THE INFLUENCE OF PARENTING STYLES AND SELF- CONCEPT ON STUDENTS' ACHIEVEMENT IN MATHEMATICS

CHONGE. M. BENSON

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DECLARATION

Declaration by the Candidate

This thesis is my original work and has not been presented for degree in this or any other university.

Name of Candidate

Chonge. M. Benson …… …..……

Signature Date

EDU/PGGC/O2/05

Department of Educational

Psychology**.**

Declaration by Supervisors

This thesis has been submitted for examination with our approval as the university supervisors.

Dr. S.M. Mulambula ….…… ……..…….

Signature Date

Department of Educational

Psychology.

Prof. Chris Mukwa …… ……..

Signature Date

Department of Curriculum Instruction and Educational

Media (CIEM).

DEDICATION

To my dear wife Beatrice and children; Daisy, Hazel and Patience who are my quiet source of inspiration and strength

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ABSTRACT

Poor performance in Mathematics over the years by students has raised many questions which can only be answered through research. The need for research against the background of the importance of Mathematics in the curriculum and career placement cannot therefore be overemphasized. This study was designed to respond to the concern raised due to low achievement of some of the students in Mathematics. The purpose of this study was to investigate the influence of parenting styles and self concept on students' achievement in Mathematics among secondary schools. Other variables investigated were gender differences, category of school, family land size and parental levels of education. This study was modeled on the cognitive social learning theory by Bandura (1977), which is built on the premise that behavior is learned through observation. A casual comparative research design was used and a sample of 214 respondents consisting of 96 boys and 108 girls drawn from 11 secondary schools was used. Stratified random sampling was used to select respondents from 11 out of 20 schools. The respondents in the study were form three students in Kaplamai Division in Trans-Nzoia District. A total of 214 students responded to the questionnaires. Scores in Mathematics were extracted from internal examination records of schools which participated in the study. The data collected was analyzed using means, standard deviations, Pearson product moment correction, t-test and one way ANOVA. The findings from the study indicated that Authoritative and Authoritarian parenting styles have significant influence on students' self concept and achievement in Mathematics; the values obtained were (t= 6.58 and 4.83) for self concept and (t = 7.51 and 5.23) for Mathematics achievement at $P \leq 0.05$. Gender differences were found to have significant influence both on Mathematics achievement and Mathematics self concept of students. The values were (t = 10.21and 8.46) at $P \leq 0.05$ respectively. Male students had positive Mathematics self concept and were better achievers in Mathematics compared to female students .Parental levels of education and school categories registered significant relationships with students' self concept and achievement in Mathematics. Parental level of education versus self concept (F = 6.18); school categories versus self concept (F = 14.05). Parental levels of education versus Mathematics achievement (F = 9.05); school categories versus Mathematics achievement (F = 12.08) respectively. However no significant relationships were found between school categories, family land size with students' achievement in Mathematics and self concept. No significant relationships were found between Neglectful and Permissive parenting style with students self concept and achievement in Mathematics. From the findings it was concluded that Authoritative and Authoritarian parenting styles as well as self concept have significant influences on students' achievement in Mathematics; parental levels of education and school categories have significant relationships with students' achievement in Mathematics and their self concept. It was therefore recommended that parents, teachers and all stakeholders in Mathematics education should strive to foster positive self concept of students and make attempts to eradicate stereotyped roles which promote gender disparity in Mathematics achievement.

ABBREVIATIONS

FSA: Foundations Skills- Assessment.

KNEC: Kenya National Examination Council

KCSE: Kenya Certificate of Secondary Education.

NGO: Non- Governmental Organization.

PISA: Programme for International Student Assessment

SMASSE: Strengthening Mathematics and Science Subjects.

SPSR: Students' Parenting Styles Rating Scale.

SSCQ: Students' Self Concept Questionnaire.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter examines the background information to the problem, statement of the problem, purpose of the study, the research objectives, research hypotheses, assumptions, significance of the study, theoretical framework, limitations of the study and definition of terms.

1.2 Background to the Study

Kenya is a developing nation that needs science and technology for its development and for achieving the millennium development goals, therefore the poor performance of students in Science and mathematics is of great concern to the nation. This situation does not favour Kenya's move towards developing a science and technology culture and worse still it may down Kenya's dream of joining the industrial nations of the world.

However, this problem is not a preserve of Kenya. Even the developed nations have similar concerns. A survey commissioned by Bayer Corporation (2003) found nine in every ten Americans concerned about the lack of mathematics skills of today's students to cope with the changing world that is progressively more difficult to understand, analyse, or explain. In coping with emerging world changes, students have a competitive advantage when they are able to draw upon meaningful mathematics skills. According to Cech (2003), a progressively complex world calls for increasingly skilled people who understand science and mathematics. In acknowledging the importance of mathematics in the curriculum, the Ministry of Education of the Republic of Kenya has made mathematics a compulsory subject in schools. The unresolved questions are; why under achievement of students in mathematics in spite of its applicability and relevance in the modern world?

What can be done to curb the poor performance of students in mathematics and enhance students' acquisition of mathematics skills for understanding and remaining relevant in today's complex and ever changing world?

The main function of public examination is to "grade candidates according to their abilities" (Wasanga, 2004 p.7). The massive failure of students to obtain a pass in

mathematics raises questions on whether examinations are accurate predicators of learners. Table 1.1 shows the candidates overall performance in mathematics for the period 2000-2003.

Table.1.1 Candidates Overall Performance in Mathematics for the Period 2002-2003

Year	Candidates	Mean Score	Standard Deviation
2000	181,947	16.16	15.00
2001	193,702	18.43	17.00
2002	197,118	19.70	18.98
2003	205,232	19.31	18.09

Source KNEC report 2004

The table shows that students' performance in mathematic is poor given low mean scores over the years**.**

National Examination Council has been publishing results in order of merit according to students' performance in the KCSE examination. These results are used to monitor performance of all the candidates in Kenya in various counties in terms of subjects offered in the curriculum; school and gender performance. Grading according to mean scores and mean grades in various subjects does not only provide clear evidence of performance disparity between counties and schools but also gender performance in mathematics compared to other subjects in the curriculum. Indeed, the national mean score and mean grade for mathematics is below those of all other subjects. Table 1.2 shows student's performance in sciences in Kenya certificate of secondary education.

Table1.2: Candidates Overall Performance (mean percentage) in Mathematics and Sciences in the Period of 2002-2005

Year	2002		2003		2004		2005	
Subject Gender	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**
Mathematics	16.44	22.53	16.25	22.10	16.21	22.5	16.45	23.19
Biology	24.53	28.34	27.23	31.35	28.23	32.45	29.03	33.42
Physics	26.61	30.89	29.07	32.28	29.46	33.32	30.15	34.26
Chemistry	22.05	26.62	24.04	29.30	25.74	29.97	26.37	30.65

Source KNEC report 2006

From the table, it is evident that the overall performance of male students in Mathematics is higher than that of female student's. Performance in Mathematics is poor in comparison to other Science subjects.

The government efforts to energize achievement in mathematics have failed to provide significant changes in achievement levels both in primary and secondary schools. Improved training of teachers through funding of seminars, launching of projects such as SMASSE, provision of incentives for mathematics teachers and improved inspection of schools have all come to little success if any.

Consequently, every time KNEC releases KCSE results, accusations and counter accusations abound. Teachers bear the blame from the parents and other stakeholders for the poor performance in mathematics. On the other hand teachers accuse parents of failing either to pay fees in time and therefore causing student absenteeism leading to poor coverage of the syllabus.

The government has not been spared the blame for overloading students' curriculum with many subjects giving rise to academic apathy and for failing to provide effective supervision through Quality Assurance Officers. Some teachers blame students for

poor performance arguing that some have low cognitive abilities in mathematics. However, failure in mathematics has been universal; both low achievers and high achievers have fallen victims to mathematics. The researcher is convinced that blame cannot help in this situation. It is on the basis of this reality that this study was designed to determine the influence of parenting styles and self concept on students' achievement in mathematics in secondary schools.

Previous studies conducted by various researchers on achievement in mathematics (Kiragu, 1988; Mwangi, 1983; Eshiwani, 1983; and Kathuri, 1982) concluded that various factors were responsible for poor performance in mathematics and in general, academic performance. Some of these studies like Eshiwani's have found that in both primary and secondary schools, availability of textbooks had a positive relationship to achievement.

Kiragu (1986), in her discussion of factors that have helped students understand mathematics concluded that interest, determination to succeed and parental encouragement as well as liking and cooperating with mathematics teachers were noteworthy factors. Most of the researchers have considered achievement in mathematics from environmentally related factors such as type of school, teaching strategies, and school administrative strategies, availability of textbooks and social-economic background of students.

The researcher is of conviction that studying factors determining achievement in mathematics should begin from the learner who is an important player in the learning process, without whom learning is impossible. The learner cannot be exonerated from the blame game whose focus is poor achievement in mathematics. This study attempted to focus mathematics achievement on the learner as opposed to external

factors. The learner is not only affected by the environment but he/she positively or negatively affects the environment (Bandura, 1986). In the light of the learner being a central player in academic achievement, this study sought to understand how self-concept of the learners relates to achievement in mathematics among secondary school students.

1.3 Statement of the Problem

Stakeholders in the education sector in Kenya have been concerned about the poor performance in science subjects and notably mathematics over the years. Students' performance in mathematics and science subjects in examinations administered by the Kenya National Examination Council has remained below expectation. This situation does not favour Kenya in its effort toward developing a scientific and technological culture. More often than not, teachers are blamed for the poor performance and even when the blame is directed to a student, explanation is offered only in terms of the students' cognitive and intellectual ability. Little or no consideration is given to the fact that the student's perception of self in mathematics can affect ones achievement in Mathematics.

Little attention too is paid to the fact that parenting could influence ones' performance in the subject. As at now, knowledge of how certain human factors relate to ones achievement in mathematics is not well known. A gap exists in understanding the possible relationship between certain human attributes such as self- concept, parenting and the individuals' evaluation of self -efficacy in the performance of mathematics at the secondary school level. This study makes an attempt to contribute towards filling the existing gap.

Various studies have identified areas of difficulty in the learning of mathematics at various levels (Cramer et al, 2002; Kato et al 2002; Harries & Suggate, 2006; Harries & Barmbey, 2007). Indeed Brown et al (2008) observed that in many countries, many students do not enjoy school mathematics and seek to avoid it later. Mathews and Pepper (2005) note powerful reasons for not continuing with mathematics. This includes lack of enjoyment and a belief that the subject is boring, for both high attaining as well as low attaining students. These studies consider performance in mathematics from the perspective of school factors therefore externalizing it. In this case the role of individual students in mathematics achievement is ignored. This study sought to establish the role of internal processes such as self- concepts (academic and mathematics self-concepts) on students' achievement in mathematics.

Most studies conclude that there is a relationship between self-concept and academic achievement. Maritim (1979) reported that self- concept was a strong predictor of academic achievement and those pupils who thought highly of their abilities significantly out achieved those who had low perception of their abilities. He further points out that on all achievement variables investigated, boys performed better than girls.

Maqsud (1983) asserts that it is important for educators in Africa to bear in mind that self -concept is essential in facilitating quality education and teachers can play a great role in this area. Loxley's (1981), findings indicated that 68% of achievement in mathematics is explained by school factors. Schiefelbein and Simmons (1981) found out that out of 13 observations, the social status of parents was a significant predictor of achievement in ten of the observations. Mwangi's study (1983), found two variables to be significantly related to achievement in mathematics; the availability of teaching materials and availability of resources.

Maritim (1979), in Misigo (1998), asserts that pupils personality characteristics help to explain differential performance among children. Therefore, consideration of the pupil's performance cannot be separated from their personality. This study investigated personality of students as manifested in their self concept and its influence on achievement in mathematics. Commenting on child rearing Shiundu, (1990) observes that the challenges of child moulding is a parental responsibility and that failure of parents to inject the right dose of life expectations in a child results in future problems for the child for example, failure of the child to mix well in society. He further points out that though the parents feed, clothe and care for their children, they do little to strengthen their children's character.

Lack of strong character according to him makes the child a push over for the forces outside the family. Shiundu focused on the role of the parent as a provider of basic needs for the child's education, survival, security, facilities and guidance. There is, however, scanty information on the relationship between parenting and achievement in Mathematics.

Literature reviewed showed that there is need for a study on the influence of parenting styles and self-concept on students' achievement in mathematics. This study conceptualized that parenting styles and students' self-concepts are predictors of achievement in mathematics.

1.4 The Purpose of the Study

The purpose of this study was to investigate the influence of parenting styles and self-concept on student's achievement in mathematics in secondary schools. The investigation focused on students' self-concepts and their orientations with regard to

parenting styles. This study also sought to find out the influence of categories of schools, and parental levels of education on students' achievement in mathematics.

1.5 Objectives of the Study

This study was designed to achieve the following objectives:

i. To determine the influence of self-concepts on student's achievement in mathematics.
ii. To investigate the influence of parenting styles on student's achievement in mathematics.
iii. To determine the influence of gender on student's achievement in mathematics.
iv. To investigate the influence of gender on student's mathematics self-concept.
v. To investigate the influence of parenting styles on student's self-concepts.
vi. To determine the influence of categories of schools on student's achievement in mathematics.
vii. To investigate the influence of parental levels of education on student's achievement in mathematics.

1 .6 Research Questions

Research questions for this study were:

i. What is the influence of students' self-concepts on achievement in mathematics?
ii. What is the influence of parenting styles on students' achievement in mathematics?
iii. Is there any difference in mathematics achievement between girls and boys?
iv. Is there any difference in the self-concepts of boys and girls?
v. Do parenting styles influence the self-concepts of students?

vi. Do categories of schools influence students' achievement in mathematics?

vii. Do parental levels of education influence students' achievement in Mathematics?

1.7 Research Hypotheses

To achieve the study objectives of this study, the following null hypotheses were formulated and tested at an alpha level of .05

HO_1: Self – concepts have no significant influence on students' achievement in mathematics.

HO_2: Parenting styles have no significant influence on students' achievement in mathematics.

HO_3: Gender has no significant influence on students' achievement in mathematics.

HO_4: Gender has no significant influence on students' self – concepts.

HO_5: Parenting styles have no significant influence on students' self – concepts.

HO_6: Categories of schools have no significant influence on students' achievement in mathematics.

HO_7: Parental levels of education have no significant influence on students' achievement in mathematics.

1.8 Justification of the Study

Studies by (Kiragu, 1988; Eshiwan, 1983; Mwangi 1983) concluded that factors such as availability of textbooks, type of school, school administration and education of parents influenced academic performance of students. These studies tended to look at the environmental factors which influence academic performance of students. This approach tends to depict the student as a victim of the environment. Since a student is an integral part of the learning process with a responsibility of influencing the learning outcomes, this study considered parenting and self concept as internal factors to the student which may influence achievement in mathematics. Consequently, the study

conceptualized, that parenting styles expose children to varying social environments which influence their self-concepts and achievement in mathematics. This study unlike the previous studies attempted to focus on the influence of parenting styles on students' achievement in mathematics.

