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THE RELATIONSHIP BETWEEN STUDY TIMING, SLEEP HABITS, AND PERCEIVED ACADEMIC PERFORMANCE

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Abstract

This study examines the relationship between students' preferred study times, sleep habits, and perceived academic performance. Using an online survey, data were collected from 40 students attending City College of New York to explore their study schedules, reasons for choosing particular study times, sleep patterns, academic consistency, and memorization difficulties. The findings revealed that evening and multiple-time study preferences were equally common, each accounting for 37.5% of participants. Additionally, 60% of students reported sacrificing sleep to study. Evening students appeared more likely to miss sleep and experience memorization difficulties than those studying at multiple times throughout the day. Students with multiple study periods also reported relatively higher academic consistency. These findings suggest that flexible study schedules may be associated with more favorable academic experiences and fewer reported challenges. However, the small sample size and reliance on self-reported data limit the generalizability of the results and prevent establishing causal relationships.

Keywords

Study Habits, Study Timing, Sleep Patterns, Academic Performance, Student Learning

I. Introduction

Students' preferred study times may impact their sleep, schedules, and academic performance. One factor altering one's preferred study time is chronotype. A chronotype is a person's natural tendency to be more active at certain times of the day. Chronotype can affect a student's productive times, but preferred study times may conflict with class schedules and sleep. Evans et al. (2017) found approximately twice as many evening-focused students as morning-focused students and noted that adolescents' biological schedules tend to begin about two hours later than those of adults. These findings suggest that students who prefer studying later may feel more productive in the evening but may also have issues balancing their natural study preferences, adequate sleep, and early academic schedules.

Everyone has their own personal preference for when they are most productive. Some people enjoy doing work in the morning because that's when they feel most motivated, while others prefer to do work in the afternoon or evening. Some students have multiple times throughout the day when they prefer to study. One of the aims of this study is to understand how students' preferred study times relate to their sleep habits, schedules, and academic performance. Using the data from previous research and an online survey, this study will find out why students choose certain times to study and how factors such as sleep and daily tasks can influence these choices.

Another aim of this study is to understand all the factors that influence a preferred study time. As mentioned previously, there are multiple factors, such as personal preferences, sleep habits, schedule constraints, and other daily tasks. Some students might study at a time when they feel most productive, and others may be forced to adjust their study schedules due to school or other responsibilities. By looking at these factors, the study aims to understand how students balance their preferred study times with their daily responsibilities and academic experiences.

An individual's chronotype determines what time of day they feel most productive. Previous research shows that people with different chronotypes may have peak cognitive functioning at different times throughout the day. Evans et al. (2017) looked at these differences among university students and found that the optimal time for cognitive function varied depending on the chronotype. The people who said they had a morning chronotype start their day around 5 a.m. and then reach their optimal productivity, which is around 80 to 90% at 9 a.m.

This optimal productivity stays consistent until noon, when it drops to 70%, and continues to decrease. The people who claimed to have multiple chronotypes had peak productivity that ranged in the 80s and 90s at 10 a.m. This peak productivity stayed consistent until 9 p.m., then declined. For students with a "mild evening" chronotype, they did not even reach half of peak performance at 9:30 a.m. A major difference between them and the previous chronotypes was that their functionality was lower than other chronotypes and never reached 90% performance. They peaked in performance around 5 to 9 p.m., which was a much smaller window of productivity as well in comparison to other chronotypes. For the evening chronotype. 50% productivity was reached at 10 a.m. Their peak performance was around 6:30 to 10:30 p.m. and declined afterwards Evans et al., (2017). Due to this data, the researchers conclude that a universal study time is not possible.

Other studies have examined how cognitive functioning and memory performance vary throughout the day. These findings could help explain why students prefer studying at different times and how their study habits might be influenced by individual differences. The source Guerrien, A., Leconte-Lambert, C., & Leconte, P. (1993) suggests that morning and afternoon are the two times when the greatest performance can be found. This was found through their study on individuals, where they made them do multiple tasks throughout the day and measured their performance. This showed that these two times were found to be most consistent with optimal performance, suggesting a possible time in between these two times of day could be a universal period of optimal performance.

