Identifying The Association Between Sleep Patterns And Stress Levels In Students

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Methodology

Chapter 3 presents an overview of the strategies, approaches, methods, theoretical perspectives, conceptual and theoretical frameworks, research questions and hypotheses for the intended research. Furthermore, the respective chapter will also explain the population and selected sample along with the data collection methods and instrumentations that will be used for data analysis. Ethical and research implications for the selected instruments are discussed.

Design

A pre-test and post-test experimental approach will be adopted for an 8-week-long study. The research uses a quantitative research approach as the primary strategy. Theoretical references to philosophical worldviews, surveys, and other quantitative research methods support this research design.

Creswell and Creswell (2023) highlight the purpose of quantitative research as the “means for testing objective theories by examining the relationship among variables”. Furthermore, the selected variables of this study will be gathered and measured using statistical methods and instruments. One of the tendencies of this quantitative design is that the researchers may tend to develop and establish “assumptions about testing theories deductively, building in protections against bias, controlling for alternative explanations, and being able to generalize and replicate findings” (Creswell & Creswell, 2023). This clearly explains that quantitative methods need to be used with significant precision and comprehensiveness to achieve reliable and verifiable results. Any biases in the data collection methods can influence the validity of these approaches as well.

Since our research focuses on helping students reduce their stress levels by receiving adequate sleep and improving their academic performance, we can consider the post-positive philosophical worldview to better understand student-social involvements. It can further help in identifying the cause-and-effect relationship between the targeted variables as the post-positivist theory “holds deterministic philosophy in which causes probably determine effects or outcomes; thus, the problems studied by post-positivists reflect the need to identify and assess the causes that influence outcomes” (Creswell

& Creswell, 2023). One of the major strengths of this approach is that it is not entirely philosophical. Instead, it has also been credited as a completely scientific method and empirical science by the researchers because it "begins with theory, collects data that either supports or refutes the theory and then makes necessary revisions before additional tests are made" (Creswell & Creswell, 2023). Therefore, the use of this philosophical theory fits our research purpose.

Moreover, it is important that our strategies of inquiry are carefully designed and selected to appropriately represent the "designs or models that provide specific direction for procedures in the research design" (Creswell & Creswell, 2023). For the purpose of our research, we will be using a quantitative survey research approach. This particular strategy is selected because it is efficient enough to provide a "quantitative or numeric description of trends or options of a population by studying a sample of that population" (Creswell & Creswell, 2023). Some of the common tools used in this strategy include questionnaires and surveys. Furthermore, it also involves cross-sectional and longitudinal research approaches so that the data collected and analyzed from a specific sample population can be generalized.

The following will be the variables for the study:

- Independent Variable
    - Sleep (6-8 hours)
- Dependent Variable

Stress Level determined by Academic performance (comparative GPA scores)

The objectives of the following research study are:

Objective: Identifying the association between sleep patterns and stress levels in students.

H_1: Adequate sleep of 6-8 hours reduces the stress level in students (Gardani et al., 2022).

Objective: Identify the impact of stress on students' academic performance (GPA).

H_2: Reducing the stress level in students improves their academic performance (GPA) (Mehta, 2022).

Participants

The research study will take an experimental approach analyzing the impact of 6-8 hours of sleep on the stress level and academic performance of university students (GPA). For this purpose, the sample population will be randomly chosen. The sample population will consist of 25 university students, including both males and females, of approximately equal ratio.

The participants will be university students, including both freshman-year students and senior students. The participants belonging to the age group of 18 to 25 years, including both males and

females and with diverse ethnicities, will be randomly included in the study. The participants will be briefly oriented about the purpose and nature of the experiment before the study takes place so that they are well aware of the procedure, scenario and possible consequences. The details and information of the participants will be kept anonymous and confidential.

Data Analysis

The data was analyzed through SPSS (Statistical Package for the Social Sciences) software. Using SPSS as a statistical tool, the data was arranged, organized and then analyzed to generate various forms and views of the data. The results were then presented in graphical and tabular forms based on the scope and nature of the study design, which focuses on the concept that students often suffer from fatigue and burnout due to immense psychological pressure and stress. Usually, this stress is caused by academic, personal and professional expectations and responsibilities. Under such immense psychological stress, not only their physical health deteriorates, but their academic performance also becomes compromised. Therefore, the aim of this study is to understand the association between stress and academic performance and how sleep of 6-8 hours can reduce the impact of stress on students while improving their academic performance (Suardiaz-Muro et al., 2023).

The permission and authorization of the Center for Community College Student Engagement for the provision of related data were highly regarded during the study. The confidentiality, privacy and integrity of the student data were also maintained during the study.

Instruments

For the support of the experiment and recording the data appropriately, the feedback and results of the experiment will also be supported by the surveys for further quantitative analysis.

Understanding that community colleges are made up of a heterogeneous student population with evolving needs, evaluation of this data set is imperative to create awareness for institutional leaders to understand the importance of the use of counselling and the variables that enhance student engagement and how they relate to entry students' engagement at community colleges. The sample for the instrument will be collected from CCSSE full- and part-time community college entry students. For prevention of bias, CESSE data/sampling will be weighted through enrollment of representative data of students entering community colleges (Center for Community College Student Engagement [CCCSE], 2025).

The Survey of Entry Student Engagement (SENSE) was established in 2007 by the Community College Survey of Student Engagement (CESSE). It is a survey instrument aimed at assessing entry students' college experience and institutional best practices for accountability and effectiveness. SENSE is usually conducted during the first month of the beginning semester and during the fall semester for

entry students using a random sampling method. Data are collected from the participating colleges and analyzed, and recommendations are made to the participating colleges based on college needs and student entry experience. Analyses of the research tool generate results based on the data analysis method and weighted or non-weighted data (CCCSE, 2025).

Procedure

The procedure for the experimental study will be simple. First of all, the participants will have to fill out an engagement survey based on their current status of sleeping patterns, academic performance, stress level determinations, etc. The results of this survey will be tabularly saved. Then, the students will be practically involved in an 8-week-long experiment with altered sleeping patterns, i.e. according to their agreement, they will have to sleep at least 6 to 8 hours per day. After the accomplishment of this period, the students will again be surveyed for their stress levels and academic performance. The pre-test and post-test results will be compared, and the conclusions will be drawn.

References

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