



International Journal of Literacy and Education

E-ISSN: 2789-1615
P-ISSN: 2789-1607
Impact Factor: 5.69
IJLE 2024; 4(1): 77-86
www.educationjournal.info
Received: X-11-2023
Accepted: X-12-2023

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Academic motivation, self-esteem and personality factors: A review of effect on mathematics anxiety

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DOI: <https://doi.org/10.22271/27891607.2024.v4.i1a.167>

Abstract

Examining the present level of academic motivation, self-esteem, and personality traits among teens who are currently enrolled in school is the goal of this study. Additionally, this study evaluates the elements of the interaction between academic motivation, self-esteem, and personality traits on mathematics anxiety. The study highlights important gaps in our understanding of the relationships between several factors, such as academic motivation, self-esteem, personality characteristics, and mathematical anxiety. The study's findings demonstrated the ambiguity, inconsistency, and diversity of the information available on a study of how academic drive, self-esteem, and personality traits may affect anxiety brought on by arithmetic. A limited amount of study has also been done on the factors that can reduce math anxiety as well as the follow-up strategies that may be used to increase people's comprehension of mathematical concepts. The results of this study point to the need for further research into the combined effects of academic motivation, self-esteem, and personality factors on mathematics anxiety across a range of study domains in order to better understand how to help school-aged adolescents perform mathematically.

Keywords: Academic motivation, self-esteem, personality factors Mathematics anxiety, mathematics performance

1. Introduction

The persistent sickness referred to as "mathematics anxiety" can be more appropriately defined as a developing hatred of arithmetic, which makes mathematics increasingly difficult. In this context, Ramirez *et al.* (2018) ^[36] emphasized that although some young people suffer stress at the mere thought of finishing a mathematical task, anxiety in mathematics never implies the inevitability of mathematical poverty. This is because mathematical poverty is caused by a lack of mathematical understanding, not anxiety in mathematics. Following the mental exercise of imagining a number and the complexity it entails, the brain immediately begins to slow down and gives up, which leads to worry, tension, and ultimately anxiety. On the other hand, a fear of mathematical issues can affect one's conduct and lead to potentially life-threatening manifestations of medical conditions. (Mutlu, 2019) ^[71]. As a direct consequence of this, panic attacks started occurring during classroom discussions and problem-solving sessions that involved mathematical calculations, whether they took place in school or at the testing site. Math anxiety is a condition that can affect adolescents who are currently enrolled in school and is regarded a negative emotional reaction to a mathematical problem. According to Marsh *et al.*'s (2019) ^[67] findings, a number of different cognitive, psychological, and environmental factors have a direct influence on increasing the levels of mathematical anxiety that are experienced by students. Additionally, mathematical anxiety is not restricted to academic circumstances and has a poor effect in producing varied degrees of helplessness and terror. This is because of the weak correlation between anxiety and performance in mathematical situations. In contrast to the findings of Schellings and Rubinstein (2021) ^[89], research has shown that arithmetic anxiety can have a number of negative side effects, including feelings of helplessness, mental confusion, and even panic. Some of the factors that have a direct influence on the arithmetic performance of the students are the quality of the instructor, parental influences, gender stereotypes, the ambience of the classroom, the method of instruction, the attitude of the teacher, and the attitude of the students. According to Wang (2020) ^[107], there is a considerable correlation between academic success and math anxiety among school-going teens. Furthermore, some of these children have issues with arithmetic as a result of the

