MATHEMATICS ACHIEVEMENT MOTIVATION: THE RELATIONSHIP BETWEEN PARENTAL INVOLVEMENT AND MATHEMATICS SELF-EFFICACY AMONG NIGERIAN ELEMENTARY SCHOOL STUDENTS.

by

OLUTOLA OPEYEMI AKINDIPE

(Under the Direction of Louis A. Castenell)

ABSTRACT

This study was carried out to find out the relationship that exists between parental involvement, Mathematics self-efficacy and Mathematics achievement motivation of elementary school students in Nigeria. The participants were one hundred and seventy-five girls (175) and one hundred and sixty-eight boys (168) selected from five public and five private elementary schools in Lagos, Nigeria. The instrument titled 'Mathematics Achievement Motivation of Elementary School Students in Nigeria Questionnaire' measured the students' self-report response to items on parental involvement, Mathematics self-efficacy and Mathematics Achievement motivation. Pearson Product Moment Correlation analysis was used to test the formulated hypotheses. The result revealed a significant positive correlation between general parental involvement and Mathematics achievement motivation, Mathematics parental involvement and Mathematics achievement motivation, Mathematics self-efficacy and Mathematics achievement motivation, parental involvement and Mathematics self-efficacy and between cultural orientation and Mathematics achievement motivation.

INDEX WORDS: Parental involvement, Mathematics self-efficacy, Mathematics achievement motivation, collectivist- individualistic cultural orientation.

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DEDICATION

To God, the Father, God, the Son and God, the Holy Spirit.

To the memory of my late father, Mr. Anthony Olude Akinyede, a pillar of support in my life and who sacrificed everything to care for and bequeath the legacy of good education to me and my siblings.

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CHAPTER ONE

INTRODUCTION

Background Information on Nigeria

Some background information on Nigeria is necessary in order to provide an understanding of the educational and environmental context on which this research is based. Nigeria is a country situated in the Western region of Africa. It is the most populous African country with a population of over 170 million people (World Bank, 2013). It has 36 states and a Federal Capital Territory, Abuja. As one of the fastest growing economies in Africa, Nigeria is abundantly blessed with unlimited natural and human resources. For instance, it is the sixth largest producer of crude oil in the world with an average of about 2,051,000 barrels of crude oil produced per day (CIA, 2013). Also, the country is highly blessed with other resources such as gold, tin, coal, platinum, limestone, copper to name a few.

On October 1st, 1960 Nigeria gained independence from its British colonial master. English is the country's official language and is also the primary language of communication and instruction in all Nigerian schools. Basically, Nigeria can be divided into two major zones namely the Northern and Southern Nigeria. Although the country has over 350 ethnic groups and languages, the three major ethnic groups are Yoruba, Igbo and Hausa. The Hausas are mostly found in the Northern parts of the country and they are predominantly Muslims. The Yoruba and

the Igbos occupy the South Western and South Eastern parts of Nigeria respectively with majority of them being Christians.

History of Education in Nigeria

Prior to the introduction of formal education, the type of education practiced in Nigeria was traditional or informal in nature. Basically, social institutions like the family, churches, mosques and communities taught people the norms, values and ethics of the society. In particular, older members of the society groomed the younger ones in various aspects of the culture such as songs, poems, proverbs and in vocations like home making, cooking, drumming, hunting, weaving, etc.

Formal education began in Nigeria with the coming of the European missionaries and later with the British colonial rulers. The proximity of the South to the coastal shores made the Yoruba the first set of Nigerians to encounter the foreign missionaries and become Christians. Consequently, they embraced the western education that was introduced by the missionaries and the first formal schools in Nigeria were established in Southwestern Nigeria. Thus formal education began among the Yoruba and soon spread to the Igbos and these two tribes, to date, continue to value and acquire formal education. On the other hand, among the Hausas in the North, some of the Islamic tenets which supported polygamy, early marriage and the non-education of the girl child contradicted the goals of formal education and made the non-formal Arabic or Islamic form of education common. However, the establishment of more formal schools in the North by the Federal Government after independence has encouraged more Hausas to send their children to formal schools.

After independence, the South West and South East regional government embraced education as their top priority and initiated the free education policy at the primary level of education thereby making primary education free to all students in these regions. As a result of this, a lot of children in the South started attending formal school. The change to a Federal system of governance in the late 1970s saw the State governments becoming responsible for primary and secondary education while the Federal government was responsible for some secondary and all tertiary education.

Like in most parts of the world, education in Nigeria is either public or private. Public schools are owned by either the Federal or State government. These schools are tuition free but students still pay some levies and for other things such as uniforms and books. Although most Nigerian public schools have qualified teaching personnel, they also have larger class sizes, diverse student populations and inadequate teaching facilities due to large student populations and poor government funding. Private schools on the other hand are owned by individuals, groups or organizations. These tuition paying schools often have smaller students' classroom size, fewer diverse student population, better facilities and teaching personnel. They provide their own infrastructures and materials for learning but obtain the state's government approval before establishment. About 75% of Nigerian school children attend the private school (Tooley, 2005).

The first educational system, the Universal Primary Education (UPE) was established by the Federal government in 1976. It consisted of 6 years of primary education, 5 years of secondary education and 4 years of tertiary education. Some years later, the UPE was changed to 6 years of primary education, 3 years of junior education secondary, 3 years of senior secondary education and 4 years of tertiary education, also popularly known as the 6-3-3-4 system.

However, the current educational system, Universal Basic Education (UBE) which was established in 1999 comprises 9 years of basic education, 3 years of vocational or senior secondary education and 4 years of tertiary education with the basic education having 6 years of primary and 3 years of junior secondary schooling.

After finishing the primary school education, students take the First School Leaving Certificate (FSLC) examination and proceed to the junior secondary school for three years of education. Thereafter, students advance for another three years of either vocational or secondary school education. Students who attend the vocational schools are trained in specific skills such as carpentry, welding, plumbing, auto mechanic repair, electronic, hair dressing, etc. Usually these vocational qualifications enable the recipients to enter the world of trade, business or get technical jobs. On the contrary, students who complete the senior secondary school education often proceed to the polytechnics or universities in pursuit of tertiary education.

Although there are many nursery and kindergarten schools across the country and the Nigerian National Policy of Education acknowledges the existence of these pre-primary schools, yet primary school education is officially considered as the starting point of formal education in Nigeria. Also, these pre-primary schools do not fully utilize formal teaching methods and they were established by private individuals and organizations and not by the government (Sooter, 2013).

Nigerian primary schools are open every week day during the school semester activities between the hours of 8 a.m. and 3 p.m. except on public holidays. The public primary schools are overseen by a head teacher who reports to the School Management Council of the Local Government under the Universal Basic Education Board in the State Ministry of Education. In

the case of private school, the head teacher is appointed by the proprietor or a board of trustees and reports to the same. Periodic staff meetings are called by the head teacher to deliberate and take decisions on school matters. Likewise, the school meets with parents under the Parents Teachers Association (PTA) to liaise on the school's progress and development.

Lagos is presently the largest metropolitan area in Africa with a population of about 21 million people (Campbell, 2012). It is the commercial hub and focal economic point of the country. It was the Federal Capital of Nigeria until December 1991 when Abuja was made the new Federal Capital Territory. As the commercial nerve of the country, it is constantly on the receiving end of rural-urban migration from all around the country, hence making the city highly diverse and multiethnic in nature. It is home to several primary, secondary and post-secondary public and private schools. All educational affairs in the state are administered and supervised by the Lagos State Ministry of Education while primary education issues are overseen by the Lagos State Universal Basic Education Board (LSUBEB).

Background

Mathematics remains a subject that many students struggle with and this has become a global educational concern not only in the developed countries of the world but also in developing countries. In some of these least developed countries, for example Nigeria, the government often strives for economic stability, growth and improving the quality of life of its citizens. However, none of these can be achieved without technological innovations, manpower and industrial advancement. Particularly related to this is the role of Mathematics education in bringing about development in these countries. Mathematics represents the foundation or core of all science, technology and engineering disciplines (Igbokwe, 2003) and is therefore imperative

to the training of the necessary manpower and personnel to drive the national engine of economic, technological and industrial development.

In Nigeria, many students perform poorly in Mathematics at all levels of education (Agwagah, 2005). This poor performance in Mathematics is not only prevalent among students in the tertiary institutions but across the elementary, junior and senior secondary levels of education as well. For instance, Ahiakwo (2006) reported that students' Mathematics academic performance at the primary, secondary and tertiary levels of education had deteriorated over the years. Quite worrisome is the high rate of students' failure in Mathematics at the senior secondary school certificate examinations over the last two decades. Consequently, this has led to a low percentage of students enrolling in Mathematics-related courses at the nation's tertiary institutions (Salman, 2001).

Although the Nigerian educational system is saddled with some challenges which include inadequate funding, lack of appropriate educational resources and facilities, poor remuneration of teaching personnel and non-conducive learning conditions among others, all of which may have negatively impacted on the quality of learning over the years, nevertheless, Mathematics education has consistently received tremendous attention probably due to the pivotal role it plays in the sustenance of any economy. A lot of researches and proposals have been made to address the problem of poor students' Mathematics achievement. Some of these include efforts at curriculum change or development (Iruoma, 2012; Ayodele, 2011), instructional methods (Gambari & Ezenwa, 2011; Aremu & Salami, 2013), use of technology (Adegoke, 2010; Ebem, 2012), students' study habits (Charles-Ogan & Alamina, 2014; Oyedeji, 2006) and self-concept (Adebule, 2014; Obilor, 2011). While few students have improved in their performances due to the recommendations of some of these researches, yet a greater proportion of students continue

to perform below the level of proficiency expected in Mathematics compared to other subjects**.** One major factor that might be contributing to this problem among many Nigerian students is a lack of Mathematics motivation (Aina & Adedo, 2013; Akomolafe, Ogunmakin & Fasooto, 2013).

Basically, motivation can be said to be the internal force that propels and directs all forms of human behavior (Omrod, 2008). It is very crucial to the understanding of the different aspects of human actions including learning. Motivation also affects an individual cognitively, affectively and behaviorally (Thorkildsen & Nicholls, 2002). When people are motivated to learn, it impact their reasoning, emotional feeling, participation and behavior. Specifically, it manifests in increased attention or concentration, greater and directed effort, continuous engagement, perseverance and personal fulfillment (Pintrich & Schunk, 2002). Its remarkable influence on students' learning cannot be overemphasized thereby making it a paramount educational issue for parents, educators and school administrators alike. Several researches have suggested that motivation is a significant predictor of students' academic achievement (Mega, Ronconi & De Beni, 2014; Armitage, 2008).

Despite the fact that many motivation theories underscore the importance of an individual's social context on the motivation to learn, few studies have actually examined students' motivation from a different cultural milieu (Cheung & Pomerantz, 2012; Song et al, 2014). Most of the existing motivational theories and researches in the field of education originated and were carried out in western cultures. It is only within the last few decades that some other cultural perspectives such as the Eastern or Asian culture have received much consideration. Therefore, there are few studies that provide much understanding to the motivation of African or Nigerian students in particular. Specifically, there is a dearth of

Nigerian studies that have examined students' Mathematics achievement from the motivational point of view. This study provides an opportunity to investigate elementary school students' Mathematics motivation from a different cultural point of view used in most educational researches.

Cultures differ in complexity (Chick, 1997) and this makes every culture unique and beautiful. Psychologists and sociologists attempt studying peoples' culture in order to understand the similarities and differences in human behavior thus, they have always sought to classify cultures in one way or the other. One of the most popular and significant classification of culture based on their differences is Triandis' (1995) Individualism-Collectivism categorization. According to Triandis (2001), collectivist cultures focus more on the group such as the family and they value group norms, goals and utility. People from collectivist cultures believe in interdependence within the in-group, the development of the collective self, conformity of behavior to the group's norms and behaving in a communal way. Also, people from collectivist cultures are extremely concerned about the continuous existence of the group and maintaining good relationship with members of the in-group. On the other hand, individualistic cultures are characterized by less focus on the group and more attention on the individual. People from the individualistic culture place a higher value on independence, autonomy and the development of the personal self, goals and values. Although the relationship between the social context and individual's behavior or motivation may be more real and direct in some cultures than others, yet in no other setting is this reality more evident than in the collectivist cultures. In collectivist cultures, people's motivation and behavior most often align with the groups' customs and norms in such a way that if the group's norms, values and expectations underline increased task performance, members of that society strive for better performance and vice versa if the opposite

is true of the group. People from North and Western Europe and North America can be generally considered as belonging to individualistic cultures while people from Asia, Africa and South America belong to collectivistic cultures (Triandis, 1995).

Obviously the social context or culture of an individual provides a vital understanding of the behavior and motivation of the individual. The immediate family or community that people belong to does not only shapens their norms, expectations and values but also determines their behavior. Peoples' values are affected by social norms and societal or institutional demands (Eccles, 2007). Therefore, peoples' values affect the choices they make and shunt motivation in one direction or another. Usually as people develop physically and mentally, their personal and social interactions with others tend to form their core values (Eccles et al, 2008). Hence, peoples' values and motivation are mostly likely a reflection of the family's or society's values.

Within the Nigerian culture, the family is a very strong and tightly knit structure. It extends beyond the parents and siblings to include members of the extended family such as grandparents, aunts, uncles or cousins, who may live with the nuclear family or visit regularly. The family is the first contact an individual has with the world and it can be equated to the cocoon where the individual is nurtured, tended and groomed to become good for him/her-self and the society. All members of the family are responsible for the training and development of the child. If a child succeeds academically or in some other areas, the immediate family receives some credit for the success and likewise if a child fails the family receives part of the blame. Therefore in a collectivist society like Nigeria, the family and society especially the parents are very crucial to the formation of the attitudes, beliefs, motivation and behavior of the individual.

The average Nigerian parent highly values education and want their children to go to school. In Nigeria, education is often associated with financial liberty and endless opportunities. This is because many parents see having good education especially tertiary education as a means of breaking the shackle of poverty and providing better lives for their children. Basically, they believe that educated children will be able to get good jobs after graduation, financially assist their families and possibly bring about a change in their families' social status. For this reason, most parents strive to ensure that their children have tertiary education if and when they can afford it. Although as the highest form of education, the tertiary education is usually the pride and prestige of almost every Nigerian parent, yet all the other levels of education like the primary and secondary education also provide their recipients with ample opportunities. Moreover, the pursuit of the tertiary education is based on the successful completion of the earlier forms of education.

In Nigeria, the primary or elementary school education is officially recognized as the first stage of the national educational system. It represents the foundation upon which all higher forms of education are built. There are two main types of primary schools in Nigeria - the public and the private schools. Consisting of 6 years of learning, primary school students are taught different subjects and participate in extra-curricular activities. Some of the compulsory subjects are Mathematics, English Language, Bible knowledge, Science, Civic Education, Health and Physical Education and Social Studies. Also, students are exposed to some vocational training in areas such as arts and crafts, baking, sewing, knitting or carpentry. In addition, students must learn one of the nation's three major languages - Hausa, Yoruba and Ibo. The extra-curricular activities that students take part in include various sports like football, swimming, running and club activities such as Literary and Debating, Farmers, Science, Music, Drama and so on. Others

involve educational excursions to places of interest such as the museum, zoo and so forth. At the end of the 6 years, students take the First School Leaving Certificate (FSLC) and proceed to the junior secondary school for another 3 years of schooling. However, students who wish to go to Federal Secondary schools or privately owned secondary schools must take the Federal Common Entrance Examinations or the entrance examinations organized by the those private schools.

Students' success at the primary, secondary or tertiary schools may be largely dependent on parents' involvement in the education of their children. Parental involvement (PI) can be considered an important aspect of students' learning because the family spends more time with and understands the child better than anyone and is able to steer him or her towards academic excellence. In fact, the parents are the child's first teachers before the child's commencement of formal education and both parents play an active role in the child's education. Albeit, in Nigeria, it is often the mothers who tend to be more involved in the children's education. This can be understood considering the African family tradition where the father is the breadwinner who is primarily responsible for providing for the family and the mother supports the father by taking care of the home and the children. Usually, mothers are the ones who get the children ready for school each morning, take the children to school, pick them up from school and assist them with homework. When families are involved in their children's education, the children are motivated to learn and perform well, participate in school activities, complete assignments, receive better grades, have higher graduation rates and are more likely to go to college (Deslandes and Bertland, 2005).

