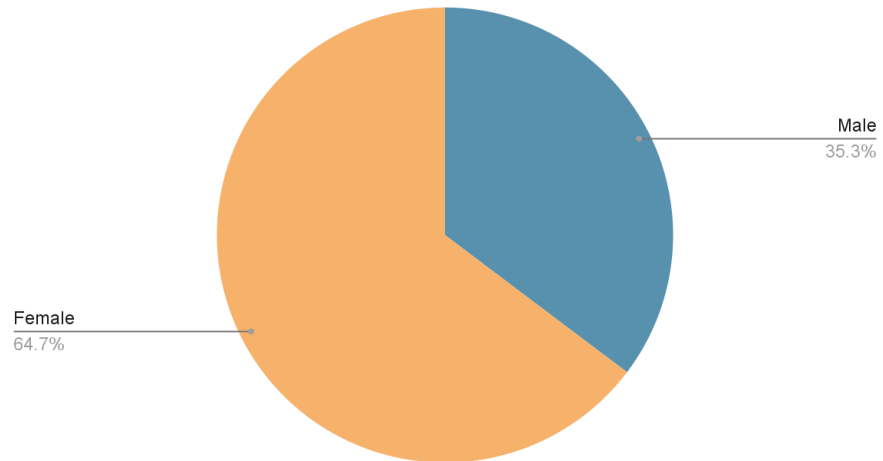


Figure 3

Distribution of the Universities/Institutes the Respondents Attend

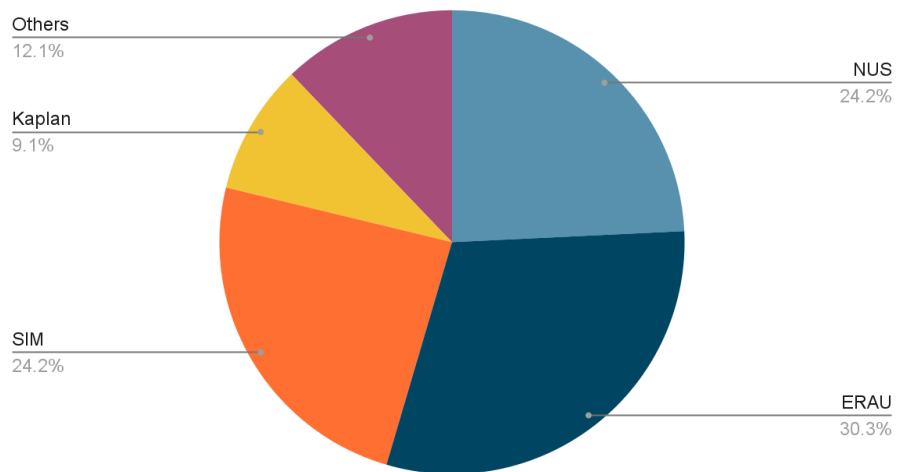


Figure 4

Distribution of Respondents' Mode of Study

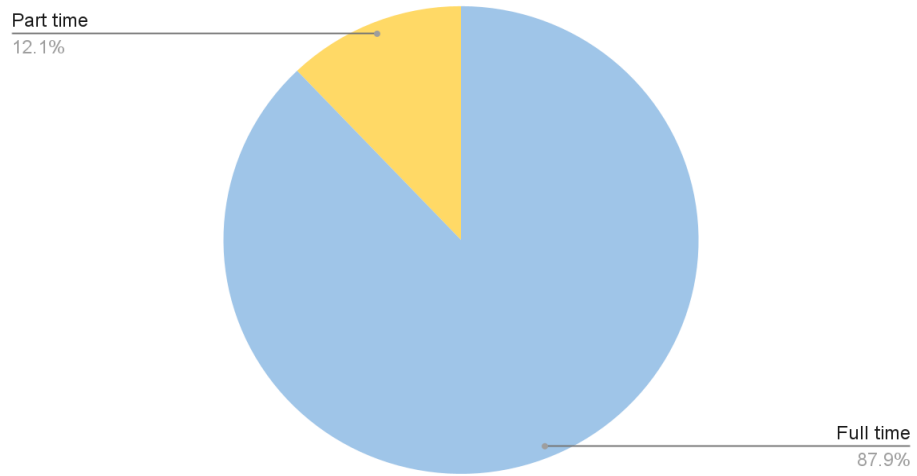


Figure 5

Distribution of Respondents' Year of Study

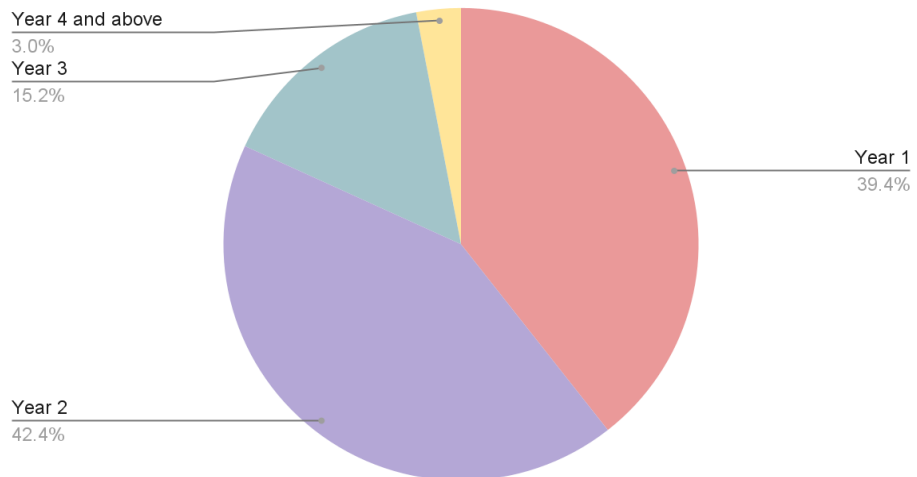


