

**PERCEPTION OF SECONDARY SCHOOL STUDENTS ON THE CAUSE OF
MATHEMATICS ANXIETY**

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NOVEMBER, 2025.

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**A PROJECT SUBMITTED TO THE DEPARTMENT OF CURRICULUM AND
INSTRUCTIONAL TECHNOLOGY. FACULTY OF EDUCATION, UNIVERSITY OF
BENIN, BENIN CITY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE AWARD OF THE BACHELOR OF EDUCATION IN MATHEMATICS..**

NOVEMBER, 2025.

CERTIFICATION

We the undersigned certify that this research study was carried out by **Gift Chioma AZIKWE** in the Department of Curriculum and Instructional Technology, Faculty of Education University of Benin.

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DEDICATION

This project work is dedicated to God Almighty for his divine mercy and grace , for seeing me through my undergraduate programme in the university of Benin.

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This researcher is sincerely grateful to God Almighty for the grace, mercy, favour and protection till the completion of the program.

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ABSTRACT

This study examined the perception of secondary school students on the causes of mathematics anxiety in Ovia North East Local Government Area, Edo State, Nigeria. The research was carried out to identify the major factors responsible for students' fear and negative attitude towards mathematics, considering the importance of the subject in academic and career development. The study was guided by specific research questions aimed at understanding how personal experiences, environmental Factors and cognitive Factors contribute to mathematics anxiety among students. The work also highlighted the need to address mathematics anxiety due to its impact on students' performance and overall learning outcomes. The study comprises of six research questions. The study is delimited to students in the secondary school system.

The study adopted a descriptive survey reasearch design. The population consisted of 150 respondent from five(5) secondary school in the aforementioned local government area and a structured questionnaire was used as the instrument for data collection. A simple random sampling technique was employed to select the respondents, while the data collected were analyzed using frequency counts, mean scores, and standard deviation. The methodological approach enabled the researcher to determine students' perceptions based on their responses and to identify the most common causes of mathematics anxiety among them.

The findings of the study revealed that personal, environmental and cognitive Factors contributed to mathematics anxiety among secondary school students. It was concluded that meaningful interventions are needed to reduce anxiety and improve students' learning experiences. The study recommended that schools provide supportive learning environments, teachers adopt student-friendly instructional strategies, students be encouraged to build confidence through consistent practice, and parents offer positive reinforcement rather than pressure. These measures will collectively help minimize mathematics anxiety and enhance students' academic performance.

CHAPTER ONE

INTRODUCTION

Background of the Study

Anxiety is widely acknowledged as a major psychological factor that influences students' academic performance and overall learning experiences. Spielberger (1985) defined anxiety as an emotional state characterized by feelings of tension, apprehension, and worry, which can interfere with an individual's ability to function effectively. Among secondary school students, anxiety often manifests when they encounter situations involving high expectations, evaluation, or fear of failure (Cassady & Johnson, 2002). Although anxiety can be experienced in various school subjects, mathematics has consistently been identified as one of the leading sources of academic anxiety (Richardson & Suinn, 1972). The phenomenon, known as mathematics anxiety, is of particular concern because of its direct link to students' low performance, lack of confidence, and avoidance of mathematics-related fields, which are vital for success in today's technology-driven world (Ashcraft & Krause, 2007).

Mathematics holds a central position in the school curriculum and serves as a gateway to many professional and career opportunities (National Research Council, 2001). Despite its importance, however, many students perceive mathematics as intimidating and difficult, which contributes to heightened levels of anxiety (Hembree, 1990). This anxiety often hinders students from fully engaging with the subject, reduces their classroom participation, and negatively affects their performance (Ma, 1999). Over time, such negative experiences create a cycle in which anxiety leads to underachievement, and underachievement further reinforces anxiety (Ashcraft, 2002). Understanding the underlying causes of mathematics anxiety has therefore become a major

concern for educators, researchers, and policymakers who seek to improve both the quality of learning and students' long-term attitudes toward the subject.

The causes of mathematics anxiety are not singular but multidimensional, involving personal, environmental, and cognitive factors (Ramirez, Gunderson, Levine, & Beilock, 2013). Personal factors, such as low self-confidence, negative past experiences with failure, and gender expectations, play a crucial role in shaping how students respond to mathematics (Meece, Wigfield, & Eccles, 1990). For instance, a student who has repeatedly struggled with solving mathematical problems may begin to associate the subject with failure, thereby developing a persistent fear whenever faced with mathematical tasks (Ashcraft, 2002). Similarly, societal expectations, such as the stereotype that mathematics is more suited for males than females, may discourage certain groups of students and increase their anxiety levels (Tobias, 1993).

Environmental factors further contribute to this challenge. Classroom practices, teacher attitudes, peer interactions, and parental expectations significantly influence how students perceive and engage with mathematics (Stodolsky, 1985). A teacher who relies heavily on rote learning and timed assessments may inadvertently intensify students' anxiety (Zakaria & Nordin, 2008), whereas one who encourages understanding, participation, and peer support can help to reduce it (Turner, Meyer, Midgley, & Patrick, 2003). Likewise, parents who place excessive pressure on their children to excel in mathematics may unintentionally reinforce a fear of failure (Gunderson et al., 2012), while supportive encouragement can foster resilience and confidence.