Parental Involvement comes in different forms and varies across situations but it generally refers to the activities or things that parents do to assist and ensure their children's educational success such as attending school meetings or conferences, volunteering for school

programs, participating in school projects, assisting child with homework, monitoring academic progress and so on (Epstein 1995). In fact, there are various operational definitions of parental involvement used in the existing literatures, however, one classification of Parental Involvement is that of Pomerantz, Moorman, and Litwack (2007) who categorized it into two major types namely school based and home based Parental Involvement. According to them school based parental involvement are those practices that parents engage in that involve making contact with their children's school while the home based parental involvement are those activities that parents engage in outside of the school, often at home, that are related to children's school success.

The concept of Parental Involvement is not completely new in the Nigerian schools system. One common form of Parental Involvement in schools is the Parents Teachers Association (PTA) which provides an effective avenue for parents to interact and collaborate with the school and teachers concerning students' educational progress. The focus of most Parents Teachers Association, however, has always been on parents working with the school to ensure that the appropriate learning environment and quality teaching is provided to students rather than directly helping parents become more involved in their children's learning. In short, the Parents Teachers Association pays more attention to issues such as raising funds for intending or ongoing school projects, equipping the school libraries or laboratories, maintaining school buildings or facilities and providing additional learning materials for the school among others.

A type of parental involvement activity that has a more direct relation to students' academic work in Nigerian schools is the open-day event. This is a one day school event planned by the school authorities within a school term where parents are allowed to come to the school,

go through their children's school work, inspect their class notes or exercise books and have discussions with their class teachers. Similar to the parents' conferences in the American schools system, it permits parents to monitor their children's classroom work and to collaborate with the teachers for students' academic success. Another form of parental involvement activity that takes place in some Nigerian schools is the inter-house sport event. This is an annual extra-curricular students' sporting event organized by the school and made open to members of the public especially the parents. As an event that encourages games and sporting competitiveness among students, it does not require parents' direct involvement in their children's learning. Some other types of activities which are geared towards students' academic success and involve a more direct form of parents' involvement often take place within the home and include helping children with homework and monitoring school progress.

Most of the existing Nigerian literature on parental involvement focus on the school-based aspect of parental Involvement such as attendance of Parents Teachers Association meetings, participation in open-day events and parents' contribution and participation in school administration and curriculum development. Only a few studies have examined the home based aspect of parental involvement like helping children with homework, discussing educational aspirations and provision of home rules to enforce studying. Although many Nigerian parents value education and believe in being involved in their children's learning, yet studies reveal that only a few of them are effectively involved in their children's learning and school programs (Amanchukwu, 2011; Adeyemo, 2005). Contributing to this low level of parents' involvement in their children's education is the country's present economic situation which has made many parents become too busy because they are trying to make ends meet. Most times, both parents are fully employed or have businesses that they own which leaves them with little or no time for

their children's education. Also, some parents believe that their main responsibility is just to provide for their children's physical and educational needs such as feeding, clothing, accommodation, buying textbooks and educational materials and also paying for their school tuition fees. Hence, these parents believe that there is no further reason for them to be involved in their children's education once they have financially provided for the child's school needs. Furthermore, they believe that since teachers receive salaries, it is their upmost duty to ensure that students learn and do well academically and that if the teachers do their work effectively, there would be no need for any form of parental involvement. In some other cases, some parents feel that they are not literate enough to effectively participate in educational programs such as the Parents Teachers Association or to assist their children at home with their school work. Finally, some schools authorities have no clear and well laid out plan for involving parents in the school programs. Similarly, many parents possess no definite knowledge of how to be effectively involved in their children's school work and education. Consequently, this makes such parents to avoid contact with the school because they do not want to be seen as interfering in the schools' affairs.

In the Nigerian context, some parents often utilize some other alternative ways to enhance their children's academic success. For example, there are working parents who value education and want to be involved in their children's learning but whose busy schedules do not afford them the time and opportunity. Also, there are wealthy parents who own businesses but who are semi or uneducated and are not competent enough to assist their children educationally even though they want to. Usually, parents in these categories understand that they cannot be effectively involved in the students' academic work and therefore seek out other ways of helping their children achieve academic excellence. First, some of these parents employ the service of a

home tutor popularly referred to as the ‘lesson teacher’. This lesson teacher comes over to the student’s house for about one or two hours after the close of school every day or on selected days and helps the student with homework and other school work that the student needs to improve on. Particular attention is paid to the core subjects taught in school for example Mathematics, English Language and Science. This method works best for parents who have someone at home to stay with the child especially when the lesson teacher is around. Second, some parents use the afterschool programs. The after school programs are fee paying services provided by schools to help working or busy parents who do not have people to care for their children after returning from school. Usually, students enrolled in these programs stay behind in school after the close of school hours. School personnel take care of them, assist them with their homework as well as engage them in various learning activities until their parents pick up them up after closing from work. Third, some parents who have family members such as uncles, aunts, cousins and grandmothers living with them often request that such relatives help their children with school work. Also, these relatives often help the parents to pick up the child from school, assist them with homework and other school assignments as well as attend school events on behalf of the child’s parents.

Apart from meeting the physical, emotional, social and psychological needs of an individual, the family or parents also influence the individual’s cognitive perspective, that is, the views and beliefs that individuals have about themselves and their environment (Ashmore & Brodzinsky, 2014). People’s beliefs are powerful determinant of their thoughts, emotions and enacted behaviors. An individual’s belief or confidence in being able to successfully produce a desired result is known as efficacy. Self-efficacy refers to an individual’s belief or perceived capability to perform a given or specific task at a desired level (Schunk, 1991). According to

Bandura (1997), peoples' self-efficacy beliefs are functions of their social environment and this varies from culture to culture. In the area of education, self-efficacy has been discovered to have great impact on students' academic performance and motivation (Bandura, 1992). When students exhibit high self-efficacy, it engenders interest, engagement and persistence in tasks while boredom, non-participation and avoidance of task occur when students have low self-efficacy (Schunk & Zimmerman, 2006). Self-efficacy is important because "unless people believe that they can produce desired outcomes by their actions, they have little incentive to act or persevere in the face of difficulties" (Bandura, Barbaranelli, Caprara & Pastorelli, 2001).

In addition, self-efficacy has been shown to predict cognitive competence (Bong, 2008) and cognitive strategy use (Zimmerman, 2000). Also, self-efficacy determines the choices that students make, for example in doing their homework, solving a difficult task or choosing careers (Pajares, 1996; O'Brien, Martinez-Pons & Kopala, 1999). This means that students make choices about the subjects to enroll in based on their perception of their confidence to perform successfully or otherwise on those subjects.

Mathematics self-efficacy is the degree of confidence that students have about their ability to solve mathematical problems. When students believe that they are good in Mathematics, the better the choices they will make regarding learning Mathematics and the more they will attempt Mathematical problems both at home and in school. In a related manner, Mathematics self-efficacy significantly dictates whether students will opt for Mathematics or science related careers in college (O' Brien et al, 1999). In other words, the more confidence students have that they can solve mathematics questions, the more the confidence they develop in their ability to attempt and solve more complicated or advanced Mathematics. Also, the longer

and harder they will work at the subject and the more successful they will become. Ultimately this results in a motivation to pursue and enroll in Mathematics-related courses in the future.

Statement of the Problem

Despite several curriculum and instructional attempts at trying to improve the poor performance of Nigerian students in Mathematics, not much has changed. In Mathematics, students continue perform below the level of proficiency expected in comparison to other subjects. For example, Akubiro and Joshua (2004) revealed that in the West Africa Examination Council Examinations, Nigerian students' performances in Mathematics and science continues to deteriorate yearly. In fact Olunloye (2010) referred to the high failure rate in Mathematics as a national disaster.

Consequently, there has been a decrease in the number of students enrolling and graduating in Mathematics-related disciplines at the country's tertiary level of education; a level far below the Federal Government's admission policy stipulating that 60% of tertiary institutions' admission should be for Science, Technology, Engineering and Mathematics (STEM) courses while 40% should be for non-STEM courses. Invariably, this has affected the number of graduates produced from these disciplines thereby limiting the potential human resources needed for national development. For instance, in 1992, only about 10.3% of Nigerian university students graduated from Mathematics and science related courses while the rest were from the Humanities and Arts (Nigeria, Higher Education).

Even though the importance of parental involvement and self-efficacy on Mathematics motivation has been stressed by some studies, however, the fact remains that most of these studies were done in Western cultures; therefore there is a dearth of studies on Mathematics

achievement motivation among Nigerian students. Furthermore, although most parents believe that involvement in their children's school work lead to better results and school outcomes, yet the reality is that few are effectively involved with their children's school work. A lot of Nigerian parents still do not create the time and effort to attend PTA meetings, are not involved in their children's school administrative processes, do not participate in school programs (Omoteso, 2010; Kutelu & Olowe, 2013) and also do not assist them at home with their learning.

Purpose of the Study

The main purpose of this study was to investigate the relationship between parental involvement, Mathematics self-efficacy and Mathematics achievement motivation of Nigerian elementary school students. In addition, the study sought to discover the individualism-collectivism cultural orientation of the Nigerian students and to find out its relationship to their Mathematics achievement motivation. Finally, this study examined the dimensions of parental involvement that are most crucial among Nigerian parents.

Research Questions

Specifically, some of the questions that this research sought to answer include the following:

What is the relationship between general parental involvement and students' Mathematics achievement motivation?

What is the relationship between Mathematics parental involvement and students' Mathematics achievement motivation?

What is the relationship between students' Mathematics self-efficacy and Mathematics achievement motivation?

What is the relationship between Mathematics parental involvement and students' Mathematics self-efficacy?

What is the relationship between students' Individualism-Collectivism cultural orientation and their Mathematics achievement motivation?

Research Hypotheses

The following hypotheses were formulated and were tested to assist in answering the research questions earlier stated.

Hypothesis 1: There will be a positive significant relationship between general parental involvement and students' Mathematics achievement motivation.

Hypothesis 2: There will be a positive significant relationship between Mathematics parental involvement and students' Mathematics achievement motivation.

Hypothesis 3: There will be a positive significant relationship between students' Mathematics self-efficacy and their Mathematics achievement motivation.

Hypothesis 4: There will be a positive significant relationship between Mathematics parental involvement and students' Mathematics self-efficacy.

Hypothesis 5: There will be a positive joint significant relationship between students' Individualism-Collectivism cultural orientation and their Mathematics achievement motivation.

Working Definitions

This section provides the working definitions of the variables in this study. The dependent variable, Mathematics achievement motivation was defined in this study as students'

interest to engage in the learning of Mathematics. The two independent variables, parental involvement and Mathematics self-efficacy were defined as students' perception of parents' participation in home or school activities that affect their academic progress and students' level of confidence in successfully solving Mathematics problems respectively.

Parental involvement was analyzed or investigated from two perspectives which were general parental involvement and Mathematics parental involvement. While the general parental involvement was considered the overall level of parents' involvement in their children's education, the Mathematics parental involvement focused on the parents' engagement in the students' learning of Mathematics. Different dimensions of parental involvement were utilized in this study and they included family rules and supervision, school and home communication, participation in school activities, extra-curricular learning and educational aspiration. The first four dimensions were adapted from Epstein (1995) framework of parental involvement while the last dimension was selected from Hong and Ho (2005) and Fan and Chen (2001) parental involvement studies.

For instance, the family rules and supervision dimension focused on the presence of family rules for learning and doing homework, parents checking or helping students with homework, assisting in completing all homework and helping students with difficult academic work. school and home communication dimension was based on the school or teacher contacting parents and parents contacting the school or teacher about school syllabus or program, student's work or behavior. The participation in school activities dimension centered on parents' attendance and participation in school activities such as the Parents Teachers Association (PTA) meetings and helping to plan for school events and programs. The extra-curricular learning dimension was directed at parents taking their children to places of learning such as the museum,

zoo or library and providing learning materials such as CDs, storybooks, work and text books for the students. Educational aspiration dimension looked at parents' discussion with students about report cards or grade scores and parental expectations for child to attend secondary schools and tertiary institutions like the polytechnic and university.

Mathematics parental involvement only examined three dimensions which are family rules and supervision, educational aspiration and school-home communication. These dimensions were similar to those of the general parental involvement but were only basically different in that they were directed towards parents' level of involvement in their children's learning of Mathematics.

On the other hand, Mathematics self-efficacy was simply based on the participants' perception of their confidence and ability in solving Mathematics problems. The dependent variable, Mathematics achievement motivation was assessed by the participants' level of interest and desire to attempt Mathematical problems and to succeed in Mathematics.

CHAPTER TWO

LITERATURE REVIEW

The issue of increasing students' motivation has remained an educational challenge of all times. This is particularly so in the area of Mathematics education. Most of the researches conducted in the field of Mathematics education have mainly focused on improving Mathematics achievement rather than resolving the problem of motivation which will subsequently impact on students' Mathematics achievement. The dearth of studies in Mathematics motivation especially from a non-western culture makes this study an important one.

This chapter contains a review of the theoretical framework as well as the existing empirical literature on parental involvement, Mathematics self-efficacy and students' Mathematics achievement motivation.

Motivation

The Oxford dictionary defines motivation as the reason(s) one has for acting or behaving in a particular way. It comes from a Latin word 'movere' which means to move. It is the deep seated rationale underlying every aspect of human behavior. Therefore, it is crucial to the understanding of all forms of human behaviors including the learning behavior.

Basically motivation can be classified as intrinsic or extrinsic (Ryan & Deci, 2000). Intrinsic motivation relates to the internal pleasure, fulfillment or satisfaction that an individual

obtains from performing a task or an activity (Deci et al, 1991). On the other hand, extrinsic motivation refers to the external factors or rewards that influence an individual to behave in a particular way or to perform a task (Deci & Ryan, 2000). Some of these factors may be monetary or non-monetary in nature such as praise, acknowledgments, cash rewards or benefits. Within the educational setting, extrinsic motivation could include rewards such as grades, material prizes or awards, scholarships as well as recognition from the teacher while intrinsic motivation often centers on the 'curiosity' or 'interest' of the individual to learn the task for example, learning for pleasure, mastery of a subject matter or skill in a particular area of knowledge (Ryan & Deci, 2000).

There had been an age-long debate among educational theorists regarding intrinsic and extrinsic motivation particularly with respect to their impact on academic achievement and education. Both intrinsic and extrinsic motivation were once assumed to be opposing constructs on the bipolar ends of the motivation continuum but are recently considered as not being mutually exclusive but rather independent (Lepper et al, 2005; Elfving, 2008). A lot of studies have demonstrated that intrinsic motivation encourages mastery and competence among students and that it results in high interest, academic engagement, confidence and achievement (Pintrich & Schunk, 2002; Ryan & Deci, 2000). Also, other studies have shown that extrinsic motivation alone leads to class inattentiveness, reduced cognitive engagement, poor academic achievement and performance (Walker et al., 2004). However, motivation which combines both intrinsic and extrinsic has generally found to lead to interest which produces engagement, participation, creativity, persistence, high performance and ultimately achievement (Lens & Tsuzuki, 2005; Anderman & Wolters, 2006).

Two of the most critical resources available to every individual are time and effort. In most human social relationships, people exchange time and effort for monetary and non-monetary rewards such as friendship, affection, love or even wages. These two resources are important and are utilized by individuals based on their cognitive interpretation of the social situation following a cost-reward analysis process (Cropanzano & Mitchell, 2005). Similarly, in every learning situation, students exchange the time and effort spent on a task for rewards such as internal fulfillment, recognition, praise, competence and mastery among others. In fact, a students' motivation towards a task can often be inferred from the amount of time and effort that the students put into performing the task. When students cognitively perceive that the time and effort they put into performing a task exceeds the pleasure or external rewards obtained from performing the task, they consider that it is a high price to pay and it results in decreased motivation. On the other hand, when the students cognitively believes that the time and effort put into performing a task is less than the internal or external reward obtained, motivation increases.