Hoffman and Hoffman (1964) and Shiundu (1990) concluded that the parent has a responsibility for rearing a child. However, these studies did not consider how parenting styles influences personality development, self concept and achievement of children in mathematics. Now, more than ever before, Mathematics competency is essential for advancement into a breath of post secondary careers and programmes (Sukthankar, 1999). Furthermore, Eccles (1987) found out that persons employed in Mathematics or science related careers tend to gain more autonomy, higher prestige, and higher pay than do persons in other career domains. As such, research focused on understanding to a fuller extent students' performance in and their perception of Mathematics is important and inevitable.

This study unlike the previous studies reviewed which considered school factors, this study focused on student factors: parenting styles and self-concepts and attempted to determine their influence on students' achievement in mathematics.

1.9 Scope of the Study

The study was concerned with the influence of parenting styles and self-concept on students' achievement in mathematics among secondary school students. It was conducted in eleven secondary schools in Kaplamai Division of Trans Nzoia County between October, 2007 and November, 2007 using a causal – comparative research design and a sample of 214 participants. The sample reflected gender representation in the population. The participants were drawn from form three class, since students in

this class have a developed self-concept compared to those in form one or form two. Performance in mathematics is influenced by many factors such as teaching methods, availability of textbooks, type of schools and students' ability as cited by previous studies. This study however, focused on the influence of parenting styles and self-concept on students' achievement in mathematics.

1.10 Limitations of the Study

In view of the scope of this study, the researcher anticipated the following limitations:

i. The study was conducted in eleven secondary schools out of twenty due to time and financial constraints. Therefore, the findings of this study may not be generalized to all secondary schools in Kenya. However, the findings can be generalized to all secondary schools in Trans- Nzoia County.
ii. The study focused on form three students and as a result, generalization of the findings to other classes may not be possible.
iii. The study did not involve manipulation of variables by the researcher i.e. the study did not have control procedures. Consequently, the influence of parenting styles and self-concept on students' achievement in mathematics can not certainly be described in terms of cause- effect relationships.
iv. Although many variables influence students' performance in mathematics, only parenting styles and self-concept were investigated.

1.11 Assumptions of the Study

The following assumptions were made during the study:

i. The participants were exposed to similar learning experiences since they were all drawn from public secondary schools.
ii. Mathematics teachers offered quality instructions to the participants.
iii. Assessment tests given by teachers to students were acceptable evaluation instruments for academic performance.

iv. Form three students used as participants in the study had developed self-perception.

v. The participants were truthful while responding to the instruments.

1.12 Significance of the Study

The findings of the study would help educators to identify factors that affect students' achievement in mathematics. This would in turn help them to improve students' achievement in mathematics. Self-concept theory places the individual at the centre of own perception, evaluation and that of the world around him. Understanding of such perceptions in school is important for educational planning and curriculum development in Kenya.

The study findings would be useful to parents who are charged with the responsibility of mentoring children. According to Baumrind (1991) authoritative parenting seems best for equipping students to meet the challenges of academic contexts, in that it is associated with the development of instrumental competence in preschoolers and elementary school children. The other two parenting styles, authoritarian and Permissive appear to fail to enable children to develop a range of self-directing, self-monitoring, and self-regulatory abilities under- girding success in academic contexts.

Children whose parents adopt an authoritative parenting style (high but reasonable maturity demands, good communication and mutual respect), succeed best in school throughout childhood and adolescence. Parents whose style is more authoritarian (strict, unyielding, leaving no room for explanation or negotiation, emotionally less open) have children who do less well in school (Dornbusch, Ritter, Leiderman, Roberts, & Fralegigh, 1987; Steinberg, Elmen & Mounts, 1989; Steinberg, Lamborn,

Darling, Mounts, & Dornbusch, 1994; Steinberg, Lamborn, Dornbusch, & Darling, 1992).

Based on these research reports, the study sought to establish the influence of parenting styles: authoritative, authoritarian, permissive and neglectful on achievement in mathematics. Findings provided by the study would enable parents to improve their parenting. The study aimed at making learners acknowledge their central role in the learning process as advocated for by the concept of self-efficacy. Self-efficacy is a multi- dimensional construct which influences human functioning directly and indirectly through its effect on other determinants (Bandura, 1997), such as motivation, self-regulation, attribution and emotion.

Research in the field of education has, and in particular in its role in academic achievement, shown positive correlation with performance attainment (Bandura, 1986; Bempechat & Drago-Severson, 1999; Covington, 2000; and Pajares 1996). Self-efficacy mediates between an individual's ability and purposive action. Perceived self-efficacy influences the course of action adopted, effort invested, endurance and resilience in the face of obstacles and failures, coping, and the level of accomplishments (Bandura, 1997). According to Bandura (2001), self-efficacy is also a crucial mechanism in individual urgency. Crucial to exercising urgency are: a) planning, b) forethought, which includes outcome expectations c) self-evaluation, d) motivation and self-regulation.

Pintrinch and Schunk (2002), state that self-efficacy is a crucial variable in learning and performance of social, cognitive, motor skills, strategies and behaviours. According to this literature, an individual's perceived self-efficacy is the source of failure or success and therefore an individual is responsible for his academic success or

failure. In this case, success or failure in mathematics is dependent on the individual students' self-concept.

1.13 Theoretical Framework

This study adopted social learning theory and self- efficacy theory developed by Albert Bandura in 1977 and 1997. This theory focuses on the behavior patterns that people develop in response to environmental contingencies. Some behaviour may be rewarded while others may produce unfavorable results through the process of differential reinforcement where people eventually select the more successful behaviour patterns (Atkinson, 1977). Albert Bunduras' social learning theory emphasizes the significance of learning by observation. Many behavior patterns are learned by watching the behaviour of others and observing what consequences it produces for them. It stresses the role of models in transmitting both specific behaviours and emotional responses and it focuses on such questions as what types of models are most effective and what factors determine whether the modelled behaviour that is learned will actually be performed (Bandura, 1977).

Bandura's (1997) key contentions as regards the role of self- efficacy beliefs in human functioning is that peoples level of motivation, affective states and actions are based on what they believe than on what is objectively true. For this reason how people behave can often be better predicted by the beliefs they hold about their capabilities than by what they are actually capable of accomplishing, equally self – efficacy perceptions help determine what skills they have. This helps to ex¯plain why people's behaviours are sometimes a mismatch from their actual capabilities and why behaviour may differ widely even when they have similar knowledge and skills. Social learning theory emphasizes that one's learning and performance of behaviours are influenced by one's

social contexts, including the family, community and broader society (Crosbie , Burnett & Lews, 1993).

Social learning suggests that a combination of factors both environmental (social) and psychological influence behaviour. It indicates the effectiveness of human social models in influencing another to change behaviours, beliefs or attitudes, as well as social and cognitive functioning. Teachers and parents must model appropriate behaviours and take care they do not model inappropriate behavior. Teachers should also expose students to a variety of other models in order to increase their confidence (Cunia, 2007).

Reinforcement and punishment influences what people do than what they learn. A child's self-concept is influenced by the feedback from significant others within the immediate environment as well as the school environment. Negative feedback may result into negative self-concept and low self-efficacy hence poor achievement in mathematics.

According to Bandura (1977), social influence is the process by which people reason about others in the social world. A Personal idea about what is important and what are good, guide people about their actions either in self-approval or in criticism. Through continuous self-evaluation people take corrective measures when they fail to meet their internal standards. Individuals acquire their standards from families, peers, teachers and the community. Standards that bring success and approval are strengthened while those that meet unpleasantness are weakened.

Consequently, this study postulated that if students receive parental approval and encouragement, they are motivated to higher levels of achievements in mathematics

but if they meet disapproval, then they are demotivated leading to poor achievement in mathematics. Apparently, parental approval eludes positive self-concept that in turn stimulates high achievement in mathematics. This theory has been used by many researchers to study various phenomena related to this study. For example, the theory was used by a team of researchers in New Zealand to assess mathematics self-efficacy of diverse students from secondary schools in Auckland. Results obtained indicated a positive correlation between achievement in mathematics and self- efficacy. This theory in essence is ideal for the current study.

Students in the school environment constantly receive feedback from teachers and peers, which shape their self-esteem and self-concept. If a student realizes that his or her abilities in schoolwork, social skills and sports are poor as communicated by the significant others, then he or she develops poor self-esteem. In the context of this study, it was conceptualized that self -concept is influenced by the environment and parenting styles which comprise the individuals' social environment. This study posted that a negative social environment results in a negative self-concept and a positive social environment results in a positive self-concept.

Consequently, achievement in mathematics is determined by the students' self-concepts. In the same vein, parenting styles are considered equally important in determining students' mathematics achievement. Various researchers have examined the role of parents in academic performance.

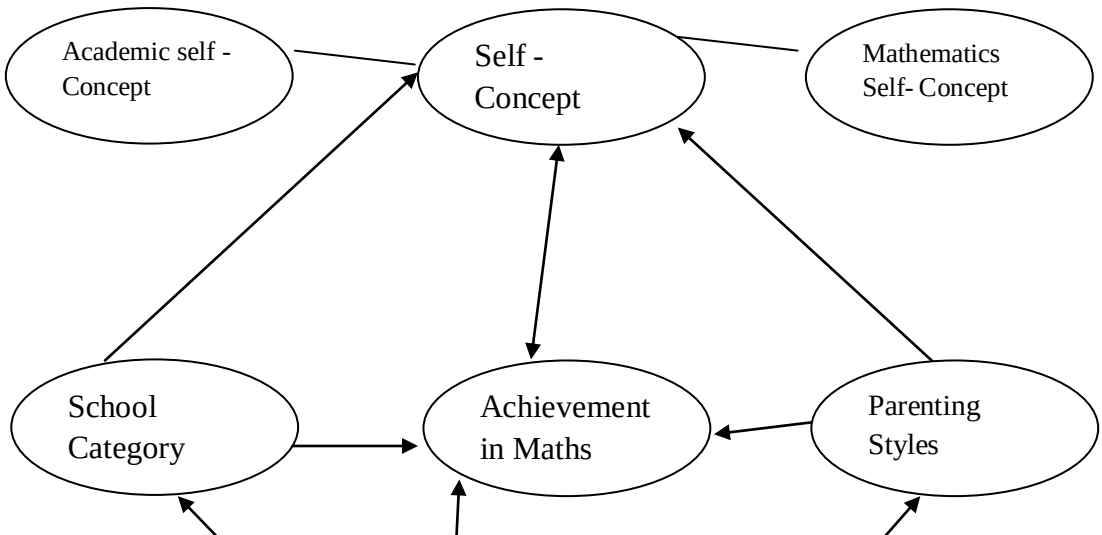
Mwamwenda (1990) reported that the child who perceives himself as unworthy, insignificant or unacceptable in the eyes of others because of parental statement or action is unlikely to develop the measures of positive self-concept or esteem that contribute to his effective learning. Authoritative parenting is a predictor of good psychosocial outcomes and few problem behaviors for adolescents in all ethnic groups

studied (African, Asian, European and Hispanic, Americans), but it is associated with academic performance only among European Americans and to a lesser extent, Hispanic Americans (Steinberg, et al. 1992; Steinberg, Darling, & Fletcher, 1995; Chao, 1994). Children and adolescents from authoritarian families (high in demandingness, but low in responsiveness), tend to perform moderately well in school and be uninvolved in problem behavior, but they have poorer social skills, lower self-esteem, and higher levels of depression.

1.14 Conceptual Framework

This study postulated that there is a relationship between parenting styles, self -concept and achievement in mathematics. The study conceptualized that self-concept (academic and mathematics self-concepts) influence achievement in mathematics; achievement in mathematics influences self-concepts; Parenting styles influence achievement in mathematics and self-concepts of students; Parental levels of education influence both parenting styles and student's achievement in mathematics; Parental levels of education influence the choice of school for the student while category of school influence student's achievement in mathematics and their self- concepts. Figure 1.1 shows interaction between the independent variables and the dependent variables.

Figure 1.1 Conceptual Framework Model



The independent variables are parenting styles and self-concept. Other independent variables include school category and parental level of education. The dependent variable is achievement in mathematics. Self-concept is a set of beliefs and judgments about personal capabilities to organize courses of action and attainment of goals. Self-concept in this study is used to refer to beliefs, attitudes and judgments of students about their abilities in mathematics. Self-concept is viewed as a collection of one's self-knowledge and self-conception. Self-conception embraces the way people thought of themselves in the past; the way people think of themselves now; and the way people imagine themselves in the future (Atkinson & Hilgard 1983, Markus and Nurius,1987).The universe of self-conception includes the good selves, the bad selves, the hoped for selves and the feared selves, the ideal selves and the right selves . Some of these self-conceptions define areas of expertise about the selves, areas where one has knowledge and involvement. This study hypothesized that a student with a positive mathematics self-concept is a high achiever in mathematics.

Coopersmith (1967) in Mwamwenda (1990) defines self-concept in the context of self-esteem as the evaluation, which the individual makes and customarily maintains with regard to himself. It expresses an attitude of approval or disapproval by socializing agents, such as peers, religious leaders, parents, teachers and other members of the community. The feedback, an individual gets from his/her environment underpins his behaviour. If the reaction of such others are positive, he is likely to accept himself as a person of worth and thus to develop a positive self concept. In the context of this

study, a student who receives positive feedback from parents and teachers develops a positive self concept.

In a study conducted by (Markus, 1987) about possible selves and academic performance revealed that those who imagined themselves as having a positive future significantly outperformed those who imagined themselves with a negative future. This study envisaged a correlation between self-concept and achievement in Mathematics.

Katam (1996), in a study of influence of circumcision on academic achievement and self-concept in West Pokot established that there is a significant relationship between self -concept and academic achievement. Research shows that people who have positive self-concept tend to be more successful in life, including academic life than people who have negative self-concept. Empirical evidence indicates that a pupil with positive self-concept stands a better chance of performing better than a pupil with a negative self-concept performs.

Previous Studies have shown close relationship between parenting styles and self-concept (Baumrind 1991, Grobman 2003, Stein 2004, Melgosa 2000, and Mitche1, 2003). These studies have shown that there is a correlation between parenting styles and self-concept.

1.15 Operational Definition of Terms

Authoritative Parenting Style: This is demanding, supportive, and less restrictive care. This was measured in this study by students' parenting styles rating scale (SPSR) in Appendix A section III.

Authoritarian Parenting Style: This is highly directive and demanding care. This was measured in this study by students' parenting styles rating scale (SPSR) in Appendix A section III.

Co-Educational School: a mixed sex (boys and girls) school.

Gender: used to refer to the state of being a male or female.

Mathematics Achievement: This is the student's competence of solving mathematics tasks as measured by the mean mark of scores obtained in various class tests.