Cognitive factors are equally important in understanding mathematics anxiety. Students' working memory capacity, problem-solving abilities, and self-regulation skills directly affect how they process mathematical information (Eysenck, Derakshan, Santos, & Calvo, 2007). When anxious, students often experience cognitive overload, where intrusive thoughts about

failure occupy mental resources needed to solve problems effectively (Ashcraft & Kirk, 2001). This reduced efficiency in processing information leads to poorer performance, which in turn perpetuates the cycle of mathematics anxiety (Beilock & Carr, 2005).

In summary, mathematics anxiety among secondary school students is a complex issue arising from the interaction of personal, environmental, and cognitive factors. It undermines students' academic performance, diminishes their interest in mathematics, and limits their opportunities for success in mathematics-related careers (OECD, 2013). Addressing this problem requires a deeper understanding of its root causes, as well as deliberate interventions that can promote confidence, resilience, and positive engagement with mathematics.

Statement of the Problem

Many secondary school students experience high levels of anxiety when faced with mathematics, often resulting in low performance, lack of interest, and avoidance of the subject.. Despite effort to improve mathematics education, anxiety related to mathematics remains a significant barrier to academic success, while various factors have been identified as potential contributions to mathematics anxiety-including teaching methods, parental pressure peer influence and personal attitude-the specific perspectives of the students themselves are not fully considered.

Understanding the root causes from the students' point of view is essential for developing effective interventions and teaching strategies that can help reduce anxiety and improve learning outcomes.. This study seek to investigate the causes of mathematics anxiety among secondary school student from their own perspective, aiming to uncover the underlying reason behind their fear and discomfort with the subject.

Research Question

The following questions were raised to guide the study:

1. What are the Personal factors that influence mathematics anxiety among secondary school students
2. What are the Environmental Factors that contribute to mathematics anxiety among secondary school students
3. What are the Cognitive Factors that influence mathematics anxiety among secondary school students
4. How do Personal Factors influence mathematics anxiety among students
5. How does Environmental Factors contribute to Mathematics Anxiety In students
6. How does Cognitive Factors influence mathematics anxiety among students

Purpose of the Study

The main purpose of this study is to investigate the causes of mathematics anxiety among secondary school student. This study seeks to

1. Explore the general concept of anxiety among secondary school students.
2. Examine mathematics as a case study of subject-specific anxiety.
3. Investigate how personal factors influence mathematics anxiety in secondary school students.
4. Analyze the impact of environmental factors on mathematics anxiety.
5. Assess the role of cognitive factors in shaping mathematics anxiety.

Significance of the Study.

This study is because it focuses on understanding the causes of Mathematics Anxiety from the students own perspective. By focusing on students viewpoint this research contributes meaningful insights into the underlying causes of Mathematics related stress and fear, which are often overlooked in traditional and academic approaches.

This study places students at the center of the division allowing their personal experience and opinions about Mathematics Anxiety to be heard and understood. This study seeks to identify the causes of Mathematics Anxiety directly from those who experience it instead of only analyzing external factors or telling solely in teacher or parental input. This could be in form of teaching style, peer, comparison or early academic failure which can lead to a more accurate and relevant understanding of them issue.

This study provide teachers with valuable feedback based on students perspectives, that can inform more emphatic student-centered approaches to teaching Mathematics. The findings of this research can guide curriculum planners and school leaders in designing instructional materials and learning environments that are less likely to trigger anxiety.

This study can help parents recognize signs of anxiety and provide appropriate support, encouragement, and communication at home by highlighting students' internal struggles and external influences. This study can serve as a foundation for more studies on student anxiety, leading to better interventions and a stronger understanding of how to support learners in challenging subjects like Mathematics.

Scopes and Delimitation Of The Study

This study focuses on investigating the causes of mathematics anxiety among secondary school students in Ovia North East Local Government Area of Edo State, Nigeria. It aims to explore the issue specifically from the students' perspective, examining how their experiences,

learning environments, past academic encounters, and personal attitudes contribute to their feelings of anxiety toward mathematics. The scope of the study is limited to selected secondary schools within the local government area, and only students currently enrolled in these schools are considered as participants.

The study does not extend to primary or tertiary institutions, nor does it examine anxiety related to other academic subjects. It is further limited to the viewpoints of students alone and does not include the perspectives of teachers, parents, or other educational stakeholders. The findings of this research are based on data collected within a defined time frame and geographic location, which means the conclusions may not necessarily apply to students outside Ovia North East LGA or other parts of Edo State.

Definition of terms

Perception: The viewpoint of opinion of the student regarding what they believe causes their anxiety in Mathematics.

Anxiety: The feeling of fear, nervousness, or stress that student experience when engaging with Mathematics task, test or classroom activities

Causes: These are the reasons it factors identified by student as contributing to their anxiety in Mathematics.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter offers an in-depth review of exciting research on the cause of Mathematics anxiety among secondary school students. This review is organized under the following subheadings

- The concept of Anxiety on students
- Mathematics as a case study
- Personal Factors and Mathematics Anxiety in secondary school students
- Environmental Factors and Mathematics Anxiety in secondary school students
- Cognitive Factors and Mathematics Anxiety in secondary school students

The Concept Of Anxiety On Student

Anxiety is a universal human emotion that arises when individuals perceive a situation as threatening, unpredictable, or beyond their control. Within academic contexts, anxiety has been defined as a state of uneasiness characterized by worry, tension, and apprehension in response to academic demands (Spielberger, 1972). Specifically, student anxiety refers to the internal feelings of tension, fear, and nervousness that manifest during the learning or performance of school-related tasks. Anxiety is not merely an emotional state; it carries cognitive, physiological, and behavioral implications that affect how students attend to, process, and respond to academic demands.

