SPOTLIGHT ON THE FACTORS OF MATHEMATICS ANXIETY AMONG UNIVERSITY ADOLESCENTS

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1. INTRODUCTION

Mathematics anxiety is a significant psychological barrier affecting university students, often rooted in a variety of emotional, cognitive, and environmental factors. As students transition to higher education, challenges such as test pressure, cognitive load, and lack of support can amplify feelings of fear and helplessness associated with mathematics. This study aims to investigate these multidimensional contributors to math anxiety among university adolescents in order to inform targeted strategies that promote healthier learning environments and improved academic outcomes.

2. PROBLEM STATEMENT

Although mathematics is a foundational subject in higher education, many university students struggle with persistent anxiety that negatively affects their performance and confidence. Traditional teaching methods, prior negative experiences, lack of motivation, and limited teacher support can heighten this anxiety. Despite growing concern, limited research in the Bangladeshi context has empirically examined the comprehensive set of cognitive, emotional, and environmental predictors of math anxiety in university adolescents. This study addresses that gap by analyzing a structured model of influencing factors.

3. STUDY OBJECTIVES

- To examine the psychological, academic, and environmental factors—including test anxiety, self-efficacy, parental influence, and classroom conditions—that contribute to mathematics anxiety among university adolescents.
- To analyze the structural relationships among key predictors such as negative experiences, attitude towards math, cognitive challenges, and perceived teacher support using a data-driven modeling approach.
- To inform policy recommendations and educational interventions by providing empirical insights that can help reduce the severity of mathematics anxiety and promote supportive learning environments in higher education institutions.

4. STUDY METHODOLOGY

4.1. STUDY DESIGN AND SETTINGS

- **Research Design:** Quantitative cross-sectional
- **Time frame:** 10th April, 2025 to 30th April, 2025

4.2. POPULATION AND SAMPLE SIZE

- **Target Population:** University level students
- **Minimum required sample size:** 129 (Calculated by G*power 3.1, Effect size f^2:0.15, Power: 0.95)
- **Study sample size:** 330 (Male: 153, Female:177)

4.3. DATA COLLECTION

- **Instrument:** Survey questionnaire.
- **Data collection procedure:** Online & face to face
- **Pilot test:** Yes
- **Validity & reliability test:** Yes (Content validity and internal consistency reliability)

4.4. DATA ANALYSIS

- **Phase 01:** Descriptive analysis (using IBM SPSS Statistics 26)
- **Phase 02:** Partial Least Squares Structural Equation Modeling (PLS-SEM) (using SmartPLS4)
  Statistical Reporting:
  (1) Measurement model evaluation (internal consistency reliability, convergent validity, and discriminant validity).
  (2) Structural model evaluation (collinearity assessment, evaluation of structural model path coefficients, and the coefficient of determination)

4.5. ETHICAL CONSIDERATION

Necessary permissions were obtained from the DIU FGS Ethics Review Board (Ref: FGS/2025/03).

5. KEY FINDINGS

5.1. DEMOGRAPHIC INFORMATION

Category	Criteria	N=330
Gender	Male	153 (46.4%)
	Female	177 (53.6%)
Area of living	Rural	49 (15.2%)
	Sub-urban	51 (15.8%)
	Urban	222 (68.9%)
Parental Education Level	No formal education	3 (0.9%)
	Primary	16 (4.8%)
	Secondary	110 (33.3%)
	Tertiary	201 (60.9%)

Paths	Original sample (O)	(STDEV)	T statistics	P values
ATM -> MA	0.589	0.040	14.611	0.000
CC -> MA	0.037	0.052	0.700	0.484
LSE-> ATM	0.726	0.030	24.535	0.000
MA -> LM	0.485	0.048	10.107	0.000
NE-> LSE	0.260	0.062	4.199	0.000
NPI -> LSE	0.284	0.064	4.452	0.000
PTS-> MA	-0.101	0.044	2.293	0.022
PCE -> MA	-0.014	0.040	0.355	0.723
TA -> MA	0.335	0.051	6.628	0.000