Neglectful Parenting Style: This is indifferent, non-communicative and detached care. This was measured in this study by students'parenting styles rating scale (SPSR) in Appendix A section III.

Parent: A person who takes care of a child; in this study the word refers to both biological and surrogate parents.

Parenting style: The manner in which children are cared for and valued by parents. This was measured in this study by students' parenting styles rating scale (SPSR) in Appendix A section III.

Permissive Parenting Style: This is non directive and supportive care. This was measured in this study by students' parenting styles rating scale (SPSR) in Appendix A section iii.

Self-Concept: A set of attitudes, beliefs, judgments, and perceptions a person holds about the self. In the study, it was determined through students' responses to a 27 item questionnaire developed on a five point likert scale (SSCQ). (Refer Appendix A section II.)

Self-Esteem: This is the value attached to self. It is based on personal experiences in life.

Self-Efficacy: used to refer to the judgment of personal capabilities to organize and affect courses of action to attain set goals

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

In this chapter, an attempt is made to review pertinent literature related to this study. The review consists of the following sections: influence of self-concept on academic achievement, influence of parenting on the development of self –concept, parenting styles and academic achievement, gender differences in mathematics self –concept, gender differences in achievement in Mathematics and summary

2.1 Self-Concept and Academic Achievement.

A study conducted by Wilkins, Zembylas, & Travers (2002) analysed international mathematics and Science study, and reported a positive relationship between self – concept and mathematics achievement for 16 different countries. However, Keifers' (2002) analysis indicated that many of the highest performing countries had some of the lowest overall beliefs in student self ability.

Wong (1992) concluded that mathematics achievement is closely related to self – concept and attitude towards mathematics. As in the case of the general self – esteem, more mathematically confident students have significantly higher scores on standardized measure of mathematics computations. Osang (1990), in his study tested the relationship between students' performance and self – concept and found that students' performance in mathematics dependent on their mathematical self – concept. In essence, their achievement in mathematics depended on what they thought of or believed about themselves with reference to mathematics as a subject.

The reciprocal model emphasizes that there is a mutual causality between the academic self - concept and academic achievement of a student (Gelay, Marsh & Boivin, 2003).

Marsh (1986) using an internal and external frame of reference model, illustrated how students' mathematics and verbal performances influence on their mathematics and verbal self concepts.

Marsh and Craven (1997) maintain that "enhancing a child's academic self-concept is not only a desirable goal but "likely to result to improved academic achievement as well'' (P 155). The anticipated improvement of student performance is based on the existence of a reciprocal relationship between self–concept and academic achievement (Marsh et al, 2005) Self – concept is important because of its linkage to academic achievement (Valentine, Dubois & Cooper, 2004)

Interpretation of the reciprocal relationship has been delineated in the following way – while better student achievement leads to improvement of self – concept, positive self – concept can help increase student achievement concurrently (Craven, Marsh, & Burnett, 2003).

Other studies on self-concept have emphasized domain-specific and multi-dimensional perspectives, that are in contrast to traditional views of a global composite self-concept that was assumed to explain self-concept in various areas (Byrne,1984; Marsh & Yeung, 1997); Shavelson, Hubner, & Stanton, (1976) proposed a hierarchical multidimensional model of self-concept that posited a general global self-concept at the apex under which were academic and non academic self- concepts which were further divided into domain specific areas such as verbal and math self-concepts. Marsh (1986) demonstrated that verbal and math self-concepts are distinct constructs. Thus, a student having a high self-concept in mathematics does not necessarily have a similarly high verbal self-concept. According to the internal and external model

developed by Marsh, math and verbal self-concepts are influenced both by external and internal comparisons.

The external frame of reference involves comparing the students' perceived ability with the abilities of other students in a specific environment for example, school, and peer group. Internal frame of reference refers to the students' comparison of perceived ability in one subject domain with perceived ability in another subject domain. Thus, a student whose achievement in mathematics is lower than most other students may have a low mathematics self-concept due to an external comparison with other students. Marsh (1986) using a confirmatory factor analysis approach to test internal and external model demonstrated a positive effect of mathematics achievement on math self-concept and a positive effect of verbal achievement on verbal self-concept.

Research done on mathematics self-efficacy of diverse students from secondary schools in Auckland New Zealand, concluded that participants had high levels of mathematics self efficacy, and believed in their capability to achieve their goals in mathematics. However, the high levels of student self-efficacy in mathematics, both curriculum specific self-efficacy and self-efficacy in major determinants, did not translate into mathematics achievement.

Song and Haitte, (1984), studied self-concept among 537 and 611 Korean boys and girls respectively. The subjects were randomly selected in schools within the same social class and ranged in age from 14 to 15 years. In their findings, relationship between self-concept and academic achievement was greater among girls than boys.

Hyneman (1979), in a study done in Uganda revealed that children who felt more confident and more self-assured performed better on the primary learning examination. His subjects were 2293 randomly chosen standard seven pupils from five districts in

Uganda and he found that the level of self-confidence was related to school achievement in the areas of mathematics, English language and general knowledge, irrespective of sex, ethnic group and district. He further points out that academic performance suffer due to lack of confidence and not due to impoverished background.

In a review of studies, Wandabwa (1996) reports that several research undertakings reveal that people with high self-esteem seem to perform academically well. A study by Roth (1970), investigating the relationship between self-concept and achievement among 54 college students revealed a strong positive correlation. Jones and Grieneeks (1970) examined the relationship between measures of self-perception and academic achievement in a sample of 877 students at college level. The measures of self-perception used were the self -expectations inventory, the 'who am I' technique and self-concept of ability scale. The results showed a positive relationship between all the measures of self-perception and academic achievement. They found the self-concept of ability measure to be the best predictor of academic achievement, even above measures of IQ and aptitude. However, other studies have shown no relationship between self-concept and academic achievement.

A study carried out by Borislow (1962) was unable to detect any significant differences in the general self -concept level between students who turned out to be under-achievers and those who turned out to be achievers. The crucial factor seemed to be whether the student intended to strive for success. Those who intended to strive but under achieved did possess a more pessimistic picture of themselves as students, both before and after academic performance. Borislow's work suggests that the relation between self-concept and academic performance is complex, since motivation equally plays a role, as well as a differentiation between global self-conception and self-concept of a student. This specific self -academic concept was further revealed in a

major study by Brookover, Thomas & Patterson (1964) using over 1000 children aged 12 years. Results showed that, there is a significant correlation between self-concept and performance in the academic role; there are specific self-concepts of ability related to specific areas of academic role performance that differ from general self concept of ability; self-concept is significantly and positively correlated with the perceived evaluations that significant others hold of the student.

Most studies reviewed, were conducted outside Africa and focused on the relationship between self-concept and general academic performance. Studies reviewed also indicate that most of them were conducted in primary schools. The current study was conducted in secondary schools in Kenya, with a specific focus on the relationship between self-concept and achievement in mathematics.

2.2 Types of Parenting Styles and Academic Achievement

Maccoby and Martin (1983) assert that parenting style captures two important elements of parenting: parental responsiveness and parental demandingness. Parental responsiveness, warmth or supportiveness, refers to the extent to which parents intentionally foster individuality, self-regulation and self-assertion by being attuned, supportive and acquiescent to children's special needs and demands (Baumrind, 1991). Parental demandingness; behavioural control, is the claim parents make on children to become integrated into the family whole by their maturity demands, supervision, disciplinary efforts and willingness to confront the child who disobeys.

Nancy (1999) observes that besides differing on responsiveness and demandingness, parenting styles also differ in the extent to which they are characterized by a third dimension; psychological control: Psychological control refers to control attempts that

intrude into the psychological and emotional development of the child through use of parenting practices such as guilt induction, withdrawal of love and sharing.

Atkinson and Hilgard (1983) defines some of the elements of parenting style as; control supervisory which explains how much a parent tries to influence the child's activities and modify expression of independent or aggressive behavior in line with their own standards. Maturity demands refer to the amount of pressure on the child to perform at his or her level of ability. Parental nurturance is the warmth and compassion the parent shows towards the child and their pleasure in his or her accomplishment.

Clarity of parent-child communication defines how well the parents explain their reasons when they want the child to obey and extent to which they take the child's opinion and feelings into consideration. This study focused on the following elements of parenting: authoritative, authoritarian, permissive and neglectful and their relationship with achievement in mathematics.

2.3.1 Types of Parenting Styles

Nancy (1999) and Grobman (2003) Mitchell (2003) have categorized parents in accordance with high or low demandingness and responsiveness creating a typology of four parenting styles; neglectful, permissive, authoritarian and authoritative.

2.3.2 Neglectful Parenting

Neglectful parents are emotionally absent, physically absent and generally unavailable. They are indifferent, non-communicative, distant, self-absorbed, unengaged, unstructured, detached and sometimes cruel (Mitchell, 2003). The children are neglected outdoors on cold nights. Parents are frequently absent or busily preoccupied with work, poverty, wealth, alcoholism, divorce or illness (Stein, 2004). For them children are a burden or obstacle which hinders them from living their own life

(Melgosa, 2000). There is no one to set family expectations for the child. The neglectful parents may therefore fail to play their role in educating their children.

2.3.3 Permissive Parenting

Permissive parents are also referred to as indulgent parents or "nondirective parents, are more responsive than they are demanding. They are nontraditional and lenient, do not require mature behavior, allow considerable self-regulation and avoid confrontation.'' Baumrind (1991) states that indulgent parents may further be divided into two types; democratic parents, who though lenient, are more conscientious, engaged, and committed to the child, and non-directive parents. They pamper, rescue and overprotect the child. They use emotional control and guilt, and they are wordy (Melgosa, 2000). They make decisions for their teens; and make excuses for them (Mitchell, 2003).

Grobman (2003) observes that permissive parents behave in an acceptant and affirmative manner toward the child's impresses, desires and actions. The parent consults with the child about policy decisions and explains family rules. They make few demands for household responsibility and orderly behavior.

The parent presents himself or herself to the child as a resource to use as the child wishes, and not as an active agent responsible for shaping or altering his on going behavior or future behavior (Schiamberg, 1985). He/she allows the child to regulate his own activities as much as possible, avoids the exercise of control, and does not encourage him to obey externally defined standards. The parent attempts to use reason but not avert power to accomplish her ends.

The aim of permissive parenting is to free the child from restraints as much as is consistent with survival. Some permissive parents may offer freedom to evade responsibilities towards the development of their children. This leizzaise-faire approach to parenting is likely to influence their academic achievement and self-concept. Parenting styles that were investigated in this study are authoritarian, authoritative, neglectful and Permissive styles.

2.3.4 Authoritarian Parenting

Authoritarian parents are highly demanding and directive, but not responsive. “They are obedient and status oriented, and expects their orders to be obeyed without explanation." (Baumrind,1991 p. 62). These parents provide well-ordered and structured environments with clearly stated rules. Authoritarian parents can be divided into two types: non-authoritarian-directive, who are directive, but not intrusive or autocratic in their use of power, and authoritarian - directive, who are highly intrusive. Maynard (1982) described the father as authoritarian parent in the eyes of a very young child. In the African context, he is the final judge and jury in all cases involving family discipline.

Schiamberg (1985) observed that authoritarian parents value obedience as a virtue and favour punitive, forceful measures to curl self-at points where the child's action or beliefs conflicts with what the parent think is right. Their voice is "the law" (Gross & Jean 1989), and no one in the family questions it. Authoritarian parents tend to have cold and warm side. The cold side seems to be the rules and regulations, which do not change depending on the situation, the warm side seems to be the attention, and support the child receives.

Grobman (2003) argues that authoritarian parenting aim is to shape, control and evaluate the behaviors and attitudes of the child in accordance with a set of standards of conduct formulated by higher authority. According to Mitchell (2003) Authoritarian parents are inflexible, lecturing and controlling. They use harsh words and humiliation, display anger, punish, and are sometimes cruel. They are domineering, critical, pushy, intrusive, and "in your face" (sometimes with a finger pointing) offer no choice and give lots of "you should." The authoritarian parent is likely to kill achievement and alter the self-concept of children.

2.3.5 Authoritative Parenting

Authoritative parents are both demanding and responsive. "They monitor and impart clear standards for their children's conduct. They are assertive, but not intrusive and restrictive. Their disciplinary methods are supportive, rather than punitive. "They want their children to be assertive as well as socially responsible, and self- regulated as well as cooperative" (Baumrind, 1991, p.62). Authoritative parenting aims to direct the child's activities but in a rational issue - oriented way.

The parent encourages verbal give and take, shares with the child and reasoning behind policy, and values both expressive and instrumental attributes, autonomous self will, and disciplined conformity, (Grobman, 2003). He further observes that the parent exerts firm control at points of parent-child divergence, does not bog the child with restrictions and recognizes her own special rights as an adult but also the child’s individual interest.

The parent affirms the child's present qualities, but also does set standards for future conduct, uses reasoning as well as power to achieve her objectives, does not base her decision on group consensus or on individual child's desires and, does not regard

herself as infallible. Schiamberg (1985), point out that authoritative parents use reason as well as power and shaping by regimes and reinforcements to achieve parental objectives.

Mitchell's (2003) assertion is that authoritative parents are supportive and empowering. They believe in their children and welcome mistakes as an opportunity to learn. They share personal stories of success and failures, offer choices, guide in exploring alternatives and allow consequences to naturally occur. They model responsible and meaningful behavior and they believe that talking less is best. The consequence of authoritative parenting could be self-confidence, self-esteem, and self-efficacy and high achievement in academics. The authoritative concept alongside other parenting concepts such as authoritarian, indulgent and neglectful are investigated in this study in relation to self -concept and achievement in mathematics.

2.3 Gender Differences in Mathematics Achievement

The relationship between gender and academic achievement of students has been discussed for decades (Eitle, 2005). A gap between the achievement of boys and girls has been found, with girls showing better performance than boys in certain instances (Chambers & Schreiber, 2004). Gender, ethnicity and fathers' occupation are significant contributors to student achievement (McCoy, 2005).

Traditionally studies have shown that boys' Mathematics achievement is superior to that of girls (Maccoby & Jacklin, 1974). One explanation offered for this achievement gap is that there are sex differences in students' Mathematics related beliefs (Bandura, 1997; Stipek & Gralinski, 1991) and that more specifically; boys' attribution patterns and levels of self efficacy are more self enhancing than those of girls.

Some studies however, have shown that there has been a closing in this mathematics achievement gap. In the British Columbia, for example data from the Foundation Skills Assessment (FISA) showed only negligible sex differences in performance on the numeric subtest (British Columbia, Ministry of Education, 2002). According to Pajares (1996) an underestimation of mathematics capability not lack of skills, is responsible for students' avoidance of math, mathematics courses and careers and that this is more likely to be the case with females than with males.