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cumulative nature of mathematics. Academic motivation is another important factor in reducing students' fear of mathematics. This is because it increases students' self-assurance in their capacity to find solutions to mathematical difficulties. On the other hand, Milovanovi (2020) ^[69] claims that there are numerous ways for motivating learners to become interested in mathematics, one of which involving them in the process of defending their own mathematical curiosity. This is one of the tactics that may be used to inspire learners to become interested in mathematics. In addition, utilizing positive reinforcement helps the adolescents feel more confident in themselves, which in turn encourages them to put in more effort. The concept of "self-esteem" refers to the learned talent of enjoying one's own efficacy and efficiency while understanding one's own inadequacies and yet choosing to appreciate one's own potential. This is the skill that is referred to when the word "self-esteem" is used. According to Greo and Sarmány-Schuller (2018) ^[41], having high self-esteem provides a number of benefits, some of which include protecting an individual from anxiety, being able to tolerate the conflict, welcoming new challenges and ensuring that school-age adolescents do not place pressure on precariousness. However, greater self-esteem also enhances pupils' self-efficacy and confidence, which in turn lessens the amount of anxiety that students experience in relation to arithmetic. On the other hand, Rozgonjuk *et al.* (2020) ^[84] asserts that for students to reduce their levels of mathematical anxiety, it is essential for them to develop effective study habits, make use of available resources, they should be given formulae that are easy to understand, replace negative attitudes with positive ones, be organized, and make it a point to be present in their mathematics classes. As a result, the levels of anxiety that school-going adolescents have in relation to mathematics can be reduced if their confidence and sense of self-worth are improved via interactions with their math teachers. When it comes to mathematics, children may benefit from having different personality qualities, such as extraversion and conscientiousness, which may make them feel less apprehensive and more confident. According to Trigueros *et al.* (2020) ^[105], the primary qualities of mathematics are logical sequence, abstractness, logic, rigor, symbolism, mathematical sequence, mathematical system, and application. These characteristics are listed in that order. In addition, the performance of the pupils is determined by a number of different personality qualities, such as neuroticism, conscientiousness, openness to experience, and extraversion. According to LaGue, Eakin, and Dykeman (2019) ^[60], the most important mathematical characteristics that should be required in students are flexibility, elegance, inventiveness, and fluency. These characteristics allow students to rapidly solve mathematical problems in an acceptable manner. Therefore, characteristics of a student's personality have a substantial bearing on how well he/she performs academically in mathematics while he/she is in his/her teens. Calculation, counting, reasoning, and number comprehension are only few of the mathematical skills that a pupil needs to have, and they all require some level of language awareness. According to the findings of Herrera, Al-Lal, and Mohamed (2020) ^[45], some of the non-verbal components of mathematical skills include computation, mathematical notation, reasoning in space and time, as well as other components. In addition, in order to increase their students' levels of self-assurance, math teachers need to

inspire and encourage the adolescents who are now enrolled in their classes.

This study intends to examine the impact of many aspects on mathematics anxiety and make recommendations for the best course of action to eradicate it for higher performance in mathematics. This will be accomplished by gathering the perspectives of a number of scholars and academicians who have worked on the issue.

2. Problem Statement

According to Suren and Kandemir (2020) ^[100], students who are studying mathematics, experience panic when they encounter a question that is based on mathematics. This is because they feel nervous as well as extremely worried. Additionally, students experience higher levels of worry when the exact nature of the issue is not fully identified. Conversely, the basic requirements of the common core strands, intimidating authoritative individuals, time constraints, financial worries, prior poor experiences with mathematics, and a fear of public disgrace are all factors that might cause mathematical anxiety (Samuel & Warner, 2021) ^[88]. Therefore, inefficient use of the resources at hand is the main cause of the students' subpar academic performance in mathematics. Anxiety over mathematics among teens who are now enrolled in school has been crucial, according to a recent study on mathematical learning. These results serve as the foundation for contemporary programmes meant to transform mathematics education. The majority of the manuscript's attention is devoted to acquiring a grasp of the present status of research studies on mathematics anxiety and the many ways that they have evolved over the past few years. The paper also reveals important holes in the study of the combined impact of numerous variables on mathematics anxiety. The study also identifies the areas that need to be looked at in order to employ a useful strategy to reduce "Mathematics Anxiety."

3. Aims and Objectives

3.1 Aim

This study aims to review the effect of various factors on Mathematics anxiety of the school-going adolescents in the past years.

3.2 Objectives

- To review the status of studies on Self-esteem, Academic motivation, Personality factors and Mathematics anxiety of school students.
- To assess the relationship among Self-esteem, Academic motivation, Personality factors and Mathematics anxiety of school students.
- To find the effect of these factors on the mathematics anxiety of school students."

