ACADEMIC RESILIENCE AND PSYCHOSOCIAL SUPPORT AS CORRELATES OF MATHEMATICS PERFORMANCE AMONG FORM TWO STUDENTS IN NAKURU COUNTY, KENYA

KIRISWA GRACE NASIOKI

E55/21960/2021

A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTERS IN EDUCATION (EDUCATIONAL PSYCHOLOGY) IN THE SCHOOL OF EDUCATION AND LIFELONG LEARNING, KENYATTA UNIVERSITY

OCTOBER, 2025

DECLARATION

This research thesis is my original work and has not been presented to any other university or institution for consideration. This research thesis has been complemented by referenced sources duly acknowledged. Where text, data, graphics, pictures, or tables have been borrowed from other sources, including the internet, these are specifically accredited, and references cited in accordance and line with anti-plagiarism regulations.

Signature _____ Date _____

Kiriswa Grace Nasioki
E55/21960/2021
Department of Educational Psychology

SUPERVISORS

We confirm that the work reported in this thesis was carried out by the candidate under our supervision as university supervisors.

Signature _____ Date_____

Dr. Josephine Mutua
Lecturer,
Department of Educational Psychology,
Kenyatta University

Signature_____ Date _____

Dr. James Ndege Oluoch
Lecturer,
Department of Educational Psychology,
Kenyatta University

DEDICATION

This work is dedicated to my mother, Mary Wangare Ndungu, and my father, Peter Kiriswa for their great support throughout this journey. I remember my siblings, the late Faith Nemaiyan, Joy Nempema, Christopher Obiki, and Manasseh Lepapa. Their encouragement gave me the determination to continue even when the situation was tough. Additionally, I dedicate this work to all my friends, parents, teachers, and students. May this work inspire you to cultivate resilience in life and to build the psychosocial support essential for the better well-being of our society.

ACKNOWLEDGEMENTS

I am profoundly grateful to God for his guidance, grace, and strength throughout this journey. Indeed, He enabled me to overcome all the challenges encountered along the way. My sincere appreciation also goes to my dedicated supervisors, Dr. Mutua and Dr. Oluoch, for their unwavering commitment, expertise, and support to bring this work to a success.

I would also like to extend my heartfelt thanks to the great team of my benefactors led by Anton and Wim. Your belief in my potential and your financial assistance have enabled me to focus on my studies without the burden of financial stress. I am deeply thankful for and indebted to your investment in my future.

To my family; my mother, Mary, and my father, Peter, your emotional, and motivational support have been a constant source of strength. To my sisters, Joy and the late Faith, and my brothers, Manasseh and Christopher, your love and encouragement have been invaluable. I am profoundly grateful.

I would also like to thank the participants and individuals who contributed to my research. Your willingness to share your experiences and insights has been crucial in providing the necessary data and perspectives for this thesis. Your cooperation was greatly appreciated. Lastly, to anyone who has supported me in any way throughout this journey, your support has not gone unnoticed. I am sincerely grateful.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KNEC	Kenya National Examination Council
KUCCPS	Kenya Universities and Colleges Central Placement Service
NACOSTI	National Commission for Science, Technology and Innovation
OECD	Organization for Economic Cooperation and Development
PISA	Program for International Student Assessment
SACMEQ	Southern and Eastern Consortium for Monitoring Education Quality
SSA	Sub Saharan Africa
STEM	Science Technology Engineering and Mathematics
TIMSS	Trends in International Mathematics and Science Study
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USA	United States of America

ABSTRACT

Mathematics is a fundamental discipline whose scientific, technological, economic and national development cannot be underestimated. Despite its central participation in development, globally and particularly in Kenya, mathematics performance has been on the decline. Case in point, over the past five years (2018-2022), Njoro Sub-County has raised alarm due to poor performance declining over the years. Poor mathematics performance is a great setback to students' academic performance and the development of the country at large, and by extension, a barrier to the success of Vision 2030. Further, literature on the said target group on academic resilience and psychosocial support on learning outcomes has been scarce. Against these, the current study sought to establish the relationship between academic resilience and psychosocial support with mathematics performance. Additionally, the study sought to examine if both variables varied significantly by gender. Lastly, the predictive weight of academic resilience and psychosocial support on mathematics performance was assessed. This study was guided by the positive psychology theory (Seligman & Csikszentmihalyi, 2000) and Bronfenbrenner's (1979) ecological systems theory. A correlational research design was implemented where 3359 (1769 girls) form two students from 52 public secondary schools in Njoro sub-county, Nakuru County in 2023 were targeted. A sample of was obtained from ten public secondary schools. Purposive, stratified random sampling, and simple random sampling were used in the sample selection. Data collection was done using an adapted 30-item Academic Resilience Scale for academic resilience by (Cassidy 2016) and the 22-item Psychosocial Support Scale for psychosocial support by Padhy et al. (2022). Mathematics performance was measured using form two end-of-year 2023 examination results. A pilot study was conducted on 30 form two students randomly selected to ascertain the reliability and validity of the research instruments. A significant positive relationship between both academic resilience, r (380) = .27 $p < .01$, and psychosocial support, r (380) = .12, $p < .05$, with mathematics performance was established. Independent samples t-test, however, showed that there were no significant gender differences in both academic resilience (t (380) = -0.63, $p > .05$) and psychosocial support (t (380) = -0.48, $p > .05$). Lastly, multiple regression analyses showed that academic resilience and psychosocial support significantly predicted mathematics performance, F (2, 279) = 15.34, $p < .001$, accounting for 8% of variance in mathematics performance. Academic resilience ($\beta = .27$, $p < .001$) was however the better predictor of mathematics performance as compared to psychosocial support ($\beta = .01$, $p > .05$). It was thus concluded that the provision of psychosocial support and better academic resilience structures among students is linked to better mathematics performance. Findings from this may be of use to students' self -regulation in the face of challenges by strengthening support structures. The findings are important to teachers, school counselors, parents, and students, as they provide evidence-based strategies for improving mathematics performance and overall academic performance.

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

In this section, the background to the study, statement of the problem, purpose, objectives, research hypothesis, and significance of the study are reviewed. Furthermore, the limitations, delimitations, and assumptions are outlined. The theoretical and conceptual framework of the study as well as the operational definition of terms are, lastly, discussed.

1.2 Background to the Study

A country's bright future to greater extent depends on educational infrastructure that shapes the citizens' attitude, behaviors and code of conduct. This requires a generous investment in system of education at a global scale (Zakelj et al., 2024). Education plays a great part in incorporating an individual within the society for the purpose of fostering national goals, and promote unity. Further, education is pivotal in accomplishing self-actualization, financial stability, cultural sensitivity, and technological advancement. In line with the aforementioned, mathematics remains a crucial component in the educational system.

Mathematics is a cornerstone of a country's technological, scientific, and industrial development, significantly transforming the world at large (Zakelj et al., 2024). In a wider scope, mathematics is the backbone of different scientific areas that is; computer science, astronomy, statistics, physics, engineering, chemistry, and astronomy and architecture to list a few (Okocha & Odinko, 2021). It's also critical to note that mathematics is the foundation of economic growth, which is essential in globalization.

Despite the importance played by mathematics worldwide, global literature portrays worrying trends in mathematics performance, raising alarm among various stakeholders. As a result, the

mathematics performance trends in most nations have aroused the interest of global assessment bodies such as Program for International Student Assessment (PISA) and United Nations Educational Scientific and Cultural Organization (UNESCO). Notably, most of the global assessments contextualize mathematics underperformance within developed nations in America and Europe, with a few developing Asian countries such as China, Malaysia and Korea, included for comparison and contrast. African nations, though few, have in the recent years been included in the global assessments depicting their underrepresentation in voicing the prevalent mathematics underperformance problem.

According to UNESCO (2017), math proficiency is declining worldwide. Over 600 million pupils including, 230 million secondary school students and over 387 million primary school students, perform poorly in reading and math with the most affected regions being those with lower socioeconomic standing, like southern Asia and Sub-Saharan Africa (UNESCO, 2017). As a result, the achievement of the Sustainable Development Goals (SDGs) is seriously threatened by such concerning performance.

Corroborating UNESCO's (2017) report, PISA results confirm that mathematics is frequently underperformed in the most nations internationally. Based on the summaries presented by Trigueros et al. (2020), the PISA Report 2018, for instance, found that Spanish students performed the worst in mathematics among European OECD nations, a startling seven points below the average of 489. Subsequent studies would later link the underperformance to mathematical anxiety emanating from societal biases (Trigueros et al., 2020). A synonymous situation was reported among Filipino students where, less than a fifth achieved above the required minimum level of performance (Lapinid et al., 2022). Variables like academic emotions, achievement motivation, and learning interests were primarily associated with the low achievement levels in mathematics. In the American continents, countries such as Chile

and Mexico have witnessed perennial mathematics underperformance issues. Particularly, poor performance has been depicted in mathematics and science with the two nations ranking the lowest in the OECD assessments. This was mainly due to social inequalities when compared with more advanced western nations.

Mathematics is a crucial subject that is taught in both primary and secondary schools in the United Kingdom (UK), according to Andreas Schleicher, the Education Director of the Organisation for Economic Co-operation and Development (OECD). The education director however pointed out that underperformance in mathematics has persisted. It was noted that differences in curriculum depth and the prevalence of high-impact assessments might be placing the students from UK at a disadvantaged position. According to the Education Director, if the issue is not attended with the seriousness it needs, it would take a very long time to catch up with the countries that achieve highly. The remarks were in response to the UK's PISA 2018 performance, often held after three years across different nations for the purpose of finding out the abilities of 15-year-olds to tackle problems set in real-world applications, that is in reading, mathematics and science. (Skipp & Dommett, 2021). Based on the findings, the UK was ranked at 14th position for reading and science, and unfortunately at 18th for mathematics in comparison to the Netherlands, Finland and Estonia, a clear indication of a great challenge that needs to be attended to.

The trend is also reflected in the USA, where mathematics performance among high school students remains a major setback. After ranking, the performance of the USA high school students was below the median of all participating countries (Hanushek et al., 2019). It is concerning that students in the United States fall behind in displaying mathematics skills in comparison to their peers in other leading industrialized countries, like China and Japan (Gjicali & Lipnevich, 2021). This has been attributed to disengagement under the conviction

that mathematics is a hard subject as well as negative attitudes towards mathematics. This relative underperformance is worrisome considering the decisive role mathematics plays in the career trajectory of learners (OECD, 2018).

Like observed in the developed nations, the African context continues to point out mathematics underperformance as a significant problem that requires attention. According to Gjicali and Lipnevich (2021), Sub-Saharan Africa (SSA) needs to boost STEM and math outcomes since low proficiency impedes social and economic advancement in SSA at both the individual and national levels. Compared to Asia, the situation in SSA is worse (World Bank, 2016). Notably, students in Ghana, Botswana, and South Africa currently have very low math achievement scores (331, 397, and 352, respectively), figures much lower than the global average of 500. The performance gap is notably wide that it is approximated to take over a century for the nations in SSA to reach the average levels of OECD nations (Gjicali & Lipnevich, 2021). Such a setback has been largely attributed to low student motivation, negative attitudes toward mathematics, and limited perceived behavioral control among students.

In line with the aforementioned, the 2019 Trends in International Mathematics and Science Study (TIMSS) confirmed mathematics underperformance among primary and secondary school students to be a persistent problem in South Africa. The report ascribed the underperformance in mathematics to insufficient professional development and gaps in teachers' pedagogical skills (Mabena et al., 2021). Results from the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) support these findings further, demonstrating that South Africa's mathematics performance remains subpar.

According to TIMSS, South Africa ranked third lowest in primary school mathematics scores among 64 countries. Furthermore, between 68 percent and 90 percent of Grade 8 students failed to meet the minimum international benchmarks in mathematics (Dall, 2023). At the secondary

level, the country was ranked 38th out of 39 nations, hence among the poorest performing countries, indicating severe challenges in mathematics education. Education experts have therefore warned that this situation limits students' career options in science and engineering fields, thus affecting the country's economic expansion and technological advancement (Dall, 2023).

In Namibia, according to Chirimbana et al. (2022), learners tend to persistently perform poorly in mathematics from junior secondary as they transition to senior secondary schools. The results show that despite the fact that 95 per cent of mathematics teachers have been equipped with mathematics skills and content delivery, and about 60 per cent of learners in junior secondary schools have enough mathematics revision books, mathematics is still poorly performed. Poor performance was linked to students' inadequate mathematical pedagogical skills and poor mathematics performance stemming from lack of necessary resources, negative attitude and poor language development (Chirimbana et al., 2022). Mathematics underperformance is noted at three selected schools that are combined with the following declining pass rate averages of 37.5% in 2017, 28.3% in 2018, 24.8% in 2019, and 21.9% in 2020 during the examination done between November and December. Such poor performance underscores the critical need of the availability of enough scientific and technical expertise in the country since mathematics is a very significant subject in the progression of the career (Chirimbana et al., 2022). This, therefore, calls for the attention of researchers to examine other possible causes of underperformance in Namibia in order to save the situation.

In the Kenyan curriculum, mathematics remains one of the required subjects in elementary and secondary education. Additionally, the Kenya Universities and Colleges Central Placement Service (KUCCPS) consider mathematics when students are selecting most of the courses. Despite mathematics' relevance, there persists a public objection to the low mathematics mean

scores every time Kenya Certificate of Secondary Education results are released. As evidenced by the KCSE results for the previous years, mathematics performance in Kenya has been declining, and the most recent trends show that secondary school students' mathematical proficiency is below average (Ruthiga, 2021). The majority of research on mathematics underperformance has concentrated on various pedagogical strategies and the availability of resources; despite the government's persistent efforts to improve these areas, student performance has remained low.

In Njoro Sub-County, Nakuru County, mathematics has consistently been underperformed during KCSE examinations as compared to the other ten sub-counties in Nakuru County. Sadly, in comparison to neighboring counties, Bomet and Kericho, Nakuru County's mathematics performance averaged 5.5 out of 12 points. The averages of Narok and Laikipia counties were found to be an average between 5.00 and 5.30 (County Director of Education Office, 2023). Moreover, mathematics has been the worst performed subject compared to other science subjects, in the KCSE for the past five consecutive years. Further, the performance in the subject has been declining despite having necessary educational resources and proximity to urban infrastructure, as reflected by the KCSE mean for the sub-counties (Ministry of Education, 2023). Hence, the problem necessitates the attention of researchers to establish the associated factors leading to poor mathematics performance as reflected in Table 1.1.

Table 1.1

Summary of Njoro Sub County KCSE Science Subject Performance Trend (2018-2022)

Subject	2018	2019	2020	2021	2022	Average
Biology	3.65	3.71	4.07	4.16	4.18	3.95
Chemistry	3.80	3.75	3.85	3.65	4.13	3.84
Physics	3.87	4.01	4.66	4.67	4.85	4.41
Mathematics	3.14	3.05	2.67	2.36	2.27	2.70

Source. County Director of Education Office, 2023

Mathematics has occasionally been viewed as a complex and hard discipline across the levels of education. It is riddled with challenges and can be occasionally frustrating, hence the high rate of poor performance among the students. Few studies have been done on mathematics performance; however, they focused on different psychological variables such as anxiety, motivation and attitude. Therefore, there is a paucity of information concerning how academic resilience and psychosocial support predict mathematics performance. This is why the current study focused on psychosocial support and academic resilience as its predictor variables.

To begin with, Ishak et al. (2020) cited academic resilience as a positive and important attribute while learning mathematics. Particularly, Ishak et al. (2020) defined academic resilience as the students' possibility to handle pressure or downsides in their academic or school life. Assertions by Xenofontos and Mouroutsou (2022) further outlined academic resilience as either a process or outcome of efficacious adaptation to any given difficulties in the academic journey. Notably, academic resilience encapsulates a couple of indicators including, reflecting and adaptive help-seeking, perseverance, negative affect and emotional response.

Cassidy (2016) goes into great detail about the indicators of academic resilience and explains that perseverance is focusing on achieving the goals and enduring in the face of difficulties. Reflecting and help-seeking behaviors involve a learner's ability to assess their own performance, and varying different learning strategies, and looking for necessary support when need be. The concept of negative affect, on the other hand, relates to how students is responsible in regulating negative thoughts, handling anxiety and upholding a sense of optimism for better learning outcomes. Closely related is emotional response aspect, which focuses on how learners' management of emotions and their feelings when faced with academic pressure. Altogether, these attributes play a crucial role in positive adjustment mechanisms and perseverance, they are essential for success in mathematics.

Academic resilience develops progressively through a personal continuous interaction with various protective systems in the surrounding they are in. Oktay et al. (2021) observe that academic resilience is normally seen in students sustained effort and determination in the face academic obstacles and adversity. Consequently, academic resilience has been correlated with a higher likelihood of academic success. It represents a learner's ability to maintain satisfactory academic performance despite facing challenges. While all learners have the potential to develop academic resilience, this can only be realized when it is cultivated intentionally and supported by teachers.

Research has demonstrated a strong correlation between enhanced mathematical performance and academic resilience. For example, García-Crespo et al. (2022) examined the impact of academic resilience on students' performance in mathematics in Europe and discovered that it significantly predicts students' performance in the subject. The results are also supported by a study done in Egypt by Khalaf (2014), which highlights the positive relationship between academic resilience and overall academic performance. While students who exhibit higher

levels of academic resilience frequently perform well in mathematics and generally present good academic results, those who lack academic resilience and are easily overwhelmed by stress frequently perform poorly in mathematics.

In Kenya studies on academic resilience in academic settings have been conducted in relation to achievement in general (Mwangi et al., 2018; Oyoo et al., 2018). Literature has shown variation in different disciplines. Previous research, therefore, did not sufficiently clarify how academic resilience relates to mathematics performance within the specific study context.

Exposure to stressful experiences negatively impacts the cognitive and socio-emotional development of students. Mathematics is a hands-on subject riddled with challenges as well as negative perceptions. Additionally, changes in puberty result in a lot of self-identity crises; students begin to understand the limits of their abilities (Duffin et al., 2020). To mitigate the influence on socio-emotional and cognitive processes there is a need for psychosocial interventions to help students navigate the circumstances they are facing adaptively. Student psychosocial well-being is critical for optimizing scholarly outcomes.

Psychosocial support has been defined broadly by (Padhy et al., 2023) as the care and support which influences an individual and the social environment which people interact with. Such care and support are offered by the parents, family and friends who play a unique role. In the current study, Psychosocial support is seen as a multifaceted tool that plays a significant role in learners social, psychological and emotional wellbeing that promotes their better academic outcomes. Parents are central in the psychosocial needs satisfaction through promoting social adjustment, better mental health and psychological well-being. Families on the other hand are key determinants of social relationships and a buffer for adversities. Friends offer companionship which enhances the students' wellbeing (Yan et al., 2023). This is both preventive and curative in that it decreases the risk of developing mental problems among

people (Coleman, 2023). On the other hand, it helps individuals deal with psychosocial problems that may have arisen. As a result, academic resilience is strengthened in the face of challenges in life. In a nutshell, psychosocial support improves the well-being of the students' performance in school.

Psychosocial support is perceived to have interrelated indicators. These include, supportive disposition; that shows the desirable attitudes and encouragements that learners obtain from their social environment. For instance, teacher affirmations and student collaboration motivates learners to endure and perform better in mathematics. Psychological support availability for instance conducive environment in school set up and student mentorship instills confidence and determination in learners for better mathematics outcomes. Social support network entails the help and collaboration peers give each other which sustains motivation and interest among the peers to succeed in mathematics and overall academic outcome. Moreover, Family based psychosocial support entails the moral support given to the learners by the family or guardians and lastly, Communicative support, refers to use of verbal and non-verbal communication in an empathetic way for the purpose of reaching understanding. It ensures there is proper sharing of ideas for instance; between teachers and students for instance during mathematics concept teaching in classroom. Psychosocial support, as Padhy et al. (2022) note, encompasses managing psychological support deprivation, leveraging social support networks, providing family-based support, ensuring the availability of psychosocial support, facilitating effective communication, and fostering a supportive disposition.

