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MATHEMATICS ANXIETY OF THE SECONDARY LEVEL STUDENTS IN RELATION TO THEIR SOCIO-ECONOMIC-STATUS

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ABSTRACT:

The present study was conducted to explore the relation between mathematics anxietyand socio-economic statusof the secondary students with respect to their gender and locality. The researchers applied Math Anxiety Scale (Bengali medium) and Socio-Economic Scale developed by Halder on 320 students, randomly selected as the sample of the study from secondary schools of Dakshin Dinajpur District in West Bengal. The study explored that there is significant negative correlation between mathematics anxiety and socio-economic status of the secondary students.

KEYWORDS: *mathematics anxiety, socio-economic status, secondary students, gender, locality.*

INTRODUCTION

Science is knowledge as well as the process of its continuous development and refinement (Barek&Halder,2016). Mathematics is the base of science.Mathematics is an important subject (Adimora. et. al.,2015)and one of the core subjects in secondary-level and also in higher secondary-level mainly those who are in science discipline (Das, Halder & Bairagya,2014) as well as others.Mathematics is truly the gateway to engineering and all scientific and technology fields.With the use of modern computer and other devices there is a more emphasis in the mathematics(Kushwaha, 2014).Themathematics performance of majority of students in poor when the world is more mathematically inclined. The teacher teachesmathematics with the help of modern educational technological devices and more and more advanced effective methods of teaching but the performance of the students in the mathematics is a poor. Hence, there must be some factorsaffecting the learners in learning of mathematics at large. These factors like psychological, social and biographical and etc.Math anxiety is a psychological phenomenon that is often considered when examining students' problems in mathematics.

MATHEMATICS ANXIETY AND SOCIO-ECONOMIC-STATUS

Mathematics anxiety is a common problem for many students. Anxiety towards mathematics has been shown to be a significant predictor of mathematics performance in many studies among both male and

female students. Blazer (2011) defined math anxiety as negative emotions that interfere with the solving of mathematical problems.Mathematics anxiety has been defined as feelings of tension and anxiety that interfere with the manipulation of numbers and the solving of mathematical problems in a wide variety of ordinary life and academic situations.

The term of socioeconomic status is used by sociologists to denote an individual or family's overall rank in social and economic hierarchy (Mayer & Jencks, 1989). Socioeconomic status (SES) is a

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measure of an individual or family's relative economic and social ranking in existing society.The social-economic status (SES) of school students' is determined by their parental social position including income, education and occupation status (Sirin, 2005).A strong association between SES and educational achievement is well established within decades of international literature (Perry & McConney, 2010; Sirin, 2005).Singh & Choudhary (2015) explored thata significant difference among adolescents in between high socioeconomic status, middle socioeconomic status, low Socioeconomic status in terms of academic achievement scores.Hembree (1990) shows in his study that students with high level of mathematics anxiety have lower levels of mathematics achievement. Ashcraft and Kirk (2001) found that the correlation between mathematics anxiety and academic performance is negatively significant. Caro (2009) explored that the relationship between family socio-economic status and academic achievement is cordial.Mahigir et al., (2012) studied on the relationship between the income levels of families and the mathematics anxiety levels and finally they did not identify the income level as an anxiety affecting variable.Adimora. et. al. (2015) explored that a significant influence of socio-economic status on pupils 'mathematics anxiety.Geyik (2015)was identified that a statistically significant difference between the means of total mathematics anxiety levels from the point of family income. Zakaria et al. (2012) was found that there is no statistically significant difference in mathematics anxiety between male and female students.Kyttala &Bjorn (2013) studies that the girls to be more anxious about mathematics. Das, Halder & Bairagya (2014) found that there is a significant difference between male and female students in math anxiety and math achievement scores.Theyalso found that math anxiety and math achievement are significantly and inversely correlated.

Despite several reports on the relationships between mathematics anxiety and its various correlates, the present investigator found a research gap in case of the student population that no research work has been done on the relationship between mathematics anxiety and socio-economic-status in West Bengal, specifically on the student population of Dakshin Dinajpur District. Hence the investigator found it as a necessary issue to make an investigation.

OBJECTIVE OF THE STUDY
Specific objectives of this study were -
- ✓ To measure the mathematics anxiety of the secondary level students of Dakshin Dinajpur District.
- ✓ To measure the socio-economic-status of the secondary level students of Dakshin Dinajpur District.
- ✓ To explore the relationship between secondary level students' mathematics anxiety and their socio-economic-status in terms of their sex and locality.

NULL HYPOTHESES
To fulfill the selected objectives, the researcher constructed the following null hypotheses-

$H_{o.1}$:There is no significant correlation between student's mathematics anxiety and their socio-economic status.

$H_{o.2}$:There is no significant correlation between student's mathematics anxiety and their socio-economic status with respect to their gender.

$H_{o.3}$:There is no significant correlation between student's mathematics anxiety and their socio-economic status with respect to their locality.

$H_{o.4}$:There is no significant correlation between student's mathematics anxiety and their socio-economic status with respect to their gender-locality.