As much as the relationship between motivation and students' achievement can be theoretically said to be correlated, it is not too clear if the correlation is direct in real life situation. This is because motivation is a very complex human construct. More so, it relies on the interaction of several factors that includes but is not limited to the individual's personality, biological predispositions, social experiences within the family, school, community, culture as well as the cognitive interpretation of all of these factors (Pintrich, 2003). Therefore, these interactions give rise to the differences and complexities in motivation that exists in individuals across situations and cultures.

Expectancy-Value Theory

One of the earliest theories of human motivation is the Expectancy-value theory. According to Feather (1982), the expectancy-value theory is the foundation for most of the contemporary models of motivation in existence. Originally propounded by Atkinson (1957), the theory postulated that there are two main components of motivation and that the interplay of these components plays a very important role in the development of human motivation. These two components are the expectancies for success and the task value. Expectancies for success made reference to the individual's anticipation that performance of a task will be followed by either success or failure while task value was seen as the relative attractiveness of succeeding or failing on a task (Wigfield & Eccles, 2000). In other words, the motivation to perform a task or activity is a product of an individual's expectation for success in a given task and the value of the task.

The theory was later expanded by Eccles et al (1983) to incorporate the individual's subjective perspective into the motivational components. Therefore, they proposed that expectancies for success and task value were a direct function of individuals' expectancies for success, subjective achievement and task-related beliefs. In other words, motivation is a function of the people's beliefs in the probability that they will succeed or fail in a task, their achievement or ability beliefs, that is, whether they believe that they possess what it takes to succeed at a task or not and their task value which is dependent on the individual's perception of the usefulness or worth of the task.

The theory also hypothesizes that people's motivation is at the peak when their cognitive perception of both expectancy for success and task value are at the highest level. Naturally, this

means that individuals are best motivated when they cognitively perceive that their likelihood to do well in a given task is highest and also when their rating of the usefulness of a given task to them is equally at the highest. Usually, when confronted with a task, individuals first contemplate or mentally judge if they can succeed at a given task before attempting the task. Also, they mentally assess the importance or value of a task before trying out the task. For example, students who believe that they possessed what it takes to succeed in Mathematics but to whom Mathematics has little or no importance, will not be motivated to learn the subject. Likewise, students who perceive Mathematics to be of high importance but believe that they do not have what it takes to succeed in the subject will experience low Mathematics motivation. However, Mathematics motivation will be highest in students who both have high expectancies for success and task value. For such students, attempting a Mathematics task, particularly a difficult one, will be perceived not as a waste of time and effort but one that would yield good dividend in terms of derived fulfillment that comes with a successful performance.

Furthermore, the theory assumed that expectancy for success is influenced by two primary factors which are perception of task difficulty and self-schema. People's perception of how difficult or easy a given task is will affect their motivation to either keep trying or give up trying to solve the task. Usually, the more difficult people perceive a task to be the less likely they expect themselves to succeed on the task and the less their motivation to attempt the task. In other words, task difficulty is related to the task choices that people make (Eccles et al, 1998). Self-schema deals with people's belief or impressions about who they are based on past and current information which include their ability beliefs and personal goals. For example, a student's perception of his/her ability in Mathematics will influence the amount of time and effort put into the subject. When individuals perceive that they are competent at a task, the more

likely they expect success and the higher their motivation compared to others who perceive themselves as less competent. Also, the personal goals people set for themselves and how they cognitively perceive the successful performance of the task as instrumental in the accomplishment of their goals will also influence their motivation. For example, a student who has a personal goal to become an astronaut in the future and therefore perceives success in Mathematics as being pivotal to fulfilling this dream will be more motivated to learn Mathematics compared to another student whose personal goal is not related to the doing well in Mathematics.

Eccles et al (1983) also outlined four motivational components of task value. These are attainment, intrinsic, utility values and cost. Attainment value refers to the importance of doing well on a given task. Basically, it refers to the personal importance or the link between accomplishing a specific task and the individual's identity or preferences (Eccles, 2009). Intrinsic value relates to the pleasure or enjoyment that one derives from doing a task. Utility value refers to how well a task fits into an individual's plan, particularly to the realization of important current and future goals. Cost is considered the perceived negative aspect of engaging a task. It makes reference to the things that an individual has to give up or forgo in order to perform a task or activity especially things the individual considers as more important than the task. For example, if a student considers training for soccer as being of a higher value than studying Mathematics, he/she will consider the cost of learning Mathematics, which is, soccer training as being higher in value to him/her than the value of studying Mathematics. Therefore, the student would be motivated to go for soccer training rather than study Mathematics.

In addition, the theory emphasized the importance of some social and cognitive factors on the motivation of the individual. Social factors such as the cultural beliefs, values, attitudes and

expectations of the individual acquired within the immediate or larger social environment significantly influence the individual's expectancies for success and task value. Also the cognitive processing and interpretation that the individual gives to each of the different social experiences play a very vital role in determining the individual's expectancies for success and task value. All of these socio-cognitive factors make motivation a personal and subjective construct.

One very significant influence on peoples' development of expectancies for success and the values they attach to different tasks is their social environment. Specific to this is the role of socialization in the forming of the ideals, character, beliefs, behavior and motivation of the individual. Socialization can be said to be the process whereby individuals come to learn the appropriate ways of behaving within their social environment and participate as an integral members of that society (Persell, 1990). Thus through socialization, people learn the acceptable and desirable values, norms, rules and regulation as well as the expectations of their societies. Socialization encourages conformity to societal expectations and values and punishes non-conformity. Also, socialization helps to meet some of the most basic and fundamental need of all humans which are belongingness and acceptance. This facilitates the internalization of parental or societal goals and values from one person or generation to the next.

For students in the elementary school, who are mostly still under the direct care and supervision of their parents or guardians, the immediate family as the first agent of the socialization process nurtures and cares for them and plays a principal role in formation and development of their core values, norms, expectations as well as the cognitive interpretations given to their experiences. More so, it is at this educational level that students first begin to

experience successes and failures and based on their values, expectations and norms which are mostly derived from the home, come to form their beliefs about their successes and failures.

The expectancy-value theory of motivation has been used by several researchers to explain students' Mathematics achievement. When students believe that they have what it takes to do well in Mathematics and also perceive Mathematics to be a very useful subject, they are more likely to pay attention, participate, attempt more difficult questions and perform well in the subject compared to students who do not believe that they can do well and that Mathematics is not important to them (Eccles et al, 1991). Also, students who have high expectancies for success and high task value in Mathematic are more likely to enroll for more Mathematics courses, take advanced Mathematics courses and choose Mathematics-related careers in college (Eccles, 2007). Therefore, peoples' expectancies for success and the relative task values engender persistence, task choice, effort and ultimately motivation.

Self-Efficacy Theory

Another theory that has been extensively examined in relation to its outstanding influence on students' achievement motivation especially in the field of Mathematics is the self-efficacy theory postulated by Bandura (1986). The self–efficacy theory of motivation represents a cognitive approach to understanding the role that peoples' expectations have on their behavior (Bandura, 1997) and also encompasses cognitive development within a socio-cultural network of influences (Adeyemo, 2005). According to Bandura (1997), self-efficacy refers to the "personal judgments of one's capabilities to organize and execute courses of action to attain specific goals". With respect to learning, self-efficacy can be said to be an individual's perceived capability to perform a given academic task at a desired level (Schunk, 1991). Further, Mathematics self-efficacy can be said to be as ''a situational or problem-specific assessment of

an individual's confidence in her or his ability to successfully perform or accomplish a particular Mathematics task or problem' (Hackett & Betz, 1989). Bandura (1997) believed that the influence of self-efficacy in directing human behavior is so strong and powerful that acting alone it is capable of raising and sustaining motivation.

Generally, the self-efficacy theory posits that people are attracted or motivated towards tasks that they are confident that they can successfully perform. This means that people will avoid tasks that they do not feel very confident that they can perform well and people will be motivated towards activities that they perceive that they can confidently perform. Therefore, the more a person's confidence or perceived capability to successfully perform a task or assignment, the higher the motivation. When students are confident that they are good in Mathematics, for example, they tend to work longer and harder on the subject compared to other students who feel less confident about their performance in the subject. Clearly, this is because perceived confidence connotes to the students that their effort or perseverance on the task will yield some degree of success or lead to a meaningful outcome. Therefore, such students will work harder and put in more effort in relation to some other students who might perceive a lesser degree of confidence about the same or similar task.

Self-efficacy belief exerts a significant impact on motivation through its ability to influence people's efforts, perseverance, performances and the choices that they make (Pintrich, 2003). For instance, students who judge themselves as being able to successfully perform a given task tend to pay more attention, put in more effort and develop greater interest in the task than students who judge themselves as being less able to perform well on the task. For instance, Chang (2010) in a study revealed that students with higher self-efficacy beliefs performed better academically and displayed more academic persistence when faced with complex tasks

compared to students with lower self-efficacy. In addition, students with higher self-efficacy beliefs develop better learning and cognitive strategies to help them solve complex or difficult tasks compared to students who have low self-efficacy (Pintrich & DeGroot, 1990). More so, the theory underscored the importance of the cognitive interpretation that an individual gives to information from all of these sources. In other words, it is ultimately the cognitive processing and interpretation that the individual assigns to the information that determines the self-efficacy beliefs that is formed.

Bandura (1986) proposed four primary sources through which people develop self-efficacy beliefs. These are mastery experience, vicarious experiences, verbal persuasion and physiological or affective arousal. Mastery experiences or people's interpretations of their personal experiences affect self-efficacy beliefs. Generally, repeated successes in performing a task may enhance self-efficacy beliefs while repeated failures at a task may lower self-efficacy beliefs. For example, a student who earns good grade and performs well in Mathematics will have a higher self-efficacy compared to a student who does not. Bandura (1997) believed that "mastery experiences are the most influential source of efficacy information because they provide the most authentic evidence of whether one can muster whatever it takes to succeed". One basic process by which mastery experience influences self-efficacy is through the integration of preexisting and present self-knowledge. Experiences that align previous and current self-knowledge strengthen self-efficacy beliefs while those that reveal past and present self-knowledge at a complete variance weaken self-efficacy beliefs. Therefore, self-efficacy beliefs are better consolidated by interpreting information that is based on a series of repeated and congruent information (Lakaye & Margalit, 2008).

Vicarious experience is the means by which people use others' performances at a task to judge their ability to successfully perform a similar task. According to Bandura (1997), when individuals observe other people successfully perform a task, they develop more confidence about their own ability to perform the same or similar task. Also, when people observe others fail on a task, it decreases their self-efficacy beliefs. These formed self-efficacy beliefs are stronger when the observed individual is similar to the observing individual. For example, a student who sees his class mate solve a Mathematics task will believe that he/she can also solve the task.

The feedback, encouragement or verbal persuasion that individuals receive during a task performance can either heighten or lower self-efficacy. For instance, if a student receives positive feedback or encouragement while performing a Mathematics task, it could significantly impact on his/her Mathematics self-efficacy especially if the information aligns with the individual's self-knowledge and is considered true by the individual. Consequently, this increases the individual's confidence to perform the task which leads to more effort and persistence in the face of difficulties and ultimately successful performance.

The bodily sensations or physiological arousal that people experience while performing different tasks are information feedback that affect their self-efficacy beliefs. This feedback can either be positive or negative and they often signal fear of failure or confidence in performing the task (Bandura, 1997). For example, a person who is relaxed or calm while performing a Mathematics task experiences a positive bodily feedback which increases confidence to do well on the task. On the other hand, if a person experiences bodily responses such as profuse sweating, trembling hands and increased heart beat when performing a Mathematics task, the less confidence in the ability to succeed on the task.

Parental Involvement

Parental involvement in recent times has received tremendous attention and recommendations from schools administrators, educators and policy makers. Basically, this is because several researches have linked parental involvement to quite a number of positive students' behavioral and academic outcomes such as improved school behavior (Domina, 2005), school attitude (Trusty, 1996), increased school participation (Simon, 2001), fewer school dropouts (Rumberger, 1995) and better academic achievement and performance (Schunk & Zimmerman, 2006). Parental involvement has also been found to be a significant predictor of students' career choices in Mathematics as well as (Turner et al. 2004) and college Mathematics courses enrollment (Perna & Titus 2005).

Also, many studies have reported that parental involvement has a direct positive relationship on students' academic performance and school success (Henderson & Berla, 1994; Christenson et al., 1992). Nevertheless, there are a few inconsistencies in researches regarding the impact of parental involvement on students' academic performance. For example, El Nokali et al (2010) and Chowa, Ansong and Osei-Akoto (2012) found no significant relationship between parental involvement and academic performance. Also, Fan (2001) discovered a negative association between some parental involvement dimension such as contact with school and students' academic performances. In addition, among the research reporting a positive relationship between parental involvement and academic performance, some have shown that parental involvement is more effective only among pre-school and elementary school students (Downs, 2001; Drummond and Stipek, 2004) while other studies have indicated that parental involvement is significant throughout all the levels of education including the middle and high schools (Izzo et al, 1999; Schunk & Zimmerman, 2006).

One basic explanation that has been given for some of the conflicting findings in studies of parental involvement is the way parental involvement is operationally defined (Fan & Chen, 2001). Various definitions of the construct were employed in the existing parental involvement literature available. For instance, some studies assess parental involvement using students' self-report, while some others measure it from the teachers' or parents' perspective. In addition, some parental involvement studies utilized different dimensions of parental involvement with some focusing on the unidimensionality of the construct while a couple of others emphasize on the multidimensional aspect of the construct. Quite a number of studies have however recommended that the multidimensionality of parental involvement should be taken into consideration in order to establish some uniformity among parental involvement researches and reduce the inconsistencies of results that have most often prevailed in most parental involvement studies (Epstein, 1995; Grolnick & Slowiaczek, 1994).

One well-known Parental Involvement model that captures a multidimensionality of the construct is the Epstein's (1995) model. It identifies six different ways that parents can be involved in their children's education. These are parenting, communicating, volunteering, learning at home, decision-making and community collaboration. These involvement activities may include attending school meetings or conferences, communicating with teachers and involvement in school projects, assisting child with homework, monitoring academic progress, providing opportunities for stimulating learning through experiences such as educational games, online activities, visiting the museums, zoos and so on. Another study that embraces a multidimensional angle to parental involvement is that Fan (2001) who assessed parental involvement using the communication, parent educational aspiration, participation, and supervision aspects.

Parental Involvement and Academic Achievement

There are quite a number of studies that have investigated the impact of parental involvement on students' academic achievement. Among these are those that clearly report the relationship between the different dimensions of parental involvement and students' academic achievement or performance.

For example, Fan (2001) in a study assessed the effect of parental involvement on the academic growth of high school students. The study used data from the National Education Longitudinal study of 1988 and the structural equation model analysis. Also, the result showed that parents' educational aspiration dimension of parental involvement had a positive correlation with students' academic outcomes, other dimensions such as parents' volunteering and communication had no correlation with students' academic performance while contact with school had a negative effect on students' academic outcome.

Similarly, Domina (2005) in a study that utilized data collected from elementary school students in the 1979 National Longitudinal Survey of youth discovered that parental involvement had no significant relationship to students' academic outcomes. Specifically, the findings revealed that parental involvement dimensions such as parents' assistance with homework, volunteering at school and attendance of school conferences had no positive significant correlation with students' academic achievement but that only parents' volunteering at school and helping children with homework had a significant relationship with students' behavioral problems.