Figure 6

Distribution of the Average Number of Hours Respondents Spent on School Work in a Week

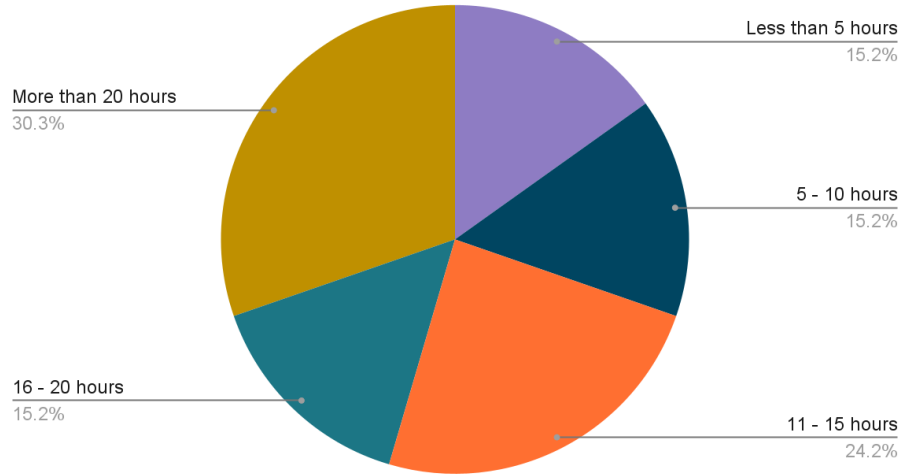


Figure 7

Distribution of the Number of Hours Respondents Sleep on Weekdays (Per Day)

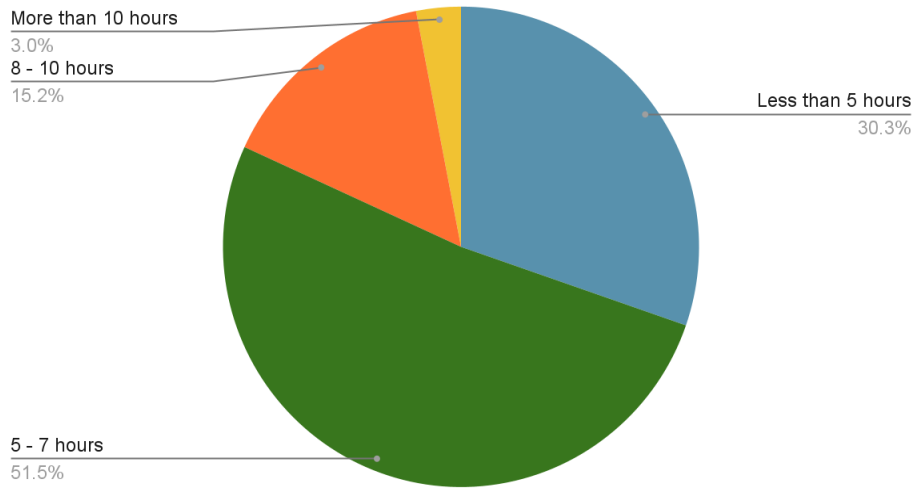


Figure 8

Distribution of the Number of Hours Respondents Sleep on Weekends (Per Day)