According to Cognitive–Behavioral theories, anxiety is sustained when individuals interpret academic tasks as threatening rather than as opportunities for growth (Beck, 1976). Eysenck and Calvo (1992), through the Processing Efficiency Theory, further explained that anxiety consumes attentional resources, leaving fewer cognitive resources for task execution. Consequently, anxious students often underperform even when they possess the knowledge or

ability. In Nigeria, where schooling is highly examination-oriented, students often perceive academic tasks as tests of self-worth. The fear of failure, compounded by parental and societal pressure, magnifies anxiety levels among secondary school students. Thus, anxiety in students cannot be separated from the cultural and systemic contexts of education. Academic anxiety among students has been found to disrupt attention, reduce concentration, and impair performance, even in cases where the learner has adequate preparation.

The Processing Efficiency Theory proposed by Eysenck and Calvo (1992) explains that anxiety consumes attentional resources in working memory, thus reducing the efficiency of cognitive performance. This was later refined into the Attentional Control Theory (Eysenck, Derakshan, Santos, & Calvo, 2007), which asserts that anxiety impairs attentional shifting and inhibitory control, thereby reducing task performance. Students experiencing high anxiety frequently report mental blocks, blanking out during tests, and difficulty recalling studied materials. In Nigeria, where education is heavily examination-oriented, the pressure to succeed intensifies anxiety among secondary school students (Olanrewaju, 2019). In Nigeria, where schooling is highly examination-oriented, students often perceive academic tasks as tests of self-worth. The fear of failure, compounded by parental and societal pressure, magnifies anxiety levels among secondary school students. Thus, anxiety in students cannot be separated from the cultural and systemic contexts of education.

Mathematics As A Case Study

Mathematics has long been identified as the school subject most associated with student anxiety. Research spanning over six decades has consistently shown that mathematics evokes higher levels of worry, tension, and avoidance compared to other subjects such as English or Social

Studies (Dowker, Sarkar, & Looi, 2016). This phenomenon is widely referred to as Mathematics Anxiety (MA), defined by Richardson and Suinn (1972) 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."

Research consistently shows that mathematics evokes stronger emotional reactions than other subjects (Hembree, 1990; Dowker, Sarkar & Looi, 2016). This is partly due to the way mathematics is taught and assessed: timed tests, public problem-solving on the chalkboard, and the emphasis on single "right" answers increase the evaluative pressure. Moreover, mathematics builds on sequential knowledge; once students miss foundational concepts, they find later topics more difficult, which increases frustration and anxiety (Ashcraft, 2002).

The centrality of mathematics in modern education, science, technology, and everyday decision-making has intensified its importance. However, because mathematics is hierarchical and cumulative—requiring mastery of foundational concepts before progressing to more abstract ones—any learning gaps often translate into frustration, fear, and eventual anxiety (Ashcraft & Krause, 2007). The strong evaluative component of mathematics (tests, timed quizzes, board demonstrations) also makes the subject highly anxiety-prone.

Many students attribute their struggles not to lack of effort but to overwhelming feelings of fear, nervousness, and mental blockages when faced with mathematical problems. This highlights mathematics as a unique and fertile case study for understanding the broader phenomenon of academic anxiety.

Personal Factors And Mathematics Anxiety In Secondary School Student

Personal factors are internal characteristics and dispositions that significantly influence how students experience mathematics anxiety. They determine whether students approach

mathematics with confidence or fear, and they shape the intensity of anxiety during learning and assessment. The following factors are central:

Past Experiences and Academic History

Students who have previously failed or struggled in mathematics often develop negative associations with the subject. These experiences condition them to expect difficulty whenever they encounter math, which triggers feelings of fear and helplessness. For example, repeated low grades in earlier classes can make students anxious even before attempting new math tasks. Such anxiety reduces concentration and problem-solving ability, further lowering performance and reinforcing the cycle of anxiety.

Gender Stereotypes and Expectations

Cultural messages that mathematics is a “male domain” lead many female students to underestimate their abilities, even when their actual performance is strong. This internalized stereotype increases self-doubt and heightens anxiety during math lessons or exams. In turn, female students may avoid participation in cla

Self-Confidence and Self-Efficacy

Low mathematics self-efficacy directly fuels mathematics anxiety, shying away from advanced mathematics courses, or experiencing tension when solving problems because they believe they are not expected to excel. Thus, gendered expectations intensify math-related anxiety by undermining confidence. Students who believe they cannot succeed in math tasks tend to experience worry, stress, and avoidance behaviors before and during math activities. This mindset weakens their ability to think clearly during problem-solving, making errors more likely, which further validates their fears. Conversely, students with high self-efficacy approach math

tasks with persistence and reduced anxiety, showing how confidence levels directly determine the extent of math-related stress.

