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RESEARCH ARTICLE

MATHEMATICS ANXIETY OF SECONDARY SCHOOL STUDENTS

Varun Kumar¹ and Dr. Nimisha Srivastava²

1. Guest Faculty, MaaKamla Chandrika Jee Teacher's Training College Jehanabad, Bihar, India.
2. Associate Professor, St. Xavier's College of Education (Autonomous), Digha Ghat, Patna, Bihar, India.

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Abstract

The present investigation has been conducted to study the Mathematics Anxiety and its effect on a set of independent variables (gender, school board, fathers' qualification, mothers' qualification and with respect to their types of family). To achieve this aim the researcher has adopted survey method. The tool used for the data collection was Mathematics Anxiety Scale (MAS) developed by Dr. (Mrs.) Sadia Mahmood and Dr. (Mrs.) Tahira Khatoon. Tool was administered on 195 secondary school students drawn randomly from two schools of Patna. For the analysis of data, the investigator has used mean, standard deviation and 't' test. The results found that there is no significant difference in Mathematics Anxiety of students with respect to their gender, school board, fathers' qualification and with respect to their types of family. Another major finding is that, students whose mothers' qualification is above intermediate they are having high Mathematics Anxiety in comparison to those whose mothers' qualification is intermediate and below intermediate.

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Introduction:-

Mathematics Anxiety is referred to as a sensation of nervousness and tension which interferes with the manipulation of numbers to solve mathematical sums in a different style than routine work and can cause learners to forget the solution of mathematical problems and have a lack of self-efficacy; and they feel insecure in such situations (Tobias, 1995). Mathematics Anxiety is an emotional, mental and physical act related to the mathematical thinking and problem solving processes and resulting from uncomfortable past experiences related to Mathematics (Arem, 2009). Smith (1997) characterized maths Anxiety in a number of ways, including: (a) uneasiness when asked to perform mathematically (b) avoidance of maths classes (c) feelings of physical illness, faintness, dread or panic (d) inability to perform on a test and (e) utilization of tutoring sessions that provide very little success. Mathematics Anxiety is not restricted to tests or classroom settings. It may generalise to various real-world situations with the consequence that otherwise perfectly intelligent and capable persons develop a severe avoidance of situations involving any kind of Mathematics even extending to not choosing careers which include the application of Mathematics. It is very real and occurs among thousands of people. Mathematics Anxiety is an emotional, rather than intellectual problem. It interferes with a person's ability to learn Mathematics and therefore results in an intellectual problem. It has become a concern for our Indian society. Evidence of student's poor attitude and high levels of Anxiety towards Mathematics is abundant. In the midst of a technological era, declining Mathematics scores in 'Scholastic Aptitude Test' as well as poor Mathematics scores had been published in the third 'International Mathematics and Science Study'.

Corresponding Author:- Varun Kumar

Address:- Guest Faculty, MaaKamla Chandrika Jee Teacher's Training College Jehanabad, Bihar, India.

Anxiety in Mathematics has raised several important questions for educational researchers. What factors promote Anxiety in students? How far do the different factors contribute towards Anxiety? **Norwood (1994)** emphasized that Mathematics Anxiety did not appear to have single cause, but was infact, the result of many different factors such as truancy, poor coping skills, teacher attitude and emphasis on learning math through drill without understanding. Another factor, which are widely routed as significant contributor for Mathematics Anxiety is student's gender, school board, parental education and types of family.

This study may bring forth the positive and negative aspect of Mathematics Anxiety. Findings from this study will help the teachers, administrators and parents to understand the current status of Mathematics education and find ways to decrease Mathematics Anxiety across all the grades.

Literature Review:-

Acevedo et al. (2020) conducted a study on Relationship between Mathematical Anxiety and Academic Performance in Mathematics in High School Students. The study shows that the level of Anxiety is greater in girls than in boys and that there is an inverse correlation between Academic Performance in Mathematics and Mathematics Anxiety; as Anxiety increases, the Academic Performance decreases.