Hill and Tyson (2009) in their study investigated the relationship between some parental involvement dimensions and the academic achievement of middle school students. In the study,

the researchers conducted a meta-analysis on fifty (50) different parental involvement researches done on middle school students. Their findings reported that all the dimensions of parental involvement used in the study were positively correlated with students' academic achievement except for parental help with homework. Also, academic socialization which was measured by parents' communication of academic expectation and value for education were discovered to have the strongest positive relationship with academic achievement while parental assistance with homework had the weakest negative relationship with academic achievement. Also, other dimensions such as attending school events, volunteering at school and visiting the school were shown to have a moderate positive correlation with academic achievement.

Likewise, Jeynes (2005) in a research conducted a meta-analysis of twenty-one parental involvement researches carried out on urban elementary and middle school students from minority groups in America. The results indicated that parental involvement had a significant positive relationship on students' academic achievement, particularly for Grade Point Average and standardized tests, across all the six ethnic groups of students employed in the study.

A longitudinal study was conducted by Keith et al (1998) to find out the relationship between parental involvement and students' academic performance. The study's participants were high school students in grade 10 from various American ethnic groups. The researchers measured parental involvement using parents' aspiration for their children and parents' communication about school activities while academic performance was measured using the students' grade point average (GPA). The collected data were analyzed by way of the structural equation model analysis. The findings indicated that parental involvement has a significant effect on students' academic performance especially the grade point average.

In another parental involvement study, Trusty (1996) investigated the relationship between high school students' career development, attitude towards education, perception of the future, school behavior and parental involvement. In this study, parental involvement was measured using students' self-report of their parents' involvement in the learning. Results of the analyzed data suggested that parental involvement was positively correlated to students' school attitude, perception and behaviors and negatively correlated to behavioral problems.

Parental Involvement and Mathematics Achievement

The field of Mathematics education is one area that has received a lot of attention with respect to parental involvement. Involving more parents in their children's learning of Mathematics educators believe will increase students' Mathematics achievement. Recent studies have outlined parental involvement in school activities as one of the pertinent factors of students' Mathematics achievement (Pomerantz & Moorman, 2010; Muller, 1995).

Shirvani (2007) in an experimental study examined the effect of parental involvement on students' Mathematics academic achievement. The participants were high school students taking an algebra class. The students were selected from four Algebra classes and students were randomly assigned into the experimental group and into the control group. Students in the experimental group had their parents' involved in their learning of Mathematics while students in the control group did not. The parents of students in the experimental group received weekly monitoring sheets and performance scores or tests grades while parents of students in the control group were not involved in any way. The result of the study revealed that students in the experimental group whose parents were involved performed better in Mathematics than students in the control groups whose parents were not involved in their learning.

Sheldon and Epstein (2005) investigated the effects of parental involvement and students' Mathematics achievement in a longitudinal study that included both elementary and secondary school students. The findings of the study suggest that parental involvement in their children's Mathematics education improved students' Mathematics achievement. In other words, children of parents who supported their children's learning of Mathematics at home received higher scores on certain standardized Mathematics test compared to students whose parents did not support their learning of Mathematics at home.

In contrast, Chow, Ansong and Osei-Akoto (2012) found no significant relationship between parental involvement and students' general academic achievement and students' Mathematics achievement. Their study was conducted among adolescents aged 12-14 from low-income household who were randomly selected from within 8 regions in Ghana. Data were obtained from 6252 students and 4,572 parents. Specifically, among all the dimensions of parental involvement studies, only talking to children about what they learned in school was significantly and positively associated to students' academic performance.

Levpušc̆ek and Zupanc̆ic (2009) in a study examined the role of parental involvement and teachers' behavior on the development of students' Mathematics achievement using 8th grade students. The students were selected from 8 urban and 5 rural middle schools. The findings showed that both parental involvement and teachers' behaviors had a significant positive correlation on students' Mathematics achievement. However, the results further indicated that students' perception of teachers' behavior had a stronger impact on students' Mathematics achievement than parental involvement.

Gonzalez and Wolters, (2006) in a study on middle school students investigated the relationship between parental involvement and parenting practices on students' Mathematics

motivation. The subjects were some algebra students in the 9th, 10th and 11th grades who completed a self-report survey in a Southeast Texas public high school. The study found that parental involvement was not significantly related with students' intrinsic (achievement) motivation but was significantly related to their extrinsic motivation. This result is in contrast to a similar study by Grolnick and Slowiaczek (1994) which was carried out using middle school students. The findings of the study discovered that parental involvement was significantly correlated with students' motivation such as mastery goals and autonomy.

Parental Involvement and Students' Achievement Motivation

It is interesting to note that few studies have actually investigated the relationship between parental involvement and students' motivation. Most of the available studies simply examined the relationship between parental involvement and students' academic achievement or performance.

Cheung and Pomerantz (2012) in their study that used 7th grade American and Chinese students as participants revealed that the higher the level of parents' involvement in their children's academic work, the more motivated the students became and the higher were the students' academic achievement.

Izzo et al (1999) in their study examined the relationship between parental involvement and students' motivation. Their study was a three years longitudinal study that utilized kindergarten to third grade elementary school students as subjects. Using various variables of parental involvement, they discovered that parental involvement in students' school activities led to a greater level of students' academic engagement. More specifically they discovered that parents' participation in school function resulted in more students' engagement while parents' initiated contact with school led to less of students' engagement.

In a related study, Gonzalez-DeHass et al (2005) investigated the relationship between parental involvement and motivation among students from the elementary to the high school. The study basically examined the impact of parental involvement on several motivational constructs such as school engagement, intrinsic and extrinsic motivation, mastery goal orientation, self-regulation, perceived control and competence by conducting a review of literature on parental involvement and motivation. The result revealed a significant positive relationship between parental involvement and students' intrinsic and extrinsic motivation.

Likewise, Steinberg et al (1992) in a study investigated the role of parental involvement on students' engagement. The participants were high school students from different socio-economic background and the results indicated that parental practices was significantly correlated with the students' academic engagement. Specifically, the result demonstrated that when parents were more involved in their students' learning, the students exhibited more attention, effort and concentration and eventually earned better grades in school.

In another study, Marchant et al (2001) investigated the relationship between parenting styles and parental involvement on students' motivation. The study employed about two hundred and thirty fifth and sixth grade students. Parental values and participation in school functions were the two ways in which parental involvement was operationalized. The findings of the study revealed that parental values were correlated with parental responsiveness and involvement and that students' perception of parents' values about academic achievement had the strongest relationship with students' motivation and competence.

Also Ginsburg and Bronstein (1993) in a study examined the relationship between parental involvement and motivation. The study used fifth grade elementary students and measured motivation using the intrinsic and extrinsic measures of motivation obtained from the

students' and teachers' report. The finding of the study shows that parental variables play a significant role in determining the motivation of students.

A different study by Fan and Williams (2010) investigated the relationship between parental involvement and students' intrinsic motivation. Using 10th grade students in the 2002 Educational Longitudinal Study, they investigated the relationship between different dimensions of parental involvement and the motivational variables such as engagement, self-efficacy and intrinsic motivation towards Mathematics and English Language. The result of the study suggested parental involvement was positively correlated to all of the students' motivational variables and that out of all the parental involvement dimensions, parental educational aspiration and school initiated contact with parents had the strongest correlation with all the motivational variables.

Self-Efficacy and Achievement Motivation

The role of self-efficacy in the motivation of students has been emphasized by quite a number of studies (Pajares and Kranzler, 1995; Alivernini & Lucidi, 2011). Self-efficacy beliefs have been shown to predict a lot of students' academic and behavioral outcomes. Self-efficacy influences students' motivation by engendering interest and attention for the task, persistence or perseverance while performing the task, the amount of effort directed towards the task as well the use of meta-cognitive strategies that results in the ability to solve very complex or challenging tasks (Lent, Brown & Hackett, 2002; Zimmerman, Bandura & Martinz-Pons, 1992).

Pintrich and Schunk (2002) reported that when people have a high expectation to do well or excel at a task, they try harder and persist to perform better at the task compared to people who do not have a high expectation of success. Similarly, that when students believed that they could do well in a task, they displayed more effort towards performing the task, persisted more

when faced with some difficulties and performed better than other students who believed that they were less able to succeed (Bandura, 1997; Eccles et al, 1998).

Studies have made it evident that Mathematics self-efficacy significantly predicts Mathematics achievement (Fast, Lewis et al, 2010; Lewis, Bocian et al, 2012). When students believe that they are good in Mathematics, the longer and harder they work on the problems even when it seems to be difficult. For instance, Bandura (1997) discovered that students with higher self-efficacy beliefs tend to persevere, put in more effort and attempt difficult mathematical problems compared to students with lower self-efficacy.

Chang (2012) examined the relationship between fifth graders self-efficacy and Mathematics achievement. The cross sectional study which was conducted in Taiwan had a total number of 1244 elementary school students who were selected by the stratified random sampling method. Data was collected on students' socio-economic status, parenting style, Mathematics self-efficacy and Mathematics achievement. A statistical analysis of the data showed that students' socio-economic status had a significant relationship with students' self-efficacy beliefs with students from low socio-economic status families having a low self-efficacy beliefs regarding learning Mathematics compared to other students. The result also indicated that family variables and parental involvement significantly impacted students' self-efficacy and that students' self-efficacy significantly predicted Mathematics achievement.

Bandura (1992) in a study that examined students' Mathematics problem solving ability revealed that children who were low in ability but high in self-efficacy performed better than students who were high in ability but low in self-efficacy. Therefore, the result suggested that students' self-efficacy was the most significant predictor of students' Mathematics achievement

and not ability. This implies that though skills or ability is important for students' achievement, self-efficacy is much more important in determining students' Mathematics performance.

In a related study, Pajares and Kranzler (1995) investigated the effect of anxiety, general Mathematics ability, Mathematics self-concept, Mathematics self-efficacy and on students' Mathematics problem solving performance. The participants in this study were 329 high school students selected from two public schools. Questionnaires were used to collect data on students' mental ability and Mathematics self-efficacy while Mathematics problem solving performance was measured using some Mathematics tasks. The questionnaires were first administered during different class periods and students' Mathematics problem solving ability was later assessed. The collected data were statistically analyzed using path analysis. The results revealed that ability and self-efficacy were the strongest predictors of students' Mathematics problem solving performance. Also, self-efficacy was discovered to mediate the indirect effect of ability on performance and also directly influenced anxiety which also had a direct effect on performance.

Also, Pajares and Miller (1994) in a study examined the predictive and meditational role of self-efficacy beliefs on students' Mathematics problem solving. The participants used in the study were 350 undergraduate students from a southern American university. Students completed the different measures of self-efficacy, perceived usefulness, self-concept, prior Mathematics experience and anxiety after which they were given some Mathematics problem solving tasks to perform. All the instruments were administered within one class. The findings found that self-efficacy was the strongest predictor of Mathematics achievement among all the variables investigated, that is, students' judgment of their confidence in the problem solving tasks had the greatest impact on their performance in the Mathematics problem solving task. In addition, self-

efficacy was discovered to mediate the effect of gender and prior Mathematics experience on students' self-concept, Mathematics usefulness and problem solving performance.

Parental Involvement, Self-Efficacy and Mathematics Achievement

Parents' perception of their children's ability or competence significantly influences the children's perception of their confidence to successfully carry out a task and ultimately their self-efficacy beliefs (Lawrie & Brown, 1992). This will affect the achievement or motivation positively or negatively. Students' self-efficacy is likely to be influenced by their parents and their home environment. Parents do not only influence the development of children's self-efficacy but also as models influence the adjustment of students' self-efficacy (Fan & Chen, 2001). The more parents are involved in their children's education, the more the children's confidence to believe that they can succeed and perform well academically. This is because parents who are involved in their children's learning assist them when they have problems, communicate the importance of education, and participate in their learning activities thereby directly and indirectly communicating their educational values and expectations of academic success to their children. Also, such parents encourage their children by having verbal discussions with them and expressing their beliefs in their effort and ability to succeed. All of these lead to a greater motivation to excel academically.

Aremu and Tella (2009) carried out a study that examined the relationship between gender, age, mental ability, anxiety, self-efficacy and Mathematics achievement among Nigerian secondary school students. The participants were selected from ten secondary schools in a Nigerian town using the stratified random sampling technique. Data which was collected from about 1099 SS2 students was statistically analyzed using multiple regressions. The result of the

study showed that self-efficacy was significantly correlated with Mathematics achievement and also that out of all the variables that were significantly correlated with students' Mathematics achievement, self-efficacy was the best predictor of students' Mathematics achievement.

In a longitudinal study of middle school students, Friedel, Cortino, Turner, and Midgley (2010) examined the effects of teachers' and parents' goal emphases on the Mathematics self-efficacy beliefs of students from the 6^{th} to the 7^{th} grade. Using a cross-classified hierarchical linear model analysis, the findings revealed that parental involvement plays a crucial role in the development of students' Mathematics self-efficacy beliefs. In addition, the researchers reported that parental involvement plays a very pertinent role in students' Mathematics achievement and also that parental variables such as parents' educational level and interest in the child's school work significantly contributed to students' choices of Mathematics and Science related majors.

Adeyemo (2005) in another study investigated the impact of parental involvement, interest in schooling and school environment on the self-efficacy of some secondary school students. The participants used in the study were 250 students who were randomly selected from twenty secondary schools in Oshogbo, a town in southwestern Nigeria. The selected secondary schools were chosen using the stratified random sampling principle. All the subjects were freshmen who had just gained admission into the school. The result revealed that parental involvement was a significant predictor of students' self-efficacy.

Hackett and Betz (1989) in a study examined the relationship between Mathematics performance, Mathematics self-efficacy, attitude towards Mathematics and the choice of Mathematics-related major among college students. A total number of 262 undergraduate students were used as participants in this study. The instrument assessed students' preference for science or non-science major, Mathematics self-efficacy and Mathematics performance. The

researchers obtained students' ACT scores from the university's record using the students' identification numbers. The data was analyzed statistically using the regression analysis. The result concluded that Mathematics performance and Mathematics self-efficacy were both positively significantly correlated with the choice of a Mathematics-related major but that self-efficacy was a greater predictor in the choice of a Mathematics-related major above Mathematics performance and other achievement variables. In other words, self-efficacy belief is a stronger predictor of students' career choices than Mathematics performance and past Mathematics achievement.

Relatedly, Pomerantz and Eaton (2001) opined that parents exert a very significant impact on the development of their children's self-efficacy, particularly, that self-efficacy is at its highest when parents are involved in their children's daily learning. Grolnick & Slowiaczek, (1994) in their study found that children reported a greater sense of competence or self-efficacy when their parents were involved in their education compared to students whose parents were less involved.

From the above review of literature, it is obvious that there is a dearth of research that examines the relationship between parental involvement, Mathematics self-efficacy and Mathematics achievement motivation of the Nigerian students especially at the elementary level of education. Therefore, this study will add to existing empirical literature on achievement motivation especially from a non-western culture. Also, it will proffer ways to help the Nigerian parents increase their involvement in their children's education, to improve students' Mathematics self-efficacy and ultimately enhance students' Mathematics achievement motivation.

CHAPTER THREE

METHODOLOGY

This purpose of this study was to examine the relationship between parental involvement, Mathematics self-efficacy and Mathematics achievement motivation of elementary school students in Nigeria. This chapter focused on the methodology such as the research design, research hypotheses, sample and sampling technique, participants, research instruments and measures, operational definition, data collection procedure, the scoring of the instrument and the statistical analysis that were used in this study. However, a brief history of Lagos State where the research was carried out is first outlined.

Brief History of Lagos State, Nigeria

Lagos State was made the Federal Capital of Nigeria right from the country's independence in 1960 up till 1991 when Abuja replaced it as the seat of government. Nevertheless, it remains the nation's largest urban development and commercial hub with a lot of business and economic activities. Over the decades, it has transformed into an extremely large metropolis with numerous surrounding suburbs that are ever expanding and overflowing with people. As a megacity, it is home to millions of people that have migrated from all over the nooks and crannies of the country in search of good jobs, business opportunities and survival. Therefore, it consists of a widely diversed groups of people of various ethnic, social, economic and educational backgrounds as well as religious inclinations and political affiliations.