Perfectionism and Fear of Failure

Perfectionistic students often feel anxious because they equate mistakes in mathematics with total failure. Since math requires trial-and-error and logical risk-taking, these students experience excessive pressure to get every answer correct. This fear of failure increases test anxiety, makes them hesitant to attempt challenging problems, and often leads to “blinking out” during exams. The link between perfectionism and math anxiety lies in the unrealistic demand for flawless performance, which heightens stress and reduces efficiency in mathematical reasoning.

Environmental Factors And Mathematics Anxiety In Secondary School Student

Mathematics anxiety is not shaped by individual factors alone but by the broader social and instructional environment in which learning takes place. Environmental influences encompass teacher behaviors, classroom climate, parental expectations, peer interactions, language of instruction, and school resources. For secondary school students—who are especially sensitive to social evaluations and external pressures—these conditions often determine whether mathematics is approached with confidence or avoided with fear.

Teacher Attitudes and Instructional Practices

Teachers serve as the primary authority in the mathematics classroom, and their attitudes toward both the subject and their students deeply influence learners’ emotions. Teachers with low confidence in mathematics or who display their own math anxiety often transmit these feelings to their students, reinforcing a sense of difficulty or failure around the subject.

Instructional practices that overemphasize correctness and speed—such as timed tests, public correction of mistakes, or cold-calling—generate fear of embarrassment. Instead of encouraging exploration, these practices heighten the stakes of participation, making mathematics a stressful experience. Students internalize the idea that mistakes equal failure, which increases avoidance behaviors and contributes to chronic anxiety in math contexts.

Classroom Climate and Learning Environment

The classroom environment establishes the emotional backdrop for mathematics learning. A supportive climate, where mistakes are treated as part of the learning process, reduces anxiety and builds resilience. In contrast, authoritarian or overly competitive environments create tension, suppress student participation, and amplify fear of failure.

Secondary school students are particularly vulnerable to peer judgments; thus, classroom conditions where students are mocked for errors, pressured to perform at the board, or constantly compared to peers often lead to heightened anxiety. This climate shifts students' focus from understanding mathematics to protecting themselves from embarrassment.

Parental Expectations and Family Attitudes

The home environment significantly influences how students perceive mathematics. Parents who stress achievement but fail to provide adequate support often increase their child's math anxiety. Similarly, when parents openly express dislike or fear of mathematics, children absorb and replicate these negative attitudes.

Eccles' Expectancy-Value Theory explains that children internalize parents' values and expectations, shaping their own beliefs about competence. High parental pressure, frequent comparisons to siblings, and socioeconomic disadvantages (such as lack of access to tutors or

resources) heighten stress levels, leaving students feeling underprepared and anxious in mathematics learning situations.

Peer Influence and Competitive Pressure

Adolescents are highly influenced by peer approval and social standing. In mathematics classrooms, this often translates into anxiety caused by ridicule, criticism, or feelings of inferiority. Students who perform below average are more likely to avoid participation for fear of embarrassment, reinforcing negative self-perceptions.

Festinger's Social Comparison Theory supports this, showing that constant comparison with high-achieving peers reduces self-efficacy and fosters anxiety. When achievement becomes a marker of social status, students with lower performance disengage to protect their self-esteem, thereby deepening their math anxiety.

Language Barriers and Instructional Medium

In multilingual contexts, the language of instruction itself can contribute to anxiety. Mathematics relies on precision in terminology and comprehension of word problems. Students with limited proficiency in the language of instruction may misunderstand tasks, even when they know the underlying concepts.

This linguistic barrier creates a double burden: students must process both the language and the mathematics simultaneously, increasing cognitive strain and heightening anxiety. Research shows that such students frequently experience underperformance not because of lack of ability, but because of misinterpretation, which reinforces avoidance of mathematics.

School Resources and Learning Infrastructure

Disparities in school resources also shape the prevalence of mathematics anxiety. In underfunded schools, lack of qualified teachers, manipulatives, laboratories, or visual aids results in overly

theoretical teaching methods. Without opportunities for hands-on, exploratory learning, students often perceive mathematics as abstract and inaccessible.

This lack of supportive infrastructure contributes to anxiety by making students feel that mathematics is beyond their reach. Conversely, resource-rich environments with interactive tools and guided support can foster engagement and reduce stress.

Cognitive Factors That Influence Mathematics Anxiety in Secondary School Students

Cognitive factors are internal mental processes—including memory, beliefs, self-talk, and appraisal—that directly affect how students perceive and perform in mathematics. Unlike environmental conditions, cognitive factors operate within the student, shaping both their response to external pressures and their approach to mathematical tasks. For secondary school students, these cognitive processes often act as triggers that sustain the cycle of mathematics anxiety.

Working Memory Deficits and Cognitive Load

Mathematics often requires holding multiple steps in memory while solving problems. High-anxiety students experience intrusive thoughts—such as fear of failure or embarrassment—that occupy their limited working memory. This reduces the cognitive resources available for actual problem-solving.

As a result, anxious students struggle with even straightforward tasks, especially under time constraints, leading to repeated failure experiences. This aligns with Cognitive Load Theory, which explains how excessive worry adds to the mental burden and impairs performance. Over time, students associate math with overwhelming mental strain, reinforcing anxiety.

