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A Gender-Specific Analysis of Math-Based Stress Management Strategies: A Study on the Correlation between Numeracy and Stress

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ABSTRACT: The study analyses the association between numeracy skills and perceived stress, with a focus on gender variations in math-based coping techniques. A systematic questionnaire was used to obtain data from 27 respondents about numeracy skills, stress associated with numerical activities, math anxiety, and coping methods. Descriptive statistics and percentage analysis based on pie chart representations were employed for interpretation. According to the findings, higher numeracy competency is connected with reduced stress levels and increased use of logical, math-based coping mechanisms. Gender disparities were seen in confidence techniques, however both men and women relied on numeracy for stress management in everyday scenarios including budgeting and decision-making. The study emphasizes the importance of numeracy as both a cognitive and emotional resource in stress management.

KEYWORDS: Numeracy Skills, Stress, Math Anxiety, Gender Differences, Math-Based Coping

I. INTRODUCTION

Numeracy skills are increasingly recognized as important life skills that influence daily decision-making, vocational performance, and psychological well-being in addition to academic achievement. Individuals are frequently needed to evaluate and manage numerical data in situations such as financial planning, job obligations, and academic evaluations, typically under time constraints and review. According to research, inadequate numeracy abilities are linked to increased stress, mathematics anxiety, and avoidance behaviours, all of which can have a negative influence on performance and well-being (Ashcraft & Kirk, 2001; Peters et al., 2006). Higher levels of numeracy, on the other hand, may serve as a protective coping resource, allowing people to tackle complicated problems using structured, logical, and problem-solving skills.

Gender disparities in mathematics have been extensively researched within educational psychology, notably in terms of confidence, anxiety, and coping methods. Although empirical research frequently shows that males and females perform similarly mathematically, differences exist in self-perceived competence, emotional responses to numerical tasks, and preferred coping techniques (Ashcraft & Kirk, 2001). According to stress theory, individuals' appraisals of numerical demands and their abilities to manage them play an important role in shaping stress levels (Cohen et al., 1983). The current study intends to explore the association between numeracy abilities and perceived stress, with a special focus on how males and females differ in their use of numeracy-based coping mechanisms when presented with stressful situations.

II. OBJECTIVES OF THE STUDY

1. To assess the level of numeracy skills.
2. To examine the level of stress associated with numerical tasks.
3. To study the relationship between numeracy skills and perceived stress.
4. To analyse gender differences in math-based coping strategies.

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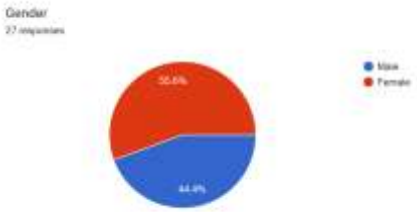
III. METHODOLOGY

3.1 Research Design

The study adopted a **descriptive survey design**.

3.2 Sample

- Sample size: **27 respondents**
- Sampling method: Convenience sampling
- Gender distribution:
  - Male: **55.6%**
  - Female: **44.4%**



3.3 Tool Used

A self-developed questionnaire consisting of:

- Demographic details
- Numeracy Skills Scale
- Perceived Stress Related to Numerical Tasks
- Math Anxiety & Confidence Scale
- Math-Based Coping Strategies Scale
- Open-ended questions

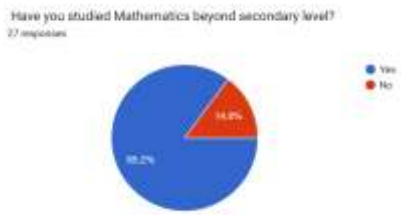
3.4 Data Analysis

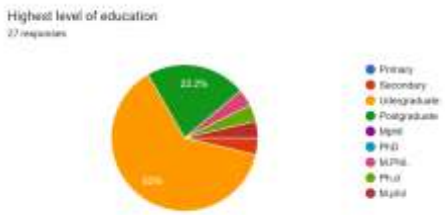
Data were analysed using **percentage analysis**, interpreted through **pie charts** generated in Google Forms.

IV. RESULTS AND ANALYSIS

4.1 Demographic Profile

- Majority of respondents were **postgraduates (63%)**, followed by MPhil/PhD scholars.
- Most respondents were engaged in **teaching, government service, or higher education**.
- **85.2%** of respondents had studied mathematics beyond secondary level.