METHOD OF THE STUDY
Normative survey method of descriptive research was followed in the present study to measure and assess the academic stress and academic performance of the students of class IX. The researchers attempt to find out the relation between academic stress and academic performance and also to find out the difference between the boy and girl students in terms of their academic stress and academic performance.

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POPULATION AND SAMPLE

The students studying at secondary level in all the secondary schools affiliated to West Bengal Board of Secondary Education were treated as the population of the present study.The researcher selected Dakshin Dinajpur District to collect the sample of the present study. The total sample of the study was consisted of 320 students randomly selected from eight secondary schools among which four were from urban area and the rest were from rural area.

VARIABLES OF THE STUDY

➢ **Independent Variable**

Mathematics anxiety&Socio-economic status

➢ **Demographic Variable**

o **Gender –** Boys&Girls
o **Locality –** Urban& Rural.

TOOLS USED IN THE STUDY

In the present study, the researcher used a Math Anxiety scale developed by Halder (2015) which contains 55 items. There were 40 positive and 15 negative items in the scale. Each item in the Math Anxiety Scale was provided with five possible alternative responses, such as strongly Agree (SA), Agree (A),Undecided (UD), Disagree (D) and Strongly Disagree (SD).The reliability of the test was 0.918 (test-retest method was applied). Another scale to measure the socio-economic status of the students, namely Socio-Economic Status Scale was also developed by Halder (2013).

ANALYSIS AND INTERPRETATION OF THE DATA

The present investigators analyzed the collected data through applying the correlation method and t-test also used to find out the difference of correlation coefficients among the sub-samples.

$H_{o.1}$:There is no significant correlation between student's mathematics anxiety and their socio-economic status.

Table 1 Presentation of the correlation of the mathematics anxiety and socio-economic status scores.

Correlations

		Mathematics Anxiety	Socio-Economic Status	Mean	SD
Mathematics Anxiety	Pearson r	1	-.510[**]		
	Sig. (2-tailed)		.000	156.18	42.062
	N	320	320		
Socio-Economic Status	Pearson r	-.510[**]	1		
	Sig. (2-tailed)	.000		68.61	28.141
	N	320	320		

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1 shows a significant negative correlation between mathematics anxiety and socio-economic status (r = - .510, p < 0.01) scores which indicates that the null hypothesis ($H_{o.1}$) will be rejected. Hence it may be interpreted that mathematics anxiety and socio-economic status scores are in a relation and it may be further interpreted that the correlation between mathematics anxiety and socio-economic status scores is negative though it is mostly negligible.

H_{o.2}: There is no significant correlation between student's mathematics anxiety and their socio-economic status with respect to their gender.

<p align="center">Table 2 Presentation of the correlation of the mathematics anxiety and
socio-economic status scores with respect to their gender.</p>

Correlations

Gender			Mathematics Anxiety	Socio-Economic Status	Mean	SD
Boys	Mathematics Anxiety	Pearson r	1	-.488**		
		Sig. (2-tailed)		.000	153.25	43.911
		N	160	160		
	Socio-Economic Status	Pearson r	-.488**	1		
		Sig. (2-tailed)	.000		68.36	29.877
		N	160	160		
Girls	Mathematics Anxiety	Pearson r	1	-.542**		
		Sig. (2-tailed)		.000	159.12	40.051
		N	160	160		
	Socio-Economic Status	Pearson r	-.542**	1		
		Sig. (2-tailed)	.000		68.86	26.383
		N	160	160		

**. Correlation is significant at the 0.01 level (2-tailed).

   Table 2 shows a significant negative correlation between mathematics anxiety and socio-economic status (r = - .488, p < 0.01) and (r = - .542, p < 0.01) respectively in boys' and girls' students.It is indicating that the null hypothesis (H_{o.2}) will be rejected. Hence it may be interpreted that mathematics anxiety and socio-economic status scores are in a relation and it may be further interpreted that the correlation between mathematics anxiety and socio-economic status scores is negative though it is mostly negligible.

   It is further found that there is no significant difference between the boys andgirls' students in terms of the correlation between mathematics anxiety and socio-economic status (*t* = 0.65, df= 158, p > 0.05) of the students.

H_{o.3} : There is no significant correlation between student's mathematics anxiety and their socio-economic status with respect to their locality.

<p align="center">Table 3 Presentation of the correlation of the mathematics anxiety and
socio-economic status scoreswith respect to their locality.</p>

Correlations

Locality			Mathematics Anxiety	Socio-Economic Status	Mean	SD
Urban	Mathematics Anxiety	Pearson r	1	-.493**	143.68	41.702
		Sig. (2-tailed)		.000		
		N	160	160		
	Socio-Economic Status	Pearson r	-.493**	1	80.12	29.955
		Sig. (2-tailed)	.000			
		N	160	160		
Rural	Mathematics	Pearson r	1	-.382**	168.69	38.678

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			Mathematics Anxiety	Socio-Economic Status	Mean	SD
	Anxiety	Sig. (2-tailed)		.000		
		N	160	160		
	Socio-Economic Status	Pearson r	-.382**	1	57.10	20.615
		Sig. (2-tailed)	.000			
		N	160	160		

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows a significant negative correlation between mathematics anxiety and socio-economic status (r = - .493 p < 0.01) and (r = - .382, p < 0.01) respectively in urban and rural students. It is indicating that the Null Hypothesis (H$_{o.3}$) will be rejected. Hence it may be interpreted that mathematics anxiety and socio-economic status scores are in a relation and it may be further interpreted that the correlation between mathematics anxiety and socio-economic status scores is negative though it is mostly negligible.