Negative Self-Talk and Cognitive Distortions

Students' internal dialogue often reflects self-doubt: "I can't do math" or "I always fail." Such negative self-talk evolves into maladaptive beliefs that mathematics ability is fixed and unchangeable. Cognitive distortions—such as catastrophizing or overgeneralization—exaggerate the threat of mathematics tasks, leading to avoidance and heightened stress.

These distorted thought patterns create a mental environment where students approach mathematics already expecting failure. This anticipation of failure amplifies anxiety and prevents students from engaging with the subject constructively.

Learned Helplessness and Attribution Styles

Repeated failure without adequate support leads to learned helplessness, where students believe that effort will not change outcomes. Attribution Theory explains that students with math anxiety often attribute failure to innate inability rather than controllable factors like effort or preparation. This internal, stable attribution style lowers motivation and self-efficacy, causing students to disengage from mathematics altogether. The result is a cycle where avoidance leads to weaker performance, which further validates the belief in incompetence and fuels ongoing anxiety.

Math-Specific Beliefs and Stereotypes

Cultural beliefs that mathematics is inherently difficult or reserved for a select group of "talented" individuals foster stereotype threat. For example, female students may internalize stereotypes that boys are naturally better at mathematics, which undermines confidence and increases anxiety during performance tasks.

When students adopt a fixed mindset—that mathematical ability is innate rather than developed—they interpret challenges as confirmation of inadequacy. This reduces resilience and increases the likelihood of experiencing anxiety whenever they encounter difficult problems.

Test Anxiety and Cognitive Appraisal

Test anxiety is a direct manifestation of cognitive processes, where students appraise exams as threats rather than opportunities. According to Cognitive Appraisal Theory, when students perceive that their resources are insufficient to cope with the demands of an exam, they experience worry, distraction, and even physical stress responses.

In mathematics, where high-stakes testing is common, this appraisal reduces working memory capacity and impairs retrieval of learned material. Even well-prepared students may underperform due to heightened anxiety, further reinforcing their belief that they are “bad at math.”

Summary of Literature Review

The literature demonstrates that mathematics anxiety is a complex, multidimensional phenomenon influenced by personal, environmental, and cognitive factors. Personal beliefs, gender stereotypes, and past experiences interact with external conditions such as teacher behaviors, peer dynamics, and parental expectations to shape students’ perceptions of mathematics. These, in turn, impair cognitive functioning by overloading working memory and weakening attentional control.

In Nigeria, systemic challenges such as overcrowded classrooms, exam-centered curricula, and societal emphasis on mathematics as a gateway subject intensify the problem. Consequently, understanding students’ own perspectives on the causes of mathematics anxiety is crucial for developing context-sensitive interventions. Such insights will help educators and policymakers address not only the symptoms of anxiety but also its root causes, thereby improving performance and attitudes toward mathematics.

CHAPTER THREE

METHODOLOGY

This chapter deals with the procedures that were adopted in carrying out the study discussed under the following subheadings;

- Design of the Study
- Population of the Study
- Sample and Sampling Techniques
- Research Instrument
- Validity of the Instrument
- Method of Data Collection
- Method of Data Analysis

Design of the Study

This study adopted a descriptive survey research design. The design is considered appropriate because it seeks to collect information from a population of students about their perspectives on the causes of mathematics anxiety, describe their responses, and analyze patterns without manipulating any variable.

Population of the Study

The target population of the study comprised of four thousand, three hundred and twenty (4,320) students across Senior Secondary One (SS1) to Senior Secondary Three (SS3) in all the twenty-four (24) public secondary schools in Ovia North East Local Government Area of Edo State.

This figure was estimated based on an average of sixty (60) students per class multiplied across the three senior secondary classes (SS1–SS3) and the total number of schools in the area.

Sample and Sampling Techniques

Simple random sampling was used to select one hundred and fifty (150) students representing samples from five (5) different secondary schools. From each of the selected schools, thirty (30) students were randomly chosen across SS1, SS2, and SS3 classes to ensure fair representation of the student population.

The sample size of one hundred and fifty (150) students, which represents approximately 3.5% of the total population, was considered adequate for the study. According to Krejcie and Morgan (1970) and Cohen, Manion, and Morrison (2007), a sample size ranging from 3% to 10% of a population is usually sufficient in educational and social science research when probability sampling techniques are applied. Therefore, the sample chosen was both adequate and representative of the larger population.

Research Instrument

The research Instrument for the collection of Data for this study is the Questionnaire. The Questionnaire used in this study consists of two sections. Section A consist of the demographic data such as name, age, gender, and class level and section B presents twenty (30) items with five points modified Likert-scale which elicited response from the respondents as to what they perceived as their perception to the cause of mathematics anxiety among secondary school students.

Validity of the Instrument

The research Instrument employed in this study was developed by the researcher and given to the project supervisor and the two other expert in the field of validation.

Method of Data Collection

The researcher visited the selected schools and administered the questionnaires during school hours with permission from the principals. Instructions were clearly explained to the respondents, and they were assured of confidentiality. The completed questionnaires were collected on the spot to ensure high response rates.

