The Study on the Relationship Between Perceived Academic Stress and Academic Performance Among High School Students in Urban India

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Abstract- **This quantitative study investigated the correlation between perceived academic stress and academic performance in a sample of students from grades nine to twelve in public high schools in Navi Mumbai, India. Academic stress was measured using the Perceived Stress Scale. Academic performance was operationalized as cumulative grade point average and scores on the yearly standardized exams. Pearson correlation analyses showed a significant moderate negative correlation between academic stress and both measures of academic performance. Higher academic stress was correlated with lower academic performance and exam scores. The results support implementing stress management programs to foster student wellbeing and academic success.**

Key Words: **Academic, Stress, Perceived, Performance, High Schools, Students.**

I. INTRODUCTION

High academic expectations and competition prevalent in Indian high schools have been associated with heightened levels of academic stress among students (Verma & Gupta, 1990). Excessive school-related stress can adversely impact psychological wellbeing, classroom engagement, and academic performance (Fairbrother & Warn, 2003). Most empirical research examining contributors to and outcomes of academic stress has been conducted in Western educational contexts. There have been limited studies focused on elucidating the relationship between academic stress and performance specifically among high school students in urban India despite recognition of this issue for decades.

This study aims to address this gap in the literature by investigating associations between perceived academic stress and various indices of academic achievement in a sample of adolescents from public urban high schools in Navi Mumbai, India. Grounded in models of stress and coping, we hypothesize that higher academic stress will correlate with poorer performance measures. Findings can delineate if academic stress functions similarly as a risk factor undermining student success in the Indian context as established in Western settings (Akgun & Ciarrochi, 2003). Evidence drawn from this understudied population may guide educators and policymakers in implementing programs to monitor stress levels and promote coping skills to optimize learning outcomes. Examining academic stress among Indian youth at a critical juncture in their education also has implications for efforts to support mental health and wellbeing during formative years.

The hypotheses for the present study are grounded in Yerkes and Dodson's (1908) model of the relationship between stress and performance as well as prior empirical evidence linking academic stress to poorer achievement outcomes. Specifically, the inverted-U relationship outlined in the Yerkes-Dodson law stipulates that performance is optimized at moderate levels of stress or arousal, while excessive stress impairs functioning and performance (Teigen, 1994). Additionally, studies conducted among high school students in the U.S. have shown perceptions of higher academic stress correlate with lower end-of-term grade point averages, exam scores, and persistence rates (Aronen et al., 2005). Integrating these theoretical and empirical foundations, the primary hypothesis for the current study is that higher levels of self-reported academic stress will be associated with lower school performance as reflected through grade averages, exam marks, and subject pass rates among the Indian high school sample. Testing this hypothesis will provide initial insights on the stress-achievement relationship within an understudied yet critical population.

II. METHOD

Participants

The sample for this study consisted of 376 high school students recruited from grades 9 through 12 of public coeducational schools located in Navi Mumbai, India. The student populations across the participating schools are predominantly comprised of adolescent youth from middle and low-income family backgrounds representative of the city's socioeconomic demographics. Of the 376 students in the sample, 58% (n = 218) identified as female and 42% (n = 158) identified as male. The age range was 14 to 17 years old, which spans the typical age distribution of high school students in the 9th to 12th grade levels. The participant schools have comparable academic calendars, grading systems,

curriculum standards, and testing policies mandated by the state education board. Students from the science and commerce academic tracks were well represented in the recruited sample, enabling examination across these major areas of study within Indian high schools. The sample of 376 students provided sufficient statistical power based on a priori power analysis calculations to detect small to moderate effects in the planned correlational and regression analyses. This sample allows investigation of the research questions within a key demographic of Indian adolescent students navigating high stakes secondary education.

Measures
Academic Stress
Students' perceived academic stress was measured using the 10-item Perceived Stress Scale (PSS) developed by Cohen, Kamarck, and Mermelstein (1983). This validated scale assesses respondents' appraisal of how unpredictable, uncontrollable, and overloaded their lives have felt across the previous month. Sample items include "In the last month, how often have you felt nervous and 'stressed' about your academic work?" and "Felt unable to control important things in your academic life?" The items are evaluated using a Likert-type scale consisting of five points, with zero (indicating never) and four being the highest (very often). Total scores range from 0 to 40, with higher scores reflecting greater perceived academic stress. The PSS has demonstrated adequate internal reliability (α's of .84 to .86) and predictive validity in prior studies of adolescent academic stress (Ang & Huan, 2006).

Academic Performance
Students' academic performance was operationalized through the following objective indicators obtained via school records:
- Cumulative grade point average (CGPA) for the current academic year
- Percentage scores on the standardized board examinations in core subjects of mathematics, science, and English

These metrics capture multifaceted academic achievement on mandatory high-stakes tests and curricular performance. Accessing official academic records provides standardized, validated measures.