Further research suggests that girls tend to attribute their mathematics success to external factors and effort and their failure to their own lack of ability (a self defeating attribution pattern) whereas boys tend to ascribe the causes of their mathematics success to internal factors and their failure to external factors (a self enhancing attrition pattern). This patterns have explained, in part, girls' traditionally poorer mathematics achievement compared to that of boys for example, Campbell & Hackett (1986) investigated sex differences in mathematics performance attribution and found that successful females rated "being lucky" as the cause of their performance significantly more often than did males.

Researchers have related the mathematics achievement gap between the sexes to boys and girls differing perception of their abilities. According to Pajares & Valiante (1997) the perception students have about competence help to determine what they do with the knowledge and skills they posses. This also influence their choice of activities, effort expended, task persistence and task accomplishment (Schunk, and Gunn, 1986).

In another study, Hackett & Betz (1989) explored the relationship between college students' mathematics achievement and mathematics self efficacy, their attitudes towards mathematics and their choice of mathematics related to degree programmes.

They discovered positive correlations among students' mathematics achievement and their levels of self-efficacy, mathematics attitudes, and their masculine sex role orientation. This study investigated the relationship between self-concept, parenting styles and achievement in mathematics. The research conceptualized a relationship between self-concept, parenting styles and achievement in mathematics.

2.4 Gender Differences in Mathematics Self Concept

Sex differences in academic achievement have been the subject of extensive investigation over the past two decades (Fan & Chen, 1997); Kianian, (1996). Few studies have been conducted to determine whether self-concept is affected by adolescence. Some of the studies conducted include that of Engel (1959) on stability of the self-concept in adolescents. She administered a questionnaire to boys and girls in eighth (13 years) and tenth (15 years) grades in U.S.A and then 2 years later the same groups who were by then in the tenth and twelfth grades. She found a relative stability of self-concept between 13 and 15, and 15 and 17. Carison (1965) carried out further investigation of the self-image during adolescent on a sample of 33 girls and 16 boys. This longitudinal study over a 6-year period tested children at 12 years of age and again at 18 by means of a self-descriptive questionnaire, which provided indices of social orientation, personal orientation and self-esteem. Results showed that median self -esteem scores remain identical for boys and girls over the 6-year period.

Another study carried out by Piers and Harris (1964) compared the stability of self concept over a 4-month period among 8, 10 and 15 years olds, and found no age differences. Like Engle's, the correlations obtained by Piers and Harris at all three levels were in excess of 0.70. Coppersmith (1967) at the end of his 3-year study of self-conception was prompted to state that "it appears relatively resistant to change

once established; it apparently provides a sense of personal continuity over space and time and is defended against alteration, diminution, and insult."(p.21).

Simmons, Rosenberg & Rosenberg (1973) also conducted a study to discern when, if at all, the adolescent self-image disturbance occurs. Several dimensions of the self-image were measured among urban schoolchildren aged 8 -17 compared to children in the 8-11 age group; the early adolescents, particularly those between 12 and 13, were shown to exhibit heightened self consciousness, greater instability of the self image, slightly lower self esteem and a less favorable view of opinions held of them by significant others. Accordingly, evidence was presented suggesting that the child's environment may have a stronger effect than his age in producing such changes.

Children who had entered junior high school appeared more disturbed along these lines than their age peers still in elementary school did. Thus, while disturbance appears, it lives in early adolescent and not as Erikson (1968) hypothesized in later adolescence, and is related to the movement into secondary school at puberty.

From the reviewed literature, it can be concluded that self-concept among adolescent is relatively stable. However, inclusive research on the self-concept of adolescents warrants for further research. This study investigated the relationship between self-concept, parenting styles and achievement in mathematics.

2.5 Parenting Styles and Self Concept

Grobman (2003) observes that regarding background information on child qualities and parenting styles, children of authoritative parents tend to be lively with happy disposition. They are self confident about ability to master task. They have well developed social skills and less rigid about gender typed traits. Therefore, authoritative

parenting helps to develop positive self-concept in children. Children of authoritarian parents have poor reaction to frustrations and girls are particularly likely to give up and boys become especially hostile, (Davidoff, 1987).

Children of permissive parents display poor emotion regulator, rebellions and defiant when desires are challenged, low persistence to challenging tasks and antisocial behavior. Stein (2004) postulates that children of neglectful parents lack ability to form close relationships. They lack the feelings that somebody cares for them or is on their side. The child looks upon himself as isolated and helpless. He feels deeply hurt and may develop bitter, hostile, anxious feelings and suffer from self-devaluation. Melgosa (2000) supports this view by pointing out that the result is a lack of ability to establish good interpersonal relationships and tendency to suffer from low self-esteem.

Mitchel (2003) argue that different parenting styles send different messages to the child: to authoritarian parents that the child cannot think for himself, he is stupid and if left alone, he make bad choices and mess things up.

The permissive parenting style teaches the child that he is fragile and weak and needs the parent to think and care for him. Without the parent, the child is not able to survive the pressures of life. The neglectful parent sends the message that the child is not important and is not worth caring about. The authoritative parent believes that the child can figure out how to handle life and even if he messes, he learns from mistakes.

Gross (1989) gives the following effects of parenting styles on the child's self concept: and creativity: permissive parenting has positive effects such as feeling independent. The negative effects include, feeling aggressive towards peers and parents, which in

turn could possibly lead to delinquency. The authoritarian parenting outcomes are children with low self-esteem and aggressiveness.

Davidoff (1987) concludes that children of authoritative parents develop high self-esteem especially the females' depend on the amount of praise and the criticism that comes from parents. Teenagers who like themselves tend to come from homes where fathers and mothers convey trust and interest, support, involve children in decision making and family affairs, and encourage gradual independence while retaining ultimate responsibility .On the contrary, young people are not sure of themselves when parents insist on total obedience and when they discipline harshly with threats and force. This situation can worsen when the parents provide little direction and allow unlimited freedom as in the case of permissive and neglectful parents.

Melgosa (2000) posits that children of authoritarian parents develop negative attitude towards their parents and beliefs. Igaga (1990) observed that some parents do not spare time for their children but leave them with servants, who may not be the best agents of socialization. The children therefore develop negative self-concept. Ingule Ruthie, Rono & Ndambuki (1996) suggest that the family is a primary agent of socialization and the parent is an important social model. In respect to this argument, this study hypothesized that poor socialization may result in a poor self-concept and low achievement in different subjects on the curriculum particularly mathematics.

Weiten (1986) observes that self-concept is shaped by feedback received about behavior from other people. Parents give a great deal of direct feedback; constantly express approval or disapproval. It is therefore not surprising that various empirical studies reveal a correspondence between parents' view of the child and the child's self

concept. This study investigated the influence of parenting on self-concept of participants and their achievement in mathematics.

Katz (2000) in a study of 4500 young people in Britain ,which highlighted their experiences of growing up ,such as problems ,hopes and believes on a wide range of issues observed that: young people who reported high level of confidents ,optimism ,and self motivation , “The can do groups” were associated with parents employing positive parenting styles –thus those who listened to problems and views ,encouraged initiative and were not overly controlling ; treated everyone in the family equally ,produced strict but fair rules ,offered guidance about live, and were loving and respectful.

This study is significant in terms of parenting influences on self concept, efficacy and motivation .This kind of research has not been conducted in Kenya; the cultural background of Britain is different from the Kenyan culture. The study does not highlight on whether gender has an influence on self confidence under motivation .This study sought to understand the influence of parenting styles on achievement in mathematics; the relationship between parenting styles and self concept.

Jabre (1988) in a survey of field projects in five African countries on women's education concluded that girls' education is hampered by negative parental attitudes towards girl education. Education of girls is considered in terms of consumption and not investment. These studies point out the disadvantaged position of girls in education based on social beliefs. However, they do not consider the response of the girl child in this scenario. This study was designed to determine whether the social structures such as the family have a significant effect on self-concept, self-efficacy and achievement in math for students.

Kamunyu (2001) argue that the process of role learning is characterized by expressive interaction and acceptance, resulting in self and gender-role identity marked by affiliation and intimacy. He goes on to point out that girls are sometimes denied freedom of speech because they are stereotyped as non-intelligent and mediocre, whatever they say is not worthy of attention. Girls respond to such stereotype language by withdrawing, crying, or sometimes but rarely retorting back, a sign of poor self-concept. In this study, one of the aims was to investigate whether there is significant difference in the self-concepts of girls and boys.

2.6 Categories of Schools and Students' Achievement

Eisenkopf et al (2012) analyzed the impact of female only classes on mathematics achievement, exploiting random assignment of girls into single set and co- educational classes in Switzerland Secondary Schools. They found out that single – sex classes improve the performance of female students in mathematics.

Saidin and Brachim (2011) in a study carried out in single sex schools in Malaysia involving 30 secondary students found out that boys performance in English and foreign languages, and girls performance in mathematics and Science improved in a single gender settings. The study found out that in gender separate classroom, students have higher motivation and higher confidence levels which offer them better educational opportunities. Most studies indicate that boys contribute more to classroom interaction for example by "calling out" answers and dominate in "hands – on" activities, such as laboratory work and computed sessions (Francis, 2004). From this perspective, the presence of boys in the classroom is seen as having a negative effect on girls' academic engagement and achievement.

Smyth (2010) asserts that critics of single – sex education argue that girls' only schools are unnatural social settings which isolate girls from boys. In well managed co-educational environments boys and girls learn to respect and value each other's ideas. They learn to listen and communicate with each other. Isolating girls and boys in single – sex schools is considered a barrier to them developing the effective interpersonal skills they will need to function as grown – ups in their society.

Spielhofer et al (2004) found that taking attainment at the end of primary schooling into account girls in single sex comprehensives did lightly better than those in co-educational comprehensives, with the difference disappearing among those who scored at level 5 and above in the key stage 2 tests. Elwood and Gipps (1999, p 51) observed that, "The performance of the school in terms of examination results has much less to do with whether it is single - sex or than with other factors." A formal systematic review conducted for the US Department of Education (Mael et al, 2005, P x) found : "as in previous reviews the results are equivocal. For many outcomes there is no evidence of either benefit or harm."From the reviewed literature it is evident that previous studies have been inconclusive. Therefore there is need for further research on this subject.

2.7 Parental levels of Education and Students' Achievement

The environment and personal characteristics of learners play an important role in their academic success. The school personnel, members of families and communities provide help and support to students for the quality of their academic performance. This social assistance has a crucial role for the accomplishment of performance goals of students at school (Guddard,2003). Besides the social structure, parents, involvement in their Childs' education increases the rate of academic success of their child (Furstenburg & Hughes, 1995; Jeynes 2002) contents that parental education and

family socio – economic status level have positive corrections with the students' quality of achievement.

Krashen (2005) concluded that students whose parents are educated score higher on standardized tests than those whose parents were not educated. Educated parents can better communicate with their children regarding school work activities and information being taught at school. They can better assist their children in their work and participate at school (Fantuzz & Tighe, 2000).The academic performance of students heavily depends upon parental involvement in their academic activities to attain the higher level of quality in academic success (Barnard, 2004).

2.8 Summary

Reviewed literature indicates that there is a positive correlation between self-concept and academic performance, and self-efficacy (Song & Haittie, 1984; Wandabwa, 1996; Jones & Grieneeks, 1970; and Borislow, 1962). Few studies have, however, been conducted to determine the relationship between self-concept and achievement in mathematics. Most studies conducted in this area were conducted outside Kenya (Hyneman, 1979; Marsh, 1986). The purpose of this study was to determine the relationship between self-concept and achievement in mathematics among students in secondary schools.

Literature on parenting styles shows a correlation with self-concept, and academic achievement (Grobman, 2003; Davidoff, 1987; Igaga, 1990). Other studies observe that there is a relationship between parenting styles and academic achievement (Baumrind, 1991; Weiss & Schwartz, 1996; Miller, et al 1993). There is a consensus among various researchers that there exists a gender difference in mathematics achievement, though findings have not been consistent (Fan & Chen, 1997; Pajares,

1996; Junge & Dretzke, 1995). In this study, the researcher investigated the relationship between parenting styles and self-concept on one hand and on the other, achievement in mathematics

Literature on category of schools suggest that there is relationship between categories of schools and students' academic achievement.(spielhofer et al, 2004;Elwood & Gipps, 1999;Eisenkopf et al,2012; Saidin&Brahim,2011; Smyth, 2010).Besides, literature shows that parental levels of education influence students' achievement at school(Goddard,2003;Krashen,2005;Fatuzzo&Tighe,2000).

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Overview

In this chapter there is a discussion of the procedure and methods that the researcher used in order to obtain relevant data needed for the study. Procedures that were used for data analysis and for hypotheses testing, Study Area, Sampling procedures, data collection procedures have been examined. Besides, development of instruments and determination of reliability, validity are considered.

3.1 Geographical Location of the Study

The Study was conducted in Kaplamai Division, one of the five divisions in Trans-Nzoia District of Rift valley province of Kenya. Trans-Nzoia borders Bungoma and Lugari Districts to the Southwest, West Pokot district to the north, Marakwet District to the East and Uasin Gishu to the South East. The district lies between latitudes 00^{o} 52' and 1°, 18' North and longitudes 34°, 18’ and 35°, 23' East. It covers an area of 2487.3 Km^2, which represents 0.4 percent of the whole republic, and 1.4 percent of the province. The District has a population of 645, 170. Kaplamai Division covers an area of 330.8km^2 and has five Locations and seven Sub Locations. It receives rainfall of about 1500mm. The region has fertile soils, which allow growing of cash crops such as coffee and tea. Maize is the main staple crop grown in the region. The researchers' preference for this area is explained by the following reasons:

i. The study area is well known to the researcher since the researcher has worked in the area for ten years; this reduced difficulties related to communication.
ii. No study as one conceptualized by the researcher had been carried out in the area.

3.2 Research Population

In this study, the target population consisted of 5,671 secondary school students in Kaplamai Division. The sample was drawn from Form 3 students in selected secondary schools in Kaplamai Division. The age bracket of students ranged between 12-18 years. Most of the students belong to the middle class economic background. Students in the Division are both day scholars and boarders. All students are exposed to the 8:4:4 Curriculum. They engage in co- curricular activities such as games and sports besides academic pursuit.

There are 20 Secondary Schools in Kaplamai Division out of which 17 are mixed schools and 3 are same sex schools. In total there were 5671 secondary school students in Kaplamai Division. Out of this population 850 were Form 3 students consisting of 250 girls and 600 boys.

3.2.1 Sample Size

In determining the sample size, the main factor considered was manageability. This enabled the researcher to derive data at affordable costs in terms of time, finance and human resources (Warwick and Lininger, 1975). The sample was drawn from 11 schools, 3 same sex and 8 co-educational schools selected from 20 schools in Kaplamai Division. In each school, only Form 3 students participated in the study. The sample consisted of 214 participants consisting of boys and girls selected from 850 Form 3 students. The schools were selected using stratified sampling while the participants were selected randomly. Each school provided 20 participants whose selection reflected the proportion of girl and boys in each class. Table 3.1 shows the population sample and school categories.