Method of Data Analysis

Data collected were analyzed using descriptive statistics namely frequency, mean and standard deviation. The structured questionnaire was based on a five-point modified Likert scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), Strongly Disagree (SD) with values 5,4,3,2and 1 respectively, **3.0** was the criterion mean for decision ruleanf and any item with a response mean of 3.00 and above is agreed ,while any below 3.00 is disagreed

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSIONS OF FINDINGS

This chapter presents the result and discuss the findings.

Presentation of Results

Criterion Mean = 3

Research Questions 1 : What are the personal Factors that influence mathematics anxiety among secondary school students?

Table 1: Mean and Standard Deviation of Personal Factors that influence mathematics anxiety among secondary school students

S/N	Item	N	Mean	SD	Decision
1	Lak of self confidence	150	3.02	1.39	Agreed
2	Fear of failure due to past poor performance	150	3.067	1.35	Agreed
3	Negative self talk(e.g I am not good at Maths)	150	2.867	1.45	Disagreed
4	Nervousness/shyness	150	3.4867	1.38	Agreed
5	Study habits	150	3.12	1.44	Agreed
	Grand mean	150	3.11	1.42	Agreed

Criterion Mean Score = 3.0

Table 1 presents personal factors that influence mathematics anxiety among secondary school students based on the responses from 150 respondents this finding suggests that low confidence,past failure,negative belief, nervousness and test anxiety are personal Factors that

influence mathematics anxiety. With a total grand mean of 3.11 it indicates that these items are personal factors that influence mathematics anxiety. The moderately high mean score suggests that while personal factors are recognized, their impact varies significantly among individuals. The high standard deviation (1.42) indicates substantial disagreement among students, suggesting that personal factors affect students differently based on individual psychological makeup and past experiences.

Question 2: What are the Environmental Factors that influence mathematics anxiety among secondary school students

Table 2: Mean and Standard Deviation of Environmental Factors that influence mathematics anxiety among secondary school students

S/N	Item	N	Mean	SD	Decision
6	Teachers' teaching methods	150	2.93	1.39	Disagreed
7	Parental pressure	150	3.34	1.47	Agreed
8	Overcrowded classrooms	150	3.5	1.47	Agreed
9	Limited access to textbooks, calculators, or learning aids	150	2.9	1.42	Disagreed
10	Peer influence	150	2.75	1.37	Disagreed
	Grand mean	150	3.084	1.45	Agreed

Criterion Mean Score = 3.0

Table 2 presents Environmental factors which are teaching method ,parental pressure,class room environment, peer pressure and limited access to resources are Environmental Factors that influence Mathematics anxiety. With a grand mean of 3.08,students agreed that environmental factors such as teaching methods and classroom conditions impact their mathematics experience. The standard deviation of 1.45 is the highest among the first three sections, showing that students' learning environments differ considerably. Some experience supportive settings while others face challenging conditions that affect their mathematics learning differently.

Question 3: What are the Cognitive Factors that influence mathematics anxiety among secondary school students

Table 3: Mean and Standard Deviation of Cognitive Factors that influence mathematics anxiety among secondary school students

S/N	Item	N	Mean	SD	Decision
11	Overthinking mistakes instead of focusing on solutions	150	3.38	1.36	Agreed
12	Struggling to connect mathematics with real-life situations	150	3.03	1.27	Agreed
13	Poor problem-solving or reasoning skills	150	2.5	1.24	Disagreed
14	Test anxiety or panic	150	3.6	1.18	Agreed
15	Difficulty understanding abstract concepts	150	3.07	1.35	Agreed
	Grand mean	150	3.116	1.34	Agreed

Criterion Mean Score = 3.0

Table 3 presents Cognitive Factors which are overthinking, difficulty to understand, poor problem solving skills, difficult in understanding are Cognitive factors that influence mathematics anxiety among secondary school students. Students expressed agreement about cognitive challenges in mathematics, achieving the grand mean (3.12) among the general factors. The relatively lower standard deviation of 1.34 suggests more consistent experiences with cognitive difficulties like understanding concepts and remembering formulas, though some variation still exists among students.

Research Question 4: How do Personal Factors influence mathematics anxiety among secondary school students

Table 4: Mean and Standard Deviation on How personal Factors influence mathematics anxiety among secondary school students

S/N	Item	N	Mean	SD	Decision
16	Because of my poor study habit I often forget key Maths concepts during a test	150	3.02	1.42	Agreed
17	My past failure affects my motivation to learn mathematics	150	2.65	1.36	Disagreed
18	Fear during lessons makes me avoid participating in solving Maths questions	150	2.34	1.21	Disagreed
19	My mind goes blank when I attempt maths questions due	150	3.213	1.30	Agreed

	to lack of confidence				
20	I feel that I am not good in mathematics by nature	150	2.6	1.38	Disagreed
	Grand Mean	150	2.76	1.37	Disagreed

Criterion Mean Score = 3.0

Table 4 presents a crucial finding with a grand mean of 2.76, indicating student disagreement about the direct connection between personal factors and mathematics anxiety. This result suggests that students consciously recognize how their personal characteristics, attitudes, and emotional patterns directly contribute to their experience of mathematics anxiety. The standard deviation of 1.37 reveals significant diversity in how students perceive this relationship. Some students clearly understand how their self-perception and emotional responses trigger anxiety, while others seem unaware of this connection. This gap in awareness is particularly important for educators and counselors to address, as recognizing the role of personal factors is often the first step toward managing mathematics anxiety effectively.