Globally, literature has established psychosocial support to be associated with increased performance levels. In the USA for instance, Duffin et al. (2020) established that psychosocial support in mathematics had a positive effect on scores. The Covid pandemic brought to focus the need to factor in mental health wellness in the classroom (Dale et al., 2023). It is

increasingly becoming apparent the need for psychosocial support among students which is built by parents, friends or family at large. In the study, 32.7% of the learners were found in need of social support. In a study across six Asian countries, Wang et al. (2021) found that psychosocial support was positively related to academic performance. Olayemi et al. (2021) conducted a study in Sudan whereby the study outcomes indicate that mathematics outcomes are significantly associated with psychosocial support that the students get. While there have been studies on social support and academic achievement in Kenya, few have attempted to delve into the construct of psychosocial support and mathematics performance.

The issue of gender differences is also evident as few studies reveal gender differences in academic resilience and psychosocial support in mathematics performance. The studies show that boys tend to be more resilient than girls hence they perform better than girls. Additionally, there are gender differences in how well students handle the academic stress that comes with mathematics (Albulescu et al., 2023).

While existing research has extensively examined pedagogical approaches and resource availability in mathematics education, there remains a significant gap in understanding how academic resilience and psychosocial support influence mathematics performance in the Kenyan context, particularly in the Njoro Sub-County. Therefore, the study concentrated on academic resilience, and psychosocial support as correlates of mathematics performance in Nakuru County, Kenya.

1.3 Statement of the Problem

Mathematics is a fundamental subject not only in the school setup but also in real-life situations for its applicability in solving our daily problems. Despite the critical role mathematics plays, poor performance in mathematics has persisted in Njoro Sub-County, as compared to the other

sub-counties in Nakuru County, in the past five years. While the government has dedicated resources to the improvement of the learning environment and learning experiences, there has not been a noticeable improvement in mathematics performance. Particularly, subpar performance has been witnessed from the year 2018 to the year 2022, as indicated in Table 1.2.

Table 1.2

Summary of KCSE Mathematics Mean Score Performance per Sub-County in Nakuru County

Sub-County	Mean-Scores					
	2018	2019	2020	2021	2022	Average
Bahati	3.50	3.60	3.14	3.20	3.51	3.44
Kuresoi North	3.21	2.90	2.96	3.35	3.43	3.17
Kuresoi South	3.32	3.14	2.87	2.91	2.98	3.04
Gilgil	3.63	3.80	3.95	3.63	3.71	3.74
Molo	3.90	3.94	3.92	3.97	4.18	3.98
Naivasha	3.27	3.50	3.11	3.61	3.40	3.38
Nakuru East	3.17	2.87	2.90	3.11	3.29	3.07
Nakuru West	3.20	3.21	2.85	2.88	2.95	3.02
Subukia	3.25	3.18	2.85	2.97	3.51	3.15
Rongai	2.95	3.11	2.75	3.00	3.19	3.00
Njoro	3.14	3.05	2.67	2.36	2.27	2.70

Source. County Director of Education Office, 2023

The persistent decline in mathematics performance in the Njoro sub-county, evidenced by a drop in mean scores from 3.14 in 2018 to 2.27 in 2022, represents a significant educational challenge. This decline not only affects immediate stakeholders but also threatens Kenya's progress towards the achievement of the Vision 2030 goals related to scientific and technological advancement.

Although there is a considerable focus on mathematics performance, most studies have been based on European and Asian samples. Given the unique educational norms and cultural complexities, such findings may not be generalizable to the local school population. In the Kenyan educational context, though scarce, some efforts have been made to study mathematics performance. The studies have mainly focused on the availability, or lack thereof, of learning resources and the necessary pedagogical skills and approaches. There is little focus on the role of students' affective and social environment variables on mathematics performance, and broadly, on students' learning. Hence, the study sought to identify Internal and external factors that work together to shape how learners interpret and approach tasks in their learning environment, ultimately affecting how well they benefit from educational experiences and outcomes. These were academic resilience and psychosocial support. The current study was conducted to determine how academic resilience and psychosocial support correlate with mathematics performance. Addressing poor performance in mathematics results in career advancement, technology, and economic development.

1.4 Purpose of the Study

The central aim of this study was to investigate the relationships between academic resilience and psychosocial support with mathematics performance among form two students in Nakuru County. Furthermore, the study examined whether there were any variations in the focus students' variables by gender, to challenge gender stereotypes. The insights were very significant in improving mathematics performance and helping the students in career advancement.

1.5 Objectives of the Study

The following objectives guided this study:

i. To identify the relationship between academic resilience and mathematics performance among form two students in Nakuru County, Kenya.
ii. To establish the relationship between psychosocial support and mathematics performance among form two students in Nakuru County, Kenya.
iii. To find out if there are gender differences in academic resilience, psychosocial support, and mathematics performance among form two students in Nakuru County, Kenya.
iv. To assess the predictive weight of academic resilience and psychosocial support on mathematics performance among form two students in Nakuru County, Kenya.

1.6 Research Hypotheses

Drawing from the objectives of the study, the following hypotheses were formulated.

H_{a1}: There is a relationship between academic resilience and mathematics performance among form two students in Nakuru County, Kenya.

H_{a2}: There is a relationship between psychosocial support and mathematics performance among form two students in Nakuru County, Kenya.

H_{a3}: There are gender differences in academic resilience, psychosocial support, and mathematics performance among form two students in Nakuru County, Kenya.

H_{a4}: There is a relative predictive weight between academic resilience and psychosocial support on mathematics performance among form two students in Nakuru County, Kenya.

1.7 Assumptions of the Study

In their self-reports, respondents were presumed to have given accurate and truthful information about their academic resilience and psychosocial support. It was also assumed that the relationships between the study variables were linear, such that changes in academic resilience and psychosocial support corresponded proportionally to changes in students' mathematics performance. Lastly, it was assumed that students' mathematics scores obtained using the proforma were objectively reflective of the students' mathematics performance.

1.8 Limitations and Delimitations of the Study

This section contains the limitations and delimitations of the current study.

1.8.1 Limitations of the Study

Only form two students drawn from selected public secondary schools in Nakuru were used in this study. This, potentially, limited the generalizability of the results that were obtained to other counties. However, probability sampling techniques were used to enhance the generalizability. The researcher relied on self-report questionnaires, which might have introduced subjectivity and social desirability bias. However, the mode of data collection was preferred as it saves time. This was mitigated by assuring learners of anonymity and students' voluntary participation. The study employed a correlational research design, which limits the drawing of causal conclusions. However, the design has comparatively greater external validity when compared to experimental methods and is thus desirable for investigations in previously under-researched samples.

1.8.2 Delimitations of the Study

The target population of the study was confined to form two students only in ten public secondary schools. The focus on the form two students was basically because they are at a critical stage of transition, and subject selection for future career choices, hence academic resilience and psychosocial support are very significant. The researcher settled on public schools because of varying socio-economic contexts and challenges faced in such schools; For instance, the limited resources and large class sizes. Such factors create a setting where nurturing academic resilience is critical. Lastly, even though there are many other predictors of mathematics performance, the current study only focused on two predictor variables: academic resilience and psychosocial support.

1.9 Significance of the Study

The findings obtained herein may be valuable to the school heads, guidance and counseling department, teachers, parents, students, and finally to the existing literature. The study might help school heads to design a welcoming school environment. Friendly environment in this context is that which promotes empathy, upholding respect, and the presence of emotional safety among the teachers and students. This may promote better teacher-student interactions. As a result, the teachers may be in a position to offer the necessary psychosocial support needed to help students overcome different challenges they encounter to improve their mathematics performance.

The guidance and counseling department may also use the findings to guide the learners on how to relate well and offer each other the needed support. This may improve the mathematics performance of the students. Additionally, mathematics teachers may come up with programs that offer support to the learners in order to help them overcome challenges in the school setup up hence performing well in mathematics.

Parents, on the other hand, may learn how to offer needed support to their children and help build their academic resilience, which may result in improved mathematics performance. Students may benefit by understanding the significance of offering each other support in discussion groups and solving mathematics problems, which may help in improving their mathematics performance, hence better career advancements.

Finally, the results might contribute to the body of knowledge already available on the predictive power of academic resilience and psychosocial support in mathematics. This may benefit future researchers by providing a basis for their research and exploration of different educational contexts.

1.10 Theoretical and Conceptual Framework

1.10.1 Theoretical Framework

Positive psychology theory (Seligman & Csikszentmihalyi, 2000) and Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979) were used to guide this study.

1.10.1.1 Positive psychology Theory (Seligman & Csikszentmihalyi, 2000). The positive psychology theory focuses on human strengths and virtues that enable individuals to survive even in difficult situations. It emphasizes the development of positive traits, emotions, and behaviors that cultivate an individual's well-being and success. In education, the theory highlights the importance of cultivating learners' internal capacities to help them handle academic pressure and challenges. According to Seligman and Csikszentmihalyi (2000), individuals who cultivate inner strengths, such as perseverance, reflective thinking, adaptive help seeking, and emotional regulation, are better positioned to sustain motivation and succeed despite adversities encountered.

Within the framework of this study, positive psychology provides the theoretical foundation for understanding academic resilience as a multifaceted construct. The first component, perseverance, represents the ability of learners to remain dedicated to their academic goals despite challenges. It entails persistence, self-discipline, and the courage to keep striving even when the results are unpredictable. Positive psychology views perseverance as a crucial internal strength that transforms obstacles into opportunities for personal growth and continuous improvement.

The second component, reflecting and adaptive help seeking, captures the cognitive and behavioral dimensions of academic resilience. Positive psychology holds that reflective learners can monitor their performance, learn from mistakes, and adjust their strategies accordingly. Adaptive help seeking demonstrates maturity and openness, where learners recognize the need to support one another. Such reflection and proactive behavior signify emotional intelligence, self-awareness, and problem-solving abilities that promote both academic and individual growth.

The third component, negative affect and emotional response, describes the emotional processes involved in dealing with academic challenges. Positive psychology acknowledges that negative emotions such as anxiety, frustration, or disappointment are natural reactions to academic failure. However, the theory emphasizes how individuals manage these emotions to maintain positive functioning. Learners who can regulate their emotions, stay calm, and refocus on their goals despite setbacks indicate high academic resilience. Emotional regulation helps sustain motivation and engagement, preventing discouragement from interfering with academic pursuits.

In essence, positive psychology theory provides a coherent explanation of academic resilience as the interplay of perseverance, reflection, adaptive help seeking, and emotional regulation. It

shows that academic resilience is not the absence of challenges but the presence of strengths that enable learners to cope, recover, and thrive academically. By applying this lens, the current study places academic resilience within a broader understanding of human potential and positive adaptation in the learning environment.

Research has applied the principles of positive psychology to demonstrate its effectiveness in promoting academic resilience and positive educational performance. For instance, studies by Datu et al. (2021) showed that interventions promoting academic buoyancy, which foster optimistic self-beliefs, enhance students' engagement in learning and academic achievement. Similarly, research by Li and Yang (2021) found that programs emphasizing resilience and psychological strengths significantly improved the mathematical performance of struggling students. Furthermore, Finkelstein-Fox et al. (2021) demonstrated that academic resilience training focusing on positive coping strategies increased the persistence of STEM students.

Research applying the principles of positive psychology in education has demonstrated that strengthening internal resources enhances academic resilience and promotes overall learner well-being. Interventions that nurture perseverance, reflective thinking, adaptive help seeking, and emotional regulation have been shown to improve students' capacity to cope with academic challenges, sustain motivation, and engage more effectively in learning. When learners are guided to set realistic goals, reflect on their strategies, seek appropriate support, and manage their emotions constructively, they develop stronger coping mechanisms that enhance persistence and confidence in academic tasks.

Contextualized within this study, academic resilience is therefore expected to play a direct role in mathematics performance and in learners' broader well-being. By enabling students to persevere through difficult mathematical problems, regulate their emotions after failure, and seek assistance appropriately, academic resilience supports both immediate task performance

and long-term academic trajectories. Beyond test scores, strengthened academic resilience promotes learners' psychological well-being, confidence in learning, and continued participation in schooling. Framing the study through this theoretical lens provides a meaningful basis for interpreting how positive psychology contributes to improved mathematics performance and to the holistic development of the learner.

1.10.1.2 Ecological Systems Theory (Bronfenbrenner, 1979). The theory emphasizes the child's development as a complex system shaped by interconnected relationships and influenced by various layers of the surrounding environment. It proposes that students' development is shaped by multiple layers of interacting social and environmental systems. Its key tenets are that supportive structures across students' ecosystems instill educational values, reinforce academic effort, provide resources to overcome challenges, and transmit positive cultural narratives about competencies - thereby fostering favorable achievement outcomes (Bronfenbrenner, 1979).

Five environmental systems that have a significant impact on children's developmental outcomes range from intimate interpersonal relationships to broad cultural belief systems. These are microsystem, mesosystem, ecosystem, macro system and chronosystem. Students' development is to the largest extent influenced by their microsystems, including peers, family, and school, where they actively interact and construct their experiences. The mesosystem, the interaction between microsystems, optimizes development when supportive links exist, such as a nurturing family encouraging scholastic activities (Bronfenbrenner, 1979). The ecosystem, is an indirect environment, for instance, the availability of resources such as mathematics textbooks and revision materials. The chronosystem in this context refers to socio-historical conditions like growing up in a digital world, which also impact students' development. An environment that has a positive influence of social media offers the students psychosocial

support needed to improve their performance in mathematics hence good academic performance.

Applying this lens, psychosocial support facilitates students' positive learning outcomes by providing encouragement, tutoring assistance, constructive feedback, and growth mindset messaging across layered ecosystems (Bronfenbrenner, 1979). Specifically, math-focused support from parents, teachers, and peers in students' microsystems develops self-efficacy beliefs, motivation, and adaptive achievement behaviors. Mesosystem linkages, say between families and schools, provide complementary learning structures across settings. Exosystems and macrosystems transmit cultural narratives expecting student effort - not innate talent - to produce math success. In conclusion, when all systems work together, the best result is obtained.

Overall, the ecological systems theory provides a clear explanation of how the indicators of psychosocial support operate across various systems. The social support network is grounded in the interplay between the microsystem and mesosystem, where learners build strong relationship ties. Family-based psychosocial support is directly derived from the microsystem through active parental involvement and nurturing family relationships. Communicative support arises from effective interactions within and between microsystems that ensure learners receive consistent emotional and academic guidance. The supportful disposition is cultivated through macrosystem influences that promote positive values and social attitudes toward learning. Psychological support availability emerges from the exosystem, where institutional and community structures provide indirect yet essential resources for learners' well-being.

Studies leveraging ecological systems theory have demonstrated how multidimensional psychosocial support enhances student outcomes. For instance, Barger et al. (2019) found that math-focused support across micro-, and mesosystems improved Latino students' mathematics motivation and grades. Van Loon et al. (2020) showed that school-based tutoring combined

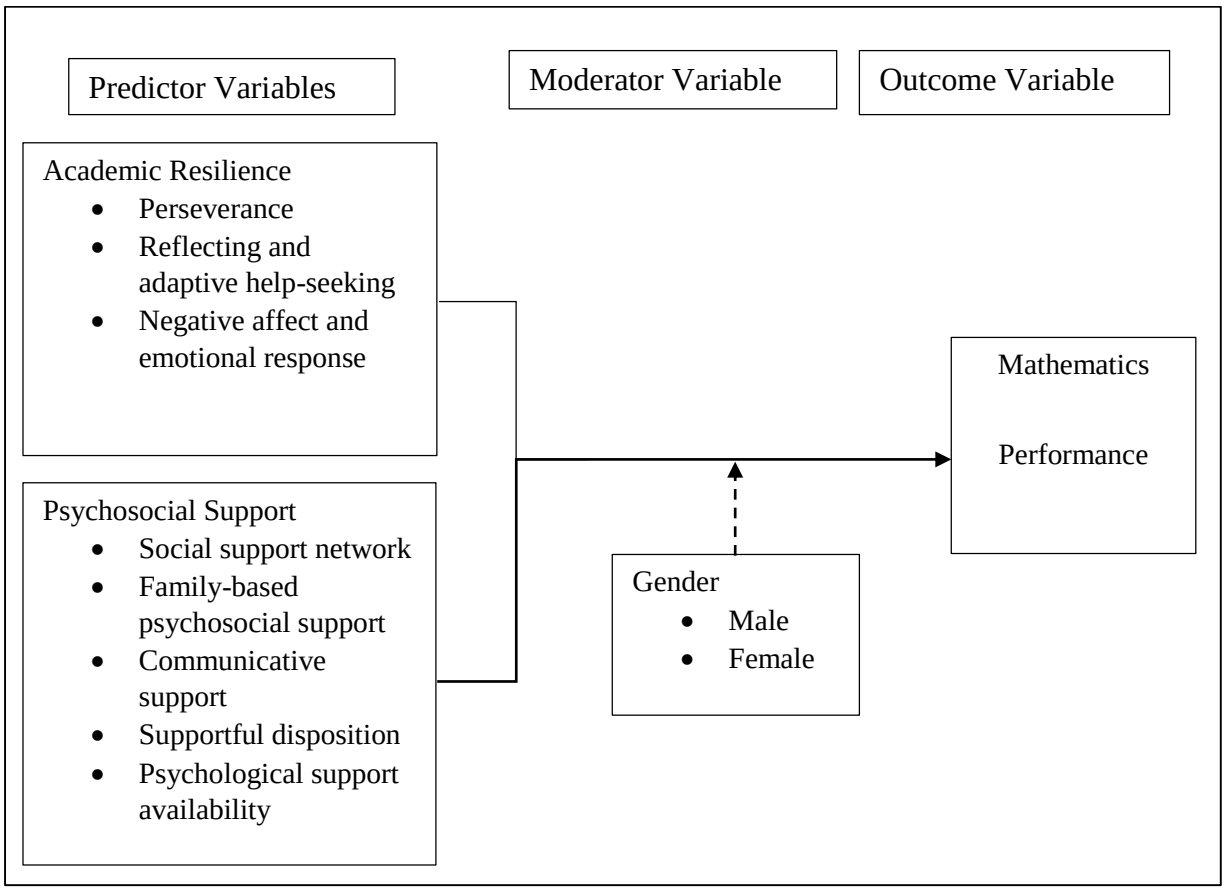
with family encouragement increased struggling students' self-efficacy and competence in math. Lastly, Kotok et al. (2017) demonstrated macrosystem narratives valuing education strengthened achievement motivation across immigrant communities. In sum, the theory aptly explains how psychosocial support links to favorable academic and mathematics outcomes.

The combined application of positive psychology and ecological theories denotes that psychosocial support enhances academic resilience and scholastic success by fostering personal characteristics and creating nurturing environments (Antony, 2022). This reciprocal mechanism is characterized by intricate social interplay both within these systems and between them. A child's academic resilience is conceptualized as nurtured through social interactions.

1.10.2 Conceptual Framework

Figure 1.1

Relationship Among the Variables



Source: Researcher's conceptualization, 2025

The correlations between the research variables are shown in Figure 1.1. Mathematics performance was the outcome variable, while academic resilience and psychosocial support were the predictor variables. Gender was hypothesized as the Moderator variable. Academic resilience and psychosocial support are hypothesized to correlate with mathematics performance. It was also hypothesized that there would be gender differences in academic resilience, psychosocial support, and mathematics performance.

1.11 Operational Definition of Terms

Academic Resilience:	It is a student's ability to overcome academic challenges, study pressure in school, and cope over time, measured as the summated score of the Academic Resilience Scale (Cassidy, 2016).
Mathematics Performance:	This referred to the mean scores attained by form two students in mathematics at the end of the year 2023 examination results.
Psychosocial Support:	This refers to the care and emotional support accorded to form two students from a social environment, for instance, from friends and family, as reflected in the total score on the Psychosocial Support Scale (Padhy et al., 2022).

