FACTORS AFFECTING MATHEMATICS ANXIETY OF SOCIAL SCIENCES AND HUMANITY UNDERGRADUATES IN SRI LANKA (WITH SPECIAL REFERENCE TO GOVERNMENT UNIVERSITIES)

W.V.K. Dileesha [1*], M.A.C.S.S. Fernando [1], C. W. C. Silva [2]
[1] *Department of Economics and Statistics, Sabaragamuwa University of Sri Lanka*
[2] *Faculty of Humanities and Social Sciences, University of Sri Jayewardenepura*

Abstract

The term "math anxiety" refers to a state of stress and dread that impairs one's capacity to perform mathematical computations, manipulate numbers, and solve mathematical problems in a range of real-world and academic environments. The main objective of this study is to explore the factors that mainly affect math anxiety among Social Sciences and Humanity undergraduates in Sri Lanka. Stratified random sampling was used to choose a sample size of 265. Structural equation modelling method was used to analyses the collected data. Five factors were tested with the math anxiety. They are; student attitude, role of lecturers, emotions, skills, and influence of peers and parents. It was discovered that students' negative attitudes and emotions have a positive effect on math anxiety. The roles of lecturer and parents and peer influence have a negative relationship with math anxiety. Finally, skills have no relationship with math anxiety.

Keywords: *Mathematics Anxiety, Policy Decision, Social Sciences and Humanity, Structural Equation Model*

**Corresponding author: Email:kasunidileesha123@gmail.com Tel: +94 (071) 124 9981*

Introduction

Math anxiety is an emotional problem that shows a reluctance and fear to solve math problems. It is also the stress that is felt in everyday life in matters related to mathematics. Math anxiety plays a pivotal role in the academic life of students. When students have math anxiety, any math related problem brings them stress and tension. This can lead to problems with their memory and ability to think properly. The main purpose of this study is to identify the factors that affect the math anxiety of Social Sciences and Humanity undergraduates in Sri Lanka. According to the previous researchers, math anxiety is an emotional issue that occurs at childhood and it develops with age.

Researchers have found that about 20% of population suffers from math anxiety. It is an emotional problem that is prevalent all over the world and affects people of all ages. By some estimates, nearly 1 in 5 US adults report severe math anxiety. Studies state that 93% of adults living in the United States suffer from some form of math anxiety. (Luttenberger, Wimmer, & Paechter, 2018) It is estimated that about 17% of American population has high levels of math anxiety. Approximately 30% of adolescent in the study had high levels of math anxiety and 18% had low levels of math anxiety. (Ashcraft & Moore, 2009)

Materials ad Methods

This study used a quantitative approach to explore the research problem. Because this study follows positivism and it is the most suitable method for this study. This study provides more explanations and details about key variables based on existing theories. So, this study has explanatory design. This study re-tests an existing theory. Therefore, this research used deductive approach as the research method.

The present study includes use of both qualitative and quantitative data and both primary data and secondary data. The total population for the study is 23542. From that, a total sample size of 265 was selected to represent the entire population by using Stratified Sampling method.

In this study, the researcher used Structural Equation Modelling as the data analysis technique. Furthermore, descriptive statistics, confirmatory factor analysis, validity, reliability and path analysis are used in data analysis.

Results and Discussions

In this study, a total of 36 items, which were identified from previous literature, were used in the CFA. According to the first run of the CFA model, it was revealed that the model is not successful. Therefore, the existing model

needed be improved. Some indicators had to be removed from the initial measurement model for the sample since they had significant covariance and also had large regression weight, ensuring a great fit model.