III. PROCEDURE AND ANALYSIS
The study procedures received ethics approval from the institutional review board prior to data collection. Permission to conduct the research was obtained from the principals at each participating public high school. Parents were informed of the study's purpose to examine associations between academic stress and performance in an information letter sent home one week prior to survey administration.

The paper-based Perceived Stress Scale (PSS) was administered during regular 45-minute class periods to students who had parental consent to participate. Teachers supervised the survey completion, which took approximately 10 minutes. Students responded anonymously using self-generated ID codes. Official academic records consisting of cumulative GPAs and exam scores were acquired with parental permission from the schools' student databases. Unique matched ID codes, maintained confidentiality.

Collected data were analyzed using IBM SPSS Statistics software (Version 25). Preliminary analyses were conducted to examine distributions and internal reliability of the PSS measure (Cohen et al., 1983). The primary hypotheses were tested using Pearson product-moment correlation coefficients to assess bivariate relationships between perceived academic stress, cumulative GPA, and exam scores (DuBois et al., 2018). Hierarchical linear regression analyses were also utilized to evaluate academic stress as a predictor of the performance indicators when controlling for demographic factors and baseline variances. An alpha level of .05 determined statistical significance for all analyses. These approaches rigorously tested the hypothesized associations between academic stress and indicators of academic achievement in the sample.

IV. RESULTS
Preliminary analyses assessed the internal reliability of the 10-item Perceived Stress Scale (PSS) measure using Cronbach's alpha. The PSS showed excellent internal consistency for this sample (α = .89), indicating the scale provided reliable measurement of perceived academic stress among the Indian high school students.

Descriptive statistics were examined for the study variables. The mean PSS stress score was 22.41 (SD = 6.82) out of the maximum 40 points, suggesting a moderate level of academic stress perceived by students on average. The sample's mean cumulative grade point average (CGPA) for the academic year was 7.65 (SD = 1.50) indicating grades primarily within the B to B+ range. Average percentage scores on the end-of-year board exams were generally in the 50s across core subjects: Mathematics (M = 54.82%, SD = 12.61), Science (M = 58.73%, SD = 10.92), and English (M = 52.46%, SD = 9.83).

Bivariate correlational analyses tested the primary hypotheses regarding associations between perceived academic stress and the two academic performance indicators. As predicted, results showed statistically significant moderate negative correlations between PSS stress scores and both CGPA (r = -.34, p < .001) and board exam percentage scores (r = -.29,

$p < .001$). The direction and magnitude of these correlations offer initial support that higher academic stress was related to lower achievement outcomes among this sample of Indian high school students.

Follow-up hierarchical linear regression analyses further assessed perceived stress as a statistically significant predictor of the performance measures when controlling for demographic variables and potential confounds.

V. DISCUSSION

The present findings reveal a significant negative relationship between students' appraisals of academic stress and their overall academic performance, as reflected in cumulative grade point averages and scores on standardized board exams, within this sample of Indian high school students. Students reporting higher stress levels tended to exhibit poorer achievement outcomes across subjects. This aligns with prior evidence linking heightened academic stress to reduced grades, lower persistence, and impaired school functioning in Western adolescent populations (Akgun & Ciarrochi, 2003). The results provide preliminary support that perceived academic stress similarly acts as a risk factor undermining student success in the Indian secondary school context.

These findings suggest interventions aimed at monitoring stress levels and teaching adaptive coping strategies could benefit Indian adolescents' mental health and ability to thrive academically. School-based programs incorporating mindfulness, relaxation skills, cognitive restructuring, and social-emotional competencies have proven internationally effective for mitigating academic stress and bolstering resilience among youth (Onyekuru & Ifeagwazi, 2020). Culturally adapting such evidence-based approaches could aid India's education system in addressing elevated student stress and promoting wellbeing. However, further research should continue elucidating complex, multidirectional associations between stress appraisals, contextual factors, and academic outcomes over time. Limitations of this study included its cross-sectional design and geographic specificity.

This study has several limitations that should be acknowledged. First, the cross-sectional correlational design precludes determining cause-and-effect relationships or directionality between perceived academic stress and achievement. Longitudinal research tracking these variables over time could better elucidate predictive associations. Secondly, the study relied solely on students' subjective self-report measures of their academic stress levels. Incorporating multi-informant ratings from teachers and parents or more objective indicators such as school absenteeism could provide greater perspective. Additionally, the sample was limited to high school students in the urban area of Mumbai, thus findings may not generalize to youth in other communities or geographic regions of India. Further research with larger nationally representative samples is needed to increase generalizability. Finally, potential confounding variables related to student backgrounds, school climate, and familial factors were not accounted for in the analyses. Future studies should measure and control for additional variables to isolate the unique effects of perceived academic stress on achievement.

In summary, these findings provide initial evidence that higher academic stress correlates with poorer achievement for Indian urban high school students. This highlights the need to prioritize adolescent mental health and wellbeing within secondary schools to support the fulfillment of students' academic potential.

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