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This section presents the review of the related literature connection to the study's objectives. Particularly, the related literature entails the relationship between academic resilience and mathematics performance, the relationship between psychosocial support and mathematics performance, the gender differences in academic resilience and psychosocial support, and the predictive role of academic resilience and psychosocial support on mathematics performance. The chapter concludes with a summary of the gaps identified throughout the review of the literature.

2.2 Relationship between Academic Resilience and Mathematics Performance

The majority of empirical research investigating the connection between mathematical performance and academic resilience has found a positive one. The influence of contextual elements like race and immigration status on academic resilience is even more obvious.

In a study conducted in Europe among 22 European Union countries, García-Crespo et al. (2022) investigated academic resilience in mathematics performance. The sample comprised 96556 fourth-grade students with a mean age of 10.24 years. The study employed a correlational research design, gathering data through self-report questionnaires. The findings indicated academic resilience to a significant relationship with mathematics performance ($r = .26, p < .001$). Nevertheless, the findings of a study sample involving fourth-grade students in primary school may not be generalizable to form three secondary school students due to variation their cognitive abilities, hence the need for the current study.

A study by Karabıyık (2020) examined the relationship between academic achievement and academic resilience among Turkish university students. The study included 198 participants, with 137 females (69%) and 61 males (31%), and an average age of 21.65. A cross-sectional survey design was utilized, with data collected through Academic Resilience Scale questionnaires and analyzed using SPSS version 22. Findings indicated a significant correlation between academic resilience and academic achievement ($r = .37, p < .01$). Unlike Karabıyık's (2020) study, the current study focuses on academic resilience and mathematics performance.

In Khomas region, Namibia, Neshila (2018), conducted a study on a sample of 8 participants in senior secondary on academic resilience and mathematics performance. Interpretive qualitative research design was used to analyze data. The study involved purposively selected grade 10 learners for interviews. Results indicated academically resilient students performed well despite coming from poverty-stricken families and low social economic status. The study used a phased interview approach to collect data which provide rich descriptive data. However, the phased interviews are prone to higher levels of subjectivity. Self-report questionnaires were employed in this study to measure the study variables in a more objective manner.

Gachigi (2018) carried out a correlational study in Nairobi, Kenya, to investigate the relationship between academic resilience and mathematical performance. For the study, a sample of 500 students (288 boys and 212 girls) were used. The results showed that learners' academic achievement was positively correlated with their academic resilience (r=.29,p<.01). Although the study is a preliminary exploration of the relationship between mathematical performance and academic resilience, it was carried out in an urban environment, which presents different difficulties than those in rural areas. Urban environments may produce

disparities in the needs for academic resilience, which could then be extrapolated to a rural population.

From the above review, most studies affirm a positive link between academic resilience and mathematics performance but reveal notable gaps. Reviewed studies have focused on younger or university samples with some relied on qualitative or urban-based contexts. The current study sought to provide evidence on how academic resilience relates to mathematics performance among secondary school students, specifically in Nakuru County, using quantitative based methods.

2.3 Relationship between Psychosocial Support and Mathematics Performance

Mathematics performance can be potentially challenging for students. There is a need for a support framework, especially for vulnerable students. While the majority of the studies show psychosocial support is linked with better performance in mathematics, this has not always been the case across the board. This subsection explores the variations in the relationship across the literature.

Forsberg and Schultz (2023) investigated the relationship between academic underachievement and psychosocial support in Gaza, Palestine. The study concentrated on mathematics among young people affected by conflict. The inquiry utilized a sample of 300 students, consisting of 150 males and 150 females, with an average age of 12.01 years. A randomized control trial design was employed for the study, with data collection relying on students' self-reports. Notably, psychosocial support was noted to have a direct impact on academic underachievement ($F = 33.58, p < .001$). While a randomized control trial design helps establish causal evidence, it fails to explain how the variable psychosocial support and mathematics performance interact naturally. Hence, this study adopted a correlational research design which measures relationships between variables as they occur naturally.

Duffin et al. (2020) examined how instructional strategy and psychosocial support affected the academic performance of college algebra students in the mid-south region of the United States. For the study, 103 students in all—61 girls and 42 boys—were enlisted. The average age of the pupils was 19.94 years. A quasi-experimental research design was also used. A MANOVA test established that planned psychosocial support had a comparatively higher incremental effect than the instructional approach in academic achievement in the algebra program ($F = 3.10, p < .01$). Nevertheless, the current study was necessary due to the limited correlational evidence explaining the strength and nature of associations between psychosocial support and academic achievement, in our case, mathematics performance, when these factors are not manipulated.

Olayemi et al. (2021) conducted a mixed-method quasi-experimental study in Sudan on psychosocial support and mathematics outcomes. A sample of 2982 with 1814 male and 1160 female students from primary school, grades 3, 5 and 6 were used for the study and the theory of change guided the study. The study indicates that mathematics outcomes are significantly associated with psychosocial support that the students get. However, due to developmental differences, the results from a primary school sample might not apply to secondary school pupils, which is why the current study was necessary.

Bofah and Ntow (2017) assessed whether social support was correlated to students' mathematics-related self-beliefs belief and performance in Ghana. A sample of 2034(58.2% girls and 41.8% boys) 12-grade high school students were used with a mean age of 18.49. The research utilized self-report questionnaires for data collection and a correlational research design was utilized. The findings demonstrated that students' performance and self-belief in mathematics are significantly predicted by social support ($r = .13, p < .01$). Among the types of support, teacher support had the strongest influence on students' self-concept and

mathematics performance. Additionally, students' self-confidence in mathematics was found to mediate the relationship between social support and their performance in mathematics. The current study was done in a different educational context with varied educational practices and norms to advance the existing literature.

In Kenya, there is scanty information directed towards psychosocial support and mathematics performance. To evaluate the connection between academic achievement, student burnout, and social support, Oyoo et al. (2018) conducted a related study using a sample of 714 secondary school students. The study used a sample of 714 form four students. As hypothesized, perceived social support was significantly and negatively predictive of student burnout, while burnout was also significantly predictive of a decrease in academic achievement. Zero-order correlations show a non-significant positive, albeit weak link between social support and academic achievement ($r = -.24, p < .05$). While Oyoo et al. (2018) investigated the relationship between social support and general academic achievement, there remains a gap in understanding how psychosocial support relates specifically to mathematics performance among secondary school students in Kenya. Our study sought to fill this gap by examining the link between psychosocial support and mathematics performance within the Kenyan secondary school context.

It is clear from the reviewed research that academic and mathematical performance are significantly impacted by psychosocial support. However, the link between the two as been inconsistent across contexts, age groups, and designs. Most of the reviewed studies used experimental or quasi-experimental methods, limiting understanding of the variable's natural relationships. Furthermore, little is known about how psychosocial support relates specifically to mathematics performance among Kenyan secondary students, specifically Nakuru County.

2.4 Gender Differences in Academic Resilience and Psychosocial Support

This section presents related literature on gender differences in academic resilience and psychosocial support.

2.4.1 Gender Differences in Academic Resilience

Gender differences in academic resilience, especially in STEM subjects have piqued the interest of researchers. A correlational study was conducted by Rao and Krishnamurthy (2018) in India on gender differences in academic resilience among 125 students. The age group of the students used was between 12-17 years. The results found that students did not vary in their levels of academic resilience by gender hence there was no gender sensitivity ($t = 1.25, p > .05$), proof that the urban Indian environment has evolved leading to little variation across genders. This study was conducted in an urban setting in India which has a different geographical and cultural context compared to Kenya. The current study therefore sought to advance the study from a different cultural set up.

Mahama et al. (2023) examined the disparities in academic resilience between male and female students in a different study conducted in Ghana. The study used a sample of 357 university students, 183 of whom were male and 174 of whom were female. The average age was 22.61 years. Both convenience sampling and basic random sampling were used to choose the responders. The study used a descriptive quantitative design. The findings show that when it came to handling the COVID-19 pandemic, male university students demonstrated greater levels of academic resilience than female students (F (3,353) = 4.47,,p<.01). The current study concentrated on Kenyan secondary school students, whose developmental characteristics may differ from those of university students.

In Trans-Nzoia County, Kenya, Kelly and Ireri (2022) undertook a study to establish gender differences in academic resilience. The study recruited a sample of 281 secondary school-

going respondents (143 male and 138 female) to fill in questionnaires. Flach theory of resilience was used to guide the study. Analysis of variance showed significant differences in academic resilience by gender with girls demonstrating higher levels ($t = -4.11, p < .001$). This study gives a current view on academic resilience in the Kenyan secondary school environment. While the study targeted academic resilience through the lens of the positive psychology theory of resilience the current study used Bronfenbrenner's ecological systems theory in a rather specific scope of mathematics achievement. It was hypothesized that considering the challenging nature of mathematics, academic resilience is bound to be different.

It is clear from the studies discussed in this section that students from various communities have differing opinions about how gender affects psychosocial support. A study on the gender disparities in academic resilience among secondary school students in Nakuru County, Kenya, was necessary, even though the discrepancies might be explained by contextual variations.

2.4.2 Gender Differences in Psychosocial Support

Findings across the world show that, whereas women seek psychosocial support more readily than men, men prefer action-oriented support (Guney et al., 2024). There are however variations influenced by cultural norms. In Spain, Fernandez-Lasarte et al. (2019) did a correlational research study to find out gender differences in, among other variables, psychosocial support in secondary students. A sample of 1457 was used, which comprised 743 female and 714 male students with a mean age of 14.03 years. Questionnaires were used to collect data on teacher support, family support and classmate support. Significant gender differences in social support and academic engagement by gender were found, whereby, girls receive more social support from friends than their male counterparts ($t = 2.50, p < .01$).

However, with teacher support and family support, the differences were not statistically significant. This study was advanced in a different cultural milieu that is in a Kenyan context.

Kugbey et al. (2015) conducted a study with 165 undergraduate students (89 females and 76 males) from the University of Ghana to explore gender differences in social support and their effects on depression, anxiety, and stress levels. The sample had an average age of 22.98 years, and a cross-sectional survey design was used. Analysis done through independent t-tests and MANOVA revealed significant gender differences, with male students reporting higher levels of depression, anxiety, and stress ($t = 4.95, p < .001$). This suggests that female students may experience better psychological functioning, potentially due to greater care and support received during challenging times. In contrast, the current study focused on secondary school students in Kenya who may vary from university students in terms of developmental attributes.

Dismus and Tom (2023) did a cross-sectional study on the relationship between gender differences and social support in cognitive engagement in Kakamega County, Kenya. A core of 450 randomly selected students was recruited to fill in questionnaires. The research findings indicated that males and females are different in the way they translate the available support, with respect to engagement in school ($t = 3.86, p < .01$). Male students' pathways to cognitive engagement were limited to that of parental support whereas females had several pathways through which support is translated into engagement for instance teacher support and parental support. Unlike Dismus and Tom's (2023) which was grounded on the social cognitive theory, the current study was rooted in Bronfenbrenner's ecological systems theory which proposes that human development occurs within a set of systems that contributes differently to the psychosocial support a person receives.

From the studies reviewed in this section, psychosocial support is perceived differently by students from different cultural backgrounds. This opens an avenue to explore the gender

differences in psychosocial support among secondary school students in Nakuru County, Kenya.

2.5 Predictive Weight of Mathematics Performance from Academic Resilience and Psychosocial Support

There is a paucity of research investigating the predictive weight of academic resilience and psychosocial support on mathematics performance. In China, Wen and Li (2022) assessed the contribution of dispositional optimism, resilience, and social support to academic achievement. Convenience sampling was employed to recruit a sample of 527 students from both primary and secondary educational levels. The study used a mediated moderated model where optimism was hypothesized to be a mediator between psychosocial support and academic achievement. Resilience moderated the three paths among the variables. SEM analysis showed that the model accounted for 27.4% of the change in mathematics and English scores. The study established that the interaction between resilience and social support has a substantial predictive effect on dispositional optimism and academic performance. The study however used a convenience sample which may diminish the potential for generalizability of the findings. In the current study, probability-based sampling techniques were used to counter this shortcoming.

Tavajjohi and Tamannaifar (2023) sought to explore the relationship between coping styles, psychosocial support, and students' test anxiety under the moderation of resilience. The study sampled 316 high school girls in Iran. Resilience was strongly and negatively correlated to test anxiety ($r = .63$ $p < .01$) whilst psychosocial support exhibited a weak relationship ($r = .2$ $p < .01$). Resilience was also found to mediate the relationship between psychosocial support and test anxiety. This study assessed the relations among the variables among students of one gender. Additionally, although the weights of the respective predictors were confirmed to be consistent with those in similar studies the study focused on test anxiety as the outcome

variable. There was, therefore, a need to conduct a study on mathematics performance which entails all genders.

There is a paucity of local information on the predictive weight of mathematics performance from academic resilience and psychosocial support. However, (Oyoo, 2018) conducted a related study. The study by Oyoo et al. (2018) in Homabay County, Kenya sought to establish the interrelationships between, among other variables, academic resilience, social support, and Academic achievement. To assess the relative contribution and the relationships between the variables, a path analysis model was employed. Resilience had a significant, albeit weak, correlation and was comparatively more closely related to achievement (r=.19 p < .001) than perceived social support which was weaker and insignificant (r=.05). While the study provides a picture of the contribution of resilience and social support in the Kenyan curriculum context and academic achievement in general, the current study focused on mathematics performance specifically, in a different locale that is Nakuru County due to limitation of generalizability of findings.

From the reviewed literature, studies revealed methodological and contextual gaps, including dependence on convenience samples, one gender participation, and limited generalizability across settings. Consequently, the current study was conducted to with the goal of addressing the identified gaps through the use of a probability-based sample, gender-inclusivity, and context-specific investigations.

2.6 Summary of the Reviewed Literature and Gap Identification

The reviewed literature adequately highlights the significance of academic resilience and psychosocial support, specifically in influencing students' mathematics performance. Studies reviewed under first objective generally affirm a positive relationship between academic resilience and mathematics performance. However, most of the reviewed studies focused on

younger learners or university students while others used qualitative designs. As a result, there was need to examine how academic resilience relates to mathematics performance among secondary school students in Nakuru County using a quantitative approach to generate context-specific evidence.

Reviewed literature based on the second objective highlighted that psychosocial support significantly influences students' academic and mathematics outcomes for most of the studies. Nonetheless, the results have been inconsistent across contexts, age groups, and research designs with some of the previous studies employing experimental and quasi-experimental methods, which limited the understanding of how psychosocial support and mathematics performance relate naturally. Furthermore, there is limited empirical evidence within the Kenyan secondary school context, particularly in Nakuru County, necessitated the current study.

Literature reviewed based on the third objective revealed mixed findings on gender differences in both psychosocial support and academic resilience. Variations were often linked to cultural and contextual differences, suggesting the need for localized research to explore gender-based patterns in academic resilience, psychosocial support, and mathematics performance among Kenyan students. Finally, studies reviewed in line with the fourth objective highlighted several gaps including, the use of convenience sampling and limited gender inclusion which led to low generalizability of the findings. As a result, the present study addressed these limitations through the use of probability-based sampling techniques and gender-inclusivity to assess the predictive weight of academic resilience and psychosocial support on mathematics performance among secondary school students in Nakuru County.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

In the section that follows, the research methodology is outlined in detail. It covers the research design, variables, and study locale. Further, the study's target population, techniques used in sampling, as well as the sample size determination are described. The instruments, pilot study, and their validity and reliability are discussed thereafter. The chapter finalizes with the techniques used in data collection, analysis methods, and concludes with the logistical and ethical considerations.

3.2 Research Design

In the current study, a correlational design was implemented, which is a non-experimental design (Dubey & Kothari, 2022). According to Creswell and Creswell (2017), the design is useful when ascertaining whether there are relationships among variables, important when making predictions. Hence, the aim was to look at the relationship between predictor variables, that is, academic resilience and psychosocial support, without manipulating them, and mathematics performance as the outcome variable. The current study found this design applicable since it looked into the relationships between research variables, that is, academic resilience and psychosocial support as correlates of mathematics performance. Additionally, the methodology was found to be relevant for the study of correlational analysis of mathematics performance, academic resilience, and psychosocial support.

3.3 Research Variables

Academic resilience and psychosocial support were the predictor variables, while mathematics performance was hypothesized as an outcome variable. Academic Resilience was obtained

from the computation of a single total score at the interval level, on the academic resilience questionnaire. Psychosocial support was obtained from totaling items at an interval level on the psychosocial support questionnaire. Gender was a moderating variable and was measured at the nominal scale. A mathematics performance score sheet's interval-level score was used to measure mathematical performance.

3.4 Study Locale

The locale of this study was Njoro Sub-County, one of the administrative centers in Nakuru County, Kenya. Although the sub-county is predominantly rural, it borders the rapidly growing metropolitan Nakuru City. The geographical area, therefore, introduces a unique blend of rural and urban settings. As such, the students admitted to these schools are characterized by diverse cultural backgrounds, ethnicities, and socioeconomic backgrounds (Mwangi, 2018). As a result, there are different belief systems and psychosocial experiences in Njoro subcounty schools (Mwangi, 2018).

Despite the diversity of learners, availability of educational resources, and proximity to the urban infrastructure, Njoro Sub-County has consistently performed poorly in mathematics at the KCSE compared to other sub-counties. Noteworthy, performance has declined from 2018 to 2022, with neighboring sub-counties, for instance, Molo and Gilgil, maintaining averages of above 3.5 during the same period (County Director of Education Office, 2023). In comparison to neighboring Nakuru County, for example, Bomet and Kericho Counties maintained an average above 5.5 in mathematics performance, whereas Narok and Laikipia had averages between 5.00 and 5.30 (Ministry of Education, 2023). These counties have similar rural setting to Njoro, However, Njoro subcounty persisted in poor mathematics performance. Noteworthy, Njoro Sub-County presents a distinct demographic profile. According to the Census conducted in 2019, the sub-county has a population of 230,000 residents, with school-age children

accounting for a significant proportion (Kenya National Bureau of Statistics [KNBS], 2019). The economy is agrarian, with most residents practicing small-scale farming and informal trade. These economic conditions limit the capacity of families to provide the needed psychosocial support for their learners. Most schools in the sub-county are overcrowded, with inadequate facilities and high teacher-student ratios (Nakuru County Government, 2022). Such factors tend to adversely affect the learner's academic resilience and their ability to endure the academic challenges. In addition, mathematics recorded the lowest performance compared to other science subjects over five years in Njoro sub-county.

Due to the declining mathematics performance, comparative disadvantage with neighboring sub-counties and counties, along with psychosocial and socio-economic factors, and the lowest performance among science subjects, Njoro sub-county was suitable for the study.

3.5 Target Population

The research study's target population was 3359 form two students (1769 girls) from 52 selected public secondary schools in the above-mentioned locale, in 2023. This includes, boys boarding schools, girls boarding schools and co-educational schools. Public schools were selected for this study because, as compared to private schools, they are more inclusive and tend to enroll students from diverse socio-economic backgrounds. Therefore, public schools provide a rich foundation of understanding student adaptability to academic challenges across different life circumstances (Ministry of Education, 2021). Additionally, public schools largely depend on government funding, which is usually inadequate to cater to large student populations. The end results are overcrowded classrooms, inadequate teaching and learning resources, and overstretched infrastructure (Taie & Goldring, 2020). Such conditions negatively affect teaching quality and students' performance. Consequently, they create a conducive environment where academic resilience is essential for the students (Mwangi, 2018).

Form two students were chosen for this study as they represent a transitional phase, where academic resilience starts to develop. By form two, students have adjusted to the secondary school learning routines, academic pressures, and expectations, and are at an important stage of making career choices that determine their future career paths, with mathematics serving as a core determinant in subject and career selection (Njoki, 2018). Furthermore, according to Omwenga and Mwangi (2024), form two students have started forming stable academic identities and are at a critical point of being influenced by peer dynamics. Such factors can either reinforce or, on the contrary, affect their motivation and academic performance.