It is further found that there is no significant difference between the urban and rural students in terms of the correlation between mathematics anxiety and socio-economic status (*t* = -1.22 df = 158, p > 0.05) of the students.

H$_{o.4}$: There is no significant correlation between student's mathematics anxiety and their socio-economic status with respect to their gender-locality.

Table 4 Presentation of the correlation of the mathematics anxiety and socio-economic status with respect to their gender-locality.

Correlations

Gender*Locality			Mathematics Anxiety	Socio-Economic Status	Mean	SD
Urban Boys	**Mathematics Anxiety**	Pearson r	1	-.443**	141.26	46.470
		Sig. (2-tailed)		.000		
		N	80	80		
	Socio-Economic Status	Pearson r	-.443**	1	80.64	30.380
		Sig. (2-tailed)	.000			
		N	80	80		
Rural Boys	**Mathematics Anxiety**	Pearson r	1	-.405**	165.24	37.819
		Sig. (2-tailed)		.000		
		N	80	80		
	Socio-Economic Status	Pearson r	-.405**	1	56.08	23.836
		Sig. (2-tailed)	.000			
		N	80	80		
Urban Girls	**Mathematics Anxiety**	Pearson r	1	-.566**	146.10	36.452
		Sig. (2-tailed)		.000		
		N	80	80		
	Socio-Economic Status	Pearson r	-.566**	1	79.60	29.706
		Sig. (2-tailed)	.000			
		N	80	80		
Rural Girls	**Mathematics Anxiety**	Pearson r	1	-.384**	172.14	39.452
		Sig. (2-tailed)		.000		
		N	80	80		

Socio-Economic Status	Pearson r	-.384**	1	58.13	16.883
	Sig. (2-tailed)	.000			
	N	80	80		

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows a significant negative correlation between mathematics anxiety and socio-economic status (r = - .443 p < 0.01) and (r = - .405, p < 0.01) respectively in urban boys' and rural boys' students. It is also found thata significant negative correlation between mathematics anxiety and socio-economic status (r = - .566 p < 0.01) and (r = - .384, p < 0.01) respectively in urban girls' and rural girls' students. It is indicating that the Null Hypothesis ($H_{o.4}$) will be rejected. Hence it may be interpreted that mathematics anxiety and socio-economic status scores are in a relation and it may be further interpreted that the correlation between mathematics anxiety and socio-economic status scores is negative though it is mostly negligible.

It is further found that there is no significant difference in terms of the correlation between mathematics anxiety and socio-economic statusrespectively in between the urban boys' and rural boys'(t = - 0.41, df = 158, p > 0.05), between the urban boys' and urban girls (t = 1.47, df = 158, p > 0.05), between the rural boys' and rural girls' (t = -0.22, df = 158, p > 0.05), between the rural boys' and urbangirls' (t = 1.88, df = 158, p > 0.05) and between the urban boys' and rural girls (t = -0.63, df = 158, p > 0.05) of the students. But, it is found that there is a significant difference between the urban girls' and rural girls' students in terms of the correlation between mathematics anxiety and socio-economic status (t = -2.1, df = 158, p < 0.05) of the students.

DISCUSSION AND CONCLSION

The present study explored that there is a negative significant correlation between total mathematics anxietyand total socio-economic status scores.It was found that there is a negative significant correlation between mathematics anxiety and socio-economic status with respect to their gender.It is further found that there is no significant difference between the boys' and girls' students in terms of the correlation between mathematics anxiety and socio-economic status of the students. It was also found that there is a negative significant correlation between mathematics anxiety and socio-economic status with respect to their locality of the students. It is further found that there is no significant difference between the boys' and girls' students in terms of the correlation between mathematics anxiety and socio-economic status of the students.

It is further found that there is no significant difference in terms of the correlation between mathematics anxiety and socio-economic status respectively in between the urban boys' and rural boys', between the urban boys' and urban girls, between the rural boys' and rural girls,' between the rural boys' and urban girls' and between the urban boys' and rural girls' of the students. But, it is found that there is a significant difference between the urban girls' and rural girls' students in terms of the correlation between mathematics anxiety and socio-economic status of the students

Hence, the present researcher found that, in present scenario, mathematics anxiety of the students in secondary level is negative to the SES of the students. Therefore, the researcher recommended conducting further study to make effective and broader findings helpful in the math learning process in secondary education instruction.

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