The source (Madhavi Munnilari et al., 2023) reviews other studies testing cognitive functions at different times of the day. One of the cognitive tests was for reaction time, where some studies found a significant increase in reaction time in the evening and others found better reaction times in the morning. Some studies found no significant difference, but most studies did find a statistical difference. The next cognitive function that was tested was attention. Some studies found attention to be lowest in the morning, while others found it to be highest in the morning, showing mixed results. For consistency, one study found there to be higher scores in the evening, while another study found no difference. Finally, for the alertness factor, it was found that the highest values were in the evening. Overall, there were differences found in cognitive function depending on the time of day, usually the evening or the morning, showing a possibility for universal study times, but it depends on what type of studying is being done.

The final source supporting the idea of a universal study time explores the time of day on the ability to study (Wile & Shouppe, 2011). Wile and Shouppe distinguish between short- and long-term recall, finding that the morning is better for short-term recall while the afternoon is better for long-term recall. It was also found that children who were considered gifted had better performance in the afternoon, and another study on fifth graders found the afternoon to be the best time for memorization. The data from this source suggest morning times but mainly afternoon times to be best for memorization and comprehension, showing evidence that one time could work for all students.

II. Methodology

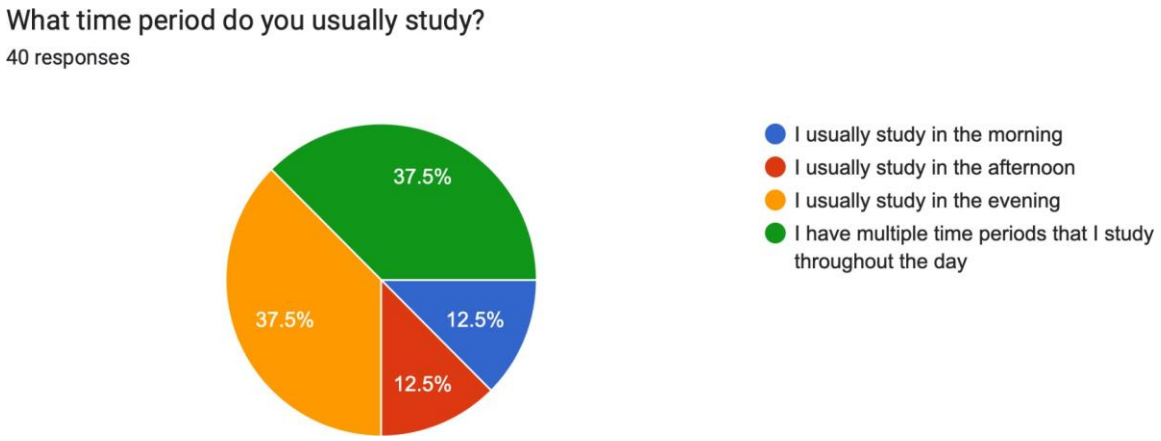
This study was conducted through an online survey that was created to obtain data through 6 multiple-choice and free-response questions. The data were collected from 40 different students of multiple grade levels and ages, but mainly from freshman and sophomore students. All of the participants are students attending City College, with some students who participated being part of the Sophie Davis School of Medicine. This group also has a mix of students who commute longer distances daily to school and students who live nearby. This mix of commuting distances also acts as a factor that affects study time. The varied commuting times may impact energy levels and available study hours.

The 6 questions that were asked on the survey were based on what time of day the student studies, why they study at their chosen times, what time they go to bed, whether they miss sleep to study, if they consider their academic performance to be consistent, and if they struggle with memorizing topics. From the free-response question, participants were asked to provide reasoning for their chosen study time, and whether it was because they prefer the time or if they are forced to study at that time due to schedule restraints and other factors. These questions provide data on the students' study habits, sleep patterns, personal preferences, and perceived academic experiences. However, the survey did not directly measure the students' chronotypes, cognitive functioning, GPAs, or academic achievement.