3.6 Sampling Techniques and Sample Size Determination

3.6.1 Sampling Techniques

Purposive and probability sampling techniques were used to arrive at the intended sample. Form two students in public schools in Njoro Sub County were purposively selected owing to the persistent poor mathematics performance. Stratified random sampling was employed in the grouping of participating schools based on gender and school type. Cohen et al. (2018) found this technique useful as it helps in classifying a population based on similar characteristics portrayed. This, therefore, helped in categorizing public secondary schools into boys and girls boarding schools and mixed-gender schools. Lastly, the respective respondents from the sampled schools were selected from the pool using simple random sampling. The main advantage of this is to ensure there is an equal chance of selection of the students to take part in the study (Guest et al., 2020).

3.6.2 Sample Size Determination

Krejcie and Morgan's (1970) table (Appendix C) was used as the basis for arriving at the ideal sample based on the targeted population. Considering that the study targeted 3359, the sample size was, therefore, 335. To cater for the problem of non-response, incomplete questionnaires,

and to maintain representativeness during data collection, the researcher increased the sample by 15% to use 385 respondents. This catered for the requirement of the sample size, which should be between 10-15 per cent of the population (Bolarinwa, 2020). The formula by Kish (1965) was used to determine the respective respondents for each stratum:

$$n_h = \frac{N_h}{N} \times n$$

Where, n_h= sample size allocated to the given stratum, N_h= population size of the given stratum, N = total population size across all strata, and n = total sample size to be drawn.

The school strata were adequately sampled. According to Oribhabor & Anyanwu (2019), a sample of 10 to 30 percent is considered an adequate representation of the population. Notably, the disproportionate stratified sampling was used to arrive to the 10 schools used in the study (Lynn, 2019).

Table 3.1

Sample Size Determination

School Type	Target population			Sample		
	Schools	Male	Female	Schools	Male	Female
Girls Boarding	8	_	803	1	_	92
Boys Boarding	7	659	_	1	75	_
Co-educational	37	931	966	8	107	111
Sub Total	52	1590	1769	10	182	203
Total	52	3359		10	385	

Source. Nakuru County District Education Office

3.7 Research Instruments

A self-report questionnaire was administered to the respondents (Appendix B). The instrument consists of five subsections. The first subsection is the respondents' demographic information. This was followed by two adapted scales: the Academic Resilience Scale and the Psychosocial Support Scale. To measure mathematics performance, the end-of-term three 2023 mathematics mark sheet was used. The tools are discussed in detail in the following subsections.

3.7.1 Academic Resilience Scale (ARS-30; Cassidy, 2016)

To measure academic resilience, the Academic Resilience Scale, abbreviated ARS-30 was used. Particularly, the 30-item instrument was adapted to measure the students' academic resilience on a five-point Likert scale—1 (*unlikely*) to 5 (*likely*). One of the sample items include "*I would do my best to stop thinking negative thoughts*." Cassidy's (2016) study established the reliability of the tool, reporting an acceptable internal consistency of α =.80. Further studies have established the reliability of the instrument. For instance, Chisholm-Burns et al. (2019) established the reliability of the ARS-30 across three different cultures, reporting acceptable internal consistent of α = .93 (Spanish sample), α = .90 (Chinese Sample), and α = .94 (Turkish sample). A composite score involving tallying all individual scores of the ARS-30's items was computed. A total score of 30-50 was considered to be reflective of low academic resilience, while a total score above 100 was considered to be reflective of high academic resilience. The ARS-30 is available in the public domain for free with the author permitting its use provided its users give proper attribution.

3.7.2 Psychosocial Support Scale (Padhy et al., 2022)

The study adapted the Psychosocial Support Scale by Padhy et al. (2022) to determine the students' levels of psychosocial support. The tool is a 22-item 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). Tool validation efforts yielded acceptable validity

and reliability coefficients. In the development phase, the tool was established to have an acceptable internal consistency of $\alpha = .79$ in an Indian secondary school sample. Scoring involved totaling the items. Following the authors' guidelines, the scoring of items ranges from 22 to 110, with scores of 44 and below reflecting lower self-reported levels of psychosocial support, scores ranging from 45 to 87 indicating moderate psychosocial support, and those above 88 indicating high levels of psychosocial support. The researcher acknowledged the author in the references and obtained a letter of permission to use the tool, which was granted.

3.7.3 Mathematics Results Mark sheet

Mathematics performance was determined using the end-of-term three 2023 mathematics examination scores. These scores were considered to be a reliable measure of students' performance in mathematics, as end-term examinations are commonly used as summative assessments to evaluate learners' progress and make important academic decisions, including placement and grading for KCSE index numbers (Soi, 2017). To allow for comparison of students across schools, the raw scores were first converted into z-scores and then transformed into t-scores

3.8 Pilot Study

A group of 30 (15 males and 15 females) students was randomly selected from one co-educational day school in Njoro Sub County. This was primarily to ascertain valid and consistent measures of the constructs under study. Piloting also helped in modifying difficult questions, hence avoiding ambiguity. For instance, it was noted that some of the respondents in the pilot overlooked the instructions in the vignette and, consequently, had difficulties in filling in the ARS-30 Scale. This informed the administration of the questionnaires, whereby the researcher thoroughly took the respondents through the instructions. This saved time and resources during data collection. Piloting also helped the researcher to avoid any unforeseen

issues that might affect the research. This school was however excluded from the main research study. The tools' validity and reliability were also assessed. The findings are reported in the sections that follow.

3.8.1 Validity of the Research Instruments

In this inquiry, content validity was assured in the current study through peer review and consultations with university supervisors to ensure that the variables under study are related to the questionnaires. Peer and expert reviews have, over literature been used as a way of ensuring credibility, legitimacy and quality of the measurement characteristics of an instrument (Tennent & Ross-Hellauer, 2020). Construct validity was ensured by the use of already established tools. As Kusi-Mensah et al. (2022) argue, using established instruments with well-established factor structures and published cross-cultural validity enhances the validity of the instruments.

3.8.2 Reliability of the Research Instruments

This study utilized the internal consistency method in measuring the consistency of the instruments. The approach is considered to be the most reliable measure of consistency (Amirrudin et al., 2021). Cronbach's Alpha coefficient measures the one-dimensionality of a construct being measured by several items by determining if the indicators measure the same characteristic. As per recommendations by Taber (2018), a coefficient of .70 or higher implies that the instruments explain at least half of the variance in the variables and are as such considered to be adequately measuring the latent construct under investigation.

The coefficients are presented in Table 3.3.

Table 3.2

Cronbach's Alpha Coefficients

Scale	Items	Authors α	Pilot α
Academic Resilience Scale	30	.90	.75
Perseverance	14	.83	.59
Reflecting and Adaptive Seeking Behavior	8	.78	.72
Negative Effect and Response	8	.80	.64
Psychosocial Support Scale	22	.79	.60
Social Support Networks	4	.62	.83
Family-Based Psychosocial Support	4	.61	.60
Psychological Support Deprivation	4	.61	.46
Psychosocial Support Availability	3	.67	.57
Communicative Support	3	.49	.56
Supportive Disposition	4	.58	.67

The Academic Resilience scale has an overall reliability of α =.75, above the recommended alpha level of α =.70, as shown in Table 3.3. With α =.59, the perseverance dimension had the lowest reliability of the three. The reliability coefficients are comparable to those found in earlier research using Chinese (α =.90), Turkish (α =.94), and Spanish (α =.93) samples, despite this less-than-ideal value (Chisholm-Burns et al., 2019). The psychosocial scale, overall, demonstrated satisfactory internal consistency with α = .83; however, reliability within the individual domains was notably lower. This reduced reliability may be attributed to the limited number of items within each domain, as Cronbach's alpha is, in part, dependent on the number of items included in a scale (Robertson & Evans, 2020). These findings suggest that, while the overall scales are reliable, caution should be exercised when interpreting scores at the domain level.

3.9 Data Collection Techniques

Students participating were briefed on the scope and procedures to be used. The researcher, later on, distributed the questionnaires to the students and gave them the necessary guidance on how to fill out the questionnaires. The process took about 30 minutes on average. The researcher went ahead to collect data on the students' mathematics performance from the test results kept by their respective teachers. Thereafter, any identifying information (admission numbers) was redacted to uphold anonymity and confidentiality when answering the questionnaires.

3.10 Data Analysis

The obtained data were coded, keyed into the computer, and entered into the Statistical Package for Social Sciences (SPSS) V25. Data were cleaned and assessed to meet statistical assumptions before conducting a descriptive analysis of the variables. Thereafter, inferential statistics were used in analyzing the objectives. The hypotheses that follow were formulated and tested at an alpha level of significance of 0.05.

H_{01}: There is no significant relationship between academic resilience and mathematics performance among form two students in Nakuru County.

Test: Pearson Product Moment Correlation Coefficient.

H_{02}: There is no significant correlation between psychosocial support and mathematics performance among form two students in Nakuru County.

Test: Pearson Product Moment Correlation Coefficient.

H_{03}: There are no significant gender differences in academic resilience, psychosocial support and mathematics performance among form two students in Nakuru County.

Test: Independent samples t-test.

H_{04}: There is no significant predictive weight of academic resilience and psychosocial support on mathematics performance among form two students in Nakuru County.

Test: Multiple regression.

3.11 Logistical and Ethical Considerations

3.11.1 Logistical Considerations

A clearance letter from Kenyatta University Graduate School was first obtained before the researcher proceeded to apply for a research permit from the National Commission for Science, Technology, and Innovation. This was followed by the presentation of the research permit to the County Executive in charge of Education, who allowed for data collection in Nakuru County. Thereafter, the subcounty Education office was informed of the intended study. Finally, appointments were sought from principals of selected schools before the researcher embarked on data collection.

3.11.2 Ethical Considerations

The respondents gave informed consent to participate in the study (See Appendix A). The researcher assured them of anonymity and confidentiality once they had agreed to take part in the research. In this case, only the assigned codes were used for identification and no names were required during the filling of the questionnaires.

CHAPTER FOUR

PRESENTATION OF FINDINGS, INTERPRETATION, AND DISCUSSION

4.1 Introduction

In detail, the findings, their interpretations, and the discussions in line with the objectives of the study are discussed in the section that follows.

4.2 General Demographic Information

In this section, the respondents' return rate, and the description s of the respondents' demographic attributes are outlined.

4.2.1 Respondents' Return Rate

Ten secondary schools in Njoro Sub-County, Nakuru County, received a total of 385 questionnaires. After being returned, each questionnaire was entered into SPSS. Data cleaning looked into. Three questionnaires were found to have over 50% of their responses missing and were therefore excluded from the analysis. For the remaining questionnaires, the maximum number of missing entries was five per questionnaire, prompting a systematic assessment of missing data. As noted by Srijan et al. (2023), effective handling of missing data requires an understanding of the nature of the missingness. The Little's Missing Completely at Random (MCAR) test was used to ascertain this, and the results showed a non-significant p-value of.758. A non-significant result means that there are no systematic patterns in the missing data (Rioux and Little, 2021). Consequently, the missing entries, which represented only 0.5% of the original dataset, were imputed using linear interpolation.

Linear imputation preserves the relationships by leaving the mean of the variables unchanged and by extension, the dataset remains largely unchanged (Karmitsa et al., 2020). The resulting sample against the expected are outlined in Table 4.1.

Table 4.1

Questionnaires Rate of Return

School Type	Expected Return Rate		Achieved Return Rate (%)		
	Male	Female	Male	Female	Total
Boys Boarding	75	--	75 (100)	--	75 (100)
Girls Boarding	--	92	--	90 (97.8)	90 (97.8)
Co-educational	107	111	106 (99.1)	111 (100)	217 (99.5)
Total	182	203	181(99.5)	201 (99.0)	382 (99.2)

Table 4.1 indicates that the respondents' return rate was at 99.2%. Boys had a marginally higher return rate (99.5%) than girls (99.0%). Overall, the return rate was appropriate for the current study considering that the average return rates in psychological and educational research have been reported to range between 70% to 94% (Buscha & Dickson, 2023).

4.2.2 Students' Demographic Attributes

In this section the students' demographic characteristics, gender, age, and school category are discussed. Table 4.2 outlines the students' genders.

Table 4.2

Students' Gender

Gender	Frequency	Percentage (%)
Male	181	47.38
Female	201	52.62
Total	382	100.00

As denoted in Table 4.2, girls comprised slightly over half of the sample at 52.62%, while boys accounted for 47.38%. These proportions closely mirror the gender distribution of targeted learners in Nakuru County, suggesting that the sample is representative of the broader student population (Zach, 2020). Further, the students' ages were analyzed, and a description is portrayed in Table 4.3.

Table 4.3

Description of Students' Age

N	Range	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
382	9	13	22	16.29	0.96	0.44	4.31

Table 4.3 indicates that, on average, students were aged 16.29, (*SD* = 0.96). This is in line with the average age of secondary school-going students in Kenya which ranges between 14 and 20 years (Ministry of Education, 2021). The age distribution was positively skewed, an indication that the majority of the students were above the mean age. However, the skewness (*Sk* = 0.44) and Kurtosis values (*Kur* = 4.31) point to an approximately normal distribution. As Orcan (2020) points out values between ± 1 and ± 10 for skewness and Kurtosis, respectively, are considered to be reasonably normal. An analysis of the distribution of age by gender was, thereafter, performed. Table 4.4 outlines this analysis.

Table 4.4

Students' Age by Gender

	N	Range	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
Male	181	9	13	22	16.43	1.11	0.60	3.87
Female	201	5	13	18	16.17	0.78	-0.48	1.81

As highlighted in Table 4.4, boys had a notably higher age on average (M = 16.43, SD = 1.11) than girls (M = 16.17, SD = 0.78). Equally, they had a higher range of scores (*Range* = 9) than girls (*Range* = 5) with a bigger dispersion of scores from the mean. To assess whether the mean differences in age by gender were significant, an independent samples t-test was performed. This is demonstrated in Table 4.5.

Table 4.5

Mean Differences in Age by Gender

t	*df*	*Sig* (2–Tailed)
2.70	380	.007

Table 4.5 reveals that the differences in age between boys and girls were statistically significant, t (380) = 2.70, $p < .01$. Therefore, boys were significantly older than girls. Additionally, the students' ages were analyzed across the three school categories. The findings on the same are expressed in Table 4.6.

Table 4.6

Students' Ages by School Category

	N	Range	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
Boys Boarding	75	5	14	19	15.96	0.99	0.17	035
Girls Boarding	90	5	13	18	16.06	0.83	-0.72	3.29
Coeducational	217	9	13	22	16.51	0.94	0.93	6.32

Table 4.6 shows that respondents in co-educational schools were slightly older (M = 16.51, SD = 0.94) than those in girls' (M = 16.06, SD = 0.83) and boys' boarding schools (M = 15.96, SD = 0.99). This suggests that there's a small but notable age difference among students in different school types. Moreover, students in coeducational schools had a wider age range *(Range* = 9) compared to students in boarding schools.

4.3 Findings on the Relationship Between Academic Resilience and Mathematics Performance

On the first goal, the extent to which academic resilience and academic achievement were linked was investigated. In the subsections that follow are the descriptive statistics on the mentioned variables, the hypothesis testing and lastly discussion of findings.

4.3.1 Descriptive Statistics of Academic Resilience Scores

Academic resilience was measured using an adapted ARS-30 scale by Cassidy (2016). The tool consists of 30 items on a five-point summative scale Further the tool has five dimensions. Items were scored by computation of a global score both at the scale and dimension level. The obtained scores were thereafter converted to average scores that ranged between 1 and 5 for

comparison across the dimensions (McNeish & Wolf, 2020). A description of the scores is provided in Table 4.7.

Table 4.8

Descriptives on Academic Resilience Scores

N	Range	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
382	2.43	2.43	4.87	4.13	0.39	-0.78	0.97

Table 4.7 outlines that the students' academic resilience scores ranged between 2.43 and 4.87 with a slight negative skewness. On average, the students had a score of 4.13 (*SD* = 0.39). The skewness (*Sk* = -0.78) and Kurtosis (*Kur* = 0.97) values are within the benchmarks of a reasonable probability distribution in line with the recommendations by Orcan (2020). Particularly, the average academic resilience among the students was high—this implied that the most students were able to overcome academic challenges, study pressure in school and cope over time. The scores across the scales were further analyzed across the three dimensions. The students' descriptions of the dimensions are provided in Table 4.8.

Table 4.9

Students' Descriptions of Academic Resilience Dimensions

Subscale	*N*	Range	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
ARP	382	3.07	1.93	5.00	4.20	0.45	-1.18	2.91
ARA	282	3.50	1.50	5.00	4.35	0.54	-1.13	1.93
ARN	382	3.50	1.50	5.00	4.73	0.75	0.12	-0.43

Note. Min = Minimum; *Max* = Maximum *M* = Mean; *SD* = Standard Deviation; *Sk* = Skewness; *Kur* = Kurtosis; *ARP* = Perseverance Subscale; *ARA* = Reflecting and adaptive seeking behaviour subscale; *ARN* = negative effect and emotional response.

Table 4.8 shows that students recorded the highest scores on average on the negative effect and emotional response subscale (*M* = 4.73, *SD* = 0.75). This was followed by the reflecting and adaptive seeking behaviour subscale (*M* = 4.35, *SD* = 0.54). then the perseverance subscale (*M* = 4.20, *SD* = 0.45). Both reflecting on adaptive seeking behaviour and negative effect, and emotional response subscales had a higher and similar range of scores (*Range* = 3.50) than the perseverance subscale (*Range* = 3.07). Both perseverance (*Sk* = -1.18) and reflecting and adaptive seeking (*Sk* = -1.13) subscales had marginal negative skew indicating that a majority of the scores were clustered above the average scores.

Subsequently, the Scores on academic resilience were grouped into three levels, high, moderate and low. Considering that the scale is multidimensional, and therefore no specific universally accepted cut-off values have been provided, this common approach was used.

The respondents' academic resilience scores were grouped into three categories; low, moderate, and high. A composite score of 30-70 indicated low academic resilience, while a composite score of 71-110 indicated moderate academic resilience. On the other hand, a composite score of 111-150 denoted high academic resilience. The outline of the students' levels of academic resilience is provided in Table 4.9.

Table 4.9

Levels of Academic Resilience

	Frequency (%)	*M*	*SD*
High	91 (23.9%)	142.08	8.7
Moderate	263 (69.2%)	107.52	7.8
Low	26 (6.8%)	65.67	8.2

Note. N = 382

Table 4.9 shows that a large majority of the learners had high levels (88.5%) of academic resilience, whereas a comparatively smaller number (11.5%) had moderate academic resilience levels. Remarkably, there were no recorded students with critically low academic resilience levels.

4.3.2 Description of Students' Mathematics Performance

Students' scores in mathematics were measured using the end-of-term three achievement records and were measured as a percentage score. Prior to the analysis of the scores, the scores were changed into t-scores for comparability across the different schools. The mathematics performance scores were analyzed and a description of the scores was provided in Table 4.10

Table 4.10

Descriptions of Students' Mathematics Performance

	N	Range	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
MP Raw Scores	382	95	1	96	28.54	21.61	0.52	-0.73
MP T-Score	382	43.96	37.26	81.21	50.00	10.00	0.52	-0.73

As illustrated in Table 4.10, before the transformation, the students had a poor mathematics score of 28.54 (*SD* = 21.61) with a very large deviation from the mean. Equally, the range of scores was large (Range = 95) which reduced to 43.96 upon transformation. Further, the distribution had a positive skewness (*Sk* = 0.52) which, nonetheless, was within the allowable thresholds for a reasonably normally distributed data set. As Matore and Khairani (2020) point out, skewness (±1) and kurtosis values (±10) within this range are considered to be within an acceptable range for normality.

The scores on mathematics performance were thereafter categorized into low, medium, and high. Scores ranging from to 34-66 were classified as moderate whereas scores below and above these cut-off points were classified as low and high mathematics performance scores respectively. This was done in line with the guidelines specified in Kelly and Ireri (2022). The findings are outlined in Table 4.11.