Amam et al. (2019) studied Math Anxiety Performance of the 8th Grade Students of Junior High School. The results showed that condition of Mathematical Anxiety level is in a low category. A low level of Students Anxiety is expected to improve the quality of student learning. The study also concluded that there is no difference in the Anxiety level of male and female students.

Srivastava (2019) conducted a study on Mathematics Anxiety among Secondary School Students in relation to Gender Attitude Parental Education Mathematics Achievement and School. The study shows that female students have more Anxiety level than male students in Mathematics. It was found that the students having high achievement in Mathematics have less Anxiety levels than that of low achieving students. The study also revealed that students whose mother and father are not educated or less educated are more anxious than students whose mother are middle educated or high educated and the students of private school have lowest Mathematics Anxiety than the other Govt., Semi Govt., Muslim Minority.

Yuliani et al. (2019) conducted a study on Analysis of Mathematics Anxiety of Junior High School Students. The findings of the study revealed that Mathematics Anxiety of Junior High School Students was at a moderate level. Anxiety increased in Grade 8. The result showed that Mathematics Anxiety increases as students go to higher classes.

Kundu&Kar (2018) conducted a study on Mathematics Anxiety and its Relationship with the Achievement of Secondary School Students. The findings of the study revealed that boys and girls students have same Mathematics Anxiety. The study also concluded that rural students are more Math Anxious than urban students and the students who have high Anxiety exhibit low Achievement in Mathematics and vice versa.

Prakash et al. (2018) conducted a Study of Mathematics Anxiety of 10th Class Students in relation to their Academic Achievement. The study shows there is a positive correlation between Academic Achievement and Mathematics Anxiety of boys and girls of 10th Class Students. High Mathematics Anxiety enhances the high Academic Achievement.

Khaliq (2016) did a study on the effect of Mathematics Anxiety on Punjab Public Secondary School Students' Mathematics Achievement. The findings of the study revealed that there is a statistically significant negative relationship between Mathematics Anxiety and students' Mathematics Achievement.

Srivastava et al. (2016) conducted A Study of Mathematics Anxiety among Secondary School Students in relation to Personal and Social Related Factors. The findings of the study revealed that there exist significant difference between male and female students; female students have more Anxiety levels than males in Mathematics.

Al Mutawah (2015) studied the influence of Mathematics Anxiety in Middle and High School Students Math Achievement. The study shows that the level of Anxiety increases as the students progress through the grade levels.

The results also showed that the level of the Anxiety is the highest among those who perceived themselves as low achievers.

Chowdhury (2014) conducted a study on Mathematics Anxiety among the 9th and 10th Grade Secondary School Students of Tinsukia district in Assam. Results showed that students' Mathematics Anxiety differ significantly according to gender, environment of the school and the Performance in Mathematics. Female students reported significantly higher Mathematics Anxiety than males. Students with higher Achievements in Mathematics reported lower degrees of Mathematics Anxiety. However, results did not show any significant difference in students' Mathematics Anxiety with respect to their grade level and school environment.

Objectives of the Study:-

1. To find the significant difference in Mathematics Anxiety among secondary school students on the basis of gender.
2. To find the significant difference in Mathematics Anxiety among secondary school students on the basis of school board.
3. To find the significant difference in Mathematics Anxiety among secondary school students on the basis of their mothers' educational qualification.
4. To find the significant difference in mathematical Anxiety among secondary school students on the basis of their fathers' educational qualification.
5. To find the significant difference in Mathematics Anxiety among secondary school students on the basis of types of family.

Tool Used:

Mathematics Anxiety Scale (MAS) developed by Dr, (Mrs.) Sadia Mahmood, Department of Education, Aligarh Muslim University, Aligarh and Dr. (Mrs.) Tahira Khatoon, Associate Professor, department of education, Aligarh Muslim University, Aligarh.

Method Used:

The investigator has used survey method for the present study.

Population:

The population of the study comprise of all of private school students of Patna.

Sample:

The sample constitutes 195 students of Secondary School by using simple random sampling technique.

Statistical Techniques Used:

Mean
Standard Deviation
't' test

Delimitations:

The study is limited to 195 students of 9th grade learners.
The study is limited to Patna only.