Presently, Lagos State has twenty local government areas which are classified under five major administrative divisions namely Lagos, Ikeja, Epe, Ikorodu and Badagry local government areas. In 2006, Lagos Sate was estimated to have a population of over 17 million people (Lagos State Bureau of Statistics, 2005). In addition it has many public and private elementary schools that seek to meet the basic primary educational needs of its teeming populace.

Research Design

The research design employed in this study is the cross-sectional correlational design that involves no active manipulation of any variables. The Independent variables are Parental Involvement and Mathematics Self-efficacy while the dependent variable is Mathematics Achievement Motivation.

Research Hypotheses

The following are the hypotheses that this study sought to test:

Hypothesis 1: There will be a positive significant relationship between general parental involvement and students' Mathematics achievement motivation.

Hypothesis 2: There will be a positive significant relationship between Mathematics parental involvement and students' Mathematics achievement motivation.

Hypothesis 3: There will be a positive significant relationship between students' Mathematics self-efficacy and their Mathematics achievement motivation.

Hypothesis 4: There will be a positive significant relationship between students' Mathematics parental involvement and their Mathematics self-efficacy.

Hypothesis 5: There will be a positive joint significant relationship between students' individualism-collectivism cultural orientation and their Mathematics achievement motivation.

Sample and Sampling Technique

One public and private elementary school were selected from each of the five administrative divisions in Lagos State namely Epe, Ikorodu, Badagry, Lagos and Ikeja local government areas, thus making ten schools altogether. This selection helped ensure that all regions of the state were covered in the research even though the private and public schools selected in each of the administrative divisions were chosen on the basis of their accessibility to the researcher.

The sample in this study consists of 400 students from the 6th grade drawn from across the ten selected secondary schools in Lagos, Nigeria. The participants were randomly selected using a list of all 6th grade students in the school that was generated by the head teacher. Forty students were randomly selected from each of the school making a total of four hundred participants for the study.

Participants

Four hundred 6th grade students were selected from the ten public and private schools in Lagos State. Fifty-three (13.25%) of the randomly selected students did not return the parents' consent forms and were therefore excluded from participating in the filling up of the questionnaire. However, 2 of the filled questionnaires were uncompleted in a manner that rendered them unusable and unfit to be included in the statistical analysis therefore this brought the total number of respondents or subjects in the study to 345**.**

Although the participants were slightly diversed in terms of ethnicity, yet majority of them were Yoruba (63.2%) who are from the South West region of the country. 36.8% of the participants were from other tribes. For instance, the Igbo made up 21.7% while the Hausa were 4.1% of the sample. Other ethnic groups like the Edo, Ijaw, Calabar and Fulani made up the rest 10.2% of the participants. There were 175 (50.6%) girls and 168 (48.7%) boys while 2 participants failed to indicate their gender. The mean age for the participants was 10.82 while the mean ages for the female and male participants were 10.81 and 10.83 respectively.

Research Instrument

The instrument was a student's self-report paper and pen questionnaire titled, "Mathematics Achievement Motivation of Elementary School Students in Nigeria Questionnaire" (See Appendix A). The researcher decided to use the participants' self-report rather than parents' or teachers' self-report because the research was focused on students therefore their self-report will provide the most accurate and valuable source of information about their inner states compared to that of parents or teachers (Barbaranelli, Caprara, Rabasca, & Pastorelli, 2003). The instrument was made up of two major sections. The first part of the instrument elicited information on the participant's socio-demographic information. This included questions about age, gender, religion, ethnicity, parents' educational qualification among others. Also, participants answered questions about who assisted them with their school work and specifically who helped them with Mathematics at home.

The second part contained the parental involvement measure, the Mathematics self-efficacy measure, the Mathematics achievement motivation measure and the individualism-collectivism measure. The parental involvement measure had twenty-three (23) items which

captured the multidimensional perspective of parental involvement that included parental participation in school activities, extra-curricular learning, family rules and supervision, school-home communication (school-home and home-school) and parents' educational aspiration. Some of the items were adapted and reconstructed from Fan (2001) and Yan and Lin (2005) studies. Other items deemed appropriate for the study were incorporated into the parental involvement measure by the researcher. Out of all the twenty-three (23) items, sixteen (16) were focused on general parental involvement while seven (7) items addressed Mathematics parental involvement. All items were structured after the 4-point Likert scale.

Basically, the Mathematics self-efficacy and Mathematics achievement motivation measures consisted of items that were drawn from the adapted self-efficacy and motivation subscales of the Motivated Strategies for Learning Questionnaire, MSLQ, by Pintrich and DeGroot (1990). The self-efficacy subscale had 11 items while the achievement motivation subscale had12 items comprising 9 and 3 items on intrinsic and extrinsic motivation respectively. As an instrument, the original Motivated Strategies for Learning Questionnaire developed by Pintrich et al (1991) has been extensively used in empirical researches of motivation and self-regulated learning among elementary, middle and high school as well as college students (Artino, 2005) because of its good measure of validity and reliability. All the items in these measures were readjusted to the 4 point Likert scale instead of the 7 point Likert format that the subscales were originally structured in order to make the response options optimal (Borgers, Hox and Sikkel, 2004) and the questionnaire easy for the students to fill. All of the items were slightly reworded to make them simple and applicable to this study. For instance, an item that read "I expect to do very well in this class" was rephrased to "I expect to do very well in my mathematics class". The internal consistency reliability Cronbach alphas of the intrinsic and

extrinsic motivation and self-efficacy for learning are .74, .62 and .93 respectively (Artino, 2005).

The final measure of the instrument contained 7 items which were specially developed by the researcher to assess the individualism-collectivism cultural orientation of the participants towards learning. An example of an individualism-collectivism item on the measure was, "I want to do well at school so that I can take care of my parents and relatives in the future". To establish the validity of the 7 items, they were sent to two experts in educational psychology for suggestions and overview.

Table I

Dimensions of General and Mathematics Parental Involvement Measure

Variables	Dimension	Items
General PI	Family rules and Supervision	8, 9, 12, 22
	School-Home Communication	4, 6, 7, 19
	Participation in School Activities	1, 2, 23
	Extra-curricular Activities	10, 15
	Educational Aspiration	11, 13, 14
Mathematics PI	Family rules and Supervision	3, 17, 18
	Educational Aspiration	5, 21
	School-Home Communication	16, 20
MSE		24,25,26,27,28,29,36,42,43,44,47
MAM		31,32,33,34,35,37,38,39,40,41,45,46
Individualism-Collectivism		30, 48, 49, 50, 51, 52, 53

Operational Definitions

In this study, Mathematics self-efficacy was operationalized as students' score on the Mathematics self-efficacy measure while parental involvement was operationalized as students' score on the parental involvement measure on the questionnaire. Similarly, Mathematics achievement motivation was operationalized as students' score on the reconstructed motivation subscale of the MSLQ as developed by Pintrich et al (1991) while individualism-collectivism orientation was operationalized as participants' scores on the individualism-collectivism measure.

Data Collection Method

An approval was obtained from the Lagos State Universal Basic Education Board (LSUBEB), Lagos State Ministry of Education, the arm of government in charge of elementary school education in Lagos State (see Appendix B). Thereafter, the researcher made contact with the head teachers in the various schools and informed them of the intention to use of their schools and 6th grade students for the study. The head teachers were asked to fill and sign permission forms indicating that they had confirmed the Lagos State University Basic Education Board approval and that they were willing to allow their schools and students take part in the research (see Appendix C).

With the support and cooperation of the head teachers, the researcher met with all the grade 6 teachers in each of the schools. Two volunteers were picked among the teachers and they were briefly informed about the study. Some days later, the researcher met with the grade 6 students in each school after the morning assembling and gave all the students two recruitment information sheets, one for themselves and one to take home to their parents. The recruitment

sheet contained information about the purpose of the research, selection of participants, risks and benefits of the study, responsibilities or duties of participants and contact details of the research team.

About a week after, the researcher returned to the schools and using a list of all 6th grade students provided by the head teacher randomly selected forty students from each of the schools. The selected students were briefed in the school hall and those willing to participate in the study signed the consent forms and took the parental permission forms home to their parents. The students were informed to return the parental permission forms to the volunteer teachers who had earlier been introduced to the students during the briefing. The researcher returned two weeks later and administered the questionnaire only to the students who had signed the consent forms and whose parents had returned permission forms.

The participants were assembled in the school hall during one of their free periods for filling the questionnaire. The researcher welcomed the students to the questionnaire session. They were informed to use pencils or biros to answer the questions and they also told not to write their names on the questionnaire. Furthermore participants were informed that they were free to ask questions that they did not understand, skip any question they felt uncomfortable with and also to exit the process of filling the questionnaire if they wanted to.

Most of the participants were very calm and cooperative throughout the duration of filling the questionnaire. Some finished quite early while a couple of others took quite a bit longer in filling out the questionnaire. The longest time recorded for filling the questionnaire was about 32 minutes while the earliest was about 13 minutes. The researcher thanked the students at the end of the questionnaire session for their cooperation and assistance.

Scoring of Instrument

Participants' data on the socio-demographic section of the questionnaire was coded based on the response options given. For instance, for gender, male participants were coded '0' while female participants were coded '1'. However, to determine participants' socio-economic status (SES), responses to questions such as 'what type of house do you live?', 'how many cars do your parents/guardian have?', 'parents/guardian highest education' and 'parents/guardian's job', were categorized and combined to place participants in the low, middle or high socio-economic status (SES) group. All of the parental involvement, Mathematics self-efficacy and Mathematics achievement motivation measures were formatted after the Likert scale with response options ranging from 'Not true at all' (1) to 'Very true' (4). Intermediate response such as 'Not very true' was given 2 points while 'Sort of true' was rated as 3 points.

Five (5) of the items (11, 21, 25, 43 and 50) were coded in a reverse order, that is, negatively phrased. Therefore a response to any of these 5 items attracted a reversed scoring. For example, if a participant picked a response '4' (very true) to item 1, the scoring had to be reversed to a score of '1'. Similarly, if a response of '1' was selected, the participant would be given a score of '4'. Also, intermediate response '2' received a score of '3' while response '3' was scored as '2'.

A higher score on the parental involvement measure represented a higher level of parents' participation and engagement in student's learning while a lower score represented a lower level of parents' participation and engagement. Likewise, a higher score on the Mathematics self-efficacy measure indicated a higher level of student's confidence in solving Mathematics problems while a lower score implied the reverse. Relatedly, a higher score on the

Mathematics achievement motivation measure suggested a higher mathematics achievement motivation while a lower score revealed a lower mathematics achievement motivation.

The minimum and maximum Mathematics self-efficacy score obtainable for each respondent was 11 and 44 respectively. However, the composite score for participants' Mathematics self-efficacy's scores was obtained by adding individual scores on all Mathematics self-efficacy items and dividing by 11. Similarly, the minimum Mathematics achievement motivation score was 12 while the maximum Mathematics achievement motivation score was 48. Students' Mathematics achievement motivation composite score was calculated by summing up each individual's scores on the achievement motivation items and dividing it by 12. In the same manner, the composite score for the general and Mathematics parental involvement was derived by adding up the scores on the items and finding their average. The lowest scores a participant could get on the general and Mathematics parental involvement was 17 and 15 while the highest scores were 68 and 24 respectively. Finally, the lowest score a respondent could get on the individualism-collectivism measure was 7 while the highest score was 28. The individualism-collectivism composite score was obtained by calculating the average of participants' total score on the measure.

Statistical Analysis

The data obtained from the participants were coded, statistically input and analyzed using the computer software Statistical Package for the Social Science (SPSS). A factor analysis was carried out on the general parental involvement items to find out the most important factors predicting the level of parents' involvement. Also, all formulated hypotheses were statistically tested using the Pearson Product Moment correlation. For instance, hypothesis 1(Ho1) which

stated that there will be a positive significant relationship between students' general Parental Involvement and Mathematics Achievement Motivation was tested using the Pearson Product Moment correlation analysis. Similarly, a Pearson Product Moment correlation analysis was also employed to test hypothesis 2 (Ho 2) which said that there will be a positive significant relationship between students' Mathematics parental involvement and Mathematics achievement Motivation. Also, Hypothesis 3 (Ho 3) which assumed that there will be a positive significant relationship between students' Mathematics Self-Efficacy and Mathematics Achievement Motivation was examined using the Pearson Product Moment correlation analysis. In the same manner, a Pearson Product Moment correlation analysis was used to test hypothesis 4 (Ho 4) to determine the relationship between students' Mathematics parental involvement and Mathematics self-efficacy. Finally, hypothesis 5 (Ho 5) which stated that there will be a significant positive correlation between students' individualism-collectivism cultural orientation and their Mathematics achievement motivation was tested using the Pearson Product Moment correlation.

CHAPTER FOUR

RESULTS

The main objective of this research was to examine the relationship between parental involvement, Mathematics self-efficacy and the Mathematics achievement motivation of Nigerian elementary school students. This chapter therefore discussed the results of the collected data and the statistical analyses employed in answering the research hypotheses.

Although 400 students were originally selected for the study, fifty-three (53) of them did not return the parents' permission forms and were not allowed to participate in filling the questionnaires. Also two (2) of subjects filled the questionnaires in a way that made it impossible for their inclusion in the statistical analysis. This left the study with 345 participants and usable questionnaires. Generally, it was observed that more of the parents in the private schools (193 or 96.5%) returned the parents' permission forms thereby indicating more willingness on the part of parents in the private schools to participate in the study compared to parents in the public school (154 or 77%).

Table II

Frequency Table of Participants' Socio-demographic Information

Variable	N	Percentage (%)
Age		
8	5	1.4
9	43	12.5
10	121	35.1
11	80	23.2

12	44	12.8
13	30	8.7
14	12	3.5
15	5	1.4
No response	5	1.4
Total	345	100
Variable	**N**	**Percentage (%)**
Gender		
Male	168	48.7
Female	175	50.6
No response	3	0.7
Total	345	100
Variable	**N**	**Percentage (%)**
Ethnicity		
Igbo	75	21.7
Yoruba	218	63.2
Hausa	14	4.1
Others	35	10.2
No response	3	0.9
Total	345	100
Variable	**N**	**Percentage (%)**
Religion		
Christianity	220	63.8
Islam	119	34.5
Traditional	5	1.4
No response	1	0.3
Total	345	100
Variable	**N**	**Percentage (%)**
Socio-economic Status (SES)		
Low	137	39.7

Middle	171	49.6
High	33	9.6
No response	4	1.2
Total	345	100
Variable	**N**	**Percentage (%)**
Parents' Educational Qualification		
Father		
Elementary School	40	11.6
Secondary School	69	20.0
Vocational School	27	7.8
College of Education	12	3.5
Polytechnic/ University	186	53.9
No response	11	3.1
Total	345	100
Mother		
Elementary School	30	8.7
Secondary School	90	26.1
Vocational School	22	6.4
College of Education	15	4.3
Polytechnic/ University	173	50.1
No response	15	4.3
Total	345	100

Table III

Frequency Table of Participants' General and Mathematics study Help

Variable	N	Percentage (%)
General Study Help		
Both parents	116	33.6
Father	59	17.1

Mother	99	28.7
Others	68	19.7
No response	3	0.9
Total	345	100
Mathematics Study Help		
Both parents	59	17.1
Father	89	25.8
Mother	88	25.5
Others	108	31.3
No response	1	0.3
Total	345	100

The socio-demographic information of the participants as well as parents' educational qualification is presented in Table II. This revealed that 49 % of the participants are between the ages of 8 and 10, 36% of them were 11 and 12 years of age while only 13.6% fell between 13 and 15 years old. Thus, about 85% of them are 12 years of age and below. Also, 48.7% of the participants are male, 50.6 % are female while 0.9 % gave no response to this question. A greater percentage of the participants (63.2%) were of the Yoruba ethnic group while the Igbo, Hausa and other tribes only made up 21.7%, 4.1% and 10.2% of the respondents' population respectively. This is not surprising given that the study was carried out in Lagos State South West Nigeria where more Yoruba can be found. On the basis on religion, 63.8% of the respondents were Christians, 34.5% were Muslims, 1.4% were of the traditional religion and 0.3% gave no response to the question. The participants were classified into socio-economic status (SES) using some indices such as the number of cars parents or guardians have, the type of houses they lived in and the educational qualification of their parents. Almost 40% of the participants belonged to the low SES, 49.6% were in the middle SES while 9.6% were of the

high SES. In addition, it was observed that 57.4% of the participants' father had some form of tertiary education of which 53.9% were either a polytechnic or university degree and 3.5% were colleges of education diplomas. Likewise, 50.1% of the mothers had a polytechnic or university qualification while 4.3% were colleges of education diploma holders.