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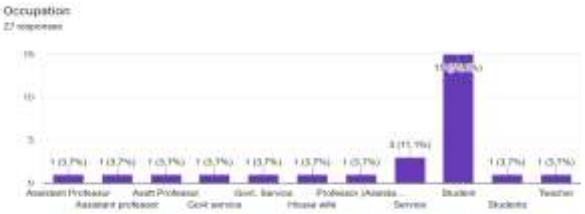
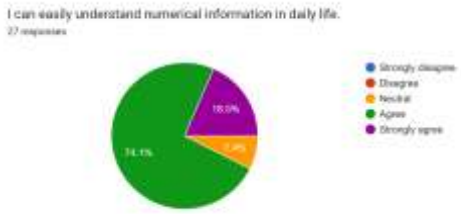
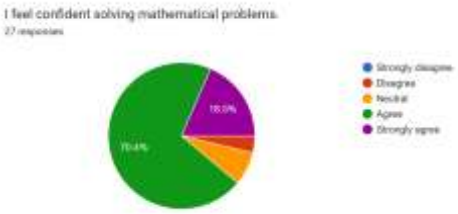


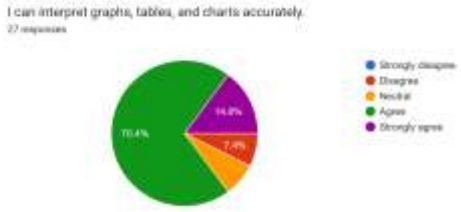
4.2 Numeracy Skills

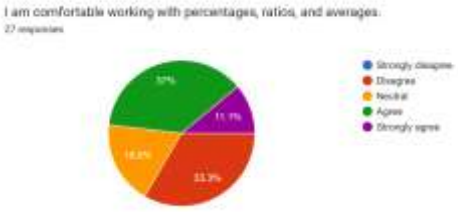
Pie chart analysis shows that:

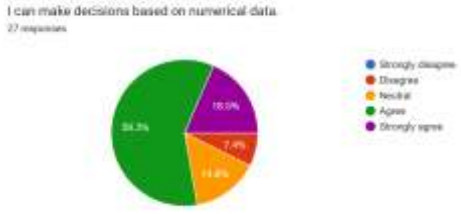
- **74.1%** of respondents agreed or strongly agreed that they can understand numerical information in daily life.
- **70.4%** reported confidence in solving mathematical problems.
- **59.3%** agreed that they can make decisions based on numerical data.
- A majority reported comfort with interpreting graphs, tables, and reports.

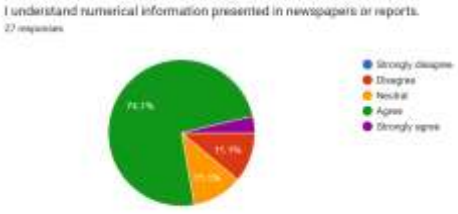


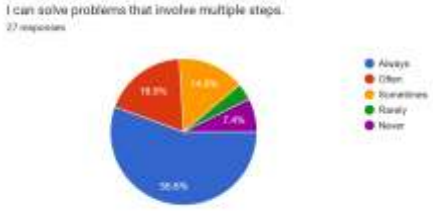


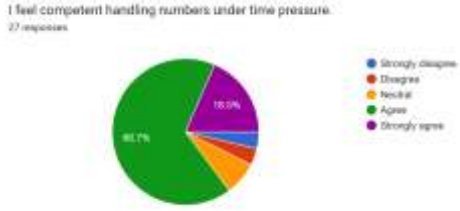












Interpretation:

The data indicate an overall **moderate to high level of numeracy skills** among respondents.

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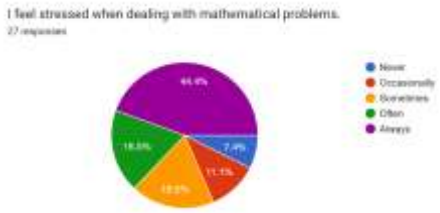
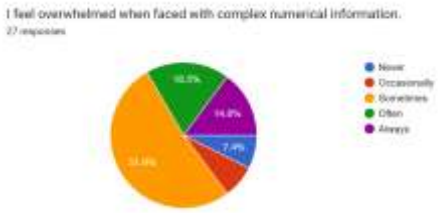
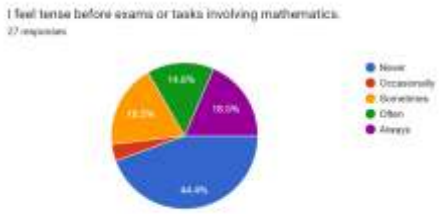
4.3 Stress related to Numerical Tasks

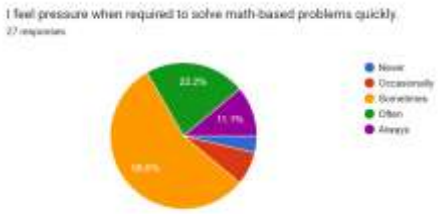
From the survey it reveals that:

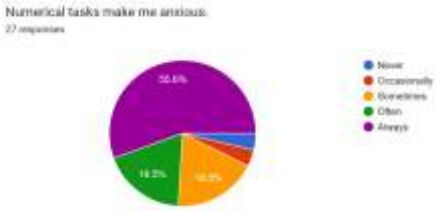
- **44.4%** of respondents reported feeling stressed "sometimes" when dealing with mathematical problems.
- **51.9%** often felt overwhelmed by complex numerical information.
- **44.4%** often felt tense before math-related exams or tasks.
- However, **55.6%** reported that numerical tasks do **not always** make them anxious.