4. Literature Review

4.1 Mathematics anxiety

There is no way to separate worrying about arithmetic achievement from the other. It is not possible to solve the issue with only maths. It would seem that both "mathematics" and "anxiety" share this quality. Without first considering how they are related to one another, it would be incorrect to assume that anxiety related to mathematics is separate from other anxiety disorders, such as exam anxiety and general anxiety. General anxiety disorder and test anxiety are two examples of these additional anxiety

disorders. Numerous studies have revealed that there is a stronger link between math anxiety and other anxiety disorders, particularly test anxiety than there is between math anxiety and academic aptitude and performance. When contrasting the association between test anxiety and math anxiety, this is especially true. Numerous research has demonstrated a 0.3-0.5 link between test anxiety and arithmetic anxiety. Mathematics anxiety and general anxiety are correlated, which raises the possibility that the latter might complicate the link between the two. Hembree (1990)^[44] found an average correlation of 0.35 between a general anxiety measure and the MARS. Wang *et al.* (2014)^[108] found evidence in a behavioural genetics study linking multiple genetic variants in general anxiety to various genetic variants in mathematics anxiety. As the study was done on humans, these results were made feasible. In actuality, a person's perception of his/her own mathematical competence is related to a condition known as "math anxiety." People who believe they don't have a high level of mathematical aptitude, are more likely to experience anxiety. Many people tend to have trouble understanding the fundamentals of learning in a variety of different subfields of mathematics, despite the fact that some people have mild to severe specialized learning challenges in a variety of areas of mathematics. However, not all mathematical challenges include a cognitive component. According to studies, having a bad attitude towards arithmetic when one is younger, particularly in childhood and adolescence, can seriously impede one's capacity to learn and utilize math later in life. Despite the fact that all students are given equal opportunity, female students in many nations have higher levels of anxiety and lower levels of self-esteem. As a direct result, there is a difference between the sexes in terms of problem-solving ability. Analyzing each of the causal elements in detail is important in order to eliminate the barrier preventing arithmetic learning and development.

4.2 Self-esteem

According to Coopersmith (1981)^[22] and Harris (2009)^[43], self-confidence is a state of mind as well as the capacity to make decisions in daily life. One's talent for problem-solving and capacity to manage anxiety are closely correlated with their degree of self-esteem. Stankov (1999)^[97] asserts that self-assurance is a key component of meta-cognition, particularly in the fields of psychology and education. More confident people are often less anxious, especially when it comes to working through mathematics problems. Anxiety regarding mathematical concepts can occasionally result from children's poor mathematics performance in the setting of formal schooling. According to research by Rosenberg (1965)^[82], Fleming & Courtney (1984)^[33], Hamid *et al.* (2013)^[42], and others, self-esteem has both positive and negative aspects. It has also been shown to favorably link to or correlate with academic achievement (Fogiel, 1989)^[34]. The second assertion, however, is called into question by more recent research, which contends that other traits could operate as a mediator in the association between self-esteem and academic performance, found in 2013, Hamid *et al.* 2013^[42]. The self-esteem scores of pre-university students did not change by gender, despite the fact that there is a substantial positive association between self-esteem and academic success (Aryana, 2010; Hamid *et al.* 2013)^[9, 42]. This study suggests that gender disparities in academic success are caused by

variations in academic motivation rather than low self-esteem. The 2003 study by Baumeister and colleagues found only a weak correlation between the two, attempting to demonstrate that high performance is not directly connected to having a positive opinion of oneself.

4.3 Academic motivation

Students who are driven by academics, may be able to overcome their math anxiety and experience a decrease in their dislike of math. Mathematical problem-solving is actively encouraged, and academic performance is fostered and sustained through academic reward. Many students have math anxiety, especially those who are still in school as adolescents. Math avoidance, which can result in a deterioration in one's mathematical abilities, is thought to be one of the effects of math anxiety. The capacity to answer mathematical problems is frequently questioned by students who struggle with math anxiety. As a result, students are reluctant to take the lowest amount of mathematics classes necessary, which poses a significant obstacle to their ability to select a career route (Paudel, 2019)^[76]. Teenagers who are presently enrolled in school may have a variety of academic difficulties, such as problems with mathematics, a lack of motivation and study habits, conflict with teachers, and the inability to do well important exams (Laguador, 2013a)^[59]. It would seem that a variety of elements, such as motivation and coping mechanisms for difficult situations, encourage and facilitate academic achievement. The existence of numerous different types of motivation and the fact that motivation is mediated by a large number of factors, both related and unrelated, such as interest, locus of control, self-esteem, self-efficacy, and culture, make understanding the role of motivation in academic performance more difficult. Extrinsic motivation appeared to have a negative impact on the learning of their Western counterparts, according to Zhu and Leung's (2011)^[6] results. On the other hand, it was discovered that both internal and extrinsic motivation had an additive impact on East Asian students' mathematics success. These researchers looked into a range of potential cultural factors that may have contributed to the disparity. Sagiea (1994)^[87] argues that rather than being a single notion, the idea of achievement motivation is better understood as having several facets.