The study was sent out to participants of this study, and all voluntarily responded to the questions in the survey. Those who did not want to fill out the form simply did not participate. The form did not ask for personal information, and participants were not forced to give answers. For the free response question, participants answered with any insight they were comfortable providing. All of the answers to this online survey were anonymous, and the participants' answers are protected.

III. Results

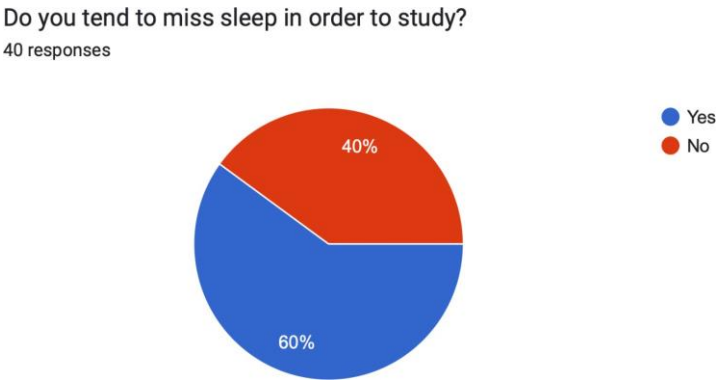
Figure 1. Chart showing time periods participants study.



This question had 40 responses from participants about which time period they tend to study. 37.5% of participants reported that they usually study in the evening, 37.5% reported that they study at multiple different times throughout the day, 12.5% reported studying in the afternoon, and 12.5% reported studying in the morning (Figure 1). The results reveal that students mainly reported studying in the evening or at multiple times throughout the day, with each group accounting for 37.5% of participants. Morning and afternoon were less common, with each group having 12.5% of participants. These findings show that students have different study habits and preferences, which could be influenced by their personal schedules and daily responsibilities.

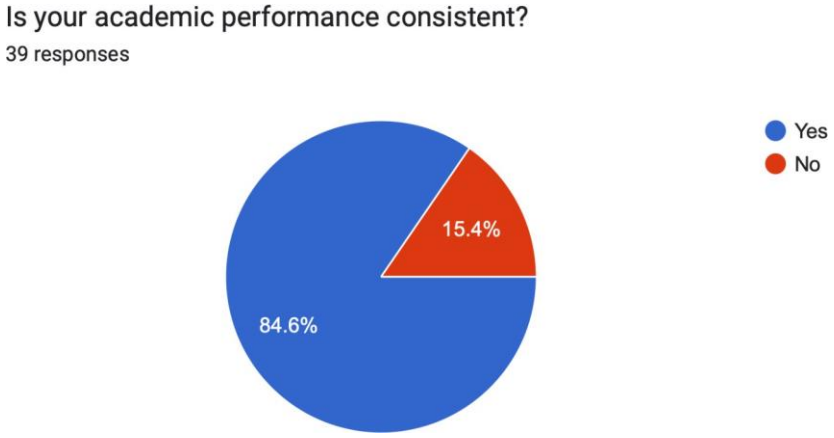
From another survey question, the reasons for the preferred study times varied depending on what time the participant chose. For those who study in the morning, their reasoning tends to be that they felt more energized or more focused in the morning, so they take advantage of their ability to study better at that time. Other responders said that they studied in the morning because it was the only time in their schedule that they had to study. For those who chose afternoon or evening, their reasoning was that they felt more energized during those times, that it was quieter so they were able to focus better, they liked to spend the daytime doing what they want to do and finish the day by studying, and that it's the only time they have due to having a busy schedule and having to commute to and from school. For those who chose multiple times of the day, their reasoning was that they simply study whenever they feel motivated or whenever they can.

Figure 2. Chart showing participants' responses on whether they miss sleep to study.