Table 3.1 Number and Percentage of Study Sample by Categories

School category	No. of schools sampled		No. of schools in Division	No. of students sampled
	%			
Single sex (Girls)	2	100	2	34
Single Sex (Boys)	1	100	1	34
Mixed	8	47	17	146
Total	**11**	**55**	**20**	**214**

Each school provided participants who responded to the students' self concept questionnaire SSCQ and the parenting styles rating scale SPSR. In the selection of participants, consideration was given to the proportion of girls and boys in the population, there were more girls (112) than boys (102) in the population. Representations in the sample reflect the proportion of each gender in the population. The selected participants were given the freedom to participate or not to participate in the study. Other willing participants replaced those who were unwilling.

3.3 Research Design

This study was conducted through a causal-comparative design; the study was concerned with explaining and predicting the relationship between independent and dependent variables. It specifically investigated the influence of parenting styles and self concept on students' academic achievement in Mathematics. Such issues are best investigated through a causal comparative design; the design enables the researcher to investigate the influence of independent variables on the dependent variable without manipulating the independent variables. The causal comparative design entails examining naturalistically occurring treatments. For the purpose of this study the causal comparative design enabled the researcher to determine the influence of parenting styles and self concept on students' achievement in mathematics.

3.4 Research Variables

There were two categories of variables investigated in this study; independent and dependent variables.

3.4.1 Independent Variables.

The independent variables were selected based on literature review. The independent variables were self-concept, parenting styles, parental level of education, and school category. Since the researcher anticipated that gender, parental level of formal schooling and family land size could affect achievement in mathematics, they were included as co-variants. Data on these variables was collected by use of questionnaires SSCQ and SPSR which were administered to participants. In this study Form 3 students were considered for this study because they are mature and therefore able to make appropriate evaluations regarding self-concept and parenting styles.

3.4.2 Dependent Variable.

There was one dependent variable which was investigated in the study. This was students' achievement in mathematics. Marks documented by teachers in their mark books were used to assess achievement in mathematics for each participant. The average scores of mathematics marks for three terms in their third year of study were used.

These marks were converted into T -scores to standardize them because the tests were constructed and administered under different conditions in different schools. This facilitated comparison of students' achievement. Achievement in mathematics was investigated as a dependent variable to determine how it is influenced by parenting styles, self concepts of participants, parental levels of education, and school categories.

3.5 Sampling Procedure

This study employed stratified sampling to select the sample. Stratified sampling was used to select the schools and the category of respondents to be included in the sample. Stratified sampling identifies sub groups in the population and their proportions and selects from each sub group to form a sample. The researcher used stratified sampling to select three same sex and 8 co-educational secondary schools to make up a total of 11 schools out of 20 schools in Kaplamai Division.

This was necessary because mixed and same sex schools do not have similar characteristics; both the target and the accessible population were not homogeneous due to gender differences in the population. Random sampling procedure was used to obtain the representative sample of 214 students out of 850. The sample consisted of 102 boys and 112 girls. Random sampling reduced bias in the selection of the sample. Girls and boys were represented in the sample according to their proportion in each group.

3.6 Instrumentation

The researcher used questionnaires (Appendix A) and document analysis as the main tools for data collection. The selection of these tools was guided by the nature of data to be collected, the time available as well as by the objectives of the study.

The overall aim of this study was to determine the influence of parenting styles and self-concept on students' achievement in mathematics. The researcher was mainly concerned with perceptions and feelings of the respondents about their mathematics self-concept, and parenting styles. Such information was best collected through the use of a questionnaire (Bell, 1993).Document analysis technique was useful in obtaining data on students' achievement in mathematics by recording mathematics scores for participants from teachers' marker books.

The researcher administered five point likert questionnaires to participants to collect their responses on parenting styles and their self concept. This enabled the researcher to receive relevant information in line with the study objectives and hypotheses. Questionnaires were the ideal tools for collecting data since the population was largely literate and unlikely to have difficulties in responding to questionnaire items.

This study adopted a modified parenting questionnaire developed by (Ogoma, 2000) and modified self concept questionnaires from (Piers and Harris 1964).The students' self concept questionnaire (SSCQ) generated two subscales; General academic self-concept (GASC) and mathematics self- concept (MSC). GASC was scored as follows: minimum score =13, maximum score = 65, positive GAS = 45-65, neutral = 34-44, negative 33 and below. MSC minimum score =14. Maximum = 70, positive MSC = 49-70, neutral = 36-48 and negative =35 and below.

The students' parenting styles rating (SPSR) was scored as follows: minimum score =18, maximum score = 90. This instrument generated four sub scales. Authoritarian, authoritative, permissive and neglectful. These sub scales were scored as follows: A/ve: minimum score = 4, maximum score = 20. A/rian: minimum score = 5, maximum = 25. P/ve: minimum = 4, maximum =16. N/gt: minimum score = 5, maximum = 25. maximum score on (SPSR) indicated strong prevalence of a particular parenting style while minimum score meant absence of the parenting style measured.

3.6.1 Validity

Moser and Kalton (1971) define validity of an instrument or scale as the success of the scale in measuring what it sets out to measure so that differences in individual scores can be taken as representing the differences in the characteristics under study. The

content validity of the instrument was determined by expert judgment approach provided by supervisors and lectures in the department of educational psychology. Verification of content validity is vital in order to ensure that the instruments measure the content they intended to measure.

The researcher discussed the items in the instrument with supervisors, colleagues and other lecturers in the department. Suggestions, clarifications and other inputs were used in making necessary changes on the items. For a research instrument to be considered valid, the content selected and included in the questionnaire must be relevant to the variable being investigated (Kerlinger, 1973).

3.6.2 Reliability

Internal reliability of the instrument was established through computation of Cronbachs' α coefficient. This was computed to determine internal consistency between the items in the instrument; Questionnaires were administered to 30 form three students in two secondary schools in Kaplamai Division which were not included in the final study. Random sampling was used to select the participants. All instruments yielded Cronbach index values above the critical value of 0.7 (Hair et al, 1998).

Mathematics self concept instrument $\alpha = 0.82$, general academic self concept instrument $\alpha = 0.72$ and participants' parenting styles rating scale $\alpha = 0.70$. Several items had to be dropped due to low reliability; nevertheless all scales had adequate number of items. The Cronbachs' alpha reliability served as an indicator that the scales were consistent in measuring the intended constructs. Finally items were modified and used in the final questionnaires for data collection.

3.7 Data Collection Procedures

The researcher sought permission from the ministry of science and technology, (see Appendix D) and from education officers and head teachers whose schools participated in the study to enable him conduct the research.

Quantitative data was collected from 214 participants in Kaplamai Division during October 2007 and November 2007 using two questionnaires (SSCQ) Appendix A II and (SPSR) Appendix A III and document analysis. The data was collected by the researcher because he wished to minimize costs and maximize objectivity of data collected. The researcher made clarifications where necessary and respondents were assured that their responses would only be used for the purpose of the research and would be treated confidentially. The questionnaires were administered and filled on the same day under the supervision of the researcher. Each respondent filled his/her questionnaire without discussing with colleagues. Sufficient time was allowed for students to respond to the instruments.

3.8 Scoring the Research Instruments

The instruments, Students' self - concept questionnaire and students' parenting styles rating (see Appendix A II &III) were rated and scored on a five point likert scale. The scores ranged from strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2 and strongly Disagree = 1. Scores were reversed for those items stated negatively. The aggregate scores for the items were computed to determine minimum, average and maximum scores. The SSCQ was scored as follows: minimum score = 27 and maximum = 135. Positive self-concept = 91 – 135, neutral = 70 – 92, negative self-concept = 69 and below. GASC minimum score = 13, maximum score = 65, positive GASC = 49 – 65, neutral 31 – 48, negative = 30 and below.

3.9 Data Analysis

The statistical tools used were calculation of means and standard deviations to show how the respondents' scores varied. Pearson product – moment correlation coefficient (r) was used to determine the extent of association between two variables. The t- test for independent samples and one way Analysis of Variance (ANOVA) were used to determine how great the differences between two means were. Significance of **r, t** and ANOVA were tested at $p \leq .05$ level of confidence.

3.10 Ethical considerations

During data collection the identity of participants and schools where data was collected were kept confidential. Data collected was used only for achieving the objectives of this study. Participants were allowed to participate in the study voluntarily.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Overview

In this chapter are presented analysis and interpretation of the data collected from respondents by means of questionnaires. There is also a description of findings of the study on parenting styles and self concept as factors influencing secondary school students' achievements in mathematics. The data analyzed and presented is based on the responses of students to the items in the questionnaires administered (Appendix A) as well as data collected from students' academic records. The chapter is presented on the basis of themes derived from the objectives. The participants who were involved in this study were form 3 students selected from 11 schools in Kaplamai Division. A total of 214 participants were randomly selected consisting of 112 girls and 102 boys.

4.1 Students' Academic Self Concept and Achievement in Mathematics The first objective of this study was to investigate the influence of self- concept on students' achievement in mathematics. Two types of self-concepts were investigated; academic self- concept and mathematics self-concept. To achieve this objective self-concepts of respondents was computed from responses to a 27 item questionnaire on self- concept. (see Appendix A). The respondents were then classified into those with positive and negative self concepts. The respondents' mathematics achievements were obtained from computing a mean mark for a year using recorded marks in the teachers' mark books. Means, Pearson correlation coefficient (r) and t-test were used to determine the significance of relationships between variables and to test the hypothesis.

Out of the 214 respondents who participated in the study, 42% had positive academic self – concept, 48.6% had a negative academic self-concept while 9% were neutral. The respondents with positive academic self-concept posited a mean mathematics score of 50.3 while those with negative academic self-concept had a mean of 35.8. those with a neutral academic self-concept had a mean score of 39.5. Table 4.1 shows means and standard deviations of mathematics achievement versus academic self-concept of respondents.

Table 4.1 Means and Standard Deviations of Mathematics Achievement among Respondents

Academic Self Concept	N	Mathematics Achievement M	S.D	%
Positive	90	50.3	6.7	42.1
Neutral	20	39.5	5.5	9.3
Negative	104	35.8	5.34	48.6
Total	**214**			**100**

The results in the table show that mathematics mean score of students with positive academic self-concepts is higher than that of students with negative academic self-concept.

4.2.1 Students' Mathematics Self Concept and Achievement in Mathematics

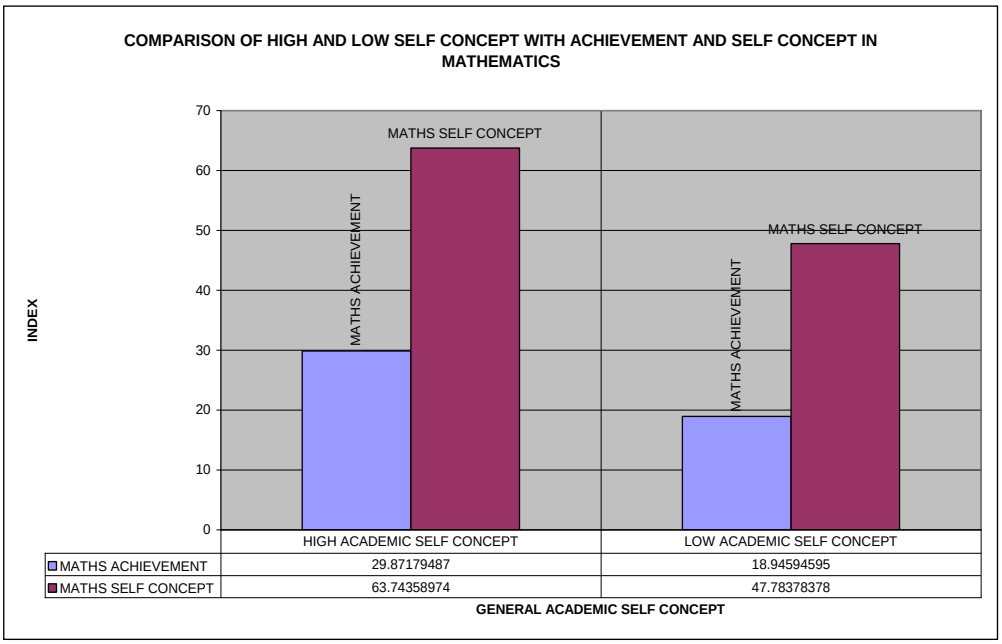
Data analysis showed that 38.3% of respondents had positive mathematics self-concept, with a mean mathematics mark of 33.24, Respondents with negative mathematics self-concept were 44.9% and 16.8% had neutral mathematics self-concept. Table 4.2 shows achievement in mathematics for respondents with positive and negative mathematics self concepts.

Table 4.2 Comparison of Mathematics Self-Concept with Achievement in Mathematics

Maths Self Concept	Mathematics Achievement N	M	S.D	%
Positive	82	33.24	6.27	38.3
Neutral	36	22.3	5.3	16.8
Negative	96	21.56	5.17	44.9
Total	**214**			**100**

The results on the table shows that mathematics mean scores for students with positive mathematics self- concepts is higher than that of students with negative mathematics self- concepts. Figure 4.1 provides a summary of relationships between academic self-concept, mathematics self – concept and achievement in mathematics.

Figure 4.1: Relationship between Students' Math Self-Concept and Math Achievement



To find out whether there was significant differences in mathematics mean scores of students with positive self-concept and negative self-concept, the following hypothesis was tested at an alpha level of .05.

HO_1: Self – concepts have no significant influence on students' achievement in mathematics. The Pearson correlation coefficient (r) was computed to determine relationship between variables. While t-test was used to determine the difference in mathematics mean scores for students with negative and positive self- concepts. Academic self – concept verses achievement in mathematics yielded (r = 0.64, t =11.54, df =192 $p < .05$).

Mathematics self- concept versus achievements in mathematics, (r = 0.73, t =14.80,df =192 $p<.05$); Academic self concept versus mathematics self concept (r = 0.85, t =22.36,df =192 $p<.05$ .In terms of the coefficients of determination (r^2) the relationship between achievement in mathematics versus academic self- concept; mathematics self-concept, yielded r^2 =0.4096 and 0.533 respectively. The relationship between academic self- concept versus mathematics self- concept yielded r^2 =0.723. These results show that 41% and 53.3% of the student's achievement in mathematics is determined by the student's self-concept and mathematics self-concept respectively. Academic self-concept positively influences mathematics self- concept by 72.3%. Table 4.3 shows the results of data analysis for self-concepts and students achievements in mathematics

4.3 Table: Self – Concepts versus Achievement in Mathematics

Self – Concepts	r	r^2	t-cv	df	t - tv
Academic self Concept	0.64	41.0	11.54	192	2.33
Mathematics Self Concept	0.73	53.29	14.80	192	2.84

Academic Self-Concept vs Maths Self - Concept	0.83	72.25	22.36	192	3.05

The results on the table shows that there is a strong positive correlation between academic; mathematics self-concepts and achievement in mathematics as well as between academic self- concept and mathematics self- concept .Given the obtained values of (t = 11.54, 14.80, and 22.36 at P< 0.05), the null hypothesis (HO_1) was rejected and led to the conclusion that self-concepts have a significant positive influence on student's achievement in mathematics.