Table III contains information of participants' reports about academic help in general and with Mathematics at home. An examination of this table showed that fewer parents helped their children with Mathematics at home (17.1%) compared to other subjects in general (33.6%). Also, more mothers (28.7%) were involved in helping their children with other subjects in general while a lesser percentage of them (25.5%) were involved in helping their children with Mathematics. The table also indicated that more fathers (25.8%) were involved in their children's learning of Mathematics than other subjects in general (17.1%). In addition, it can be observed from the table that the percentage of 'others' particularly lesson teachers, uncles or aunts (31.3%) involved in helping the participants with Mathematics at home is a lot higher than those involved in helping the students with their general study (19.7%).

The items that made up each aspect or dimension of the general and Mathematics parental involvement were also analyzed in order to determine the percentage of parental involvement in those categories. The data are presented in frequencies and percentages in Table IV. Students' responses to the questions were grouped into 2, namely 'true' and 'not true'. The 'true' category consisted of responses ranging from 'sort of true' to 'very true' while the 'not true' category comprised 'not at all true' and 'not very true' responses.

Table IV

Number and Percentage of Family Rules and Supervision

Variable	Not True		True	
	n	(%)	n	(%)
Parents check or help with homework.	135	(39.1)	207	(60.0)
Family rules for doing homework.	164	(47.5)	177	(51.3)
Parents help with difficult school work.	48	(13.9)	295	(85.5)
Timetable for home work, chores and play.	145	(42.1)	199	(57.7)

Among the family rules and supervision aspect, the most frequently occurring form of parental involvement is helping students with difficult school work (85.5%) while the least occurring is the existence of family rules for doing homework (51.3%).

Table V

Number and Percentage of School-Home Communication

Variable	Not True		True	
	n	(%)	n	(%)
Teacher contact parent about student work or behavior.	97	(28.1)	246	(71.3)
Teacher contact parent about school event.	130	(37.7)	209	(60.6)
Parents contact school about school event.	153	(44.3)	186	(53.9)
Parents contact school about students' work or behavior.	116	(33.6)	222	(64.4)

For the school-home communication, teachers' contact with parents (71.3%) about students' work or behavior was the most common while parents' contact with school about school event (53.9%) was the least common.

Table VI

Number and Percentage of School Activities Participation

Variable	Not True		True	
	n	(%)	n	(%)
Parents attend school events or activities.	101	(32.1)	234	(67.9)
Parents attend PTA meetings.	100	(29.0)	244	(70.7)
Parents assist school in planning for events.	116	(33.6)	148	(42.9)

Under the school activities participation, many of the parents attend the PTA meetings (70.7%) while the least activity that parents engaged in is helping the school to plan for events (42.9%).

Table VII

Number and Percentage of Extra-Curricular Learning

Variable	Not True		True	
	n	(%)	n	(%)
Parents take students to places of learning such as zoo, library and museums.	153	(44.4)	189	(54.8)
Parents buy practice and text books, CDs and other learning materials for students at home.	53	(15.4)	290	(84.0)

From Table VII above, it can be seen that a large percentage of parents (84%) are committed to buying learning materials for their children to learn while a much lesser percentage of them (54.8%) often take students to places of learning such as the zoo, museum, library, etc.

Table VIII

Number and Percentage of Educational Aspiration

Variable	Not True		True	
	n	(%)	n	(%)
Parents talk to student about school grades, report cards and performance.	136	(39.3)	203	(58.8)
Parents expect student to advance to secondary school.	25	(7.2)	318	(92.2)
Parents expect student to attend college.	32	(9.3)	310	(89.8)

Majority of the parents (92.2%) expect their children to go to a secondary school after completing the elementary school education. Similarly, most parents (89.8%) also expect that their children will receive a tertiary education or go to college in the future. On the other hand, only 58.8% of parents discuss either school grades, report cards or academic performance with their children.

Table IX

Number and Percentage of Mathematics Supervision

Variable	Not True		True	
	n	(%)	n	(%)
Parents practice Mathematics at home with students.	85	(24.6)	257	(74.5)
Parents help students with Mathematics homework.	49	(14.2)	288	(83.5)
Parents ensure students do and complete Mathematics homework.	50	(14.5)	291	(84.3)

Table IX revealed that more than half of parents help students with Mathematics by practicing mathematics with them at home (74.5%), helping with Mathematics homework (83.5%) and ensuring that they do and complete (84.3%). However, parents practicing

Mathematics with students at home was the least occurring of the Mathematics supervision dimensions.

Table X

Number and Percentage of Mathematics Educational Aspiration

Variable	Not True		True	
	n	(%)	n	(%)
Parents expect students to take Mathematics-related subjects in secondary school.	54	(13.0)	287	(83.1)
Parents expect students to do well in Mathematics.	70	(17.3)	268	(77.7)

It is obvious from Table X that 83.1% of parents expect their children to take Mathematics-related subjects like Chemistry or Physics in the senior secondary school. Also, 77.7% of parents expect that their children will perform well in Mathematics.

Table XI

Number and Percentage of Mathematics School-Home Communication

Variable	Not True		True	
	n	(%)	n	(%)
Teacher contact parent about student Mathematics performance.	111	(32.2)	227	(65.8)
Parents contact school about students' Mathematics performance.	134	(38.9)	207	(60.0)

The percentage of teachers that made contact with parents about students' Mathematics performance was 65.8% while 60% of parents made contact with school about students' Mathematics performance. In other words, the school made more contact with parents than parents did with the school over students' Mathematics performance.

In summary, some of the school and home activities that had the lowest level of parental involvement among the different dimensions assessed were the presence of family rules for doing homework, parents contacting school about events, taking students to places of learning such as zoo, library and museums, assisting school in planning for events and talking to students about grades, report cards and performances.

Variables

Composite variables were generated for general and Mathematics parental involvement, Mathematics self-efficacy, individualism-collectivism orientation and Mathematics achievement motivation. These were obtained by calculating the average of the participants' total responses to the questionnaire items measuring each of the variables. For instance, the composite variable for general parental involvement was derived by adding up respondents' scores to the 16 questionnaire items of the variable and dividing the score by 16. Likewise, respondents' scores on Mathematics parental involvement were also obtained by adding subjects' responses on each of the 7 items and dividing the score by 7. In order to further understand and compare general and Mathematics parental involvement, their composite variables were grouped into low and high levels using their median score (see Tables XII & XIII). In addition, the composite variables were used in answering the research hypotheses.

Table XII

Frequency Distribution of Grouped Mathematics Parental Involvement

Levels	**Range of Score**	**Frequency**	**Percentage**
Low	1.83 – 3.33	173	49.9
High	3.36 – 4.00	172	50.1
Total		345	100

The frequency table for Mathematics parental involvement showed that the minimum and maximum composite score of Mathematics parental involvement was 1.83 and 4.00 respectively. Only 97 (28.12%) students had a composite score of less than 3.00, 128 students (37.10%) had scores between 3.00 and 3.50 while only 120 students (34.78%) had score above 3.50 (see Appendix D).

Table XIII

Frequency Distribution of Grouped General Parental Involvement

Levels	**Range of Score**	**Frequency**	**Percentage**
Low	1.91 – 3.11	172	49.9
High	3.12 – 4.00	173	50.1
Total		345	100

In the same manner, the frequency table for general parental involvement displayed scores ranging from 1.91 to 4.00. A total number of 126 (36.52%) students had a composite score of less than 3.00, 164 (47.54%) had between 3.00 and 3.50 while 55 (15.94%) had above 3.50 (see Appendix E).

The minimum composite score for general parental involvement (1.91) was a slightly higher than that of Mathematics parental involvement (1.83). Also, more students reported general parental involvement to be low (less than 3.00) or average (between 3.00 and 3.50) in comparison with Mathematics parental involvement while less students said that general parental involvement was high (above 3.50) when compared to Mathematics parental involvement.

Hypotheses Testing

Hypothesis 1: There will be a positive significant relationship between general parental involvement and students' Mathematics achievement motivation.

The Pearson Product Moment correlation analysis discovered a significant positive relationship discovered between general parental involvement and Mathematics achievement motivation with a correlation coefficient, $r = .348$, $p < .01$. This showed that there is a significant relationship between general parental involvement and students' Mathematics achievement motivation.

Table XIV
Pearson Product-Moment Correlations for General Parental Involvement and Mathematics Achievement Motivation

Variable	General PI	Math Achievement Motivation
General P I	-----	.348**
Math Achievement Motivation	.348**	-----

Note ** $p < .01$

Hypothesis 2: There will be a positive significant relationship between Mathematics parental involvement and students' Mathematics achievement motivation.

The result of the Pearson Product Moment correlation analysis revealed a significant positive relationship between the Mathematics parental involvement and the Mathematics achievement motivation of the participants with the correlation coefficient, $r = .408$, $p < .01$. This means that there is a significant association between Mathematics parental involvement and students' Mathematics achievement motivation.

Table XV

Pearson Product-Moment Correlations for Students' Mathematics Parental Involvement and Mathematics Achievement Motivation

Variable	Math PI	Math Achievement Motivation
Math Parental Involvement	-----	.408**
Math Achievement Motivation	.408**	-----

Note ** p < .01

Hypothesis 3: There will be a positive significant relationship between students' Mathematics self-efficacy and Mathematics achievement Motivation.

Similarly, Pearson Product Moment correlation analysis was used to test this hypothesis and a significant positive relationship was discovered between students' Mathematics self-efficacy and their Mathematics achievement motivation. The correlation coefficient, $r = .580$, $p < .01$ implied that there is a significant relationship between students Mathematics self-efficacy and their Mathematics achievement motivation.

Table XVI

Pearson Product-Moment Correlations for Students' Mathematics Self-Efficacy and Mathematics Achievement Motivation

Variable	Math SE	Math Achievement Motivation
Math Self-Efficacy	-----	.580**
Math Achievement Motivation	.580**	-----

Note ** p < .01

Hypothesis 4: There will be a positive significant relationship between students' Mathematics parental involvement and Mathematics self-efficacy.

Likewise, the result of the Pearson Product Moment correlation analysis that tested this hypothesis found a significant positive relationship between students' Mathematics parental involvement and their Mathematics self-efficacy with correlation coefficient, $r = .371$, $p < .01$. This indicated that students' Mathematics self-efficacy is significantly correlated with their Mathematics achievement motivation.

Table XVII

Pearson Product-Moment Correlations for Students' Mathematics Parental Involvement and Mathematics Self-Efficacy

Variable	Math PI	Math Self-Efficacy
Math Parental Involvement	-----	.371**
Math Self-Efficacy	.371**	-----

Note ** $p < .01$

Hypothesis 5 (Ho 5): There will be a significant positive correlation between students' individualism-collectivism cultural orientation and Mathematics achievement motivation.

A significant relationship was also found between students' individualism-collectivism cultural orientation and their Mathematics achievement motivation using the Pearson Product Moment correlation analysis (correlation coefficient, $r = .420$, $p < .01$).

Table XVIII

Pearson Product-Moment Correlations for Students' Individualism-Collectivism Culture and Mathematics Achievement Motivation

Variable	Individualism-Collectivism	Math Achievement Motivation
Individualism-Collectivism	-----	.420**
Math Achievement Motivation	.420**	-----

Note ** $p < .01$

Finally, a factor analysis was carried out on participants' responses to the 16 items of the general parental involvement measure. As stated earlier, most of the items were generated from the different dimensions of parental involvement as outlined by studies such as Epstein (1995) and Yin and Lan (2005). The value of the Kaiser-Meyer Olkin measure of sampling adequacy was .626 showing that the sample was factorable. Also, the Barlett's test of Sphericity was significant (χ^2 (120) = 420.66, $p < .05$). The result of the factor analysis showed that five factors or components on the measure loaded significantly to determine the general parental involvement. All the items were highly and moderately loaded on the five factors. In the same vein, all the five (5) factors accounted for about 51.1% of the variance in general parental involvement. The factors can be listed as the following: parents' participation in school activities and programs, parents' involvement in students' work behavior and performance, parents' assistance with difficult or outside school (extra-curricular) work, family rules and environment for learning and playing higher educational expectation.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

Discussion of Findings

The relationships between parental involvement, self-efficacy and academic achievement have been examined by quite a number of studies. However this study took a slightly different angle by examining the relationship between parental involvement and self-efficacy on Nigerian elementary school students' Mathematics achievement motivation. Motivation is a very crucial factor that influences and determines attention, participation, engagement and ultimately achievement. Also Mathematics motivation has been found to impact on students' interest and enrollment in Mathematics and Mathematics-related subjects.

The finding of this study suggests the following:

The general and Mathematics parental involvement of Nigerian parent is average, that is, not too high and not too low.

There is a significant positive relationship between general and Mathematics parental involvement and students' Mathematics achievement motivation.

There is a significant positive relationship between students' Mathematics self-efficacy and their Mathematics achievement motivation.

There is a significant positive relationship between Mathematics parental involvement and students' Mathematics self-efficacy.

There is a significant positive relationship between students' Individualistic-Collectivistic cultural orientation and their Mathematics achievement motivation.

Particularly, the finding indicated that the level of both general and Mathematics parental involvement of Nigerian parents is average, that is, it is neither high nor low. This might mean that although many parents are interested in their students' overall academic success, their level of involvement is just average probably because they do not have the time to be involved or because they are unaware of the possible ways of being effectively involved. This result has been corroborated by other studies such as Adeyemo (2005) and Chow, Ansong and Osei-Akoto (2012) who found that parental involvement among Nigerian and Ghanaian parents is low. The result suggests that some of the parents are concerned about their students' academic performance. For example, more than half of the students reported that their parents help them with difficult work, attend PTA meetings, buy learning materials for them, expect them to go to secondary school and college and help them with their Mathematics homework. This finding supports Adeyemo (2005) who reported that most parents want their students to perform well in school and would give them all the necessary support. Similarly, Chow, Ansong and Osei-Akoto (2012) reported that parents' attendances of PTA meetings are usually high because they are mandatory for parents or they will be fined. On the other hand, not many parents contact school about events, take students to places of learning such as zoo, library and museums, assist school in planning for events, and talk to students about grades, report cards and performances and have family rules for doing homework and for learning. The lack of parents having family rules for homework and learning contradicts the finding of Catsambis (1998) who discovered in his study

that most parents set rules at home for doing homework and that this was correlated with students' academic performance. However, this may also imply that though most Nigerian parents are concerned about their students' academic success, they have no corresponding practices at home to help them achieve this.

Also, the finding showed that more women were involved in helping their children with learning compared to men. The only exception was when it came to learning of Mathematics. Of course, this can be explained from the Nigerian culture and society where the mothers are the ones that take care of the children and deal with most of their educational concerns while the fathers basically fend for the family. This finding corresponds with that of Chowa, Ansong and Osei-Akoto (2012) who reported that mothers were more involved in helping their children with their studies at home than fathers.

Furthermore, the data suggests that most parents found it more difficult to assist their children with Mathematics compared to other subjects at home. The fact that the percentage of both parents and mothers helping their children with Mathematics at home dropped may imply that more of the parents and mothers who are the first teachers to the students found assisting students with Mathematics more challenging compared with other subjects. More so, the fact that there was an increase in the number and percentage of fathers helping their children with Mathematics at home may connote that more fathers had to step in to help the students when the mothers could not. Although this was not an objective of this research, it tends to suggest a gender effect in Mathematics parental involvement, with fathers probably being better at helping students with Mathematics than mothers. Future researches might need to investigate this probability of men have higher Mathematics parental involvement than women.