Table 4.11

Levels of Mathematics Performance

	Frequency (%)	*M*	*SD*
High	34 (8.9)	69.10	3.65
Moderate	73 (19.1)	45.74	7.41
Low	275 (72.0)	21.30	0.86

Note. $N = 382$

Table 4.11 shows that majority of the respondents had low levels (72.0%) of mathematics performance. These were followed by those with moderate levels (19.1%) whereas those with high mathematics performance formed 8.9% of the sample. Notably, students with high mathematics performance had their scored skewed closer to the upper threshold of 40 ($M = 69.10$, $SD = 0.86$).

4.3.3 Hypothesis Testing

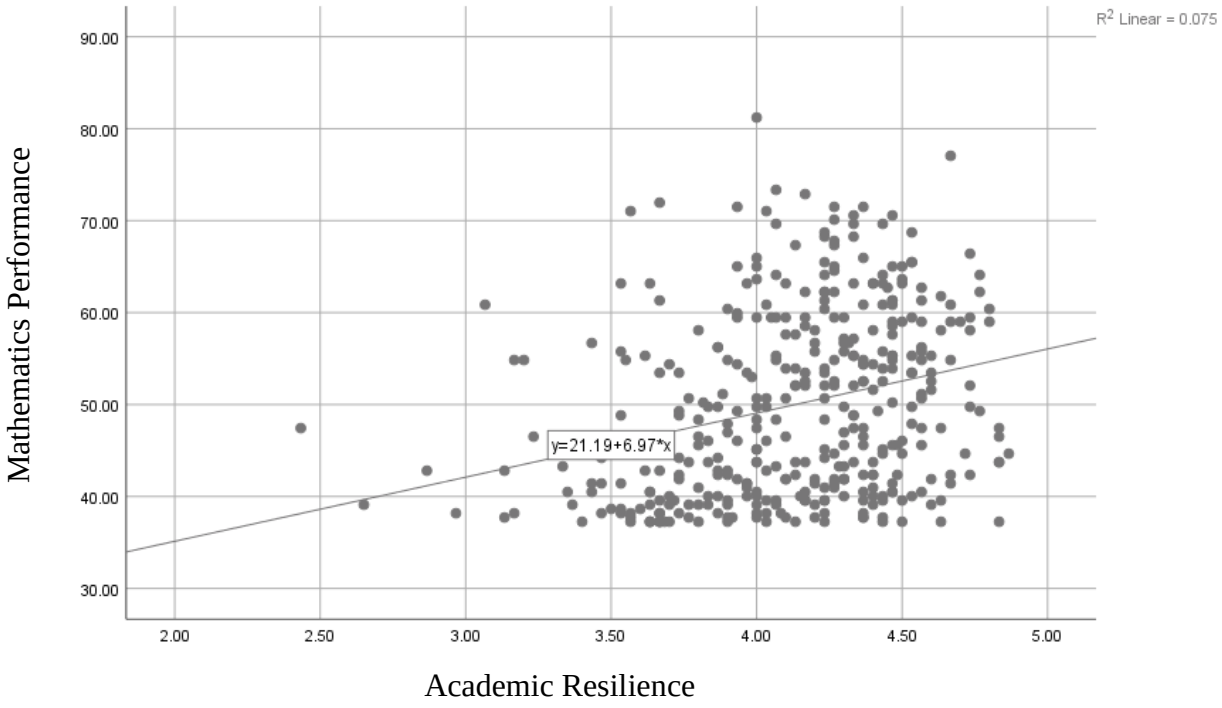
The first aim of the study was on the link between academic resilience and mathematics performance. The following null hypothesis was tested:

$H_{01:}$ There is no significant relationship between academic resilience and mathematics performance.

Before testing this hypothesis, a scatterplot was generated to evaluate the distribution of scores graphically, ensuring the dataset adheres to the assumptions of linearity. The relationship between the variables is outlined in Figure 4.1.

Figure 4.12

Correlation Between Academic Resilience and Mathematics Performance



The distribution of scores displayed in Figure 4.1 demonstrates a linear pattern, with no apparent extreme outliers among the variables. Further, according to Cohen's guidelines, the coefficient of determination (r^2) can be interpreted as follows: values below 0.10 are considered weak, those between 0.10 and 0.25 are moderate, and those exceeding 0.25 are deemed high (Lovakov & Agadullina, 2021). From the foregoing, a weak effect size of 7.5% was established. Therefore, academic resilience accounted for 7.5% of the change in mathematics performance.

Having satisfied the assumptions, Pearsons' Product Moment Correlation Coefficient Test was performed. Findings are presented in Table 4.12.

Table 4.12

Correlation Between Academic Resilience and Mathematics Performance

Academic Resilience	*r*	*df*
Mathematics Performance	.27**	380

Note. ** = Correlation significant at .01 level (2-tailed)

Academic resilience and math performance had a weak, positive, and statistically significant relationship (r (380) =.27 p <.01), as Table 4.12 demonstrates. As a result, the alternative was accepted and the null hypothesis was rejected. This suggested that students' performance in mathematics increased in tandem with their increased academic resilience.

4.3.4 Discussion of Findings

The first goal evaluated the degree of correlation between mathematical performance and academic resilience. According to descriptive analyses, the majority of respondents reported higher levels of academic resilience, with students attending boys' boarding schools exhibiting comparatively higher levels of academic resilience. In contrast, most students performed moderately well in mathematics. A weak but significant positive correlation between academic resilience and mathematical performance was discovered through hypothesis testing. Notably, mathematics often requires problem-solving skills that academic resilience alone cannot compensate for. While academic resilience may help with persistence it necessarily does not directly translate to higher mathematics performance, explaining the two variable's weak relationship.

This observation aligns with previous research that has consistently highlighted the pivotal role of resilience in fostering academic success. This study, for instance, lends credence to an earlier study by García-Crespo et al. (2022) among 22 European countries where academic achievement was positively linked to performance in mathematics and science. Resilient students were established to bounce back from academic setbacks and maintain a positive mindset. An incremental attitude is especially significant in accomplishment situations, where resilient students may better adjust to difficult mathematical problems and learning environments, resulting in higher performance.

The results of this study support those of Karabiyik (2020), who examined the connection between academic achievement and academic resilience in a sample of teacher candidates. Despite the variations in the samples' developmental stages and cultural backgrounds, these results demonstrate the importance of academic resilience at all educational levels. Resilience has been shown to foster perseverance, which helps students overcome obstacles and accept constructive criticism, both of which lead to better performance. Additionally, resilient people are more likely to ask for assistance when they need it and frequently exhibit good self-regulation techniques like time management, which promotes academic success in mathematics.

The results obtained support Neshila's (2018) findings about Namibia's underprivileged students. Resilience is a crucial quality for overcoming obstacles and setbacks both inside the learning environment and outside of it, such as poverty and difficult circumstances. Strong identity identification increases a student's likelihood of maintaining interest and effort, which improves performance. This could translate into persevering through challenging problems, choosing wisely how to approach problem-solving, and learning from mistakes all of which can improve performance in mathematics.

Positive psychology theory by Seligman et al. (2019) emphasizes the importance of fostering strengths and positive psychological resources to promote well-being and optimal functioning, and the current findings support these ideas. This study supports the relevance of positive psychology concepts in the contexts of students' achievement by emphasizing the positive effects of academic resilience on mathematical performance. In particular, it emphasizes how resilience can be developed to improve academic performance and support students' overall development (Seligman et al., 2019).

It is crucial to recognize, though, that some research has produced conflicting or ambiguous results about how the variables relate to one another. For example, a sample of middle school students showed a non-significant relationship between the two variables in Layne et al. (2021). These disparities were attributed to variations in how academic resilience was operationalized and measured as well as the particular educational or cultural settings in which the research was carried out.

Differences in the connections between academic disciplines and academic resilience have also been observed. According to Zeng et al. (2023), there may be a stronger correlation between academic resilience and performance in some academic domains or skill areas than others. This was related to the fact that different subjects or tasks require different cognitive demands and approaches to problem-solving. As a result, the impact of resilience on performance may interact with the particular academic skills being evaluated.

4.4 Findings on the Relationship Between Psychosocial Support and Mathematics Performance

The study also aimed to ascertain the connection between math performance and psychosocial support. In this section, the psychosocial support scores are descriptively analysed, hypotheses are tested, and the results are finally discussed.

4.4.1 Description of Psychosocial Support Scores

The respondents perceived levels of psychosocial support were quantified using the Psychosocial Support Scale (Padhy et al., 2022). The tool consists of 22 items on a five-point summative scale. Items spread across six dimensions; social support networks, family -based psychosocial support, psychological support deprivation, psychosocial support availability, communicative support and supportive disposition. The scoring of the items was based on a global score as well as scores for each dimension both of which were averaged to range between 1 and 5 for comparability. A description of these scores is outlined in Table 4.13.

Table 4.13

Descriptives of Psychosocial Support Scores

N	Range	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
382	3.00	2.00	5.00	3.77	0.56	-0.36	-0.21

Table 4.13 outlines that the respondents had an average of 3.77 (*SD* = 0.56) with a range of scores between 2.00 and 5.00. Notably, a majority of respondents indicated above-average perceptions of psychosocial support (*Sk* = - 0.36). The skewness (*Sk* = - 0.36) and Kurtosis (Kur = - 0.21) were within the cutoffs for an approximately normal distribution as per the recommendations by Orcan (2020). These findings suggest a generally positive perception of

psychosocial support among the study population. The scores were further analyzed across the subscales and the description of the scores is presented in table 4.14.

Table 4.14

Descriptive Statistics of Psychosocial Support Dimensions

Subscale	*N*	Range	*Min*	*Max*	*M*	*SD*	*Sk*	*Kur*
PSN	382	3.75	1.25	5.00	3.21	0.81	0.09	-0.43
PSF	382	4.00	1.00	5.00	3.90	0.87	-0.94	0.71
PSD	382	4.00	1.00	5.00	3.76	0.84	-0.54	-016
PSA	382	4.00	1.00	5.00	3.53	1.12	-0.56	-0.48
PSC	382	3.67	1.33	5.00	4.16	0.75	-1.05	0.89
PSS	382	4.00	1.00	5.00	4.08	0.72	-0.69	0.40

Note. Min = Minimum; *Max* = Maximum *M* = Mean; *SD* = Standard Deviation; *Sk* = Skewness; *Kur* = Kurtosis; *PSN* = Social support networks; *PSF* = Family-based psychosocial support; *PSD* = Psychological support deprivation: *PSA* = Psychosocial support availability; *PSC* = Communicative support; *PSS* = Supportive disposition

Findings in Table 4.14 indicate that the communicative support (*M* = 4.16, *SD* = 0.75) and supportive disposition (*M* = 4.08, *SD* = 0.72) dimensions had the highest mean scores, suggesting these were the most strongly endorsed aspects of psychosocial support. In contrast, the psychosocial support availability (*M* = 3.53, *SD* = 1.12) and social support networks (*M* = 3.21, *SD* = 0.81) dimensions had the lowest mean scores. Examination of the range of scores for each subscale reveals that communicative support had the smallest range at 3.67, indicating a relatively narrow distribution of responses for this dimension. The other subscales, except for the social support networks dimension (Range = 3.75), all had a range of 4.00. Furthermore, the skewness and kurtosis values for all subscales are within the acceptable criteria for a moderately normal distribution, as defined by Orcan (2020). The scores on psychosocial

support were further classified as low, moderate and high. Scores one standard deviation above or below the mean were classed as high or low, respectively, while scores in the middle were classified as moderate. Therefore, scores between 1 and 3.20 were grouped as low, 3.21 to 4.32 as moderate and those above 4.33 as high levels of psychosocial support. The proportion of respondents in each level is outlined in Table 4.15.

Table 4.15

Levels of Psychosocial Support

	Frequency (%)	*M*	*SD*
High	60 (15.7)	4.57	0.15
Moderate	261 (68.3)	3.80	0.31
Low	61 (16.0)	2.86	0.29

Note. $N = 382$

Table 4.15 illustrates that more than two-thirds (68.3%) of the respondents had moderate levels of psychosocial support whereas another 16% recorded low levels. Those recording high levels of psychosocial support formed the lowest proportion of respondents (15.7%).

4.4.2 Hypothesis Testing

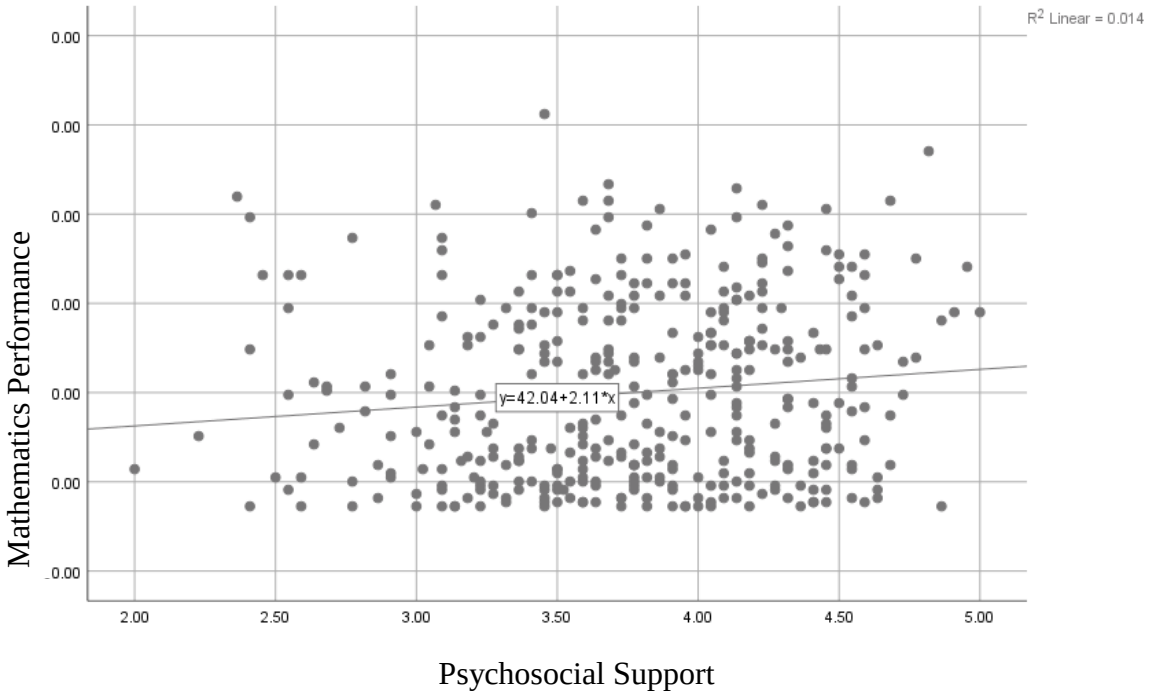
The second objective attempted to establish the association between psychosocial support and students' mathematics performance where the null hypothesis below was tested.

$H_{02.}$: There is no significant relationship between psychosocial support and mathematics performance.

Before testing the hypothesis, a scatterplot was generated to assess the distribution of scores graphically and ensure the dataset meets the assumptions of linearity. The relationships between the variables are illustrated in Figure 4.2.

Figure 4.2

Correlation Between Psychosocial Support and Mathematics Performance



Direct observation of Figure 4.2 indicates the absence of other relationships such as curvilinear. Moreover, in line with Cohen's guidelines on the interpretation of the effect sizes, it is noted that there was a small effect size of $r^2 = 0.014$. This implies that 1.4% of the change in mathematics performance scores was accounted for by psychosocial support. A correlation test using the Pearsons' Product Moment Correlation Coefficient was computed. The findings are outlined in Table 4.16.

Table 4.16

Relationship Between Psychosocial Support and Mathematics Performance

Psychosocial Support	*r*	*df*
Mathematics Performance	.12*	380

Note. * = Correlation significant at .05 level (2-tailed)

According to Table 4.16, students' performance in mathematics and psychosocial support had a weak but significant positive relationship (r (380) =.12, p <.05. Thus, the null hypothesis was disproved, suggesting that a slight improvement in students' arithmetic performance was associated with a rise in the psychosocial support they received.

4.4.3 Discussion of Findings

The second objective sought to establish the link between psychosocial support and mathematics performance. Prior analyses indicated that the majority of the students demonstrated average perceptions of psychosocial support. Students from boys boarding schools recorded marginally higher levels of academic resilience whereas those in day schools recorded the lowest. Hypothesis testing outlined that the relationship between the two variables was weak positive and significant. In the Kenyan setting, contextual factors such as learning resources may play a more profound role in determining mathematics performance compared to psychosocial support alone, hence the weak relationship.

These findings lend credence to earlier findings by Forsberg and Schultz (2023) who established psychosocial support effective in improving student with underachievement in Gaza, Palestine. Providing support structures around the learner helps mitigate stress which improves the psychological wellbeing of the learners. This resultantly leads to better academic achievement. Students who receive strong psychosocial support from teachers, peers, and

family members are more likely to develop a sense of belonging and emotional security, which in turn can boost their motivation and engagement in learning m mathematics.

Duffin et al. (2020) obtained similar findings when they investigated psychosocial support teacher instructional strategies and students' performance in algebra. Planned psychosocial support was found to provide students with instrumental resources, such as academic guidance, tutoring, and access to educational materials, which can directly contribute to improved mathematics performance. Additionally, supportive relationships can foster resilience and coping strategies, enabling students to navigate academic challenges and setbacks more effectively (Bowers et al., 2021).

The present study's findings provide support for the principles of ecological systems theory, which emphasizes the interplay between an individual's development and the multiple environmental contexts surrounding them, including the multiple systems. Specifically, this study underscores the importance of creating supportive and nurturing environments across various ecological systems, as these can promote positive academic outcomes and contribute to the holistic development of students (Bronfenbrenner & Morris, 2006).

The findings of this study, however, contradict those by Kim and Han (2023) who found a non-significant relationship between peer support and mathematics achievement among a sample of middle school students. As outlined, such non-significant findings could be the presence of moderating variables that influence the relationship between psychosocial support and academic performance. Case in point, individual differences in students' perceptions and interpretations of support may shape the impact of psychosocial resources on their academic outcomes (Rueger et al., 2021). Additionally, the effectiveness of psychosocial support may be moderated by such factors as students' personality traits, or coping strategies (Pascoe et al., 2020).

4.5 Findings on the Gender Differences in Academic Resilience and Psychosocial Support

On the third objective, the gender differences in academic resilience and psychosocial support were investigated. The section that follows reviews the descriptive statistics on the variables before hypothesis testing. Independent samples t-test was used in the testing of these hypotheses. Lastly, a discussion of the findings is outlined.

4.5.1 Descriptive Statistics on Academic Resilience Scores by Gender

Students' scores on academic resilience were analyzed by gender. An outline of this is provided in Table 4.17.

Table 4.17

Academic Resilience Scores by Gender

Gender	*N*	*M*	*SD*
Male	181	4.12	0.45
Female	201	4.14	0.34
Total	383	4.13	0.39

Note. n = Sample by Gender

As depicted in Table 4.17, girls exhibited a slightly higher academic resilience score ($M = 4.14$, $SD = 0.34$) compared to boys ($M = 4.12$, $SD = 0.45$). It was noted that boys' scores ($SD = 0.45$) demonstrated greater variability around the mean than those of girls ($SD = 0.34$). These findings suggest a marginal difference in academic resilience between genders, with boys showing more diverse responses than girls. The scores were further analyzed across the three dimensions and the findings are presented in Table 4.18.

Table 4.18

Description of Academic Resilience Scores Dimensions Score by Gender

Gender	Male		Female	
Subscales	*M*	*SD*	*M*	*SD*
ARP	4.17	0.46	4.26	0.39
ARA	4.34	0.57	4.40	0.47
ARN	3.82	0.77	3.68	0.72

Note. M = Mean; *SD* = Standard Deviation; *ARP* = Perseverance Subscale; *ARA* = Reflecting and adaptive seeking behaviour subscale; *ARN* = negative effect and emotional response.