Hypotheses of the Study:

There is no significant difference in Mathematics Anxiety among secondary school students on the basis of gender.
There is no significant difference in Mathematics Anxiety among secondary school students on the basis of school board.
There is no significant difference in Mathematics Anxiety among secondary school students on the basis of mothers' qualification.
There is no significant difference in Mathematics Anxiety among secondary school students on the basis of fathers' qualification.
There is no significant difference in Mathematics Anxiety among secondary school students on the basis of family.

Ho 1: There is no significant difference in Mathematics Anxiety of secondary school students with respect to their gender.

Table No. 1:- Mathematics Anxiety On The Basis Of Gender.

Mathematics Anxiety					
Gender	Mean	S.D.	Number	t-ratio	Remarks
Female	51.50	10.20	107	1.89	NS
Male	48.53	11.40	88		

(At 5% level of significance, the table value of 't' is 1.96)

Interpretation:

It is inferred from the table no. 1 that the calculated value of 't' is 1.89 which is less than the table value of 't' (1.96) at 5% level of significance. Hence, the null hypothesis is accepted. It means there is no significant difference in Mathematics Anxiety of secondary school students with respect to their gender.

Ho 2: There is no significant difference in Mathematics Anxiety of secondary school students with respect to type of school board.

Table No. 2:- Mathematics Anxiety On The Basis Of School Board.

Mathematics Anxiety					
Type of School Board	Mean	S.D.	Number	t-ratio	Remarks
C.B.S.E.	50.65	10.37	102	0.66	NS
I.C.S.E.	49.62	11.34	93		

(At 5% level of significance, the table value of 't' is 1.96)

Interpretation:

It is inferred from the table no. 2 that the calculated value of 't' is 0.66 which is less than the table value of 't' (1.96) at 5% level of significance. Hence, the null hypothesis is accepted. It means there is no significant difference in Mathematics Anxiety of secondary school students with respect to their type of school board.

Ho 3: There is no significant difference in Mathematics Anxiety of secondary school students with respect to types of family.

Table No. 3:- Mathematics Anxiety On The Basis Of Type Of Family.

Mathematics Anxiety					
Type of Family	Mean	S.D.	Number	t-ratio	Remarks
Joint	51.70	9.82	68	1.52	NS
Nuclear	49.33	11.28	127		

(At 5% level of significance, the table value of 't' is 1.96)

Interpretation:

It is inferred from the table no. 3 that the calculated value of 't' is 1.52 which is less than the table value of 't' (1.96) at 5% level of significance. Hence, the null hypothesis is accepted. It means there is no significant difference in Mathematics Anxiety of secondary school students with respect to their types of family.

Ho 4: There is no significant difference in Mathematics Anxiety of secondary school students with respect to their mothers' qualification.

Table No. 4:- Mathematics Anxiety On The Basis Of Mothers' Qualification.

Mathematics Anxiety					
Mothers' Qualification	Mean	S.D.	Number	t-ratio	Remarks
Above Intermediate	51.40	11.01	148	3.15	S
Intermediate and Below Intermediate	46.25	9.30	47		

(At 1% level of significance, the table value of 't' is 2.576)

Interpretation:

It is inferred from the table no. 4 that the calculated value of 't' is 3.15 which is more than the table value of 't' (2.576) at 1% level of significance. Hence, the null hypothesis is rejected. It means there is a significant difference in Mathematics Anxiety of secondary school students with respect to their mothers' qualification.

Ho 5: There is no significant difference in Mathematics Anxiety of secondary school students with respect to their fathers' qualification.

Table No. 5:- Mathematics Anxiety On The Basis Of Fathers' Qualification.

Mathematics Anxiety					
Fathers' Qualification	Mean	S.D.	Number	t-ratio	Remarks
Above Intermediate	50.29	10.90	177	0.55	NS
Intermediate and Below Intermediate	48.88	10.26	18		

(At 5% level of significance, the table value of 't' is 1.96)

Interpretation:

It is inferred from the table no. 5 that the calculated value of 't' is 0.55 which is less than the table value of 't' (1.96) at 5% level of significance. Hence, the null hypothesis is accepted. It means there is no significant difference in Mathematics Anxiety of secondary school students with respect to their fathers' qualification.