Also, the increase in the percentage of ‘others’ especially lesson teachers, uncles and aunts in assisting students with Mathematics may indicate that majority of parents perceive themselves as either incapable of helping the students or unavailable to provide the necessary assistance, thus they arrange for ‘others’ who can they feel are more skilled to help their students achieve academic success. For instance, Lee (2007) revealed that Asian parents used ‘others’ in this case tutors to academically help both high and low achieving students.

The finding of the frequency distribution of the grouped variables also showed that a greater percentage of the students reported higher Mathematics parental involvement than general parental involvement. A lesser percentage however, reported a lower Mathematics parental involvement in comparison to the general parental involvement. Obviously, this suggests that more of the students perceive their parents’ involvement to be higher for Mathematics than for other subjects. Also, it connotes that parents are interested in their students’ Mathematics performances, therefore they are spending more time and practice with students in Mathematics as well as helping them with homework that might improve their performances. This might be because parents believe that Mathematics is very important and want their children to perform well in the subject. Moreover, it may indicate that most parents expect their children to do well in Mathematics and to take Mathematics-related subjects such as Chemistry and Physics at the secondary school and colleges. In other words, more parents want their children to take Mathematics-related careers in the future because such jobs are more prestigious and receive better pay compared to others. This is consistent with Langdon et al (2011) who noted that people in Mathematics-related careers usually earn better salaries than those in the other jobs. Future research, however, is needed to help understand if these parents’

Mathematics involvement are actually effective in the enhancing the students' Mathematics performance.

Although parental involvement in the learning of Mathematics and other subjects tends to be average, the findings indicate that more of it seems to be directed at Mathematics than other subjects. One reason for this might be due to the fact that parents understand that Mathematics is an important subject and that they need to spend more time helping their children with it. Another reason may be that they do not know how to be effectively involved in helping the students. This may explain why many families still use the lesson teachers, that is, they perceive themselves as not being able to provide the necessary assistance for the students therefore they seek out 'others' to help them. More so, future studies may need to examine the effectiveness of Mathematics parental involvement since the students may have simply reported on this based on the time or duration of the supervision rather than its quality.

The significant relationship found between general parental involvement and students' Mathematics achievement motivation corroborates the studies such as Pomerantz and Cheong (2012), Gonzalez-DeHass et al (2005) and Fan and Williams (2010) who discovered a significant positive relationship between parental involvement and students' motivation among elementary, middle and high school students. However, the finding is contrary to Chow, Ansong and Osei-Akoto (2012) and Fan (2001) who found a negative relationship between parental involvement and students' academic achievement.

Likewise, the result of a significant relationship between Mathematics parental involvement and students' Mathematics achievement motivation corresponds with study of Marchant et al (2001) who reported a significant relationship between parental involvement and

students' achievement motivation while it is at variance with the study carried out by Gonzalez and Wolters (2006) who demonstrated that parental involvement was not significantly correlated with students' intrinsic achievement motivation.

Also, a significant relationship found between students' Mathematics self-efficacy and their Mathematics achievement motivation is obviously supported by other studies such as Lent, Brown and Hackett (2002) and Pajares and Kranzler (1995) who similarly reported that students' Mathematics self-efficacy was positively correlated with their Mathematics achievement motivation.

Underlying the significant relationship between Mathematics parental involvement and students' Mathematics self-efficacy may be the fact that parents who are involved in their children learning of Mathematics are directly and indirectly helping to develop their level of confidence and stimulating their interest or curiosity in the subject. Thus, they unconsciously pass to them the important value of Mathematics thereby stirring them towards academic success in the subject. Invariably, this establishes an association between parents' involvement in students' learning of Mathematics and their Mathematic self-efficacy which is consistent with the findings of Marchant, Paulson and Rothlisberg (2001) who concluded that parental involvement encourages academic self-efficacy.

Majority of the students were collectivists in their cultural orientation with only a few of them being individualistic. This agrees with Triandis (2001) who said that Nigeria as a country was more of collectivism than individualism in culture. Therefore, for most of the students', their academic motivation was influenced by a desire to impress or please parents and family, assist younger ones with their education when necessary and become successful so as to help

their parents and family in the future. Relatedly, the result found a significant relationship between students' individualism-collectivism cultural orientation and their Mathematics achievement motivation thus implying that the students' Mathematics achievement motivation was positively associated with their individualistic-collectivistic cultural orientation**.**

Another objective of this study was to investigate the dimensions of parental involvement that are important and exist among the Nigerian parents. The result of the factor analysis carried out on the general parental involvement measure discovered that the most important factors were parents participation in school activities and programs, parents involvement in students' work behavior and performance, parents' assistance with difficult or outside school (extra-curricular) work, family rules and environment for learning and playing and higher educational expectation These factors accounted for more than half of the variance in explaining the Nigerian parental involvement and suggest Nigerian parental involvement programs and measures should involve these factors as they would most significantly capture what parental involvement should be for the Nigerian parent.

Conclusion and Recommendations

This study indicated that any type of parental involvement whether general or specific as relating to Mathematics has a positive relationship with students' Mathematics achievement motivation. In other words, any form of parental involvement whether general or specific (even though not directly aimed at a particular subject or area of learning) will generally improve students' Mathematics achievement motivation. This might imply that when there is a high level of general parental involvement, it affects all areas of learning which will eventually include

Mathematics. Therefore, that there is a transfer of learning that comes with general parental involvement which impacts all areas of the students' learning including Mathematics.

Also since the study discovered that most students' homes lacked the presence of family rules and environment and for learning and that this is one of the important factor of parental involvement, therefore there is a need to assist parents with creating the appropriate family rules that can significantly motivate their children towards academic excellence not only in Mathematics but in other subjects as well.

Also, the fact that students receive less Mathematics help from their parents at home compared to other subjects may signal that some of the parents need help in this regard. In particular are those who cannot afford the lesson teacher and those who due to their limited time constraints or tight schedules are unavailable. One of the ways of overcoming these challenges is to provide training for available parents who do not know how to help their children with their studies. Such training will identify parents' problems with involvement and seek for ways of eliminating or mitigating their challenges. Another consideration might be for the schools to initiate communication with busy parents to try and work with them at their convenience. Also, the government and schools should collaborate and conduct more researches and develop strategies to assist parents to provide their children with Mathematics help. This is because the more parents are involved in their children's learning of Mathematics, the more the students come to value the subject as being important and the more effort and attention they will pay to it.

Although the finding of the study showed that parents' involvement in Mathematics learning and in other subjects is generally on the average, however, the nature of the differences in both the Mathematics and general parental involvement was not investigated by this study and might need to be explained by further researches. Also, since the study identified significant

differences in students' report of parents' assistance with Mathematics at home, it might be more informative for future researches to investigate the differences in the Mathematics achievement motivation of students whose parents are personally involved in their learning of Mathematics versus those assisted by lesson teachers. Furthermore, future studies could examine the effects of gender, socio-economic status (SES) and ethnicity on the relationship between parental involvement, self-efficacy and Mathematics achievement motivation.

Limitations of the Study

The first limitation of this study was the fact that it was a correlational study and therefore could not establish causality. Second was that the study utilized the students' self-report survey for the measures of parental involvement, Mathematics self-efficacy and Mathematics achievement motivation. Future studies or other researchers might need to explore the relationship between parental involvement, self-efficacy and Mathematics achievement motivation of Nigerian elementary students using parents' or teachers' self-report. It would be interesting to see what the results of such studies will be. Although the study presented a multidimensionality of parental involvement, it did not take into consideration all possible dimensions of parental involvement such as involvement in sport activities or parental advising. Thus future studies that embrace a complete multidimensionality of parental involvement might be very informative. Also, the study was carried out within the Lagos metropolis and comprising a highly diversed populace, it would be interesting to find out if a replication of the study in other regions of the country or across the three major regions of the country would yield similar or conflicting findings.

Despite some of the above stated limitations, this study contributes to growing literature on parental involvement, self-efficacy and Mathematics achievement motivation for a few

reasons. The study separated parental involvement into general and Mathematics parental involvement and examined the relationship between both and students' Mathematics achievement motivation.

Also, it was carried out in a non-Western culture and it examined students' cultural and motivational orientation and its relationship to students' Mathematics achievement motivation.

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APPENDIX A

MATHEMATICS ACHIEVEMENT MOTIVATION QUESTIONNAIRE

Dear Student: Here are some questions to help us find out about parents' participation in children's education and how it connects to your interest in Mathematics. Please do NOT write your name on this paper and answer ALL questions truthfully. Thank you for taking part in this study.

Age: ____ Sex: Male ____ Female _____

Name of school: _____

Ethnicity: Hausa____ Igbo ___Yoruba____ Others (specify)_____

Religion: Christianity _____ Islam _____ Traditional _____ Others (specify) _____

Who do you live with: Both parents____ Father ____ Mother ____ Relative ____ Others(specify) _____

What type of house do you live in? Face-me-I-Face- you ____ Self-contained _____ 2 bedroom apartment _____ 3 bedroom apartment _____ Duplex _____ House _____ Others (specify) _____

How many cars do your parents/ guardians have? None ____ One ____ Two ____ More than two _____

Father's highest education: Primary School ____ Secondary School ____ Vocational School _____ College of Education _____ Polytechnic _____ University _____ Others (specify)_____

Mother's highest education: Primary School _____ Secondary School _____ Vocational School _____ College of Education _____ Polytechnic _____ University _____ Others(specify)_____

Father's job: _____ Mother's job: _____

Who helps you with your school work? Both ____ Father ____ Mother ____ Others (specify) _____

Who helps you more with Mathematics at home? Both ____ Father ____ Mother ____ Others _____

If you think a statement is very true of you, circle 4, if it is sort of true of you circle 3, if it is not very true of you circle 2 and if it is not at all true of you, circle 1. Please circle only **ONE** answer.

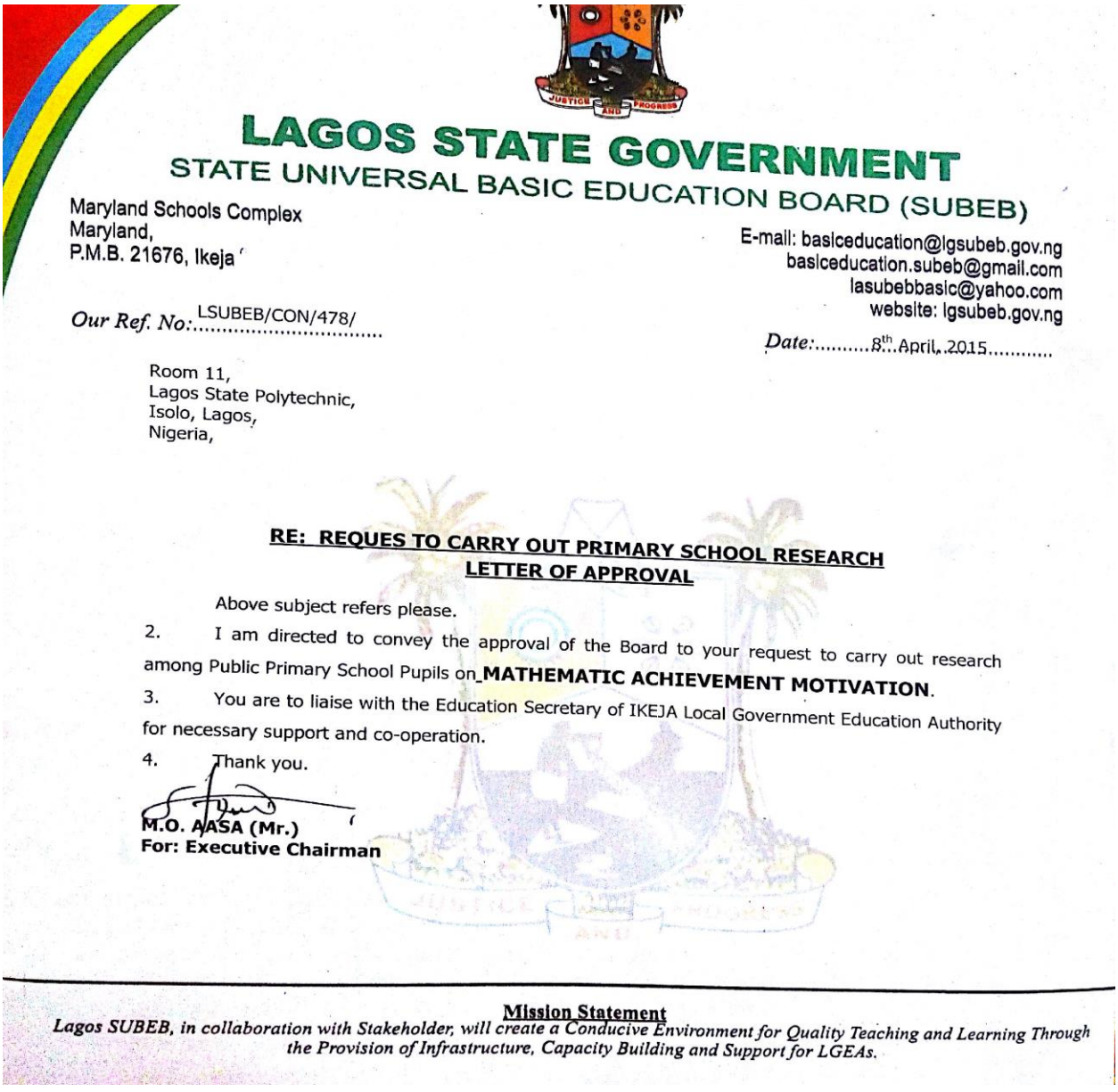
		Not at all true (1)	true (2)	Sort of true (3)	Very true (4)
1.	My parents/guardians always attend school activities that I am involved in.	1	2	3	4
2.	My parents/guardians always attend the school PTA meetings.	1	2	3	4
3.	My parents/guardians always practice mathematical problems with me at home.	1	2	3	4
4.	My teacher/school often contacts my parents about my school work or behavior.	1	2	3	4