4.2 Parenting Styles and Students' Achievement in Mathematics

The second objective of this study was to investigate the influence of parenting styles on students' achievement in mathematics. To achieve this objective, parenting styles for respondents were analyzed from the responses to the questionnaire (SPSR) in Appendix A and their mean mathematics scores were computed.

There were 214 participants in the study, 36.9% were under authoritative parents, 30.4% under authoritarian parents,19.1% under permissive and 13.6% under neglectful parents. Figure 4.2 shows prevalence of parenting styles among respondents. These results show that majority of the respondents mostly experienced authoritative and authoritarian parenting styles. Few respondents experience permissive and neglectful parenting styles.

After analyzing the mean mathematics scores for respondents under various parenting styles, the following mean scores were obtained: authoritative = 24, authoritarian = 22, neglectful = 15, and Permissive = 20. From these findings, it was observed that authoritative and authoritarian parenting styles yielded higher mathematics mean scores: (24 and 22) respectively than those under permissive and neglectful parenting

styles (20 and 15) respectively .This suggests that students under authoritative and authoritarian parenting styles are better achievers in mathematics compared to those under permissive and neglectful parenting styles.

To find out whether there was significant differences in mathematics mean scores for students under various parenting styles, the following hypothesis was tested.

HO_2: Parenting styles have no significant influence on students' achievement in mathematics.

The t- test was used to determine the difference in mathematics means scores for students. The following t- values were obtained, authoritative parenting versus students' achievements in mathematics $t = 7.51$, $df = 77$ at $p \leq .05$; authoritarian parenting versus students' achievements in mathematics $t = 5.23$, $df = 63$ at $p \leq 0.5$; neglectful parenting versus students' achievements in mathematics $t = 1.13$, $df = 27$ at $p \leq 0.5$; permissive parenting versus students' achievement in mathematics $t = 1.75$, $df = 39$ at $p \leq 0.5$. Table 4.4 shows parenting styles against students' achievements in mathematics.

Table 4.4 : Comparison of Parenting Styles with Achievements in Mathematics.

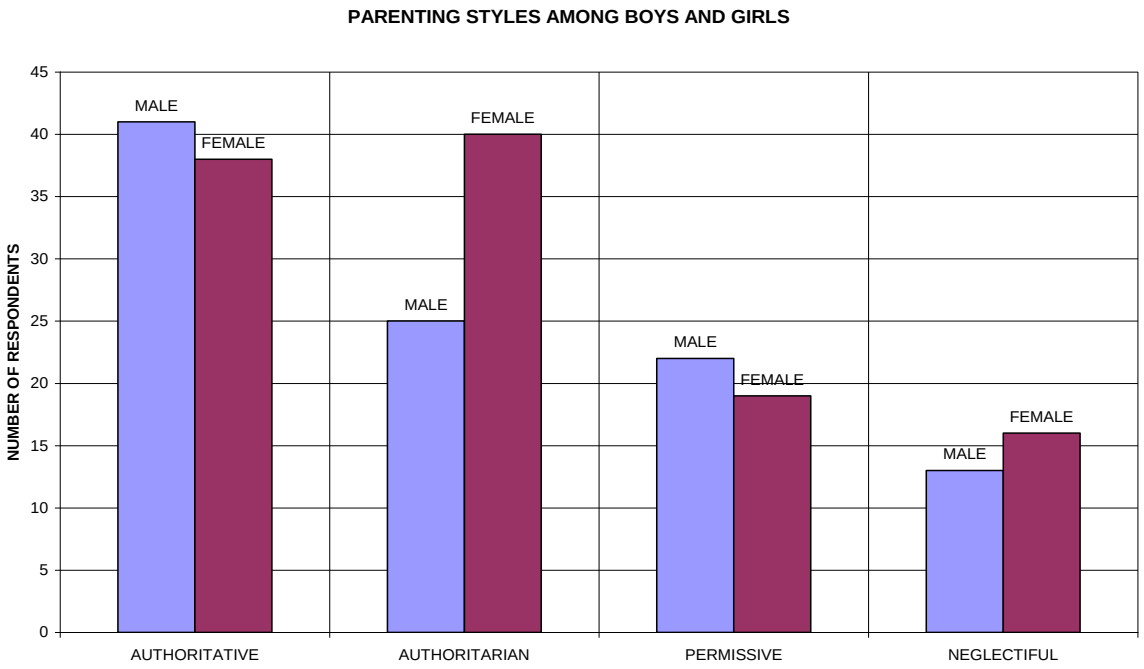
Parenting styles	**N**	**t = c.v**	**df**	**t = t.v**
Authoritative	79	7.51	77	2.00
Authoritarian	65	5.23	63	2.00
Neglectful	29	1.13	27	2.00
Permissive	41	1.75	39	2.02

The results on the table shows that parenting styles have significant influence on students' achievement in mathematics. From the obtained results, it was concluded that

there are significant differences between mathematics mean scores for students under the four parenting styles.

On the basis of these findings, authoritative and authoritarian parenting styles have significant influences on student's achievements in mathematics. Consequently the null hypothesis (HO_2 was rejected.

Figure 4.2: Types of Parenting Styles among Students



For the purpose of determining the relationship between each parenting styles and respondent's achievement in mathematics the Pearson correlation coefficient (r) was computed. The following (r) indices were obtained for the four parenting styles :Authoritative (r = 0.65), authoritarian (r =0.55),neglectful (r = 0.21) and permissive (r = 0.301). in the four cases ,the results indicated strong positive relationships between authoritative, authoritarian parenting styles and achievement in mathematics .However neglectful and permissive parenting reported a weak correlation with achievement in mathematics .Authoritative parenting style yielded a strong positive correlation coefficient (r = 0.65) with achievement in mathematics .The coefficient of

determination (r^2) for the relationship between parenting styles versus student's achievement in mathematics yielded values as follows: authoritative =0.423, authoritarian = 0.3025, neglectful = 0.0454 and permissive =0.0906. This result shows that 42.3% and 30.3% of the student's achievement in mathematics is influenced by authoritative and authoritarian parenting styles respectively.

On the contrary, only 4.54% and 9.06% of the student's achievement in mathematics may be attributed to neglectful and permissive parenting styles respectively which were not significant.

4.3 Gender versus Students' Achievement in Mathematics

The third objective of this study was to investigate the influence of gender on students' achievement in mathematics. To achieve this objective mathematics mean marks for male and female respondents were computed. The mean mark for male respondents was 25 and for female respondents was 15.

To determine whether the difference in the mean marks for male and female respondents in mathematics was significant, a hypothesis which stated that: HO_3: There is no significant difference in mathematics achievement between boys and girls. The t-test was used to compare the means for male and female respondents. The value of (t =10.21), df =192) was obtained. This finding led to rejection of the null hypothesis (HO_3) and it was concluded that there is a significant difference in mathematics achievement between boys and girls. The result suggests that boys' achievement in mathematics is higher compared with girls.

4.4 Gender and Mathematics Self- Concept of Students

This study had an objective of investigating the influence of gender on students' mathematics self – concepts. To achieve this objective, data was analyzed to determine

mathematics self concepts for boys and girls. Out of 214 respondents 90 (42.1%) had positive mathematics self- concept while 104 (48.6%) had negative mathematics self-concept 61.1% were boys and 38.9% were girls. From the 104 respondents with negative mathematics self – concepts, 33.7 were boys and 66.3% were girls. The mean for boys' mathematics self – concept was (89.5) and for girls was (65.1).

To test the hypothesis which stated that: HO_4: Gender has no significant influence on students' mathematics self concept. The t-test was computed to determine whether the difference in means of boys and girls mathematics self- concepts were significant. The value ($t = 8.46$, $df = 192$ at $p \leq .05$ was obtained. This implied that there were significant differences in the means and therefore (HO_4) was rejected. It was concluded that gender has a significant influence on students' mathematics self – concepts.

4.5 Parenting Styles and Students' Self Concepts

The fifth objective of this study sought to investigate the influence of parenting styles on students self concepts. To achieve this objective, the participants were divided into four groups on the basis of parenting styles. This was made possible by analysing their responses to the students parenting styles rating. (SPSR). The mean score of students academic self concepts were computed on the basis of their responses to students self concept questionnaire (SSCQ).The students' academic self- concept mean scores were as follows. Authoritative = 47, authoritarian= 45, neglectful = 32 and permissive = 40. The mean scores for mathematic self- concepts were; authoritative = 55, authoritarian = 53, neglectful =35 and permissive = 48.

These findings showed that students under authoritative and authoritarian parenting styles had higher mean scores on both academic self- concepts and mathematics self-concepts than those students under neglectful and permissive parenting styles.

To determine whether the differences in the mean scores of students' self concepts for the four parenting styles was significant, null hypothesis was formulated which stated that:HO_5 Parenting styles have no significant influence on students' self-concepts.

This hypothesis was tested by comparing self- concept mean scores for the four parenting styles using one way ANOVA. Data analysis yielded the results as follows: the ratio $F_{(observed)}$ was 6.032 and the $F_{(critical)}$ value was 1.42 at $p \leq .05$.

Table 4.5: Shows ANOVA for Parenting Styles and Students' Self Concepts

	Sum of squares	**df**	**mean square**	**F**	**sig**
Between groups	41581.25	95	2598.82	6.032	042
Within groups	1292.500	99	430.83		
Total		**194**			

This finding revealed that there was significant difference between students' self-concept means. On the basis of this finding, it was concluded that parenting styles have significant influence on students' self concepts. This is especially for authoritative and authoritarian parenting styles. This led to rejection of the null hypothesis (HO_5) with respect to authoritative and authoritarian parenting styles.

4.6 Category of Schools and Students' Achievement in Mathematics

The sixth objective of this study was to investigate the influence of school categories on students' achievement in mathematics. To achieve this objective mathematics mean marks for students in mixed and single sex schools was computed. The mean marks for mixed schools (20.5) and single sex schools (39.5). Table 4.6 shows students' achievement in mathematics in mixed and single sex schools.

Table 4.6: School category and students achievement in mathematics

School categories	**N**	**x marks**	**S.D**

Mixed	146	20.5	18.8
Single	68	39.5	14.5
Total	**214**		

The results on the table shows that students in single sex schools have a higher mathematics mean score than those in mixed schools.

The hypothesis which stated that: HO_6: school categories have no significant influence on students' achievement in mathematics was tested. Analysis of variance (ANOVA) was used to determine the difference in mathematics mean marks for students in the two categories of schools.

Table 4.7: Shows ANOVA of Students' Mathematics Means for Mixed and Single Sex Schools

	Sum of squares	**df**	**mean square**	**F**	**sig.**
Between Groups	516.94	1	516.94	12.80	.05
Within Groups	8560	212	40.38		
Total	**9076.94**	**213**			

The results on the table gave the ratio $F_{(observed)}$ as 12.80 and $F_{(critical)}$ value was 3.89 at 5% level of significance. Since $F_{observed}$ value was greater than the $F_{critical}$ value, the (HO_6) was rejected. From the results, it was concluded that categories of schools have significant influence on students' achievements in mathematics.

4.7 Parental level of Education and students' achievement in mathematics

The seventh objective of this study was to determine the influence of parental levels of education on students' achievement in mathematics. To achieve this objective, data was analysed to establish the parental levels of education and mathematics mean scores for respondents.

Data analyzed showed that 17.8% of the respondents had parents with no formal education; 40.7% had parents with Primary level of education; 35% had parents with secondary education; 6.5% had parents with university education. The mean mathematics scores for respondents were as follows:

Those whose parents had no formal education 10.38, with primary level 20.56, with secondary level, 30.35 and those with university level 40.25. Table 4.8 &Figure 4.3 show relationship between parental levels of education and students' achievement in mathematics

Table 4.8 : **Relationship between Parental Levels of Education and Students Achievement in Mathematics**

Parental Academic levels	**%**	**Maths M. scores**	**S.D**
None	17.8	10.38	5.77
Primary	40.7	20.56	13.58
Secondary	35.0	30.35	7.80
University	6.5	40.25	12.6
Total	**100**		

The analysis on the table shows that students' whose parents are educated have higher achievement in mathematics than those whose parents have no formal education.

The null hypothesis stated that:

HO_7: Parental levels of education have no significant influence on students' achievement in mathematics. To test this hypothesis, analysis of variance (ANOVA) was used to determine the significance in the difference of mathematics mean scores. Table 4.9 shows ANOVA of students' achievement in mathematics.

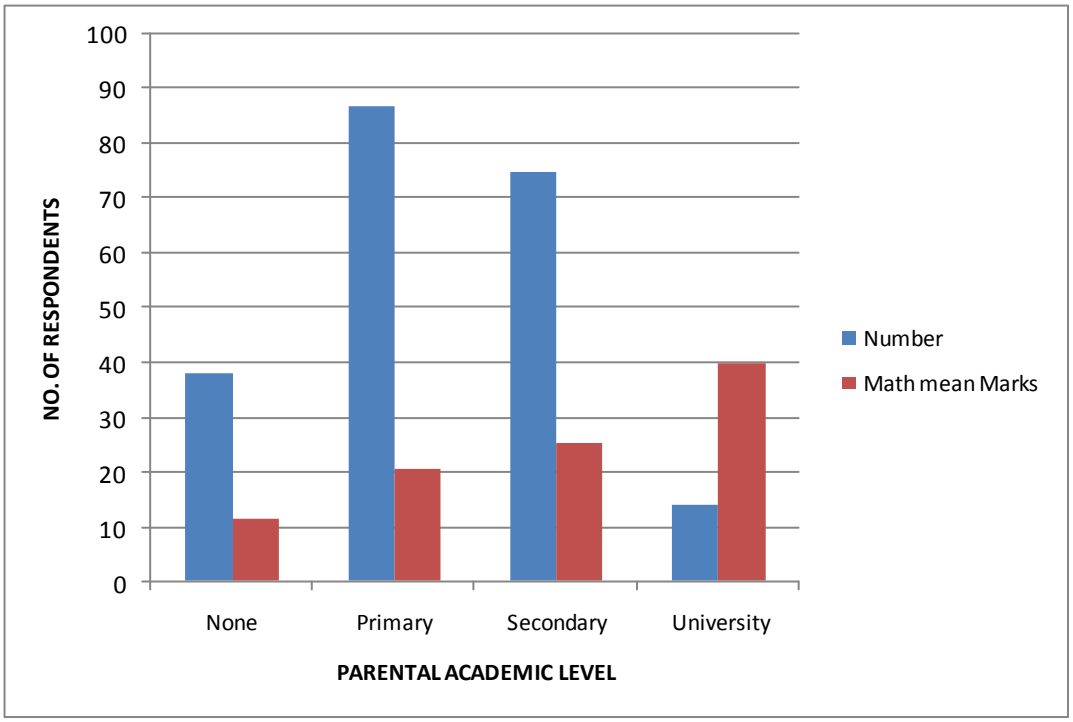
Table 4.9: ANOVA of Students' Achievement in Mathematics

	Sum of squares	**df**	**mean squares**	**F**	**sign**

Between groups	605.03	3	201.77	9.05	.05
Within groups	4680.5	210	22.29		
Total	**5285.80**	**213**			

The results shown on the table indicates that the ratio $F_{(observed)}$ was 9.05 and the $F_{(critical)}$ value was 2.65 at 5% level of significance. Since $F_{(observed)}$ value is greater than $F_{(critical)}$, the null hypothesis (HO_7) was rejected. It was concluded that the influence of parental levels of education on students' achievement in mathematics is significant.