Conclusion:-

This study points out that students whose mothers' qualification is above intermediate they are having high Mathematics Anxiety in comparison to those whose mothers' qualification is intermediate and below intermediate. Results show that there is no significant difference in Mathematics Anxiety of students with respect to their gender, school board, fathers' qualification and with respect to their types of family. Mathematical Anxiety appears as classroom issue across the globe and during secondary school period it becomes more severe as adolescents find it difficult to cope up with already happening changes around them. This is an area which needs attention to find out its causes and also to suggest teachers and parents to help students in managing their Anxiety related to subject.

References:-

1. Al Mutawah, M.A. (2015) The Influence of Mathematics Anxiety in Middle and High School Students Math Achievement. International Education Studies, 8(11) DOI: <http://dx.doi.org/10.5539/ies.v8n11p239>
2. Amam, A., Darhim, D., Fatimah, S., and Noto, M.S. (2019). Math Anxiety Performance of the 8th Grade Students of Junior High School. IOP Conf. Series: Journal of Physics: Conf. Series 1157 DOI: <http://10.1088/1742-6596/1157/4/04209>
3. Arem, C.A. (2009). Conquering Mathematics Anxiety. 3rd Edn., Cengage Learning, Belmont.
4. Chowdhury, S.R. (2014). Mathematics Anxiety among the 9th and 10th Grade Secondary School Students of Tinsukia district in Assam. The Clarion- International Multidisciplinary Journal. <https://www.semanticscholar.org/paper/A-study-on-Mathematics-Anxiety-among-the-9th-and-of-Chowdhury>
5. Khaliq, A. (2016). Effect of Mathematics Anxiety on Punjab Public Secondary School Students' Mathematics Achievement. Pakistan Journal of Educational Research and Evaluation, 1(1), 55-65. https://www.researchgate.net/publication/339687683_Effect_of_Mathematics_Anxiety_on_Punjab_Public_Secondary_School_Students'_Mathematics_Achievement
6. Kundu, S.C., & Kar, S. (2018). Mathematics Anxiety and its relationship with the achievement of Secondary school students. International Journal of Research and Analytical Reviews, 5(3). <http://ijrar.com/>
7. Norwood, K.S. (1994). The Effect of Instructional Approach on Mathematics Anxiety and Achievement. International Journal of School Science and Mathematics, 94(5). DOI: <https://doi.org/10.1111/j.1949-8594.1994.tb15665.x>
8. Parkash, J., Rani, S., Satnarain. (2018). A Study of Mathematics Anxiety of 10th Class Students in Relation to their Academic Achievement. International Journal of Advance Research in Science and Engineering, 7(4). <https://www.ijarse.com>
9. Smith, S.S. (1997). Early Childhood Mathematics. Boston: Allyn & Bacon.
10. Srivastava, R. (2019). Mathematics Anxiety Among Secondary School Students in Relation to Gender Attitude Parental Education Mathematics Achievement and School. <http://hdl.handle.net/10603/272520>
11. Srivastava, R., Imam, A., Singh, G.P., Singh, S.P. (2016). A Study of Mathematics Anxiety Among Secondary School Students in Relation to Personal and School Related Factors. International Journal of Multidisciplinary Research and Development, 3(1), 134-137. <https://www.allsubjectjournal.com>
12. Tobias, S. (1995). Overcoming Mathematics Anxiety (1st ed.). New York: W.W. Norton.
13. Villamizar Acevedo, G., Araujo Arenas, T.Y., Trujillo Calderón, W.J. (2020). Relationship between mathematical Anxiety and academic performance in Mathematics in high school students. Ciencias Psicológicas, 14(1). DOI: <https://doi.org/10.22235/cp.v14i1.2174>
14. Yuliani, R.E., Suryadi, D., Dahlan, J.A. (2019). Analysis of Mathematics Anxiety of Junior High School Students. IOP Conf. Series: Journal of Physics: Conference Series, 1157(4). DOI: <https://doi.org/10.1088/1742-6596/1157/4/042053>.