5.	My parents/guardians expect me to take Mathematics-related courses such as Physics and Chemistry in the secondary school.	1	2	3	4
6.	My teacher/school always contacts my parents about school syllabus or programs.	1	2	3	4
7.	My parents /guardians always contact my teacher or school about school syllabus or programs.	1	2	3	4
8.	My parents/guardians do not check, correct or help with my homework.	1	2	3	4
9.	There are family rules for doing homework in my house.	1	2	3	4
10.	My parents/guardians often take me places where I can learn such as the museum, zoo and library.	1	2	3	4
11.	My parents/guardians do not talk to me about my report cards and scores.	1	2	3	4
12.	My parents/guardians always explain and help me with any school work that I find difficult.	1	2	3	4
13.	My parents/guardians expect that I will go to secondary school.	1	2	3	4
14.	My parents/guardians expect me to go to the polytechnic or university.	1	2	3	4
15.	My parents/guardians buy learning materials such as CDs, storybooks, text and practice books for me to learn at home.	1	2	3	4
16.	My teacher often contacts my parents about my performance in Mathematics.	1	2	3	4
17.	My parents/guardians always help me to understand my Mathematics homework.	1	2	3	4
18.	My parents/guardians make sure I do and complete my Mathematics homework.	1	2	3	4
19.	My parents/guardians often speak to my teacher about my school work or behavior.	1	2	3	4
20.	My parents/guardians often contact my teacher or school because of my performance in Mathematics.	1	2	3	4
21.	My parents/guardians do not expect me to do very well in Mathematics.	1	2	3	4
22.	There is a timetable for homework, house chores, playtime and watching television in my house.	1	2	3	4
23.	My parents/guardians always help my school with planning for school events or programs.	1	2	3	4
24.	Compared with other students I expect to do well in Mathematics.	1	2	3	4
25.	When I take Mathematics test or examination, I am afraid that I may fail.	1	2	3	4
26.	I am sure I can do an excellent job on my Mathematics' assignments and tests.	1	2	3	4
27.	I think I will receive a good final score in Mathematics.	1	2	3	4
28.	I want to get better grades than most of the other students in Mathematics.	1	2	3	4
29.	Compared with other students in mathematics class I think I know a great deal about Mathematics.	1	2	3	4
30.	I want to do very well in Mathematics because I want my parents/guardians, family or teacher to be proud of me.	1	2	3	4
31.	I enjoy Mathematics because it is challenging and I can learn new things.	1	2	3	4
32.	Even when I do poorly on a Mathematics test I try to learn from my mistakes.	1	2	3	4
33.	I like what I am learning in Mathematics class.	1	2	3	4
34.	I think I will be able to use what I learn in my Mathematics in other subjects.	1	2	3	4
35.	I often choose Mathematics topics that I will learn from even if they require more work.	1	2	3	4
36.	Compared with others in Mathematics class, I think I am a good student.	1	2	3	4
37.	I think that what I am learning in Mathematics is useful for me to know.	1	2	3	4
38.	I think that Mathematics is fun and interesting.	1	2	3	4
39.	Getting a good grade in Mathematics is very important to me.	1	2	3	4
40.	The most important thing for me in Mathematics is to understand what I am being taught.	1	2	3	4
41.	Doing well in my final examination is very important so my main concern is to get a good grade in Mathematics.	1	2	3	4
42.	I know that I will be able to learn the material in my Mathematics class.	1	2	3	4
43.	When I take Mathematics tests or examination, I think about how poorly I am doing compared with other students.	1	2	3	4
44.	My study skills in Mathematics are excellent compared with other students.	1	2	3	4
45.	I really need to do well in Mathematics to be successful in life.	1	2	3	4
46.	Mathematics is a subject that you can learn if you put in your best.	1	2	3	4
47.	I expect to do very well in my Mathematics class.	1	2	3	4
48.	When I do well in school, it brings respect and honor to my parents and relatives within the community.	1	2	3	4

49.	I want to do well at school so that I can take care of my parents and relatives in the future.	1	2	3	4
50.	My success or failure in school has nothing to do with my parents or relatives.	1	2	3	4
51.	My parents and relatives will receive part of the blame if I fail in school. IND-COLL	1	2	3	4
52.	I want to do well at school so that I can help other students especially my younger ones with their studies.	1	2	3	4
53.	The most important thing for me in school is to please my parents even if I have to give up what I love to do.	1	2	3	4

APPENDIX B

LSUBEB APPROVAL LETTER



LAGOS STATE GOVERNMENT
STATE UNIVERSAL BASIC EDUCATION BOARD (SUBEB)

Maryland Schools Complex
Maryland,
P.M.B. 21676, Ikeja

E-mail: basiceducation@lgsubeb.gov.ng
basiceducation.subeb@gmail.com
lasubebbasic@yahoo.com
website: lgsubeb.gov.ng

Our Ref. No: LSUBEB/CON/478/

Date: 8th April, 2015

Room 11,
Lagos State Polytechnic,
Isolo, Lagos,
Nigeria,

RE: REQUES TO CARRY OUT PRIMARY SCHOOL RESEARCH
LETTER OF APPROVAL

Above subject refers please.

2. I am directed to convey the approval of the Board to your request to carry out research among Public Primary School Pupils on **MATHEMATIC ACHIEVEMENT MOTIVATION**.

3. You are to liaise with the Education Secretary of IKEJA Local Government Education Authority for necessary support and co-operation.

4. Thank you.

M.O. AASA (Mr.)
For: Executive Chairman

Mission Statement
Lagos SUBEB, in collaboration with Stakeholder, will create a Conducive Environment for Quality Teaching and Learning Through the Provision of Infrastructure, Capacity Building and Support for LGEAs.

APPENDIX C

HEAD TEACHERS' PERMISSION LETTER

MATHEMATICS ACHIEVEMENT MOTIVATION: THE RELATIONSHIP BETWEEN PARENTAL INVOLVEMENT AND MATHEMATICS SELF-EFFICACY

The purpose of the research study has been clearly explained to me and behalf of the school authority and management, I hereby give my approval to conduct the research using students in our school.

Name of School Head Teacher: ……

Signature: …… Date:……..

…….

APPENDIX D

GROUPED MATHEMATICS PARENTAL INVOLVEMENT

MathPIA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.83	1	.3	.3	.3
	2.08	2	.6	.6	.9
	2.12	1	.3	.3	1.2
	2.17	1	.3	.3	1.4
	2.18	2	.6	.6	2.0
	2.19	1	.3	.3	2.3
	2.22	1	.3	.3	2.6
	2.24	2	.6	.6	3.2
	2.27	3	.9	.9	4.1
	2.32	3	.9	.9	4.9
	2.33	1	.3	.3	5.2
	2.36	1	.3	.3	5.5
	2.38	1	.3	.3	5.8
	2.39	1	.3	.3	6.1
	2.40	4	1.2	1.2	7.2
	2.47	1	.3	.3	7.5
	2.47	1	.3	.3	7.8
	2.48	1	.3	.3	8.1
	2.50	1	.3	.3	8.4
	2.53	4	1.2	1.2	9.6
	2.56	1	.3	.3	9.9
	2.57	1	.3	.3	10.1
	2.58	1	.3	.3	10.4
	2.60	3	.9	.9	11.3

2.61	1	.3	.3	11.6
2.62	2	.6	.6	12.2
2.63	6	1.7	1.7	13.9
2.66	2	.6	.6	14.5
2.67	4	1.2	1.2	15.7
2.70	4	1.2	1.2	16.8
2.72	1	.3	.3	17.1
2.73	1	.3	.3	17.4
2.78	1	.3	.3	17.7
2.79	2	.6	.6	18.3
2.80	6	1.7	1.7	20.0
2.83	1	.3	.3	20.3
2.87	6	1.7	1.7	22.0
2.88	1	.3	.3	22.3
2.90	4	1.2	1.2	23.5
2.91	1	.3	.3	23.8
2.93	6	1.7	1.7	25.5
2.94	1	.3	.3	25.8
2.96	2	.6	.6	26.4
2.97	5	1.4	1.4	27.8
2.99	1	.3	.3	28.1
3.00	13	3.8	3.8	31.9
3.01	1	.3	.3	32.2
3.02	1	.3	.3	32.5
3.03	2	.6	.6	33.0
3.04	2	.6	.6	33.6
3.07	4	1.2	1.2	34.8
3.08	2	.6	.6	35.4
3.08	1	.3	.3	35.7
3.09	2	.6	.6	36.2
3.10	5	1.4	1.4	37.7
3.11	1	.3	.3	38.0
3.12	1	.3	.3	38.3
3.13	3	.9	.9	39.1
3.14	1	.3	.3	39.4

3.16	1	.3	.3	39.7
3.17	3	.9	.9	40.6
3.20	5	1.4	1.4	42.0
3.21	1	.3	.3	42.3
3.22	1	.3	.3	42.6
3.23	2	.6	.6	43.2
3.24	2	.6	.6	43.8
3.27	3	.9	.9	44.6
3.28	2	.6	.6	45.2
3.29	2	.6	.6	45.8
3.30	8	2.3	2.3	48.1
3.31	1	.3	.3	48.4
3.32	1	.3	.3	48.7
3.33	4	1.2	1.2	49.9
3.36	1	.3	.3	50.1
3.37	3	.9	.9	51.0
3.39	2	.6	.6	51.6
3.40	5	1.4	1.4	53.0
3.41	2	.6	.6	53.6
3.42	1	.3	.3	53.9
3.43	2	.6	.6	54.5
3.47	7	2.0	2.0	56.5
3.47	1	.3	.3	56.8
3.49	4	1.2	1.2	58.0
3.50	25	7.2	7.2	65.2
3.51	3	.9	.9	66.1
3.56	5	1.4	1.4	67.5
3.57	4	1.2	1.2	68.7
3.58	1	.3	.3	69.0
3.60	5	1.4	1.4	70.4
3.61	1	.3	.3	70.7
3.62	1	.3	.3	71.0
3.64	1	.3	.3	71.3
3.66	1	.3	.3	71.6
3.67	21	6.1	6.1	77.7

3.70	2	.6	.6	78.3
3.71	1	.3	.3	78.6
3.73	2	.6	.6	79.1
3.77	2	.6	.6	79.7
3.78	2	.6	.6	80.3
3.80	6	1.7	1.7	82.0
3.82	4	1.2	1.2	83.2
3.83	7	2.0	2.0	85.2
3.87	6	1.7	1.7	87.0
3.89	6	1.7	1.7	88.7
3.93	5	1.4	1.4	90.1
4.00	34	9.9	9.9	100.0
Total	345	100.0	100.0	

APPENDIX E

GROUPED GENERAL PARENTAL INVOLVEMENT

GenPIA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.91	1	.3	.3	.3
	1.93	1	.3	.3	.6
	1.99	1	.3	.3	.9
	2.03	1	.3	.3	1.2
	2.03	1	.3	.3	1.4
	2.04	1	.3	.3	1.7
	2.13	1	.3	.3	2.0
	2.18	1	.3	.3	2.3
	2.19	2	.6	.6	2.9
	2.24	1	.3	.3	3.2
	2.25	1	.3	.3	3.5
	2.27	1	.3	.3	3.8
	2.28	1	.3	.3	4.1
	2.30	1	.3	.3	4.3
	2.35	1	.3	.3	4.6
	2.37	1	.3	.3	4.9
	2.38	1	.3	.3	5.2
	2.38	1	.3	.3	5.5
	2.39	1	.3	.3	5.8
	2.45	1	.3	.3	6.1
	2.46	1	.3	.3	6.4
	2.48	1	.3	.3	6.7
	2.53	1	.3	.3	7.0
	2.54	1	.3	.3	7.2

2.54	1	.3	.3	7.5
2.55	1	.3	.3	7.8
2.56	1	.3	.3	8.1
2.57	1	.3	.3	8.4
2.57	2	.6	.6	9.0
2.58	1	.3	.3	9.3
2.59	2	.6	.6	9.9
2.60	3	.9	.9	10.7
2.61	1	.3	.3	11.0
2.63	1	.3	.3	11.3
2.63	1	.3	.3	11.6
2.64	1	.3	.3	11.9
2.65	3	.9	.9	12.8
2.66	1	.3	.3	13.0
2.66	1	.3	.3	13.3
2.67	2	.6	.6	13.9
2.68	1	.3	.3	14.2
2.68	1	.3	.3	14.5
2.69	1	.3	.3	14.8
2.70	2	.6	.6	15.4
2.72	1	.3	.3	15.7
2.73	1	.3	.3	15.9
2.73	1	.3	.3	16.2
2.74	3	.9	.9	17.1
2.76	6	1.7	1.7	18.8
2.78	1	.3	.3	19.1
2.78	1	.3	.3	19.4
2.79	1	.3	.3	19.7
2.79	2	.6	.6	20.3
2.80	1	.3	.3	20.6
2.81	1	.3	.3	20.9
2.81	4	1.2	1.2	22.0
2.82	1	.3	.3	22.3
2.83	2	.6	.6	22.9
2.83	1	.3	.3	23.2

2.86	1	.3	.3	23.5
2.86	1	.3	.3	23.8
2.87	4	1.2	1.2	24.9
2.88	1	.3	.3	25.2
2.88	3	.9	.9	26.1
2.89	3	.9	.9	27.0
2.90	2	.6	.6	27.5
2.91	3	.9	.9	28.4
2.92	1	.3	.3	28.7
2.93	5	1.4	1.4	30.1
2.93	1	.3	.3	30.4
2.94	1	.3	.3	30.7
2.94	5	1.4	1.4	32.2
2.95	2	.6	.6	32.8
2.95	2	.6	.6	33.3
2.96	1	.3	.3	33.6
2.96	1	.3	.3	33.9
2.96	1	.3	.3	34.2
2.97	3	.9	.9	35.1
2.98	2	.6	.6	35.7
2.98	1	.3	.3	35.9
2.99	2	.6	.6	36.5
3.00	3	.9	.9	37.4
3.00	1	.3	.3	37.7
3.01	2	.6	.6	38.3
3.01	6	1.7	1.7	40.0
3.02	1	.3	.3	40.3
3.02	1	.3	.3	40.6
3.03	3	.9	.9	41.4
3.03	2	.6	.6	42.0
3.04	1	.3	.3	42.3
3.04	2	.6	.6	42.9
3.05	4	1.2	1.2	44.1
3.06	3	.9	.9	44.9
3.07	1	.3	.3	45.2

3.08	3	.9	.9	46.1
3.08	1	.3	.3	46.4
3.08	3	.9	.9	47.2
3.09	1	.3	.3	47.5
3.10	3	.9	.9	48.4
3.11	1	.3	.3	48.7
3.11	4	1.2	1.2	49.9
3.12	1	.3	.3	50.1
3.13	1	.3	.3	50.4
3.14	1	.3	.3	50.7
3.15	12	3.5	3.5	54.2
3.17	3	.9	.9	55.1
3.17	1	.3	.3	55.4
3.17	2	.6	.6	55.9
3.18	3	.9	.9	56.8
3.18	1	.3	.3	57.1
3.19	1	.3	.3	57.4
3.20	1	.3	.3	57.7
3.21	4	1.2	1.2	58.8
3.21	1	.3	.3	59.1
3.22	1	.3	.3	59.4
3.22	1	.3	.3	59.7
3.23	2	.6	.6	60.3
3.23	1	.3	.3	60.6
3.23	5	1.4	1.4	62.0
3.24	3	.9	.9	62.9
3.25	1	.3	.3	63.2
3.26	1	.3	.3	63.5
3.27	1	.3	.3	63.8
3.28	5	1.4	1.4	65.2
3.28	3	.9	.9	66.1
3.29	4	1.2	1.2	67.2
3.30	5	1.4	1.4	68.7
3.31	1	.3	.3	69.0
3.32	1	.3	.3	69.3

3.32	1	.3	.3	69.6
3.33	4	1.2	1.2	70.7
3.34	1	.3	.3	71.0
3.36	3	.9	.9	71.9
3.36	1	.3	.3	72.2
3.37	2	.6	.6	72.8
3.37	1	.3	.3	73.0
3.38	2	.6	.6	73.6
3.38	3	.9	.9	74.5
3.39	1	.3	.3	74.8
3.40	4	1.2	1.2	75.9
3.41	2	.6	.6	76.5
3.42	5	1.4	1.4	78.0
3.43	2	.6	.6	78.6
3.43	1	.3	.3	78.8
3.44	3	.9	.9	79.7
3.45	2	.6	.6	80.3
3.46	2	.6	.6	80.9
3.47	1	.3	.3	81.2
3.48	1	.3	.3	81.4
3.48	3	.9	.9	82.3
3.49	2	.6	.6	82.9
3.50	4	1.2	1.2	84.1
3.53	7	2.0	2.0	86.1
3.53	2	.6	.6	86.7
3.54	1	.3	.3	87.0
3.55	4	1.2	1.2	88.1
3.55	1	.3	.3	88.4
3.57	1	.3	.3	88.7
3.57	1	.3	.3	89.0
3.58	1	.3	.3	89.3
3.59	2	.6	.6	89.9
3.61	3	.9	.9	90.7
3.61	1	.3	.3	91.0
3.63	5	1.4	1.4	92.5

3.63	1	.3	.3	92.8
3.63	1	.3	.3	93.0
3.65	4	1.2	1.2	94.2
3.66	1	.3	.3	94.5
3.67	1	.3	.3	94.8
3.68	1	.3	.3	95.1
3.68	1	.3	.3	95.4
3.71	3	.9	.9	96.2
3.73	1	.3	.3	96.5
3.75	1	.3	.3	96.8
3.78	1	.3	.3	97.1
3.83	2	.6	.6	97.7
3.88	3	.9	.9	98.6
3.92	1	.3	.3	98.8
3.93	1	.3	.3	99.1
3.96	2	.6	.6	99.7
4.00	1	.3	.3	100.0
Total	345	100.0	100.0	