Table 4.18 shows notable gender differences in academic resilience dimensions. Girls demonstrated slightly higher scores in perseverance *(M* = 4.26, *SD* = 0.39) and reflecting and adaptive behaviour (*M* = 4.40, *SD* = 0.47) compared to males. Conversely, boys exhibited higher scores in negative affect and emotional response (*M* = 3.82, *SD* = 0.77) than girls (*M* = 3.68, *SD* = 0.72). These findings suggest potential gender-specific patterns in academic resilience, with females showing strengths in persistence and adaptive strategies, while males appear more prone to negative emotional responses. Additionally, the levels of academic resilience were compared across the two genders. The findings are exhibited in Table 4.19.

Table 4.19

Levels of Academic Resilience by Gender

Levels of AR	Gender		Total
	Male	Female	
High	154 (85.1)	184 (91.5)	338 (88.5)
Moderate	27 (14.9)	17 (8.5)	44 (11.5)
Low	-	-	-
Total	181 (100)	121 (100)	382 (100)

Note. *()* = Percentage by Gender; *AR* = Academic Resilience

As exhibited in Table 4.19, girls demonstrated a higher percentage of learners with high academic resilience (91.5%) compared to boys (85.1%). Conversely, girls showed a lower proportion of moderate academic resilience scores (8.5%) than boys (14.9%). These findings suggest that girls exhibit higher academic resilience, which may subtly indicate that they are often placed in situations requiring greater academic resilience than boys.

4.5.2 Descriptive Statistics on Psychosocial Support Scores by Gender

Students' scores on psychosocial support were analyzed by gender and a breakdown of the same was reported in Table 4.20

Table 4.20

Description of Psychosocial Support by Gender

Gender	*n*	*M*	*SD*
Male	181	3.75	0.53
Female	201	3.78	0.59
Total	383	3.77	0.56

As noted in Table 4.20, there was a slight difference in psychosocial support between genders. Girls exhibited marginally higher average scores (*M* = 3.75, *SD* = 0.53) compared to boys (*M* = 3.78, *SD* = 0.59). Both groups demonstrated comparable variability an indication of minimal variance of psychosocial support. Further, the scores on the psychosocial support dimensions were analyzed by gender. The findings are outlined in Table 4.21.

Table 4.21

Psychosocial Support Levels by Gender

Gender	Male		Female	
Subscales	*M*	*SD*	*M*	*SD*
PSN	3.24	0.82	3.19	0.80
PSF	3.88	0.87	3.92	0.86
PSD	3.77	0.81	3.76	0.87
PSA	3.43	1.08	3.61	1.14
PSC	4.18	0.75	4.13	0.75
PSS	4.05	0.75	4.12	0.71

Note. M = Mean; *SD* = Standard Deviation; *PSN* = Social support networks; *PSF* = Family-based psychosocial support; *PSD* = Psychological support deprivation: *PSA* = Psychosocial support availability; *PSC* = Communicative support; *PSS* = Supportive disposition

Table 4.21 reveals slight gender differences in psychosocial support levels. Males exhibited marginally higher scores in social support networks (*M* = 3.24, *SD* = 0.82), psychological support deprivation (M = 3.77, SD = 0.81), and communicative support (*M* = 4.18, *SD* = 0.75). Conversely, females demonstrated slightly elevated scores in family-based psychosocial support (*M* = 3.92, *SD* = 0.86), psychosocial support availability (*M* = 3.61, *SD* = 1.14), and

supportive disposition (*M* = 4.12, *SD* = 0.71). It is noteworthy that psychosocial support availability displayed the highest standard deviation among all subscales for both genders, suggesting greater variability in this dimension. These findings indicate slight gender-specific patterns in psychosocial support experiences. The distribution of scores was further assessed by the levels and an outline provided in Table 4.22.

Table 4.22

Levels of Psychosocial Support by Gender

Levels of AR	Gender		Total
	Male	Female	
High	22 (12.2)	38 (18.9)	60 (15.7)
Moderate	133 (73.5)	128 (63.7)	261 (68.3)
Low	26 (14.4)	35 (17.4)	61 (16.0)
Total	181 (100)	201(100)	382 (100)

Note. *()* = Percentage by Gender; *AR* = Academic Resilience

Table 4.22 shows that boys had higher proportions of students with moderate levels (73.5%) of psychosocial support whereas girls had a higher number of learners with both high (18.9%) and low (14.4%) levels. Girls showed greater representation across the categories suggesting varying psychosocial support experiences between genders.

4.5.3 Hypothesis Testing

The third hypothesis sought to establish the gender differences in academic resilience and psychosocial support. To test the objective, two supplementary objectives were formulated:

$H_{03.1}$: There are no significant gender differences in academic resilience.

$H_{03.2}$: There are no significant gender differences in psychosocial support.

Before testing the hypotheses, Levene's test for the homogeneity of variance was assessed to ensure the dataset observed the assumption of homoscedasticity. Zhou et al. (2023) point out that the test checks whether the sample variances for the two groups are significantly different and therefore a non-significant finding is preferred. In the two variables, sufficient homogeneity of variance was established. The findings of the independent samples t-test are outlined in the same Table 4.23.

Table 4.23

Gender Differences in Academic Resilience and Psychosocial Support

	Levene's Test		Independent Samples t-test				95% CI	
Variable	*F*	*Sig*	*t*	*df*	*Sig*[a]	*MD*	Lower	Upper
AR	9.19	.375	-0.63	380	.528	-0.03	-0.10	0.05
PC	2.18	.141	-0.48	380	.633	-0.03	-0.14	0.09

Note. AR = Academic Resilience; *PC* = Psychosocial Support; *CI* = Confidence Interval; Sig = Level of Significance (two-tailed); *df* = Degrees of Freedom; *MD* = Mean Difference

The results presented in Table 4.23 demonstrate that there were no significant differences between genders in either academic resilience (t (380) = -0.63, $p > .05$) or psychosocial support (t (380) = -0.48, $p > .05$). The null hypothesis was thus rejected. While the descriptive statistics suggested that girls had higher levels of academic resilience and psychosocial support compared to boys, these observed differences were not large enough to reach the threshold for statistical significance.

4.5.4 Discussion of Findings

The third hypothesis sought to establish if academic resilience and psychosocial support varied significantly by the students' gender. Descriptive analyses showed those girls had comparatively higher scores in both academic resilience and psychosocial support. Hypothesis testing however showed that the differences in both variables by gender were not statistically significant. This suggests that both male and female students may possess similar capacities to overcome academic challenges, adapt to adversities, and maintain motivation in the face of setbacks. These findings challenge gender stereotypes and highlight the importance of recognizing individual variations within each gender group rather than generalizing based on gender alone.

The findings are similar to those of Amoadu et al. (2024) among secondary school students in Ghana. Although female students had higher ratings on academic resilience, this goes further to indicate that academic resilience may not be sensitive to gender. Equally, a review of the literature indicates that whereas boys are conditioned by society to be resilient, girls develop resilience through exposure to a variety of challenges which can improve the versatility of dealing with them. Having resources to equally deal with challenges denotes both genders may at the end of the day not vary regarding their levels of resilience.

Similarly, the non-significant gender differences in perceived psychosocial support indicate that male and female students may experience comparable levels of support from their social networks, including family, peers, and educational institutions. This observation challenges traditional gender norms that may have previously assumed differing levels of support or socialization processes based on gender.

There are however contradictory findings to those established in this study (Dsouza et al., 2025; Pelch, 2018; Vera Gil, 2024) and it is therefore important to interpret the obtained findings

considering these findings. One finding by Yang and Wang (2022) indicates that female students reported higher levels of academic resilience than their male counterparts. It was explained that in the Chinese culture, girls were encouraged to be more persistent and diligent in their studies. Mallick and Kaur (2019) on the other hand established boys to have higher academic resilience. As they argued, male adolescents achieved higher academic resilience since boys are expected to be more self-reliant and independent. Further, it was attributed to the coping styles that boys take which are more process-focused as compared to girls who may observe a more emotional approach.

In Norway, a study by Johansen et al. (2021) across men and women showed psychosocial support to be a protective factor for stress among younger females than in males suggesting social support may be more beneficial for young women's mental health. Similar findings were reflected in Martínez-Hernáez et al.'s (2022) study where gender differences in the strategies for managing stress were established as well as in the social support that students received. The outgoing nature that girls have makes them more likely to get psychosocial support as they are likely to share and ask for help.

Overall, the present study's findings emphasize the significance of acknowledging individual differences within gender groups, rather than relying on broad gender-based generalizations.

4.6 Findings on the Prediction of Mathematics Performance from Academic Resilience and Psychosocial Support

The last objective was testing the contribution of academic resilience and psychosocial support, as a whole to students' mathematics performance. This section tests for the assumption of the multiple regression analyses before testing for the hypothesis and discussion of the obtained findings.

4.6.1 Test for Assumptions for Regression Analysis

To assess potential multicollinearity of the findings, a correlation matrix was developed. By examining the correlation matrix, it is possible to identify any structural and data multicollinearities that would have otherwise affected the sensitivity of your model. Correlations above .70 imply high multicollinearity between the variables (Kyriazos & Poga, 2023). To further assess this, tolerance and VIF values were used. VIF values above 1 and tolerance values closer to 0 indicate high correlations and, by extension, multicollinearity. Bivariate correlations forming the collinearity matrix and the VIF and tolerance values are provided in Table 4.24.

Table 4.24

Correlation Matrix

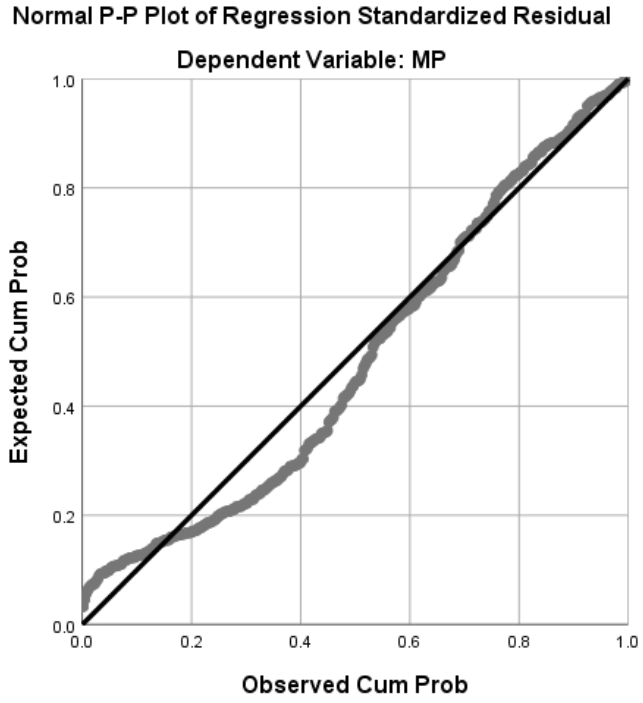
Variable	1	2	3	Tolerance	*VIF*
Academic Resilience	-			1.00	1.00
Psychosocial Support	.41**	-		.83	1.19
Mathematic Performance	.27**	.12*			

Note. * = Significance at .05 level (2 -Tailed); ** = Significance at .01 level (2 -Tailed)

Table 4.24 indicates that all the variables had weak to moderate correlations ranging from r = .12 to r = .41. This indicates that there is a low likelihood of multicollinearity among the variables. This is, additionally, ascertained by the VIF and tolerance values. The linearity assumption was thereafter checked. In line with Arkes' (2023) recommendations, a distribution observes the linearity assumption if the normal probability plot is approximately a straight diagonal line. A normal Probability plot is illustrated in Figure 4.3.

Figure 4.3

Normal Probability Plot



This straight-line pattern is a visual representation indicating that the residuals closely follow the normal distribution. This observation strongly suggests that the assumption of normality for the residuals is likely satisfied, meaning the residuals are likely to be normally distributed.

4.6.2 Hypothesis Testing

A regression model was developed to examine how psychosocial support and academic resilience, combined, predicted students' mathematics performance scores. The model summary is provided in Table 4.25.

Table 4.25

Model Summary of the Prediction of Mathematics Performance

r	r^2	Adjusted r^2	*SEE*
.27[a]	.08	.07	9.63

Note. [a] = Predictors (Constant) Academic Resilience; Psychosocial Support

Table 4.25 notes that the overall prediction model of mathematics performance from academic resilience and psychosocial support had an r^2 of .08 which indicates that 8% of the changes in the students' mathematics performance scores were accounted for by the two variables. Following this, the model's significance was assessed and findings were denoted in Table 4.26.

Table 4.26

Model's Significance

Model	Sum of Squares	*df*	Mean Square	*F*	*Sig*
Regression	2868.31	2	1434.16	15.43	.000c
Residual	35231.69	379	92.96		
Total	38100.00	381			

Note. [a] = Predictors (Constant) Academic Resilience, Psychosocial Support.

As illustrated in Table 4.26, the model entailing academic resilience and psychosocial support in the prediction of mathematics performance was statistically significant; F (2, 279) = 15.34, $p < .001$. Following the rejection of the null hypothesis, it was determined that math performance was significantly predicted by academic resilience and psychosocial support. Additionally, a separate analysis of each variable's contribution was conducted. The results are summarized in Table 4.27.

Table 4.27

Model's Regression Coefficients

Model	Unstandardized Coefficients		Standardized_	*t*	*Sig*
	B	*SE*	β		
(Constant)	20.96	5.37		3.90	.000
AR	6.87	1.37	.270	5.00	.000
PSS	.17	0.96	.010	0.17	.860

Note. SE = Standard Error; *AR* = Academic Resilience; *PSS* = Psychosocial Support

Table 4.27 indicates that academic resilience was the better predictor (β = .27, $p < .000$). Conversely, psychosocial support did not have a significant prediction of mathematics performance (β = .01, $p > .05$). We thus derive the prediction equation of mathematics performance from the two variables as follows:

$$\hat{Y} = 20.96 + 6.87(\text{Academic Resilience}) + 0.17\ (\text{Psychosocial Support})$$

4.6.3 Discussion of Findings

The current study explored the predictive power of academic resilience and psychosocial support on students' mathematics performance. The findings revealed a statistically significant model, with both variables accounting for 8% of the variance in mathematics scores. Academic resilience emerged as a stronger predictor compared to psychosocial support. These results align with previous research highlighting the crucial role of resilience in academic achievement while also suggesting potential nuances in the relationship between psychosocial support and specific learning domains.

Corroborating the current findings, a study by Wen and Li (2022) revealed that dispositional optimism, resilience, and social support with academic achievement were significantly related. The interaction between dispositional resilience and social support had a substantial predictive effect on dispositional optimism as well as on academic achievement. Resilient students exhibit a heightened ability to rebound from setbacks, maintain motivation, and, when supported, engage in adaptive coping strategies, thereby fostering a positive outlook in the face of challenges and academic success. This may explain the current finding on the prediction of mathematics performance.

Similarly, Tavajjohi and Tamannaifar (2023) found that academic resilience predicted higher levels of academic engagement and achievement among Filipino high school students. The researchers proposed that resilient individuals possess effective self-regulation skills which facilitate academic success. Additionally, resilience fosters a growth mindset and perseverance, enabling students to embrace challenges and persist through difficulties, ultimately leading to improved academic outcomes. When combined with psychosocial support, this resilience can be further reinforced, as supportive relationships provide emotional security, encouragement, and a nurturing environment that fosters a positive attitude toward learning and academic pursuits.

Furthermore, a study by Wang and Eccles (2022) revealed perceived teacher support to be positively linked to science achievement motivation among adolescents. The authors suggested that supportive teacher-student relationships foster a sense of belongingness, emotional security, and instrumental resources, which enhance students' motivation and engagement in learning. While the current study found no significant predictive relationship between psychosocial support and mathematics performance, Wang and Eccles' (2022) findings

highlight the potential importance of taking into account specific sources and types of support, as well as the academic domain under investigation.

On the contrary findings such as those by Layne et al. (2021) academic resilience and academic success were found not to be significantly related in a sample of Latino students. Additionally, Kim and Han (2023) found that peer support was not a significant predictor of mathematics achievement. The researchers suggested that the effectiveness of peer support may vary depending on the specific academic domain, the quality of the peer relationships, and the developmental stage of the students.

In sum, these findings point to the essence of fostering resilience and psychosocial support as a means to enhance academic achievement and align with the principles of positive psychology theory and ecological systems theory.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter is organized as follows, a summary of the findings, conclusions of the findings, and lastly, recommendations for policy and future research.

5.2 Summary of the Findings

In the first objective, the relationship between academic resilience and mathematics performance was investigated. Prior descriptive analyses show that most learners had high levels of academic resilience, with boys from boarding schools having the most resilient of respondents. Mathematics performance scores were mostly moderate, with girls' boarding schools having the best performance. It was established that academic resilience has a significantly positive albeit weak relationship with mathematics performance. An increase in students' academic resilience was therefore linked with improved performance in mathematics.

On the second objective, the relationship between psychosocial support and mathematics performance was investigated. Descriptive analyses showed that most of the respondents reported moderate psychosocial support. A significant, but weak positive relationship was established between psychosocial support and mathematics performance. It was, therefore, established that an increase in psychosocial support is thus linked to an increase in the students' mathematics performance.

The third objective was on the gender differences in academic resilience, and psychosocial support. Girls were revealed to have marginally higher academic resilience as well as perceptions of psychosocial support. The observed differences were not large enough to reach

the threshold for statistical significance. Thus, girls and boys didn't vary in their levels of academic resilience and psychosocial support.

Lastly, the prediction of mathematics performance from academic resilience and psychosocial support. The two variables accounted for a small variation in the mathematics scores. Academic resilience was the better predictor of mathematics performance between the two. The overall prediction model was, nonetheless, statistically significant. Therefore, combined, academic resilience and psychosocial support significantly predicted higher scores in mathematics performance.

5.3 Conclusion

The findings of the first objective show that academic resilience was positively related to students' mathematics scores. As students' academic resilience increased, their performance in mathematics improved. Therefore, we can conclude that fostering academic resilience in students may contribute to better mathematics performance.

For the second objective, there was a weak, significant positive relationship between psychosocial support and mathematics performance. Higher levels of psychosocial support received by students are linked to better performance in mathematics. Consequently, providing adequate psychosocial support to students could be a contributing factor in improving their mathematics performance.

The findings in the third objective revealed marginally higher levels of academic resilience and perceptions of psychosocial support among female students compared to their male counterparts. However, the observed gender differences did not reach statistical significance. Therefore, it is concluded that students do not vary in the levels of academic resilience and levels of psychosocial support by gender.

Lastly, on the fourth objective, academic resilience and psychosocial support jointly accounted for a small but statistically significant proportion of the variation in mathematics performance scores. While academic resilience emerged as the stronger and more significant predictor, the combination of these two variables significantly predicted higher scores in mathematics. Therefore, interventions targeting both academic resilience and psychosocial support may have a cumulative positive effect on students' mathematics performance. To sum it all up, academic resilience and psychosocial support predicted mathematics performance.

5.4 Recommendations

The following are the recommendations based on the findings.

5.4.1 Recommendations for Policy

The following recommendations have been proposed for policymakers;

i. Teachers should adopt interventions that foster perseverance and interest in mathematics. This can be achieved, for instance, through encouraging a growth mindset and teaching self-regulation strategies among learners. As a result, these interventions yield learners who can bounce back from academic setbacks with ease while taking charge of their learning process.

ii. The school administration, counselors, and teachers may consider strengthening support systems within the schools by implementing peer support programs and establishing mental health services in schools.

iii. A collaborative approach among teachers, parents, and counselors may be considered to help create supportive networks and a safe space for students to fulfill students' psychosocial needs and sustain academic resilience in the face of challenges.