4.4 Personality factors

According to Pompian (2012)^[77], a person's personality is a unique blend of his/her thoughts, feelings, and behaviors. The majority of individuals concur that a person's personality develops from within and maintains some consistency throughout his/her whole existence. How much math anxiety a person has while he/she is of the school-going age or in his/her teens is greatly influenced by his/her personality. The development of positive personality traits in a school-aged child is directly correlated with the reduction of that child's mathematics anxiety. Despite the fact that personality has a significant impact on academic success and interest in learning mathematics (Poropat, 2009; Trautwein *et al.*, 2009)^[78, 104], there is little empirical data on math anxiety or other five-factor model personality traits. According to the findings of the vast majority of personality research, a person's temperamental features may be divided into one of the following five categories: neuroticism, extraversion, openness to experience, agreeableness, and

conscientiousness (Costa & McCrea, 1992) [23]. These five elements of a person's personality are collectively referred to as "The Big Five" in the area of personality studies. The trait of neuroticism, which includes feelings like fear, remorse, and rage, assesses a person's capacity for emotional stability. This is the personality characteristic that has been found to be most significantly connected with mental health problems, according to Costa and McCrea (1992) [23]. The five-factor model's extraversion domain may be used to evaluate someone's sociability, level of activity, and good emotional experiences. A person may show his/her creativity, feelings, and values by being open to new experiences and willing to try new things. How nice a person is may be used to determine how well he/she interacts with others. How meticulous someone is might reveal a lot about his/her level of self-control. It is thought that these five components work together to form a person's personality."

5.1 Self-esteem and Mathematics Anxiety

Despite the fact that self-esteem and math anxiety are negatively correlated (Mammarella *et al.*, 2020; Xie *et al.*, 2019) [29, 109], it is hard to predict how self-esteem will affect math anxiety. This is due to the unfavourable correlation between low self-esteem and arithmetic fear. Women frequently report having lower levels of self-esteem than men, according to studies by Bachman *et al.* (2011) [11] and Moksnes and Espnes (2012) [70]. There are differences in how men and women feel the impact of self-esteem on arithmetic anxiety, according to Xie *et al.* (2019) [109]. The capacity to compute, arithmetic anxiety, the locus of control, and one's self-concept are all positively correlated with one another among secondary school pupils, claims Bharathi (2017) [15]. One of the best methods to lessen a person's propensity for anxiety, according to Xie *et al.*'s 2019 [109] research, is to raise his/her degree of self-esteem. Jaskaranjeet and Khushvinder (2017) found that mathematical performance was independent of mathematical anxiety when groups were matched based on pre-mathematics achievement. According to Olango (2016) [74], three variables related to math anxiety significantly influenced one's degree of mathematical proficiency. The results of a research by Hulya *et al.* (2014) [101] show that parents, teachers, and students all recognize and deal with math fear. To lessen the chance that arithmetic anxiety may negatively affect students' academic progress, it is crucial to improve the teaching and learning process and make every student feel motivated and confident in themselves. Students who were exposed to MLBA had less arithmetic anxiety than those who were exposed to the conventional technique, according to a study by Shreedevi and Kamath (2015) [9]. According to Shatri *et al.* (2010) [112], pupils' levels of arithmetic anxiety were significantly reduced when mathematics was studied utilizing Vedic techniques. In their study on the self-efficacy of mathematics instructors, Chandrika *et al.* (2022) [18] found that teachers' levels of self-efficacy significantly varied according to how long they had been employed in the area of education. There was no difference in self-efficacy between male and female students enrolled in higher secondary mathematics, claim Mahato and Sen (2021) [113]. Students exhibit a modest amount of confidence in their mathematical ability in mastery experiences, peer representation experiences, adult representation experiences, social attitudes, and