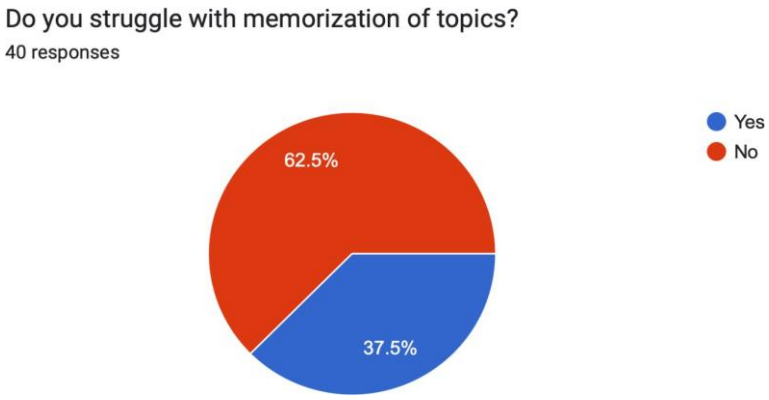
There were 40 responses to this question. 40% of participants reported not missing sleep in order to study, and 60% reported missing sleep in order to study (Figure 2). There is significant data showing that participants mainly go to bed late or super late rather than early. A majority of participants also said that they tend to miss sleep in order to study.

Figure 3. Chart showing academic performance of participants.



There were 39 participants who responded to this question. 84.6% of participants reported having consistent academic performance and 15.4% reported not being consistent academically (Figure 3). A majority of participants reported that their academic performance was consistent, with a few saying that their performance was inconsistent.

Figure 4. Chart showing participants' responses on memorization of topics.



This question had 40 responses. 62.5% of participants reported not struggling with memorizing topics, and 37.5% reported struggling with memorizing topics (Figure 4). A majority of students also stated that they struggle with memorization of topics, but a good number of students admitted to struggling with memorization.

IV. Discussion

The findings of this study show that students' preferred study time may be related to sleep habits, memorization difficulties, and academic performance. The survey showed that 37.5% of participants studied in the evening, while another 37.5% studied multiple times throughout the day (Figure 1). When comparing study times with sleep sacrifice, 66.7% of evening students reported sacrificing sleep to study, compared to 46.7% of students who studied multiple times. This shows that students who mainly study in the evening may have more difficulty balancing studying with sleep. Furthermore, only 20% of students who studied at multiple times reported memorization difficulties, compared to 40% of evening students and 80% of afternoon students. Students who studied multiple times also reported high academic consistency, with 92.9% of those who answered the question reporting consistent performance. These findings show that studying at multiple times throughout the day may be associated with fewer reported challenges. However, because the survey included only 40 students and relied on self-reported responses, these correlations cannot establish that certain study times actually improve academic performance.

Some limitations of this study are the relatively small sample size and the questions asked in the survey. Because there were only 40 students from City College who participated in the survey, the findings may not fully represent the study habits of students at other universities. Additionally, the survey relied on self-reported data from students instead of academic records such as grades or GPAs. Relying on self-reported data makes it difficult to determine whether study times actually influence academic performance. The survey also did not measure students'

chronotypes, which could have given more information about their natural preferences for studying at certain times. Another limitation is the disparity between study time groups. Some groups were bigger than others, making comparisons between groups less reliable. Overall, more specific questions and a larger sample size could identify better relationships between study times, sleep habits, and academic performance.

Future studies could build on these findings by including a larger sample size of students from a broader range of universities to better understand how study habits differ across different academic environments. Researchers could also examine how factors such as sleep habits, class schedules, commuting, and other responsibilities influence student study times. Gathering information about students' actual academic performance, such as grades or GPAs, could help determine if certain study habits correlate with better academic outcomes. Additionally, future research could investigate whether students who are able to study at their preferred times experience less difficulty with sleep and memorization. Overall, getting a better understanding of these relationships could assist students in making study routines that accommodate their personal preferences, while being able to balance academic responsibilities and overall well-being.

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