Figure 4.3: Parental Academic levels and Achievement in Mathematics



Summary

The analysis of data revealed that both parenting styles and self-concepts had significant influences on students' achievement in mathematics. This is because significant relationships were found between the variables; ($r = 0.64$, 0.73 and 0.85 at $P \leq 0.05$) for academic self-concept, mathematics self – concept against achievement in mathematics and academic self–concept against mathematics self-concept respectively. Authoritative and authoritarian parenting styles yielded mathematics

mean scores of 24 and 22 respectively, while neglectful and permissive parenting styles provided mean scores of 15 and 20 respectively. Significant relationships were found between self-concept of students, authoritative and authoritarian parenting styles; the obtained values were ($t = 6.58$, $df = 77$) and ($t = 4.83$, $df = 63$) at $P \leq 0.05$). No significant relationship was found between students' self-concept, neglectful and permissive Parenting styles. The two parenting styles posited values ($t = 0.16$, $df = 27$) and ($t = 0.25$, $df = 39$) at $P < .05$ respectively. Gender was found to have significant influence on students' mathematics self-concept and achievement in mathematics. The obtained value for gender against mathematics self- concept was ($t = 8.46$, $df = 192$) at $P \leq .05$ and gender against achievement in mathematics was ($t = 10.21$,$df = 192$) at $P \leq .05$.

The influence of parental levels of education on students' achievement in mathematics was significant; the ANOVA value obtained was $F_{(observed)} = 9.05$ greater than $F_{(critical)}$ 2.65 at $P \leq 0.05$. The categories of schools have significant influence on students' achievement in mathematics. The value obtained was $F_{(observed)}$ 12.80 greater than $F_{(critical)}$ 3.89.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Overview

This chapter focuses on discussion of the study findings, conclusion, recommendations and suggestions for further research. The major purpose of this study was to investigate the influence of parenting styles and self concept on students' achievement in mathematics among secondary students in Kaplamai Division. The need for investigation arose from the students' poor performance in mathematics in national examinations and formal examinations at different levels of academic hierarchy. The realization that over the years, research findings have identified various factors both external and internal such as learning facilities, teaching methodologies, students' attitude, and economic factors that influence students' performance in mathematics necessitated this study. A causal comparative design was used involving 214 respondents selected from 11 Secondary schools in Kaplamai Division.

The researcher collected data from the respondents using questionnaires as the main research instruments. Analysis of data was carried out through the Statistical Programme for Social Sciences (SPSS). The study made use of statistical tests; the Pearson product - moment correlation, t –test and ANOVA were used to determine the relationship between variables. All hypotheses were tested and accepted or rejected at $P \leq .05$ levels of significance. The discussion in this chapter is based on the themes derived from the objectives and hypotheses of this study. The major findings are discussed and compared with earlier studies.

5.1 Self-Concept as a Predictor of Achievement in Mathematics

The findings in this study showed that achievement of students in mathematics is significantly influenced by academic self concept (r = 0.64) and mathematics self-concept (r = 0.73) at P=<.05. The coefficient of determination for the relationship between mathematics achievement versus academic self-concept and mathematics self concept were (41%) and (53.3%) respectively (table 4.4). These results imply that 41% and 53.3 % of students' achievement in mathematics is influenced by academic and mathematics self-concepts. The study therefore revealed a positive significant relationship between mathematics achievement and self-concept. This finding is consistent with studies by Wandabwa (1996), Wilkins et al (2002), Osang (1990),Wong (1992), Jones & Grieneeks (1970),Marsh et al(2005) which point out that students' self concept has not only a positive influence on achievement in mathematics but also students' academic performance. These studies further observed that students with positive self-concept perform better than those with negative self- concept. In a different study, Marsh (1986) using a confirmatory factor analysis approach to task to test internal and external model, demonstrated a positive effect of mathematics achievement on mathematics self-concept. Other researchers such as Song and Haittie (1984) found a significant relationship between self-concept and academic achievement.

These findings, however, contradict those of Borislow (1962), Keifers (2002) which found no significant differences in general self-concept level between students who turned out to be under achievers and those who turned out to be achievers. Positive self-concept increases academic self-efficacy of students; Bandura (1997) identified self-efficacy as a key element in the cognitive processes. The decision to engage in a situation as well as the intensity of effort ex¯pended in the situation depends on the persons' confidence of success. Students who have high mathematics and academic self-concepts visualize success scenario that provide positive guides for better

performance in mathematics and they cognitively rehearse good solutions to potential problems . Students who judge themselves as inefficacious or who portray negative self-concept are more inclined to visualize failure scenarios and to dwell on how things go wrong .Negative self-concept weakens students' motivation and undermines academic performance. Despite this proportionate relationships between self-concept and students achievements in mathematics, one can maintain high mathematics self-concept but have low mathematics self- efficacy with regard to specific mathematics tasks leading to weak academic performance .

5.2 Influence of Parenting Styles on Students' Achievement in Mathematics

The study showed achievement in mathematics is positively influenced by parenting styles; the t-values obtained were as follows: authoritative parenting versus students' achievement in mathematics yielded $t = 7.51, df = 77$ at $p<.05$; authoritarian parenting versus students' achievement in mathematics $t = 5.23, df = 63$ at $p<.05$; neglectful parenting style versus students' achievement in mathematics $t = 1.13, df = 27$ at $p<.05$; and permissive parenting versus students' achievement in mathematics $t = 1.75, df = 39$ at $P< .05$.

From the results, it was concluded that authoritative and authoritarian parenting styles have strong influence on students' achievement in mathematics compared with neglectful and permissive parenting styles. Neglectful and Permissive parenting styles negative influences on students' achievement in mathematics.

The possible explanation for this finding is that, authoritative and authoritarian parents apart from punishing and rewarding children's behaviour according to socially defined standards, they provide models that children are encouraged to emulate. In this case the desire of a child to become a high academic achiever tends to reflect pressure exerted

by parents. On the contrary, permissive and neglectful parents seem to either provide undesirable models or to inspire self pity, helplessness or dependence denying children an opportunity to learn social cognitive skills. These findings support those of Baumrind (1991), Weiss & Schwartz (1996), Miller et.al (1993) which found that children and adolescents whose parents are authoritative rate themselves and are rated by objective measures as more socially and instrumentally competent than those whose parents are non-authoritative.

5.3 The Influence of Gender on Students' Achievement in Mathematics

The study found that gender has significant influence on students' achievement in mathematics .The findings indicated that male students performed better in mathematics than female students.

The male respondents' mathematics mean mark was higher (25) compared to female respondents mean mark (15). The t-test analysis on the means yielded ($t = 10.21$, $df = 192$ at $p<.05$. This finding is supported by those of (Eshiwani 1975 Maccoby & Jacklin 1974,Fan &Chen 1997,Stipek &Gralinski 1991,Chambers &Schreiber 2004) which found a significant difference in mathematics performance between boys and girls. Gender differences in mathematics achievement, is attributed to mixed feedback given to both boys and girls from their environment regarding their abilities in mathematics. Boys are told by their peers that mathematics is a male subject while girls are told that mathematics is difficult for girls because it is a male subject. This type of feed back reinforces boys' achievement in mathematics but decreases the girls' self-efficacy regarding mathematics achievement. Negative feedback given to girls interferes with their perceived self-efficacy in mathematics.

Bandura (1997), asserts that culture defines the boundary between male and female tasks and therefore influences the cognitive preparedness of individuals to perform tasks; efforts ex¯pended on the task such as working on mathematics problems .Tasks perceived as male oriented are either resisted or reluctantly performed by female students hence optimum achievement may not be attained in such tasks as is the case with girls' low achievements in mathematics. However, (Osang, 1990 and British Columbia, Ministry of Education, 2002) reported that gender differences were not found in mathematics achievement. One explanation offered for this achievement gap in mathematics is the differences in mathematics related beliefs with boys having higher levels of self-efficacy than girls (Stipek and Gralinsiki, 1991).According to Pajares (1996), an underestimation of mathematics capability, not lack of skill, is responsible for students' avoidance of mathematics courses, and careers, and this is more likely to be the case with females than with males.

5.4 Relationship between Gender and Mathematics Self Concept

The findings reported a significant relationship between gender and mathematics self-concept. Male respondents were found with a higher positive mathematics self-concept compared to their female counterparts. There were more males with positive mathematics self concept N= 55 (61%) compared to female students N=35(38.9) The mean mathematics self-concept score for boys was (89.5) and for girls was (65.1).The t-test value was ($t = 8.46, df = 192$ at $p < .05$. This finding is supported by those of (Junge and Dretzke, 1995, Eccles 1987, Malpass, O'Neil, and Hocevar, 1999) which found boys with a more enhanced perception of self-efficacy than girls. Male students have positive mathematics self-concept compared to female students because they perceive themselves to be generally efficacious in a range of activities including ability to undertake mathematics tasks and they believe in the value of mathematics.

The positive mathematics self-concept for male students is also derived from the positive feed back received from parents, teachers and peers who point out that mathematics is a male domain. In the male dominated society of Kenya, the commonly ex¯pressed view is that passing mathematics is prestigious for a man but feminine to fail mathematics. This notion makes failure of mathematics for girls normal but disgraceful for male students. Consequently, male students are intrinsically motivated to work hard to achieve higher scores in mathematics compared to girls. Past experiences such as failure in mathematics dictate opinions of students concerning perception of their ability in mathematics (Bandura 1997) as well as their optimism about career choices where mathematics is a basis of entry. Those who experience failure re- evaluate their ability in mathematics as well as their perception about mathematics hence either develop positive or negative mathematics self- concepts. Gender stereo- typing in the domain of mathematics introduces self doubt in girls leading to resignation in the face of mathematics tasks or avoidance of the subject to preserve their self-worth (Bandura, 1986).Boys tend to preserve their mathematics self-efficacy in the face of new challenges such as failure in tackling mathematics tasks; they convince themselves that they can overcome the tasks and attain high achievement in mathematics since they constantly receive positive feedback from the society regarding their capacity to handle mathematics tasks.

Other studies, suggest that no differences exist between boys and girls in terms of mathematics self-concept. A foundation skill Assessment (FSA) study of 161 British Columbian public schools students indicated that girls' mathematics achievement met or exceeded that of boys and girls' attribution patterns were higher than those found in previous studies.

5.5 The Influence of Parenting Styles on Students' Self Concept

The results showed that self-concepts of students are significantly influenced by authoritative and authoritarian Parenting Styles. Analysis of students' self-concept mean scores for the four parenting styles were as follows: authoritative = 47, authoritarian = 45, neglectiful = 32, permissive = 40. The analysis of variance between parenting styles and students' self-concepts yielded the ratio $F_{(observed)}$ 6.032 and $F_{(critical)}$ value 1.42 at $p<.05$.

These results showed parenting styles significantly influenced the self-concept, either positively or negatively. In the context of the social learning theory, authoritative and authoritarian parents reinforce positive behaviour in their children enhancing their self-efficacy. Reinforcement is given by parents in terms of positive feedback regarding their abilities and achievements. Consequently, students develop positive images and ideas about themselves which in turn raises their self approval: self esteem and self-concept.

On the contrary, neglectful and permissive parenting styles do not inspire nor reinforce self approval in students. This is because they create either dependence or despair leaving the affected students confused. Students who have been raised by permissive and neglectful parents are more likely to suffer from low confidence levels in their own abilities and negative self-concept compared to those who have been raised by authoritarian and authoritative parents. These results are supported by findings of (Mitchell 2003 and Grobman, 2003) which assert that parenting styles employed by parents have a direct effect on the children's self-concept; they single out authoritative parenting as instrumental in the development of children's self- concept.

5.6 School Categories and Students' Achievement in Mathematics

The results of analysis to determine the mean mathematics marks for students in mixed and single sex schools, yielded (20.5) and (39.5) respectively. The analysis of variance computed to establish the difference in mathematics achievement for the two categories yielded the ratio of $F_{(observed)}$ as 12.80 and $F_{(critical)}$ as 3.89 at 5% level of confidence. It was concluded that there is significant differences in the levels of mathematics achievement for students in mixed and same sex schools. This finding suggests that the type of school influences and shapes the performance of students in mathematics. The school is one of the many factors which determine the students' performance in mathematics besides students' mathematics self-concept and self-efficacy which provide the inspiration that generates the desire to perform tasks in mathematics. Schools provide varied learning environments which either support good performance in mathematics or discourage such performance.

Schools which provide adequate learning support materials for mathematics such as text books, have enough trained teachers in mathematics, supervise implementation of the curriculum well, have established culture of achieving high performance in mathematics are better placed in influencing students' achievement in mathematics as compared to those schools which do not fulfill the listed factors .

On the basis of social learning theory, supportive school environment provides students with inspiration for high achievement in mathematics and generally in academic pursuit. A supportive school environment contributes positively to the students' mathematics and academic self- concepts. A positive self-concept energizes the student toward the pursuit of academic excellence. On the contrary, negative mathematics self-concept undermines the students' performance of mathematics tasks and willingness to shift position from negative self-evaluation to positive evaluation with regard to mathematics performance. This situation is worsened if the student

receives negative evaluation from significant persons such as peers, teachers and parents. This result supports findings by Spielhofer et al (2004),Eisenkopf et al(2012),Saidin &Brahim(2011), which found that students in single-sex schools performed better than those in Co-educational schools in various subjects. However, this result contradicts the findings by Elwood &Gipps(1999);Mael et al(2005) which concluded that there is no evidence of academic benefit or harm for students either in single-sex or Co-educational schools.

5.7 Parental levels of Education and Students' Achievement in Mathematics

Data analysis to determine levels of education for parents of respondents in this study indicated as follows: no formal education =17.8%, primary level =40.7%, secondary level = 35%,University = 6.5%.Respondents' mean mathematics marks were: 10.38, 20.56, 30.35,and 40.25 respectively.