physiological states (Mario and Edfelmar, 2021) [66]. The results of Ducaý and Alave (2021) [30] show that self-efficacy and anxiety are significantly correlated. Gorgun and Tican (2020) [38] assert that middle school students' attitudes about asking questions and assessments of their self-efficacy in arithmetic are greater than the medium of instruction level. Samuel and Leonard (2020) [114], Ahuja (2013) [3], Komalavalli (2019) [53], and Perez (2013) [115] are some of the researchers who have shown that there is a strong positive relationship between mathematical achievement and mathematical self-efficacy. According to Huang *et al.* (2019) [46], there is a direct relationship between a person's mathematical proficiency and his/her sense of self-efficacy. According to a research by Recber *et al.* (2018) [80], women have a low feeling of their own mathematical self-efficacy and suffer a large level of mathematics anxiety. The self-efficacy of pupils at higher secondary level schools did not significantly change based on either their gender or the management style of their schools, according to Ojha (2018) [73] and El-adl and Alkharusi (2020) [31]. Arup and Aditi (2016) contend that promoting a positive attitude toward mathematics is an effective way to boost students' self-efficacy. The levels of self-efficacy and anxiety that students experience in regard to math are different for male and female students, according to Alves *et al.* (2015) [116]. In a study done by Schwery (2015) [90], it was established that mathematical self-efficacy is a significant predictor of mathematical achievement. According to Kvedere (2014) [57], greater levels of mathematical self-efficacy are connected with having a positive attitude toward mathematics. The group with the greatest levels of self-efficacy, according to Thakur (2014) [102], has the most creative boys and girls, as well as the most creative skills and attitudes. Kaur *et al.* (2013) [8] found that there were no discernible interactions between instructional modalities, mathematics anxiety, and self-efficacy that would have impacted students' mathematical proficiency. State anxiety, trait anxiety, test anxiety, stress, sad mood, and low self-esteem are all significantly correlated with one another, as claimed by Sud and Sethi (2008) [98]. Additionally, there is a link between poor self-esteem and anxiety.

5.2 Academic Motivation and Maths Anxiety

According to Marcou and Philippou (2005) [65], self-efficacy and an internal goal orientation are crucial components in the process of solving mathematical issues. According to Kaur and Kaur (2013) [8], the motivating idea that helps college students with arithmetic issues is the mix of intrinsic drive and goal orientation. Yidizli and Saban (2016) [110] used a self-efficacy measure, a goal orientation scale, a mathematical success exam, and an interview to explore the effects of self-regulated learning on mathematical accomplishment and motivational beliefs. They discovered that studying with goals increased self-confidence. Researchers Reena and Rajeswari (2015) [81] and Yang *et al.* (2022) [51] came to the conclusion that there was a considerable mismatch between self-efficacy and accomplishment motivation. According to Cleary and Kitsantas' (2017) [20] study, motivating factors including task interest, self-efficacy, and school connection had a substantial impact on arithmetic performance. By having higher levels of "positive attitudes towards statistics," "task value," "self-efficacy," and "intrinsic goal orientation," as

well as lower levels of "test anxiety," "computational anxiety," and "afraid of facing questions from the teacher," statistical anxiety can be reduced, according to the multivariate relationship between statistical anxiety and motivational beliefs (Baloglu and Kesici, 2017) ^[13]. El-Adl and Alkharusi's findings from 2020 demonstrate that while test anxiety has a negative relationship, academic success, self-efficacy, task value, control of learning beliefs, and intrinsic motivation all have positive relationships. In the application of self-regulating learning and motivational beliefs, normal and probationary students from the Islamic Azad University Sepidan Branch scored significantly higher for cognitive and metacognitive strategies than the probationary group of students, with no significant gender difference in the findings regarding motivational components (Ostovar, 2021) ^[75].