Research Question 5: How does Environmental Factors contribute to mathematics anxiety among secondary school students

Table 5: Mean and Standard Deviation on How Environmental Factors contribute to mathematics anxiety among secondary school students

S/N	Item	N	Mean	SD	Decision
21	My teachers method of explaining make it hard to me to understand maths	150	2.7	1.46	Disagreed

22	Encouragement from teachers reduces my fear for mathematics	150	3.4	1.40	Agreed
23	I avoid being involved in Mathematics class because of peer pressure influence	150	2.7	1.32	Disagreed
24	Lack of textbook or materials makes mathematics difficult for me	150	2.64	1.34	Disagreed
25	Pressure from parents about my mathematics result makes me afraid of mathematics	150	2.67	1.39	Disagreed
	Grand Mean	150	2.83	1.42	Disagreed

Criterion Mean Score = 3.0

Table 5 presents that with a grand mean of 2.83, students expressed disagreement about environmental factors directly causing mathematics anxiety. This finding suggests that students may underestimate how significantly their learning environment influences their anxious feelings toward mathematics. The high standard deviation of 1.42 indicates dramatically different perceptions among students. Some learners are highly sensitive to environmental pressures such as teacher expectations, classroom competition, or parental demands, while others remain relatively unaffected by these external factors. This variation highlights the importance of considering individual differences in sensitivity to environmental stressor when addressing mathematics anxiety and designing intervention strategies.

Research Question 6: How does Cognitive Factors influence mathematics anxiety among secondary school students

Table 6: Mean and Standard Deviation on How Cognitive Factors influence mathematics anxiety among secondary school students

S/N	Item	N	Mean	SD	Decision
26	Difficulty applying mathematics in real life	150	2.8	1.40	Disagreed
27	Forgetting formulas during exams or test due to panic	150	3.713	1.46	Agreed
28	Struggling with concepts in Mathematics makes me feel discouraged	150	3.1	1.35	Agreed
29	Negative thoughts (e.g 'I will fail) makes me solve Mathematics badly	150	2.66	1.44	Disagreed
30	Inability to solve problems reduces my interest in mathematics	150	2.95	1.44	Disagreed
	Grand Mean	150	3.05	1.47	Disagreed

Criterion Mean Score = 3.0

Table 6 presents Cognitive factors emerged as the only anxiety-linked section where students agreed about the direct connection to mathematics anxiety, with a grand mean of 3.04. However, this section also shows the highest standard deviation of 1.47, indicating extreme variation in student experiences. This combination of findings reveals that while students generally recognize how cognitive challenges contribute to their anxiety, the intensity of this relationship differs tremendously from one student to another. For some learners, struggling with a mathematical concept immediately triggers severe anxiety, while others experience only mild stress when facing similar cognitive challenges. This extreme variability underscores the complex interplay between cognitive abilities, emotional responses, and anxiety management skills among students.

Discussion of Finding

The study examined students' perception of the causes of mathematics anxiety among secondary school students based on personal, environmental, and cognitive factors. The analysis indicates that personal factors form the most direct link to mathematics anxiety. Students reported that their internal feelings, such as low self-confidence, a fear of failure due to past experiences, and a belief that they are "not good at math," are powerful drivers of their anxiety. This suggests that a student's own mindset and emotional state are foundational to how they perceive and react to mathematics.

Environmental factors also play a critical role as major triggers for anxiety. The data suggests that elements outside the student, such as a teacher's harshness, constant pressure from parents to perform, and negative attitudes from peers, actively create and intensify fear. The classroom and home environment are not just backdrops for learning but are active forces that can make a student feel threatened and stressed, turning math from a subject into a source of dread.

When it comes to cognitive factors, the results are more complex. While students find math cognitively challenging, this does not automatically lead to the same level of anxiety for everyone. The high variation in responses shows that some students are able to face these mental challenges with resilience, while others become overwhelmed and discouraged. This indicates that it is not just the difficulty of the math itself, but the student's personal reaction to struggling with a concept or forgetting a formula, that determines their level of anxiety.

In conclusion, the findings paint a picture of mathematics anxiety as a complex issue with three interconnected sources. Personal feelings create a foundation of fear, environmental pressures act as powerful triggers, and cognitive challenges are the point where mental struggle turns into emotional distress for many students. The high variability in all responses confirms that anxiety

is a highly individual experience. There is no single cause that affects all students equally, which means that solutions to this problem cannot be one-size-fits-all but must be tailored to address this complex interplay of factors.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The study investigated the perception of secondary school students on the causes of mathematics anxiety. The research employed a survey research design, utilizing a structured questionnaire to collect data from 150 secondary school students. The population of the study consisted of junior and senior secondary school students in Benin City. The sampling technique used was purposive sampling to ensure that participants had experience with mathematics learning in secondary school. The research instrument was a self-developed questionnaire containing 30 items divided into six sections: Personal Factors, Environmental Factors, Cognitive Factors, Personal Factors and Mathematics Anxiety, Environmental Factors and Mathematics Anxiety, and Cognitive Factors and Mathematics Anxiety. The method of data collection involved direct administration of questionnaires to students in their school settings, ensuring high response rate and immediate clarification of any ambiguities.