5.4.2 Recommendations for Further Studies

The following recommendations are made for future research.

i. Future studies may consider other student outcomes, such as their well-being and mental health. Further, other than gender, other moderators of these relationships need to be investigated.

ii. Future studies could be conducted in different locales, encompassing various educational practices and cultural norms, particularly among underprivileged populations such as learners in refugee camps, special needs schools, or students from economically disadvantaged areas.

iii. It would be interesting to validate these findings with an experimental or a causal-comparative approach to assess the causality of the variables and the effectiveness of academic resilience and psychosocial support interventions on academic outcomes.

iv. Since this study focused on mathematics performance, future researchers could find out how academic resilience and psychosocial support correlate with languages and other science subjects to bring out their holistic contribution to academic performance.

v. The current study was done in a secondary school. It would be amazing to conduct the same study among primary school students in order to find out the relationship between academic resilience, psychosocial support, and mathematics performance.

vi. Further research may consider drawing a sample from both public and private schools, as the current study only focused on a sample from public schools to ascertain if the findings would be different.

vii. The study found contradictory findings on gender differences in psychosocial support. Future studies may consider further investigations into the same to validate this finding.

REFERENCES

Albulescu, I., Labar, A. V., Manea, A. D., & Stan, C. (2023). The mediating role of anxiety between parenting styles and academic performance among primary school students in the context of sustainable education. *Sustainability*, *15*(2), 1539. https://doi.org/10.3390/su15021539

Amirrudin, M., Nasution, K., & Supahar, S. (2021). Effect of variability on Cronbach alpha reliability in research practice. *Jurnal Matematika, Statistika dan Komputasi*, *17*(2), 223-230. https://doi.org/10.20956/jmsk.v17i2.11655

Amoadu, M., Agormedah, E. K., Obeng, P., Srem-Sai, M., Hagan, J. E., & Schack, T. (2024). Gender differences in academic resilience and well-being among senior high school students in Ghana: A cross-sectional analysis. *Children*, *11*(5), 512. https://doi.org/10.3390/children11050512

Antony, E. M. (2022). Framing childhood resilience through Bronfenbrenner's ecological systems theory: A discussion paper. *Cambridge Educational Research e-Journal (CERJ)*, *9*, 244-257. https://doi.org/10.17863/CAM.90564

Arkes, J. (2023). *Regression analysis: a practical introduction*. Routledge.

Barger, M. M., Wu, J., Xiong, Y., Oh, D. D., Cimpian, A., & Pomerantz, E. M. (2022). Parents' responses to children's math performance in early elementary school: Links with parents' math beliefs and children's math adjustment. *Child Development*, *93*(6), e639-e655. https://doi.org/10.1111/cdev.13834

Bofah, E. A., & Ntow, F. D. (2017). Perceived social support from parents and teachers' influence on students' mathematics-related self-beliefs. *African Journal of Educational Studies in Mathematics and Sciences, 13*(2), 41-62. https://www.ajol.info/index.php/ajesms/article/view/169279

Bolarinwa, O. (2020). Sample size estimation for health and social science researchers: The principles and considerations for different study designs. *The Nigerian Postgraduate Medical Journal, 27*(2), 67-75. https://doi.org/10.4103/npmj.npmj_19_20

Bowers, E. P., Geldhof, G. J., Schmid, K. L., Napolitano, C. M., Minor, K., & Lerner, J. V. (2021). Relationships with important non-parental adults and positive youth development: An examination of youth self-regulation and future orientation. *Journal of Youth and Adolescence, 50*(1), 173–189. https://doi.org/10.1007/s10964-020-01322-6

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In W. Damon, R. M. Lerner, & N. Eisenberg (Eds.), *Handbook of child psychology* (pp. 793–828). Wiley. https://doi.org/10.1002/%209780470147658.chpsy0114

Buscha, F., Dickson, M. (2023). Returns to Education: Individuals. In: Zimmermann, K.F. (eds) *Handbook of Labor, Human Resources and Population Economics*. Springer, Cham. https://doi.org/10.1007/978-3-319-57365-6_377-1

Cassidy, S. (2016). The Academic Resilience Scale (ARS-30): A new multidimensional construct measure. *Frontiers in Psychology*, *7*, 1787. https://doi.org/10.3389/fpsyg.2016.01787

Chirimbana, M., Nghipandulwa, L. T., & Kamati, F. N. (2022). An investigation of the factors that contribute to poor problem-solving skills in grade 8 mathematics Learners in Namibia. *Open Journal of Social Sciences*, *10*(12), 614-628. https://doi.org/10.4236/jss.2022.1012042

Chisholm-Burns, M. A., Spivey, C. A., Sherwin, E., Williams, J., & Phelps, S. (2019). Development of an instrument to measure academic resilience among pharmacy students. *American Journal of Pharmaceutical Education*, *83*(6), 6896. https://doi.org/10.5688/ajpe6896

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (6th Ed.). Routledge. https://doi.org/10.4324/9781315456539

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approach.* Sage Publications.

Dale, R., Jesser, A., Pieh, C., O'Rourke, T., Probst, T., & Humer, E. (2023). Mental health burden of high school students, and suggestions for psychosocial support, 1.5 years into the COVID-19 pandemic in Austria. *European Child & Adolescent Psychiatry*, *32*(6), 1015-1024. https://doi.org/10.1007/s00787-022-02032-4

Dall, N. (2023). Complex equation of maths education in South Africa. *The UNESCO Courier*, *2023*(1), 22-23. https://doi.org/10.18356/22202293-2023-1-8

Datu, J. A. D., King, R. B., & Valdez, J. P. M. (2022). Grit and academic resilience: Achievement goals as mediators. *Personality and Individual Differences, 187*, 111408. https://doi.org/10.1016/j.paid.2021.111408

Dismus, B., & Tom, K. (2023). Perceived gender differences in the social support and cognitive engagement of day secondary school students in Kakamega County, Kenya. *African Journal of Business and Management (AJBUMA), 8*(2), 321-333. https://uonjournals.uonbi.ac.ke/ojs/index.php/ajbuma/article/download/1902/1550

Dsouza, S., Singh, N. P., & Oliyide, J. A. (2025). Dynamic connectedness among the BRICS markets and the recent pandemic: an application of TVP-VAR approach. *International Journal of Emerging Markets*, *20*(9), 3721-3743. https://doi.org/10.1108/IJOEM-11-2022-1673

Dubey, U. K. B., & Kothari, D. P. (2022). *Research methodology: Techniques and trends*. Chapman and Hall/CRC. https://doi.org/10.1201/9781315167138

Duffin, L. C., Keith, H. B., Rudloff, M. I., & Cribbs, J. D. (2020). The effects of instructional approach and social support on college algebra students' motivation and achievement: classroom climate matters. *International Journal of Research in Undergraduate Mathematics Education*, *6*, 90-112. https://doi.org/10.1007/s40753-019-00101-9

Fernandez-Lasarte, O., Goni, E., Camino, I., & Ramos-Diaz, E. (2019). Perceived social support and school engagement in secondary students. *Revista Española de Pedagogía*, *77*(272), 123-141. https://doi.org/10.22550/REP77-1-2019-06

Finkelstein-Fox, L., Park, C. L., Russell, B. S., Fendrich, M., Hutchison, M., & Becker, J. (2021). Americans' distress early in the COVID-19 pandemic: Protective resources and coping strategies. *Psychological Trauma: Theory, Research, Practice, and Policy*, *13*(4), 422-431. https://dx.doi.org/10.1037/tra0000931

Forsberg, J. T., & Schultz, J. H. (2023). Educational and psychosocial support for conflict-affected youths: The effectiveness of a school-based intervention targeting academic underachievement. *International Journal of School & Educational Psychology*, *11*(2), 145-166. https://doi.org/10.1080/21683603.2022.2043209

Gachigi, P. N. (2018). *Academic self-concept, motivation and resilience as predictors of mathematics achievement among secondary school students in Nairobi County, Kenya* [Doctoral dissertation, Kenyatta University]. Kenyatta University Repository. http://ir-library.ku.ac.ke/handle/123456789/18524

García-Crespo, F. J., Fernández Alonso, R., & Muñiz, J. (2022). Academic resilience in mathematics and science: Europe TIMSS-2019 data. *Psicothema*, *34*(2), 217-225. https://hdl.handle.net/20.500.14352/72673

Gjicali, K., & Lipnevich, A. A. (2021). Got math attitude? (In) direct effects of student mathematics attitudes on intentions, behavioral engagement, and mathematics performance in the US PISA. *Contemporary Educational Psychology*, *67*, 102019. https://doi.org/10.1016/j.cedpsych.2021.102019

Guest, G., Namey, E., & Chen, M. (2020). A simple method to assess and report thematic saturation in qualitative research. *PloS One*, *15*(5), e0232076. https://doi.org/10.1371/journal.pone.0232076

Hanushek, E. A., Peterson, P. E., Talpey, L. M., & Woessmann, L. (2019). The achievement gap fails to close. *Education Next*, *19*(3), 78-140. https://www.educationnext.org/wp-content/uploads/2022/01/ednext_XIX_3_hanushek_et_al.pdf

International Student Assessment (PISA) - Mathematics performance (PISA) - OECD data. The OECD. (2018). https://data.oecd.org/pisa/mathematics-performance-pisa.htm

Ishak, N. H. F. B., Yusoff, N. F. B. M., & Madihie, A. (2020). Resilience in mathematics, academic resilience, or mathematical resilience: An overview. *Universal Journal of Educational Research*, *8*(5), 34-39. https://doi.org/10.13189/ujer.2020.081905

Jameel, H. T., Ali, H. H., & Phil, M. (2016). Causes of poor performance in mathematics from teachers, parents, and students' perspectives. *American Scientific Research Journal for Engineering, Technology, and Sciences*, *15*(1), 122-136. https://www.researchgate.net/profile/Hafiz-Tahir-Jameel/publication/306910423

Johansen, R., Espetvedt, M. N., Lyshol, H., Clench-Aas, J., & Myklestad, I. (2021). Mental distress among young adults–gender differences in the role of social support. *BMC Public Health*, *21*, 1-14. https://doi.org/10.1186/s12889-021-12109-5

Karabıyık, C. (2020). Interaction between academic resilience and academic achievement of teacher trainees. *International Online Journal of Education and Teaching*, *7*(4), 1585-1601. http://iojet.org/index.php/IOJET/article/view/1032

Karmitsa, N., Taheri, S., Bagirov, A., & Mäkinen, P. (2020). Missing value imputation via cluster wise linear regression. *IEEE Transactions on Knowledge and Data Engineering*, *34*(4), 1889-1901. https://doi.org/10.1109/TKDE.2020.3001694

Kelly, A., & Ireri, A. M. (2022). Academic resilience and self-efficacy as predictors of academic achievement among form three students in Trans-Nzoia County, Kenya. *Journal of Popular Education in Africa*, *6*(6), 92-108. https://ir-library.ku.ac.ke/server/api/core/bitstreams/470dfbd0-fbb0-475f-96f1-61a0cb52210a/content

Kenya National Examinations Council. (2023). *KCSE performance analysis by subject and county (2018–2022)*. Nairobi: KNEC.

Khalaf, M. A. (2014). Validity and reliability of the academic resilience scale in Egyptian context. *US-China Education Review*, *4*(3), 202-210. https://mc.minia.edu.eg/research/admin/Publications/28310302403192US-China_Education_Review_2014_3B.pdf#page=57

Kim, S., & Han, Y. (2023). The role of peer support in mathematics achievement: A longitudinal study of middle school students. *Educational Psychology, 43*(1), 1–18. https://doi.org/10.1080/01443410.2022.2156367

Kish, L. (1965). *Survey Sampling*. Wiley

Kotok, S. (2017). Unfulfilled potential: High-achieving minority students and the high school achievement gap in math. *High School Journal*, *100*(3), 183-202. https://doi.org/10.1353/hsj.2017.0007

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, *30*(3), 607-610. https://doi.org/10.1177/001316447003000308

Kugbey, N., Osei-Boadi, S., & Atefoe, E. A. (2015). The influence of social support on the levels of depression, anxiety and stress among students in Ghana. *Journal of Education and Practice*, *6*(25), 135-140. http://files.eric.ed.gov/fulltext/EJ1078530.pdf

Kusi-Mensah, K., Nuamah, N. D., Wemakor, S., Agorinya, J., Seidu, R., Martyn-Dickens, C., & Bateman, A. (2022). A systematic review of the validity and reliability of assessment tools for executive function and adaptive function following brain pathology among children and adolescents in low-and middle-income countries. *Neuropsychology Review*, *32*(4), 974-1016. https://doi.org/10.1007/s11065-022-09538-3

Kyriazos, T., & Poga, M. (2023). Dealing with multicollinearity in factor analysis: the problem, detections, and solutions. *Open Journal of Statistics*, *13*(3), 404-424. https://doi.org/10.4236/ojs.2023.133020

Lapinid, M. R. C., Cordel, M. O., II, Teves, J. M. M., Yap, S. A., Chua, U. C., & Bernardo, A. B. I. (2022). *Which Filipino students are being left behind in mathematics? Testing machine learning models to differentiate lowest-performing Filipino students in public and private schools in the 2018 PISA mathematics test* (Working Paper No. 2022-09-085). De La Salle University-Angelo King Institute. https://animorepository.dlsu.edu.ph/res_aki/4

Layne, C. M., Ruzek, J. I., & Dixon, K. (2021). From resilience and restoration to resistance and resource caravans: A developmental framework for advancing the disaster field. *Psychiatry*, *84*(4), 393-409. https://doi.org/10.1080/00332747.2021.2005444

Lovakov, A., & Agadullina, E. R. (2021). Empirically derived guidelines for effect size interpretation in social psychology. *European Journal of Social Psychology*, *51*(3), 485-504. https://doi.org/10.1002/ejsp.2752

Lynn, P. (2019). The advantage and disadvantage of implicitly stratified sampling. *Methods, Data, Analyses: A Journal for Quantitative Methods and Survey Methodology*, *13*(2), 253-266. https://www.ssoar.info/ssoar/handle/document/63134

Mabena, N., Mokgosi, P. N., & Ramapela, S. S. (2021). Factors contributing to poor learner performance in Mathematics: A case of selected schools in Mpumalanga province, South Africa. *Problems of Education in the 21st Century*, *79*(3), 451. https://doi.org/10.33225/pec/21.79.451

Mahama, I., Danquah, S. O., Ammah, C., Amos, P. M., & Eshun, P. (2023). An examination of mindfulness and academic resilience among higher education students amidst COVID-19 pandemic in Ghana. *Psychology*, *14*(6), 974-999. https://doi.org/10.4236/psych.2023.146052

Mallick, M. K., & Kaur, S. (2019). Academic Resilience among Senior Secondary School Students: Influence of Learning Environment. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, *8*(2), 49-58. http://dx.doi.org/10.21659/rupkatha.v8n2.03

Martínez-Hernáez, A., Carceller-Maicas, N., DiGiacomo, S. M., & Ariste, S. (2022). Social support and gender differences in coping with depression among emerging adults: a mixed-methods study. *Child and Adolescent Psychiatry and Mental Health*, *10*, 1-11. https://doi.org/10.1186/s13034-015-0088-x

Matore, E. M., & Khairani, A. Z. (2020). The pattern of skewness and kurtosis using mean score and logit in measuring adversity quotient (AQ) for normality testing. *International Journal of Future Generation Communication and Networking*, *13*(1), 688-702. https://www.researchgate.net/profile/Mohd-Effendi-Ewan-Mohd-Matore-2/publication/340125322

McNeish, D., & Wolf, M. G. (2020). Thinking twice about sum scores. *Behavior Research Methods*, *52*, 2287-2305. https://doi.org/10.3758/s13428-020-01398-0

Ministry of Education. (2021). *Basic Education statistics, 2020*. https://www.education.go.ke/sites/default/files/Docs

Mwangi, J. W. (2018). *Influence of drug use on academic performance among secondary school students: A case study of Lamudiac secondary school, Njoro Sub-County, Nakuru County, Kenya* [Doctoral dissertation, University of Nairobi]. University of Nairobi Research Archive. https://erepository.uonbi.ac.ke/handle/11295/105147

Nakuru County Government. (2022). *Nakuru County Integrated Development Plan (CIDP) 2023–2027*. Nakuru: County Planning Office

Neshila, K. F. (2018). *Academic resilience in mathematics amongst at-risk grade 10 learners in Namibia: A phenomenology study* [Doctoral dissertation, University of Namibia]. UNAM Gā-aisib Repository. http://repository.unam.na/bitstream/handle/11070/2215/neshila2018.pdf

Njoki, G. P. (2018). *Academic self-concept, motivation and resilience as predictors of mathematics achievement among secondary school students in Nairobi County, Kenya* [Doctoral thesis, Kenyatta University]. Kenyatta University Repository. https://ir-library.ku.ac.ke/server/api/core/bitstreams/9a71a46d-1fde-41e1-8b29-cddf564d8de6/content

Okocha, S. N., & Odinko, M. N. (2021). E-Learning facilities availability, usability and adaptability as predictors of job effectiveness among academic staff of University of Ibadan. *Journal of Educational Research and Development, 25*(2), 93-109. https://files.eric.ed.gov/fulltext/EJ1408539.pdf

Oktay, A., Dogan, H., Özcan, Z. Ç., Dönmez, Ö, & Özdemir, H. (2021). Investigation of academic achievement, self-efficacy and psychological resilience of sixth grade students starting primary school at different ages. *Journal of Education and Instruction*, *11*(1), 187-216. https://doi.org/10.14527/pegegog.2021.006

Olayemi, M., Tucker, M., Choul, M., Purekal, T., Benitez, A., Wheaton, W., & DeBoer, J. (2021). Creating a tool to measure children's wellbeing: *A PSS Intervention in South Sudan*, *2* (1), 1-34. https://doi.org/10.33682/rhqb-fy8u

Omwenga, M., & Mwangi, S. (2024, September 9). *The influence of sociodemographic factors on anti-social behavior among children: A case of Bobaracho area, Nyaribari Chache, Kenya.* SSRN. https://doi.org/10.2139/ssrn.5027014

Orcan, F. (2020). Parametric or non-parametric: Skewness to test normality for mean comparison. *International Journal of Assessment Tools in Education*, *7*(2), 255-265. https://doi.org/10.21449/ijate.656077

Oribhabor, C. B., & Anyanwu, C. A. (2019). Research sampling and sample size determination: A practical application. *Journal of Educational Research (Fudjer), 2*(1), 47-57. https://www.researchgate.net/publication/336723498

Oyoo, S. A., Mwaura, P. M., & Kinai, T. (2018). Academic resilience as a predictor of academic burnout among form four students in Homa-Bay County, Kenya. *International Journal of Education and Research*, *6*(3), 187-200. https://ir-library.ku.ac.ke/bitstream/123456789/23089/1/Academic%20Resilience....pdf

Padhy, M., Hariharan, M., Monteiro, S. R., Kavya, C., & Angiel, P. R. (2022). The Psycho-Social Support Scale (Psychoss-22): Development and validation. *The Indian Journal of Social Work*, *83*(1), 95-114. https://doi.org/10.4103/ijhas.IJHAS_254_20

Pascoe, M. C., Hetrick, S. E., & Parker, A. G. (2020). The impact of stress on students in secondary school and higher education. *International Journal of Adolescence and Youth*, *25*(1), 104–112. https://doi.org/10.1080/02673843.2019.1596823

Pelch, M. (2018). Gendered differences in academic emotions and their implications for student success in STEM. *International Journal of STEM Education, 5*, 1-15. https://doi.org/10.1186/s40594-018-0130-7

Rao, P. S., & Krishnamurthy, A. (2018). Impact of academic resilience on the scholastic performance of high school students. *Indian Journal of Mental Health*, *5*(4), 453-462.https://www.indianmentalhealth.com/pdf/2018/vol5-issue4/OR7%20PADMASHRI%20RAO.pdf

Rioux, C., & Little, T. D. (2021). Missing data treatments in intervention studies: What was, what is, and what should be. *International Journal of Behavioral Development*, *45*(1), 51-58. https://doi.org/10.1177/0165025419880609