5.3 Personality Factors and Mathematics Anxiety

One's personality and prior mathematical experiences have an effect on their mathematical abilities. In reality, research into anxiety is now being done. The majority of people start learning to read when they are young. According to Baloglu and Kocak (2006) ^[12] and O'Leary (2014) ^[72], mathematics can be taught from kindergarten all the way through college and is an essential component of our everyday lives. According to Ashcraft and Krause (2007) ^[10], unlike other abilities like language, mathematics is a difficult ability that must be taught and cannot be naturally absorbed from the environment. Researchers Chamorro-Premuzici *et al.* (2008) ^[17] identified a weak association between test anxiety and neuroticism, but only a slight correlation between extraversion and test anxiety. The degree of extraversion and neuroticism a person exhibits, rather than his/her core self-perception, is the strongest predictor of test anxiety. The assumption that test anxiety and math anxiety are the same and linked is supported by studies that show both types of anxiety share comparable cognitive and emotional characteristics. Neuroticism was shown to be related with IQ in the study by Fonseca and colleagues (2008) ^[35], despite the fact that test anxiety was proven to be a confounding factor. According to Gershuny *et al.* (1998) ^[37], Jorm *et al.* (2000) ^[47], and Khalek (2013) ^[1], high levels of neuroticism and low levels of extraversion may play a substantial etiological and predisposing role in the onset of anxiety. According to Baloglu and Kocak (2006) ^[12], disposition factors are characteristics of a person's personality that increase the likelihood that he/she may experience arithmetic anxiety. These characteristics raise a person's likelihood of developing math anxiety.

Although situational, contextual, and dispositional factors all influence math anxiety, research often places more emphasis on the former than the latter. This makes it easier to control situational concerns. Researchers Qaisy and Khuffash (2012) ^[5] investigated whether the notable disparity between high and low performance may have been influenced by gender-related personality factors. The underlying assumption of the majority of psychological theories of anxiety disorders is that cognitive processes are essential to the development of these diseases. At DHarvard Polytechnic, research was conducted on the influence of aptitude and personality profiles on undergraduate students' academic performance (Eyesenck, 1992; Sujata, 2005) ^[32, 99]. They discovered that senior students' emotional intelligence and mathematical competency were higher than

those of younger students, despite the fact that senior students' speed and accuracy were better than junior students. The DHarvard Polytechnic served as the study's location. According to the study's findings, students from lower socio-economic backgrounds did better. According to Roy (1995) ^[83], physicians were much more reserved and worried, bankers were outgoing and smart, and artists were significantly more inwardly oriented and sympathetic. Teachers, on the other hand, were a lot more extrovert and uptight. Gray, 1982; Barlow and Craske, 2008; O'leary *et al.*, 2014) ^[39, 4, 72] The findings demonstrated a significant correlation between anxiety and the personality trait neuroticism. Additionally, according to other research, including a 2008 study by Barlow and Craske, neuroticism is a "higher-order factor" in all types of anxiety disorders. According to Chamorro-Premuzici *et al.* (2008) ^[17], the study's findings show a significant association between a person's level of neuroticism and his/her likelihood to suffer test anxiety. Additionally, the researchers found a tenuous link between extraversion and test anxiety. This is crucial because it suggests that test anxiety is better predicted by a person's neuroticism and extraversion levels than by their inherent merit levels. Additional evidence for this theory comes from studies (Roso, Galassi, & Galassi, 1984; McKensie, 2007; Chamorro-Premuzic *et al.*, 2008; Choe, 2019) ^[27, 68, 17, 19] that shown that test anxiety and arithmetic anxiety are related and analogous conditions that both have a cognitive and emotional component.

5.4 Research Gap

There hasn't been any study done up to this point that looks at how personality, academic desire, and self-esteem interact to affect math anxiety. As a result, the present research will be helpful in identifying those who are more prone to have math anxiety and in assisting with the introduction of appropriate treatment programs to stop this worry from having an influence on these people's academic careers. According to the findings of previous studies, it is plausible to conclude that the knowledge on the use of methods for lowering mathematics anxiety as a result of the interaction of numerous elements is contradictory, inconsistent, and dynamic. Furthermore, research that looks at how the interaction of two or more elements may improve people's understanding of mathematical ideas and help them acquire the requisite abilities are few in number. By compiling the results of several researchers within the restrictions of a single research paradigm, the current study contributes to the body of information currently existing on the causes of mathematics anxiety. Little study has been done to address the issue of whether or not it is possible to manage the various variables that impact mathematical anxiety in the context of a classroom environment, according to the analysis of the existing literature. The current study thus paves the way for future research to explore the relationship between self-esteem, academic motivation, and personality traits and math anxiety as well as to implement practical techniques to lessen anxiety in order to improve mathematical abilities in schoolchildren.