Analysis of variance was used to test the significance of differences in mathematics achievement for students. The ratio of $F_{(observed)}$ was 9.05and $F_{(critical)}$ was 2.65 at 5% level of confidence. It was concluded that parental levels of education significantly influence students' achievement in mathematics. This result is supported by a study done in Canada by PISA (2003) which revealed that the average mathematics scores of students whose parents had high school or less academic qualification were significantly lower than the average scores of students whose parents had college or University Certificate. Other studies have also established significant relationships between parental levels of education and students academic achievement.(Furstenburg &Hughes 1995,McCoy 2005,Krashen 2005,Fantazzo&Tighe 2000).

This finding emphasizes the significant role played by parents in the education of their children through provision of guidance, constructive feedback and care. These

components build the students' confidence in performing mathematics tasks and in turn provide the desire to engage in constant evaluation of their abilities in handling mathematics. Good results in mathematics, for example passing a test reinforce the belief that it is possible to achieve high grades in mathematics. Students whose parents fail to provide a good role model in education, family life and work life may not excel in mathematics because they are denied a chance to learn from experiences.

Cognitive development is a function of cumulative experiences, though positive experiences last longer in memory and are better motivators to learning compared to negative experiences. Educated parents seem to transmit positive mathematics attitudes to their children; children then develop intrinsic motivation which inspires them to excel in mathematics. When the student's effort in mathematics is rewarded, the effort is not only sustained but it is also increased.

5.8 Conclusion

The following conclusions were made based on the research findings.

i. Parenting styles influenced students' performance in mathematics .Respondents under authoritative and authoritarian parenting styles had higher positive correlations with achievement in mathematics. (r = 0.65 and 0.55) respectively. That the influence of neglectful and permissive parenting styles was not significant.
ii. Gender has significant influence on students' achievement in mathematics; male students performed better than female students.
iii. Students' self-concepts (academic and mathematics self-concepts) have significant influence their achievement in mathematics. Those with positive self-concepts performed better in mathematics than those with negative self-concepts.

iv. Gender significantly influenced students' mathematics self-concept; male students had higher positive mathematics self-concept than their female counter parts.

v. Parenting styles significantly influenced students' self-concept; authoritative and authoritarian parenting styles had a strong positive influence on the respondents' self-concepts. The influence of neglectful and permissive parenting styles was negative.

vi. Category of schools showed significant positive influence on students' mathematics achievement.

vii. Parental levels of education had significant influence on students' achievement in mathematics.

5.9 Recommendations

The study focused on the influence of parenting styles and self-concept on students' achievement in mathematics in selected secondary schools in Kaplamai Division of Trans-Nzoia County. The analysis of data generated various findings; in this section, various recommendations are given based on the findings and conclusion. From the findings there is a positive correlation between authoritative and authoritarian parenting styles with students' achievement in mathematics .This being the case, there is need for both parents and teachers to be good role models and to communicate positively in order to provide the children with positive feedback on their mathematics achievement and other social skills. This is essential for improving their self-concept and achievement in mathematics. Parents should employ mainly authoritative and authoritarian parenting styles in caring for their children because they have a positive influence on students' self-concept and mathematics achievement. On the contrary, permissive and neglectful parenting styles have a negative influence on students' achievement in mathematics and on students' self-concepts.

These findings are significant to teachers and parents since their responsibility as guardians of students demand that they employ self-concept enhancing skills to strengthen positive self-concepts among students. Parents and teachers should either minimize or avoid giving negative feedback which generates and perpetuates negative self-concepts among students .Teachers should make a deliberate effort to care for students so that they meet their cognitive, emotional and psychological needs.

This may translate into higher academic achievement or better achievement in mathematics. Verbal persuasion or convincing serves as a source of efficacy information and positive self-concepts. Teachers and parents for example, can raise or inhibit students' percepts' of self-efficacy by suggesting whether or not they have the capabilities to succeed in a given task.

The results indicated that permissive and neglectful parenting styles have negative influence on students' self-concepts and achievement in mathematics. Parents should be cautious in their duty of parenting by avoiding permissive and neglectful parenting styles if they wish to see their children meet academic challenges. Instead, they should adopt authoritative and authoritarian parenting styles, which are associated with the development of instrumental competency in students.

For students, this results shows that their self-concept is an important predictor of their achievement in mathematics. Individual students should reduce or avoid negative self evaluation which consequently undermines their achievement in mathematics. There is a positive relationship between all measures of self perception and academic achievement (Jones & Grieneeks, 1970).Students should emulate good role models within their environment and beyond and shun bad models.

The study revealed that gender influenced students' achievement in mathematics; an attempt should be made by parents, teachers, peers and members of the wider community, especially policy makers to eliminate stereotyping roles and activities which promote gender disparity in mathematics learning and subsequently performance. The study showed that there was a positive correlation between self-concepts (academic / mathematics self-concept) and achievement in mathematics. Parents, teachers and other stakeholders in mathematics education should strive to foster positive self-concepts among all students through physical, emotional and psychological care. Teachers are better placed in this task since they have the knowledge of psychology. The results showed that parental levels of education influence positively students' achievement in mathematics; therefore parents should make an effort to receive basic levels of education for supervision of academic progress of their children. Educated parents seem to be more caring and responsive to physical, emotional and psychological needs of their children. This strengthens and sustains the self-concept of children throughout their life despite the many challenges encountered along the journey of life.

5.10 Suggestions for Further Research

This study suggests the following areas for further research.

i. A similar study to be carried out in other districts in Kenya. This will make it possible to determine whether the findings documented in this study hold the same for all other districts.

ii. Further studies involving the use of interview schedules and participatory observations should be carried out in order to supplement the information obtained by using questionnaires.

iii. The present study was mainly quantitative in nature and therefore, there is need to carry out a qualitative study to establish the influence of parenting styles and

self concept on students' achievement in mathematics in Kenyan Secondary schools.

iv. A study on the relationship between parental attitude towards mathematics and the students' performance in mathematics.

v. A study on peer influence on the students' achievement in mathematics.

vi. A study on the role of self efficacy on mathematics teachers' performance.

vii. A study on the role of prayer and internal locus of control on students' performance in mathematics.

viii. A study on the effect of mathematics anxiety on students' performance in mathematics exams.

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APPENDICES

APPENDIX A: STUDENTS' QUESTIONNAIRE

You are being requested to participate in this study on the influence of parenting styles and self concept on achievement in Mathematics among secondary school students.Therefore complete the following questionnaire to the best of your knowledge. The information provided will be used only for the purpose of research and will be kept confidential.
Please note that this is not meant to be an exam; there are no correct and wrong responses to the items. Please tick (√) in the spaces provided after each statement to indicate your response. Do not write your name on the questionnaire. Please respond to all items.

Section 1
Background information

1.	Indicate your admission number……..		
2.	Indicate the category of your school.	Same Sex	[ ]
		Mixed	[ ]
3.	Indicate your gender	Male	[ ]
		Female	[ ]
4.	Whom do you stay with?	Parents	[ ]
		Guardians	[ ]
5.	Did your father/guardian go to school?	No	[ ]
		Yes	[ ]
6.	If Yes in (4) above, state up to which level.	Primary	[ ]
		Secondary	[ ]
		A-Level	[ ]
		University	[ ]
7.	Did your mother/guardian go to school?	No	[ ]
		Yes	[ ]
8.	If Yes in (6) above, state up to which level.	Primary	[ ]
		Secondary	[ ]
		A-Level	[ ]
		University	[ ]
9.	How would you rate the size of your family land?	None	[ ]
		Small	[ ]
		Average	[ ]
		Large	[ ]

STUDENTS' SELF CONCEPT QUESTIONNAIRE (SSCQ)

Section II:

Each person is special and different from others. Some people think that the differences are reflected in our feelings. Please indicate by use of a tick (√) in the spaces provided against each item that best describes your feelings. Note that the following abbreviations have been used for the following words:-

SA=Strongly Agree A = Agree UN = Undecided

DA=Disagree SD = Strongly Disagree

Example. I am a good student *SA A UN DA SD means he/she strongly*

(√) ( ) ( ) ( ) ( ) agrees with the statement

Scale 1: General Academic Self Concept (GASC)		SA	A	UN	DA	SD
1.	I am proud of my class work.					
2.	I learn new ideas with difficulty.					
3.	I score good marks in all subjects.					
4.	I always participate in class discussions.					
5.	I get worried when we have tests at school					
6.	I feel I am not clever enough.					
7.	I can draw beautiful pictures of physical features.					
8.	I am slow in finishing my school work.					
9.	I am an important member of my class.					
10.	I speak well in front of my classmates.					
11.	I am poor in school work.					
12.	I hate school.					
13.	I forget what I learn very easily.					
Scale 2: Math self concept (MSC)		SA	A	UN	DA	SD
14	Passing Mathematics is my objective					
15.	I feel helpless in math.					
16.	I am good in math.					
17.	I compete with the best students in math.					
18.	I hope to get a good grade in Mathematics in the final exam.					
19.	I hate math.					
20.	I spend much of my time solving math problems.					
21.	I am not good in math.					
22.	Math is an enjoyable subject.					
23.	I complete my math assignment on time.					
24.	I am forced to do math.					
25.	Math exams scare me.					
26.	I do not like attending math lessons.					
27.	Studying math is burdensome.					

STUDENTS' PARENTING STYLES RATING SCALE (SPSR))

Section III:

For the following 1-18 items tick in the space provided after each item to choose what best describes how you feel about your parents.

Example. *SA* *A* *UN* *DA* *SD*

I am loved by my parents. *( )* *( )* *( )* *( )* *(√) –Means the person strongly Disagrees with the statement*

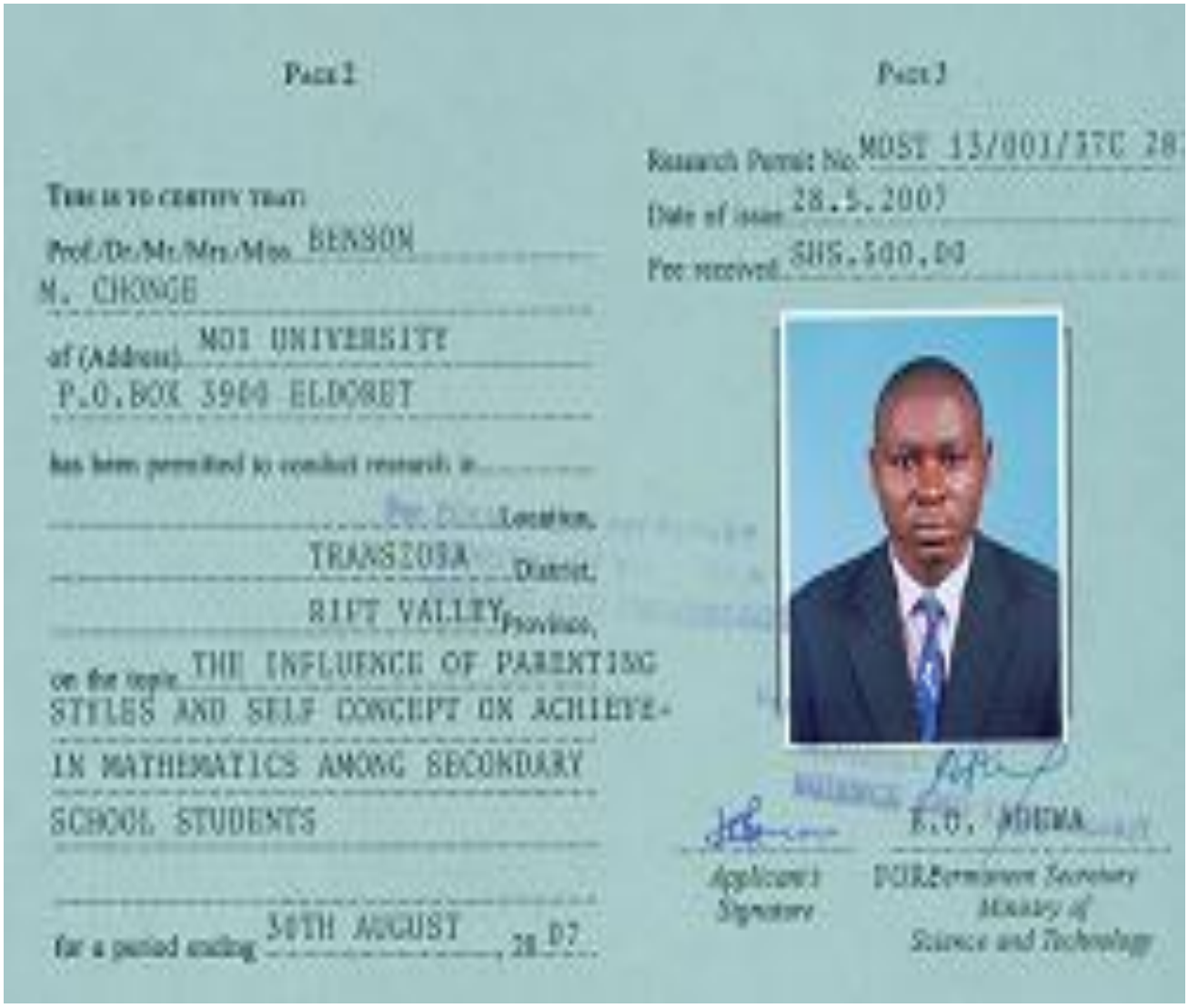
		SA	A	UN	DA	SD
S_1: Authoritative Parenting (A/VE)						
1.	I am scared of my parents.					
2.	My parents support me whenever I have problems.					
3.	My parents ex¯plain things to me patiently.					
4.	My parents make me feel loved.					
S_2: Authoritarian Parenting (A/RIAN)						
5.	My parents demand too much from me.					
6.	My parents expect me to obey their commands.					
7.	My parents are very strict.					
8.	My parents make me feel stupid.					
9.	I fear my parents.					
S_3: Permissive Parenting (P/VE)						
10.	My parents provide me with anything I want on demand.					
11.	My parents do not quarrel me.					
12.	My parents consult me on important decisions.					
13.	My annoyance disturbs my parents a lot.					
S_4: Neglectful Parenting (N/GT)						
14.	My parents do not care about my needs.					
15.	My parents do not notice when I am disturbed.					
16.	My parents rarely communicate with me.					
17.	My parents punish me for every small mistake.					
18.	My parents make me feel rejected.					

Thank you for taking your time to fill in this questionnaire

APPENDIX B

APPENDIX C

APPENDIX D



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THIS IS TO CERTIFY THAT:

Prof/Dr/Mr/Mrs/Miss BENSON N. CHONGE

of (Address) MOI UNIVERSITY P.O.BOX 3900 ELDORET

has been permitted to conduct research in

Location,

TRANSZOIA District,

RIFT VALLEY Province,

on the topic THE INFLUENCE OF PARENTING STYLES AND SELF CONCEPT ON ACHIEVE- IN MATHEMATICS AMONG SECONDARY SCHOOL STUDENTS

for a period ending 30TH AUGUST 20 07

Applicant's Signature

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Research Permit No. MOST 13/001/37C 28

Date of issue 28.5.2007

Fee received SHS.500.00

P.O. BOX

DG/Permanent Secretary
Ministry of
Science and Technology