Robertson, O., & Evans, M. S. (2020). Just how reliable is your internal reliability? An overview of Cronbach's alpha (α). *PsyPag Quarterly*, *1*(115), 23-27. https://www.academia.edu/download/65214636/PsyPAG_115_June.pdf#page=24

Rueger, S. Y., Rubinski, A., Crowley, C. G., & Malecki, C. K. (2021). The moderating role of ethnicity in the association between perceived teacher support and academic achievement. *Journal of Early Adolescence, 41*(8), 1263–1289. https://doi.org/10.1177/0272431620985839

Ruthiga, D. W., (2021). *Effects of students' language interpretation on performance in mathematics in selected secondary schools in Nakuru North Sub-County, Kenya* [Doctoral thesis, University of Eldoret]. University of Eldoret Repository. http://erepository.uoeld.ac.ke/xmlui/bitstream/handle/123456789/1122/

Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *The American psychologist*, *55*(1), 5–14. https://doi.org/10.1037//0003-066x.55.1.5

Skipp, C. S., & Dommett, E. J. (2021). Understanding and addressing the deficiencies in UK mathematics education: Taking an international perspective. *Education Sciences*, *11*(3), 141. https://doi.org/10.3390/%20educsci11030141

Soi, G. K. (2017). *Motivational, affective, and self-regulatory processes as predictors of academic achievement among secondary school students in Bomet County, Kenya* [Doctoral thesis, Kenyatta University]. Kenyatta University Repository. https://ir-library.ku.ac.ke/server/api/core/bitstreams/5489bddc-80f4-4cb5-b3e0-b70526822894/content

Srijan, S., & Rajagopalan, I. R. (2024). Best practices for handling missing data. *Annals of Surgical Oncology, 31*, 12–13. https://doi.org/10.1245/s10434-023-14471-7

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *4*(2), 1273-1296. https://doi.org/10.1007/s11165-016-9602-2

Taie, S., & Goldring, R. (2020). *Characteristics of public and private elementary and secondary school teachers in the United States: Results from the 2017–18 National Teacher and Principal Survey (First Look NCES 2020-142)*. U.S. Department of Education, National Center for Education Statistics. https://files.eric.ed.gov/fulltext/ED604223.pdf

Taie, S., & Goldring, R. (2020). Characteristics of public and private elementary and secondary school teachers in the United States: *Results from the 2017-18 National Teacher and Principal Survey. First Look. NCES 2020-142*. National Center for Education Statistics. https://eric.ed.gov/?id=ED604223

Tavajjohi, M., & Tamannaifar, M. (2023). Relationship between coping strategies and social support with students' test anxiety in the Covid-19 pandemic: The mediating role of academic resilience. *Clinical Psychology and Personality*, *20*(2), 149-163. https://cpap.shahed.ac.ir/article_3992_22fc75eebfd39b6e668e4386f2a83e78.pdf

Trigueros, R., Padilla, A., Aguilar-Parra, J. M., Mercader, I., López-Liria, R., & Rocamora, P. (2020). The influence of transformational teacher leadership on academic motivation and resilience, burnout and academic performance. *International Journal of Environmental Research and Public Health*, *17*(20), 7687. https://doi.org/10.3390/ijerph17207687

UNESCO. (2017). More than one-half of children and adolescents are not learning worldwide. *UIS Fact Sheet, 46* (3), 1-25. http://uis.unesco.org/

Van Loon, A. W., Creemers, H. E., Beumer, W. Y., Okorn, A., Vogelaar, S., Saab, N., ... & Asscher, J. J. (2020). Can schools reduce adolescent psychological stress? A multilevel meta-analysis of the effectiveness of school-based intervention programs. *Journal of Youth and Adolescence*, *49*, 1127-1145. https://doi.org/10.1007/s10964-020-01201-5

Vera Gil, S. (2024). the influence of gender on academic performance and psychological resilience, and the relationship between both: Understanding the differences through gender stereotypes. *Trends in Psychology*, 1-20. https://doi.org/10.1007/s43076-024-00370-7

Wang, J., Aaron, A., Baidya, A., Chan, C., Wetzler, E., Savage, K. & Kang, Y. (2021). Gender differences in psychosocial status of adolescents during COVID-19: A six-country cross-sectional survey in Asia Pacific. *BMC Public Health*, *21*(1), 1-18. https://doi.org/10.1186/s12889-021-12098-5

Wang, M. T., & Eccles, J. S. (2022). Perceived teacher support and science achievement motivation: A longitudinal examination among adolescents in secondary school. *Journal of Research on Adolescence, 32*(2), 492–510. https://doi.org/10.1111/jora.12717

Wen, X., & Li, Z. (2022). Impact of social support ecosystem on academic performance of children from low-income families: A moderated mediation model. *Frontiers in Psychology, 13,* 710441. https://doi.org/10.3389/fpsyg.2022.710441

World Bank. (2016). *Education in Sub-Saharan Africa: Policies for adjustment, revitalization, and expansion.* World Bank Group. https://documents.worldbank.org/curated/en/816101468009945118/Education-in-Sub-Saharan-Africa-policies-for-adjustment-revitalization-and-expansion

Xenofontos, C., & Mouroutsou, S. (2022). Resilience in mathematics education research: A systematic review of empirical studies. *Scandinavian Journal of Educational Research, 2* (1), 1-10. https://doi.org/10.1080/00313831.2022.2115132

Yan, Z., Yu, S., & Lin, W. (2023). Parents' perceived social support and children's mental health: the chain mediating role of parental marital quality and parent–child relationships. *Current Psychology, 43*, 4198–4210. https://doi.org/10.1007/s12144-023-04625-x

Yang, S., & Wang, W. (2022). The role of academic resilience, motivational intensity and their relationship in EFL learners' academic achievement. *Frontiers in Psychology, 12*, 823537. https://doi.org/10.3389/fpsyg.2021.823537

Zach, B. (2020). *What is a representative sample and why is it important?* Statology. https://www.statology.org/representative-sample/

Zeng, Q., Li, J., Huang, S., Wang, J., Huang, F., Kang, D., & Zhang, M. (2023). How does career-related parental support enhance career adaptability: the multiple mediating roles of resilience and hope. *Current Psychology*, *42*(29), 25193-25205. https://doi.org/10.1007/s12144-022-03478-0

Zhou, Y., Zhu, Y., & Wong, W. K. (2023). Statistical tests for homogeneity of variance for clinical trials and recommendations. *Contemporary Clinical Trials Communications*, 101119. https://doi.org/10.1016/j.conctc.2023.101119

APPENDICES

Appendix A: Informed Consent Form

My name is Kiriswa Grace Nasioki, I am a master's student from Kenyatta University. I am conducting a study whose title reads "***Academic Resilience and Psychosocial support as correlates of Mathematics Performance in Nakuru County, Kenya***.". The results obtained from the research will promote student support from parents, teachers, and peers and in adapting measures that enhance academic resilience among the students hence better performance in mathematics, hence improved overall performance in academics, and better career advancement.

Voluntary Participation

Participation in answering the questionnaires is voluntary and students have the right to refuse to participate or filling in the given questionnaires and there is no penalty. The student who is willing should therefore go ahead and fill out the questionnaires.

Risks and Discomforts

There are no known psychological, physical, or emotional risks to the students participating in the research. However, you may experience some discomfort when answering sensitive questions about academic resilience.

Confidentiality

To maintain anonymity, no student name should be used for identity purposes. Moreover, the questionnaires will only be handled by the researcher and research assistants during collection, data entry and afterward stored safely by the researcher.

Contact Information

In case of any questions or inquiries about the study you can reach the researcher using the email address; nasiokigracie@gmail.com

Participant Statement (for students aged 18 and above)

The above information regarding my participation in the research is well understood. My participation in the study is therefore voluntary. I understand that I will not be treated differently or suffer any consequences if I choose to leave the study.

Signature: _____ Date: _____

If you do not consent to participate, you do not need to sign this form, rather, return it to the researcher.

Parental Consent (for students under 18 years of age)

I, _____the undersigned parent/guardian, have read and understood the above information regarding my child's participation in this research study. I hereby give my consent for my child to participate in this study.

Signature: _____ Date: _____

Appendix B: Student Questionnaire

General guidelines: Kindly answer correctly and truthfully or tick the suitable response.

SECTION A: Personal Information

1. Gender Male ☐ Female ☐
2. School Name …….
3. Age …….
4. Code Number…….
5. School Category

   Boys Only ☐

   Girls Only ☐

   Co-educational ☐

SECTION B: Academic Resilience Questionnaire by Cassidy (2016)

Using the information which has been given below, select to what extent each item given corresponds to your personal feelings about your life in school environment. Circle or tick your choice. The given choices are as follows, Unlikely, Uncertain, Somewhat Unlikely, Likely and Very Likely.

NOTE. There are no wrong or correct answers, and your answers will not be shown to your teachers therefore there is no need to fear.

Vignette: Consider that you have received the marks for a recent mathematics examination that you had an E (fail). The marks for two other recent mathematics examinations were also poorer than you would want as you are aiming to pass your KCSE examinations because you have clear career goals in mind and don't want to disappoint your family. The feedback from the

mathematics teacher for the examination is quite critical, including reference to 'lack of understanding' and 'poor writing and expression,' but it also includes ways that the work could be improved. Similar comments were made by the mathematics teacher who marked your other two examinations.

Kindly fill the answers below on how you would approach the situation.

		Unlikely	Uncertain	Some what Unlikely	Likely	Very Likely
Perseverance						
1	I would not accept the teachers' feedback					
2	I would use the feedback to improve my work.					
3	I would just give up.					
4	I would use the situation to motivate myself					
5	I would change my career plans.					
6	I would see the situation as a challenge.					
7	I would do my best to stop thinking negative thoughts.					
8	I would see the situation as temporary.					
9	I would work harder.					
10	I would try to think of new solutions.					
11	I would blame the teacher.					
12	I would keep trying.					

13	I would not change my long-term goals and ambitions.					
Reflecting and Adaptive Seeking Behaviour						
14	I would look forward to showing that I can improve my grades.					
15	I would use my past successes to help motivate myself.					
16	I would start to monitor and evaluate my achievements and effort.					
17	I would give myself encouragement.					
18	I would seek help from my teachers.					
19	I would try different ways to study.					
20	I would set my own goals for achievement.					
21	I would seek encouragement from my family and friends.					
22	I would try to think more about my strengths and weaknesses to help me work better.					
Negative Effect and Emotional Response						
23	I would start to self-impose rewards and punishments depending on my performance.					
24	I would feel like everything was spoilt and was going wrong.					
25	I would stop myself from panicking.					
26	I would probably get annoyed.					

27	I would begin to think my chances of getting the job I want were poor.					
28	I would begin to think my chances of success were poor					
29	I would probably get discouraged.					
30	I would be very disappointed.					

SECTION C: Psychosocial Support Questionnaire Padhy et al. (2022)

Using the information which has been given below, select to what extent each item given corresponds to your personal feelings about your life in the school environment. Circle or tick your choice. The given choices are as follows,

KEY: **SD** = Strongly Disagree**, D** = Disagree, **N** = Neutral, **A** = Agree, **SA** = Strongly Agree

	Statements	SD	D	N	A	SA
Social support networks						
1	I believe I will remain close to my friends for a long time					
2	I can visit my friends when I need advice					
3	I have long- lasting friendships					
4	I help others without expecting anything in return					
Family based psychosocial support						
5	My parents/Family members support my decisions					
6	My parents/Family members understand my needs					
7	I am encouraged by my friends and family to follow my dreams					
8	My parents give me pocket money					
Psychological support deprivation						
9	I don't have friends to spend time with					
10	I feel lonely even in the presence of friends and family					
11	There is no one I feel comfortable to discuss my personal problems					

12	I help people to get something in return					
Psychosocial support availability						
13	There is someone to stay with me when I need them					
14	There are people to listen to me when I need to talk					
15	When I feel lonely several people come forward to be with me					
Communicative support						
16	My loved ones celebrate my achievements					
17	I express appreciation to others help					
18	There are several people whose company I enjoy					
Supportive disposition						
19	I help others without expecting anything in return					
20	I provide support as long as one needs					
21	Once I start supporting others, I continue giving support					
22	I provide help to others if someone needs					

SECTION D: Summary of Students' Mathematics Performance

School: Gender: Male () Female ()

Code no:

Examinations	Total Marks Obtained in Mathematics examination at the end of the term	Mean Score
Form two: Term III 2023		

Appendix C: Sample Size Determination Table

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Source: Krejcie and Morgan (1970)

Appendix D: Permission to Adapt Instrument

KENYATTA UNIVERSITY

Grace Kiriswa <21960.2021@students.ku.ac.ke>

Permission to Use the Psycho-Social Support Scale (PSYCHOSS-22)

2 messages

Grace Kiriswa <21960.2021@students.ku.ac.ke> 16 April 2024 at 12:06
To: "meerapadhy@yahoo.com" <meerapadhy@yahoo.com>

Greetings,
My name is Grace Nasioki Kiriswa, a Masters student at the Department of Educational Psychology, Kenyatta University, Kenya. I am writing to you seeking permission to use the Psycho-Social Support Scale (PSYCHOSS-22) for my academic purposes. I intend to use and fully acknowledge your work as per the stipulated guidelines.
Looking forward to your response.

Regards,
Grace Nasioki Kiriswa.

meera padhy <meerapadhy@yahoo.com> 16 April 2024 at 14:18
Reply-To: meera padhy <meerapadhy@yahoo.com>
To: 21960.2021@students.ku.ac.ke

Dear Grace
I am glad that you are interested to use this scale in your academic work. I have no objection. All the best
Best
Meera

Yahoo Mail: Search, organise, conquer

On Tue, 16 Apr 2024 at 14:37, Grace Kiriswa <21960.2021@students.ku.ac.ke> wrote:

[Quoted text hidden]

Appendix E: Research Approval Letter

KENYATTA UNIVERSITY
OFFICE OF THE EXECUTIVE DEAN GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Internal Memo

FROM: Executive Dean, Graduate School **DATE:** 20th March 2024

TO: Ms. Kiriswa Grace Nasioki **REF:** E55/21960/2021
c/o Department of Educational Psychology

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board, at its meeting on **13th March 2024** approved your Research Proposal for the M.Ed. Degree entitled, ***"Academic Resilience and Psychosocial Support as Correlates of Mathematics Performance Among Form Two Students in Nakuru County, Kenya"***.

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking and Progress Report Forms per semester. The Forms are available at the University's Website under Graduate School webpage downloads.

Also, please ensure that you publish article(s) from your thesis before submitting it to Graduate School for examination as per the Commission for University Education and Kenyatta University guidelines.
Thank you.

P.L.OPONDI
FOR: EXECUTIVE DEAN, GRADUATE SCHOOL

CC. Chairman, Department of Educational Psychology

Supervisors:

1. Dr. Josephine Mutua
   C/O Educational Psychology Department
   Kenyatta University
2. Dr. James Oluoch
   C/O Educational Psychology Department
   Kenyatta University

Appendix F: Research Authorization Letter

KENYATTA UNIVERSITY
OFFICE OF THE EXECUTIVE DEAN GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Our Ref: E55/21960/2021

DATE: 20th March 2024

Director General,
National Commission for Science, Technology and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR MS.KIRISWA GRACE NASIOKI – REG. NO. E55/21960/2021

I write to introduce Ms. Kiriswa Grace Nasioki who is a Postgraduate Student of this University. She is registered for M.Ed. degree programme in the **Department of Educational Psychology.**

Ms. Kiriswa Grace Nasioki intends to conduct research for a M.Ed. Thesis Proposal entitled, ***"Academic Resilience and Psychosocial Support as Correlates of Mathematics Performance Among Form Two Students in Nakuru County, Kenya"***.

Any assistance given will be highly appreciated.

Yours faithfully,

PROF. ELISHIBA KIMANI
EXECUTIVE DEAN, GRADUATE SCHOOL

Appendix G: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **845016**

Date of Issue: **17/April/2024**

RESEARCH LICENSE

This is to Certify that Miss.. GRACE NASIOKI KIRISWA of Kenyatta University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nakuru on the topic: ACADEMIC RESILIENCE AND PSYCHOSOCIAL SUPPORT AS CORRELATES OF MATHEMATICS PERFORMANCE AMONG FORM TWO STUDENTS IN NAKURU COUNTY, KENYA for the period ending : 17/April/2025.

License No: **NACOSTI/P/24/34660**

845016

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix H: Nakuru County Map

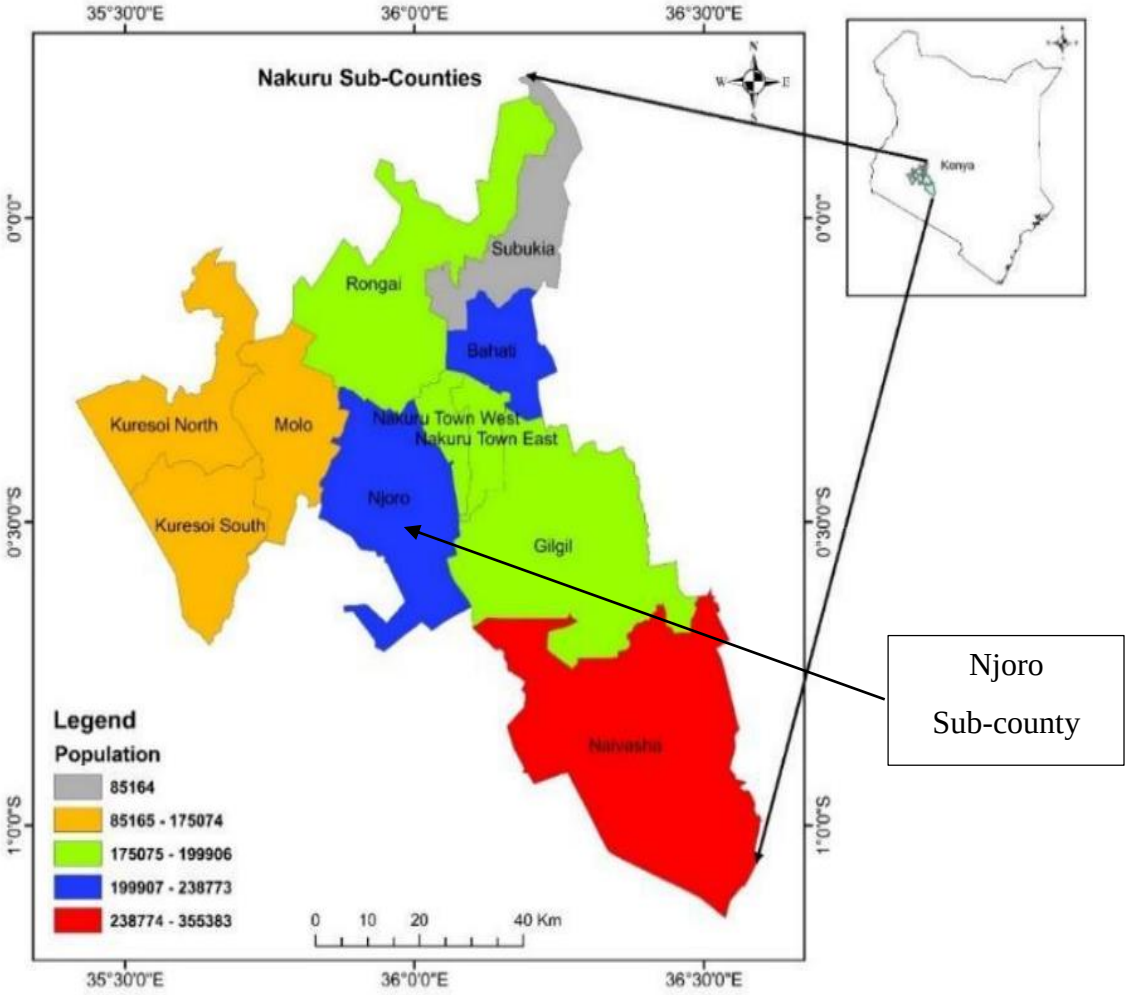


Figure 2: Map of Nakuru County

Source: Google Advanced Image Search