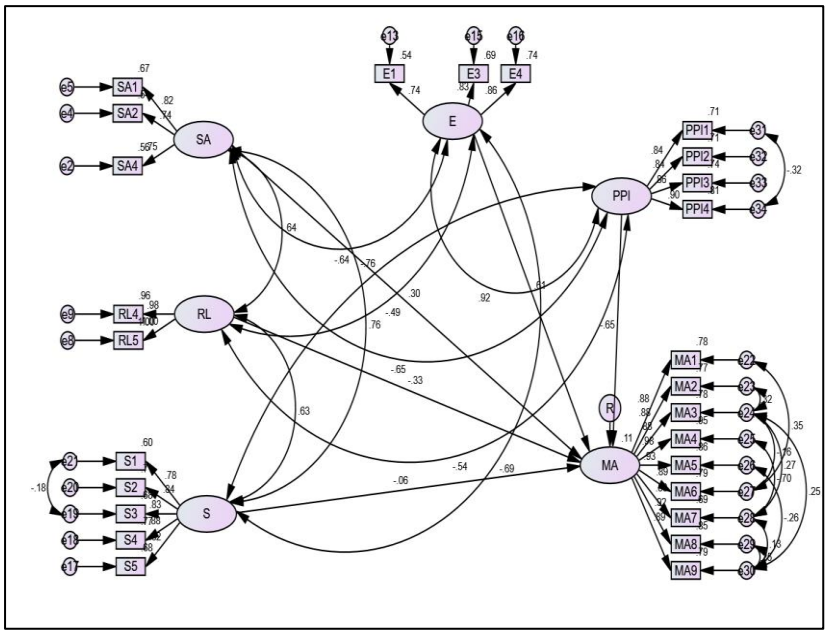
Table 1:

Fit Indices for Final CFA Model

Fit Index	Recommended Value	Coefficient
CMIN/DF	<5 Preferable <3	3.090
GFI	>0.9 Preferable >0.95	0.822
CFI	>0.9 Preferable >0.95	0.927
TLI	>0.9 Preferable >0.95	0.913
RMSEA	<0.08 Preferable <0.06	0.08

Figure 1:

Path Diagram



Source: Sample Survey 2022

Then the hypothesized relationships within the variables can be evaluated using the proposed structural model.

Table 2:

Summary of the Results for the Hypothesis

Hypothesis	Effect Type	Path Coefficient	P Value	Result
H1	SA → MA Direct effect	0.300	0.025*	Supported
H2	RL → MA Direct effect	-0.326	0.003**	Supported
H3	E → MA Direct effect	0.615	0.027*	Supported
H4	S → MA Direct effect	-0.062	0.356	Not Supported
H5	PPI → MA Direct effect	-0.652	0.048*	Supported

*Note:*p<0.05, **p<0.01*

According to table 2, the factor loadings (regression weights) output in AMOS suggests that four out of five hypothesized associations for the sample were validated.

When students' negative attitudes increase by one point the mathematics anxiety of undergraduates would increase by 0.300. The standardized coefficient value is significant at 5% of significance level. When the role of lecturers increases by one point the mathematics anxiety of undergraduates would decrease by 0.326. The standardized coefficient value is significant at 1% of significance level. When negative emotions increase by one point, the mathematics anxiety of undergraduates would increase by 0.615. The standardized coefficient value is significant at 5% of significance level. When peers and parents influence increase by one point the mathematics anxiety of undergraduates would decrease by 0.652. The standardized coefficient value is significant at 5% of significance level. However, there is no relationship between skills and mathematic anxiety of undergraduates. Because the effect is insignificant.

Conclusions and Recommendations

Five factors were tested with the dependent variable (Math Anxiety). They are Students' Attitude, Role of Lecturers, Emotions, Skills and Peer & Parent Influence. There is a direct positive relationship between students' attitude and mathematic anxiety of Social Sciences and Humanity undergraduates. There is a direct negative relationship between the role of lecturers and mathematic anxiety of social sciences and humanity undergraduates. There is a direct positive relationship between emotions and mathematic anxiety of social sciences and humanity undergraduates. There is no relationship between skills and mathematic anxiety of undergraduates. Finally, there is a direct negative relationship between the influence of peers and parents and mathematic anxiety of Social Sciences and Humanity undergraduates.

In conclusion, the structural equation modeling used in this study indicated that, with the exception of one factor, all factors are significant drivers of mathematics anxiety.

It is recommended that it is necessary to foster a love of mathematics by establishing "Mathematics Clubs" in each university in Sri Lanka and undergraduates should be aware of the link between their attitudes and their mathematical performance.

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