For data analysis, the study employed descriptive statistics, specifically mean scores and standard deviations. The mean scores were used to determine the level of agreement with various mathematics anxiety factors, while standard deviations measured the variability in responses among students.

The analysis revealed that students identified personal factors as the most significant contributor to their mathematics anxiety. These internal factors, including low self-confidence, fear of failure, and negative self-perception about mathematical abilities, formed the foundation of students' anxious experiences. The data showed that students' personal beliefs about their mathematical capabilities strongly influenced their emotional responses to the subject, with many students

reporting that these internal factors directly triggered their anxiety during mathematics activities and assessments.

Environmental factors emerged as another major category influencing mathematics anxiety among students. The learning environment, particularly teaching methods, classroom atmosphere, and social pressures from both peers and parents, played a crucial role in either amplifying or reducing anxiety levels. The data indicated that teacher-related factors were especially influential, with teaching style, classroom management, and the quality of teacher-student relationships significantly impacting students' emotional experiences in mathematics classes.

Cognitive factors presented a more complex picture in their relationship with mathematics anxiety. While students acknowledged the inherent mental challenges of mathematics learning, the data showed considerable variation in how these cognitive difficulties translated into anxious feelings. Some students demonstrated resilience in facing mathematical challenges, while others experienced overwhelming stress when encountering difficult concepts or problem-solving situations. This variation suggests that cognitive factors alone do not determine anxiety levels, but rather interact with students' personal characteristics and environmental conditions to produce different anxiety outcomes.

The findings were;

1. low self-confidence, fear of failure, nervousness when called to the board to solve and text anxiety are the personal Factors that influence mathematics anxiety among secondary school students
2. Parents pressure and overcrowded classrooms are the environmental Factors that contribute mathematics anxiety among secondary school students.

3. Overthing mistakes, struggling to connect mate with real-life situation, text anxiety or panic and difficulty understanding abstract concepts are cognitive Factors that contribute to mathematics anxiety
4. Forgetting key maths concept due to bad study and memory loss due to lack confidence are how personal Factors influence mathematics anxiety among secondary school students
5. Fear of Mathematics is reduces due to teachers encourage which is how environmental Factors contribute to mathematics anxiety
6. Forgetting formulas and struggling with maths concepts are how cognitive Factors influence mathematics anxiety among secondary school students

Conclusion

Based on the findings of this study, it can be concluded that mathematics anxiety among senior secondary school students arises mainly from personal factors, environmental Factors and cognitive Factors. Students' perceptions show that mathematics is often seen as a difficult and fearful subject, not only because of their mindset but also due to teaching methods, limited resources, and the learning atmosphere. Cognitive difficulties—such as the inability to recall formulas or understand problem-solving steps—intensify this anxiety and lead to poor performance.

The study therefore concludes that reducing mathematics anxiety requires a joint effort from teachers, students, parents, and educational authorities. A supportive environment, improved teaching techniques, and student-centered learning approaches will help students develop confidence and interest in mathematics, ultimately improving performance and reducing fear.

Recommendations

Based on the results and conclusions of this study, the following recommendations were made:

1. Teachers should adopt friendly, interactive, and practical teaching methods that make mathematics easier to understand and more enjoyable for students.
2. Students should build self-confidence by practicing regularly, asking questions, and developing a positive attitude toward mathematics.
3. Schools should provide adequate mathematics textbooks, instructional materials, and teaching aids to support effective learning.
4. Parents should encourage and motivate their children to take interest in mathematics instead of reinforcing fear or negative beliefs about the subject.
5. Counselors should organize workshops or guidance sessions to help students overcome anxiety, develop study skills, and manage exam tension.
6. Government and education authorities should ensure that qualified and well-trained mathematics teachers are employed in schools to promote quality teaching.
7. Curriculum planners should design mathematics lessons that focus on understanding and real-life application rather than rote memorization, to help reduce students' anxiety.

Suggestions For Further Studies

1. Future research should examine how school policies and administrative practices contribute to mathematics anxiety, especially in areas such as assessment methods, school culture, and academic expectations
2. Further studies may explore the impact of school-wide support systems, including counselling units, peer mentoring programmes, and academic clubs, to determine their effectiveness in reducing mathematics anxiety.

3. Researchers should investigate how different teaching styles influence students' perception of mathematics and their anxiety levels, comparing learner-centred, interactive, and traditional approaches.
4. Researchers can investigate the relationship between students' self-efficacy, motivation, and mindset, and how these psychological factors contribute to their perception of mathematics anxiety.
5. Further research may explore the impact of parents' own attitudes toward mathematics, especially whether parents who view mathematics as difficult or stressful unintentionally pass this anxiety to their children.

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APPENDIX 1

Population of the Study

S/N	Name of School	Population
1.	Uniben Demonstration Secondary School	30
2.	UBTH STAFF SCHOOL	30
3.	Ekosodin Secondary School	30
4.	Bethany Secondary school	30
5.	Technical College	30
	Total	150

APPENDIX 2