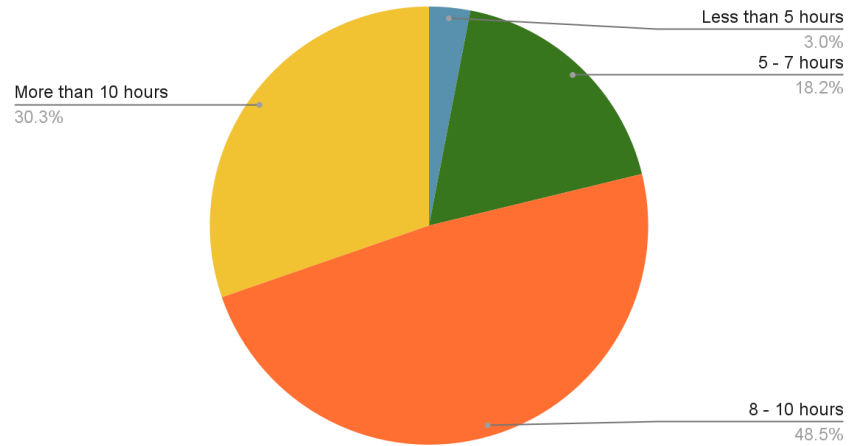
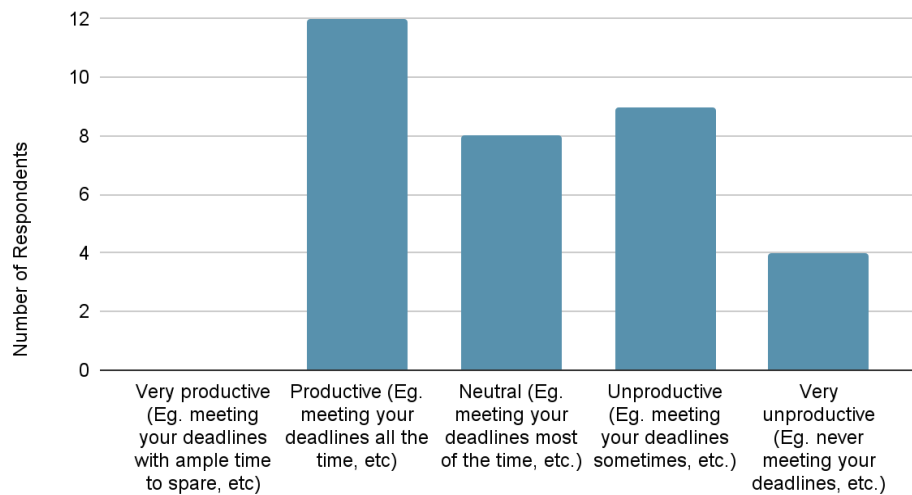


Figure 9

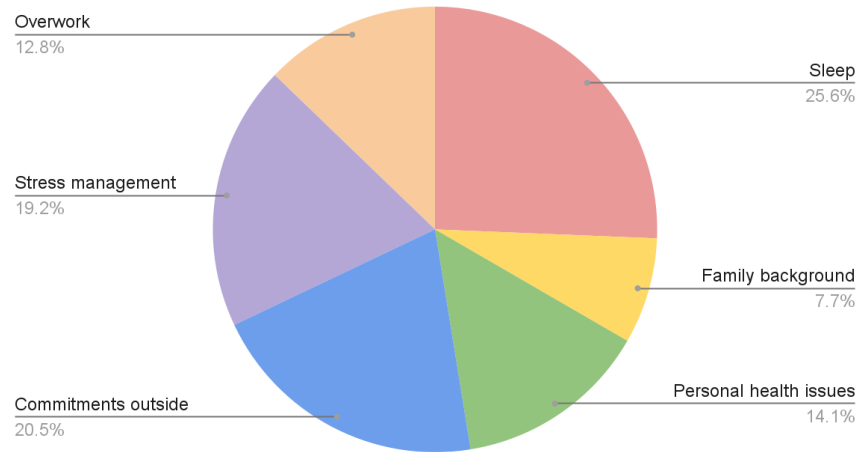
Distribution of Respondents' Perceived Productivity in a Week



Note. Number of respondents feel very productive within the week = 0, number of respondents feel productive within the week = 12, number of respondents feel neutral within the week = 8, number of respondents feel unproductive within the week = 9, number of respondents feel very unproductive within the week = 4, total $N = 33$.

Figure 10

Distribution of the Factors Respondents Perceived is Affecting their Productivity



Brief Summary of Survey Results

The data has been collected with the use of a survey of local universities and private/overseas universities in Singapore. We have used stratified random sampling to disseminate our survey to students from NUS, ERAU, SIM, Kaplan, Laselle and PSB Academy to find out the causes affecting one's productivity and the number of hours of sleep. Overall, we are generally satisfied with the survey outcome we collected over two weeks. Most of our respondents are aged 20 and 23 years old and two-third of the respondents are female. Furthermore, out of the 32 respondents, one-fourth of the sample came from NUS while three-fourth of the sample were from private universities. 45.5% of the students reported that they spent more than 16 hours on school work in a week, showing how overworked they are. We also compared the number of hours of sleep students get on both weekdays and weekends and our results showed that one-third of the students got less than 5 hours of sleep on the weekday. On the other hand, one-third of the students get more than 10 hours of sleep over the weekend, more than the recommended hours. This shows that students tend to undersleep during weekdays and oversleep during the weekends, which shows the irregular sleeping cycle, affecting productivity.