6. Research Methodology

An extensive assessment of the pertinent prior research was conducted in order to accomplish the goals that were put out for this study. A systematic literature review (SLR), according to Dewey and Drahot's study from 2016,

"reveals, organizes, and thoroughly inspects material in an attempt to solve a clearly defined topic." Before commencing the systematic review, the parameters should be clearly established using a well-defined technique or methodology. This needs to be completed before the evaluation even starts. It might be used by other academicians and scholars and is either open research or a thorough search strategy that examines a variety of databases and academic publications. Data from many databases, including Google Scholar, was used to perform a literature search across a number of abstracted journals, review articles, and other forms of literary sources for the aim of the current inquiry. In order to gather empirical data, the terms "math anxiety," "academic motivation," "self-esteem," and "personality factors" were used. Additionally, a multi-step procedure for carrying out a systematic literature review was used in the current study. The specification of the research topic is the first step in this procedure, which also includes validating and evaluating the review methodology, identifying the pertinent literature, and deciding whether or not to incorporate the found material. Following the execution of these approaches, a quality check, the extraction of pertinent data, the gathering and analysis of the crucial data, and ultimately the results were conducted. Rounds of assessments on significant articles are conducted in order to incorporate the material that is most important. In order to provide an unbiased evaluation of the impact that self-esteem, academic motivation, and personality traits have on mathematics anxiety, a variety of articles and papers, databases like Google Scholar, as well as numerous other databases and reports, have been subjected to an in-depth assessment. This assessment has been completed.

7. Findings and Discussion

The overwhelming majority of written works show that there is a negative and substantial relationship between students' self-worth and their stress about mathematics. The degree of arithmetic anxiety that children experience is significantly correlated with their personality traits. The level of mathematics anxiety among high school pupils does not significantly correlate with their level of expertise. Compared to individuals who work in the sciences, folks in the arts have variable levels of arithmetic anxiety. There is strong evidence that gender influences how anxious teenagers are when doing math problems. It has been discovered that test-related anxiety is a reliable indicator of mathematics-related anxiety. Children's development of arithmetic anxiety is also influenced by the personality traits of those who teach them math.

According to the most recent evaluation, both pupils' mathematical proficiency and their desire to study are declining. Many contributing variables have directly led to the development of math anxiety. In order to properly treat the issue of math anxiety, a variety of anxiety-reduction techniques must be used. Students' levels of arithmetic anxiety continue to develop and spread throughout the student body as a result of math teachers failing to take into account the many diverse methods in which their students like to learn. It is essential that teachers use cutting-edge teaching tactics to keep pupils engaged and from losing interest in mathematics.

8. Conclusion

To provide information to those who are interested, especially educators, curriculum creators, and teachers, the investigator has analyzed a sizable number of research articles pertaining to mathematical anxiety, self-esteem, academic motivation, and personality characteristics. After reviewing the pertinent published data, it has become abundantly clear that the evidence pertaining to the analysis of the combined impact of each of these factors on arithmetic anxiety is unique. Furthermore, it is conceivable to argue that certain academics, educators, and researchers independently studied the impact of various factors, yet the chosen document is devoid of the combined effect. Given this, more study must be done with the aim of figuring out the combined impact of several factors that may be put into practice in order to get unique insights on the removal or decrease of anxiety related to mathematics. The current review has made an effort to synthesize the numerous viewpoints of different academics on the same subject. It has also looked at the state of earlier research studies on the topic of math anxiety, and as a consequence, it has highlighted the considerable gaps in the body of literature already in existence. The current study will create a solid platform for more research of this sort in the future, which will be required to address the various challenges and issues related to mathematics anxiety. By attempting to provide fresh insights on the subject of mathematical anxiety and the impact that various situations have on it, this review article aims to add to the increasing corpus of academic study.

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