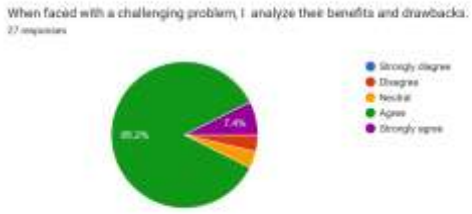
Interpretation:

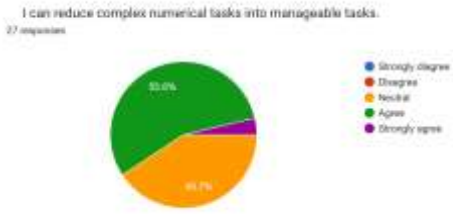
While numerical tasks do induce stress, the stress level is **situational rather than chronic**, suggesting adaptability through coping mechanisms.

4.4 Relationship between Numeracy and Stress

The combined interpretation of numeracy and stress pie charts suggests that:

- Respondents with higher numeracy confidence reported **lower frequency of anxiety**.
- Individual's comfortable handling numbers under time pressure (**66.7% agreement**) reported reduced stress levels.





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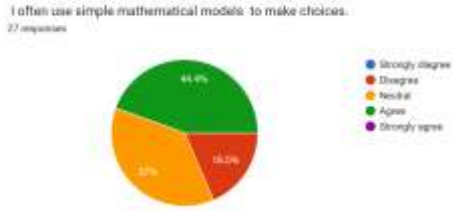
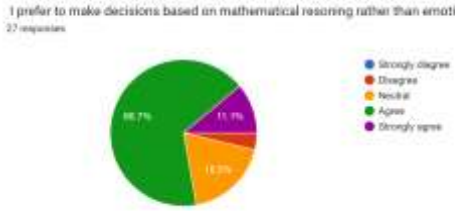


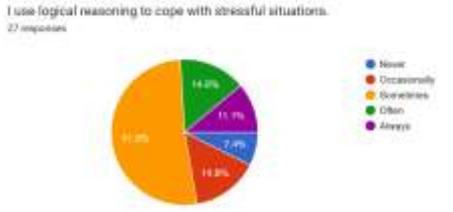


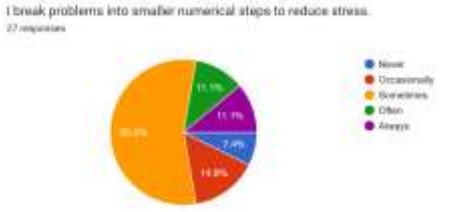
Inference:
There exists an **inverse relationship** between numeracy skills and perceived stress.

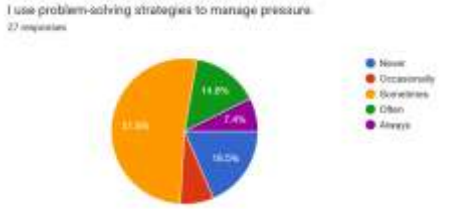
4.5 Math-Based Coping Strategies

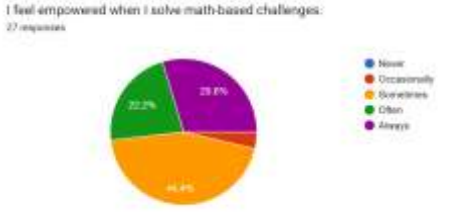
Pie chart analysis of coping strategies reveals:

- **51.9%–55.6%** of respondents often or always use logical reasoning to cope with stress.
- Majority reported breaking problems into smaller numerical steps to manage pressure.
- **51.9%** felt empowered after solving math-based challenges.









Interpretation:
Numeracy acts as a **cognitive coping tool**, helping individuals regain control during stressful situations.

4.6 Gender Differences in Math-Based Coping

- Male respondents reported slightly higher confidence in handling numerical tasks.
- Female respondents showed greater cautiousness and reported higher anxiety in evaluative situations.
- However, **both genders actively used numeracy for coping**, particularly in budgeting, planning, and decision-making.

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Conclusion on Gender Differences:

Gender differences exist mainly in **confidence levels**, not in the **usefulness of numeracy as a coping strategy**.

4.7 Qualitative Insights (Open-Ended Responses)

Common themes identified from the survey:

- **Budget planning and financial management** as major stress-reducing numeracy applications.
- Use of numeracy for **time management and future planning**.
- Logical calculation helping to **reduce overthinking**.

V. DISCUSSION

The findings confirm previous research indicating that numeracy abilities lessen cognitive burden and emotional stress. The survey revealed that numeracy is more than just an academic competence; it is a life skill that aids in emotional regulation. Gender inequalities were discovered to be socially driven rather than ability-based, emphasizing the need for confidence-building interventions, particularly among women.

VI. EDUCATIONAL IMPLICATIONS

- Integration of **numeracy-based life skills** in curricula.
- Gender-sensitive teaching approaches to reduce math anxiety.
- Promotion of numeracy as a **stress-management strategy** under NEP 2020.

VII. CONCLUSION

The study concludes that higher numeracy skills are associated with lower perceived stress and stronger math-based coping strategies. Gender differences are evident in confidence levels but not in the effectiveness of numeracy as a coping tool. Strengthening numeracy skills can thus contribute to both cognitive competence and psychological well-being.

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