The contributing factors that led to students' productivity include sleep, family background, personal health issues, commitment outside of school, stress management, and overworking.

Conclusion

In a nutshell, our research strives to discover the relationship between oversleeping and students' productivity levels. Our findings can be utilized by university students in Singapore to better shape their lifestyle in order to study at their peak level. On a large scale, our findings can also provide Singapore universities more statistics on long sleeping. They can amend their school policies and readjust the amount of workload assigned to their students, thus creating a better study-life balance for themselves. However, we foresee that the survey preliminary results may not be accurate to an extent as the survey is given to the students during different periods of their academic timeline. The survey responses varied between private university students' exam periods and local university students' non-exam periods which causes their level of productivity to differ. Hence, to overcome such limitations, we recommend distributing our survey over a longer time period to ensure the responses encompass both the exam and non-exam periods in local and private universities. We also recommend using skewness as a measure for the survey responses. This is because skewness helps to identify the probability distribution of a variable deviating from the normal distribution, hence making the results more accurate and reliable.

A suggestion we would like to propose is the implementation of School Work Policy for the universities present in Singapore. This policy will enforce professors to follow a schedule that controls the amount of workload they are allowed to assign to their students. Currently, such policies are only implemented in primary and secondary schools in Singapore, specifying the amount of homework (in hours) that can be assigned to students per week and during term breaks (Opera Estate Primary School, 2021). However, in tertiary educational institutions, assignments are assigned based on the discretion of professors. With the implementation of the School Work Policy, it can help prevent tertiary students from being overworked and allow them to better plan

out their schedule to focus on more essential aspects such as healthier amounts of regulated sleep and their mental health.

Describe Limitations present in your study

Students from different universities face different challenges and scenarios, which affects the level of productivity. As the level of productivity is qualitative, it cannot be measured by a definite number. Therefore, the findings are extremely subjective and may differ from other research made by different teams. There are students who do not track their time spent on doing work, level of productivity is subjective to everyone. There is a different amount of workload being assigned to students across the different universities, which causes a conflict with our measures of calculating productivity as we measure productivity by the ability to meet deadlines.

Policy implications of your study, for example, how should social and economic policy address the findings of the study? Should the current policy be revised? Should a new policy be designed? Consider it as recommendations for policymakers.

We are only limited to the number of responses that we receive back as we are only able to collate the results from those who put in effort to complete the survey. Guidelines should be recommended for tertiary education systems to ensure that students should have a good work-school-life balance as students may spend their entire weekends just focusing on their school work, leaving no time for their family/ relationships.

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Appendix A
Survey Questionnaire

Link to survey: https://qfreeaccountssjc1.az1.qualtrics.com/jfe/form/SV_2sKR0P2kg2mJgh0

1. What is your age (in years)?
 - _____
2. What is your gender?
 - Male
 - Female
 - Non-binary
 - Prefer not to say
3. What is your university/institute of study?
 - NUS
 - ERAU
 - SIM
 - Kaplan
 - Laselle
 - PSB Academy
 - Others: _____
4. What year of study are you in?
 - Year 1
 - Year 2
 - Year 3

- Year 4 and above
5. What is your mode of study?
- Full time
 - Part time
6. What is the average number of hours you have spent on school work in a week?
- Less than 5 hours
 - 5 - 10 hours
 - 11 - 15 hours
 - 16 - 20 hours
 - More than 20 hours
7. What is your number of hours of sleep on WEEKDAYS (per day)?
- Less than 5 hours
 - 5 - 7 hours
 - 8 - 10 hours
 - More than 10 hours
8. What is your number of hours of sleep on WEEKENDS (per day)?
- Less than 5 hours
 - 5 - 7 hours
 - 8 - 10 hours
 - More than 10 hours
9. How productive do you feel within a week?
- Very productive (Eg. meeting your deadlines with ample time to spare, etc)
 - Productive (Eg. meeting your deadlines all the time, etc)

- Neutral (Eg. meeting your deadlines most of the time, etc.)
- Unproductive (Eg. meeting your deadlines sometimes, etc.)
- Very unproductive (Eg. never meeting your deadlines, etc.)

10. Which of the following factors are affecting your productivity?

- Sleep
- Family background
- Personal health issues
- Commitments outside school
- Stress management
- Overwork