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THE IMPACT OF PARENTAL INVOLVEMENT ON ADOLESCENTS' ACADEMIC ACHIEVEMENT IN NIGERIA

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ABSTRACT

THE IMPACT OF PARENTAL INVOLVEMENT ON ADOLESCENTS' ACADEMIC ACHIEVEMENT IN NIGERIA

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Parental involvement in education remains important for supporting educational achievement in adolescents. The purpose of this ex-post facto study was to evaluate the impact of parental involvement a multidimensional construct, on mathematics achievement in adolescents (9th graders) in Kwara State Nigeria. The study also evaluated the relationship between social capital, parental involvement and two motivational constructs, the growth mindset and learning goals. A total of 280 students in their third year of Junior secondary school in Kwara state Nigeria, participated in the study. The study was conducted using a 46-item survey of parental involvement administered once to students who volunteered to participate in the study at two secondary schools in Ilorin metropolis. A path analysis, which does numerous multiple regressions was conducted on the data to determine the unique contributions of the predictor variables parental involvement, social capital, growth mindset and learning goals to the dependent variable math achievement.

The findings from the study show that social capital is a precursor of parental involvement, and both are indirect predictors of math achievement with learning goals acting as a significant mediational pathway. The study findings also indicate that social capital may be a barrier to equitable access to learning supports for math achievement.

Recommendations stemming from the study findings include suggestions for the government, policymakers, parents, and school administrators for fostering parental involvement. There is also a need for further research to generate more robust data to contribute to existing empirical evidence of the benefits of parental involvement for adolescents.

DEDICATION

This dissertation is dedicated to the memory of my parents Ibironke Victoria Olawole-Shaba and Festus Rotimi Olawole-Shaba. You gave your all to me every step of the way, so I could thrive. Thank you, love always.

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CHAPTER 1: INTRODUCTION

Education is one of the major gateways into economic growth and freedom in many developing countries including Nigeria. The general belief is that students learn and excel within the school and the community through learning processes that involve school, home and community, much like the popular African saying, "it takes a village to raise a child." Partnerships between schools, parents, and the community support student success, especially since children spend the bulk of their time outside of school with their parents (Epstein, 2001). Developing nations are tasked with educating their citizens as a means of poverty alleviation and achieving development goals. Despite these laudable goals, many developing nations are making little or no progress even with constant reforms of education systems. Despite the universal basic education act of 2004 that mandates nine years of basic education for all school aged-children, Nigeria reports lower levels of educational achievement, specifically in mathematics, in comparison to the rest of the world. Recent statistics show that only 43% of eligible students are enrolled in junior secondary schools and only about 80% of enrolled students complete the course of study and transition into senior secondary or vocational schools (Education for All, 2015). Student motivation declines with students' time in school (Eccles & Wigfield, 2002) and is more pronounced for math achievement (Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). Research has shown that parental involvement complements school reforms for continued student success (Epstein 2001, 2003) and is a likely tool for nurturing motivation and closing the achievement gap (Gorleku, Brancaccio, & Campbell, 2018).

Parental Involvement (PI)

Parental involvement (PI) is a multidimensional construct which is operationalized in diverse ways to support student learning and achievement (Campbell 2004; Campbell & Verna 2007; Epstein 1992, 1995, 2001; Fan & Chen, 2001; Jeynes 2005a, 2007). Parental involvement can be school- or home-based. The effect and nature of the former have been more studied, understood, and referenced than the latter. This is probably because it is relatively easier to measure how many times a parent volunteers at school activities or comes to parent teacher association meetings versus how the parent is involved with the learner at home. When the term PI is used, the general understanding for many people is the participation of parents in school-based activities such as attendance/participation at parent-teacher-association events, and volunteering at other school events. However, PI is a robust support of the child's development physically, academically, and psychologically. The No Child Left Behind (NCLB;2002) policy encourages the active participation of parents in their child's education in the United States. This is similar to the education policy in Nigeria that mandates parents (families) to participate in their child or ward's learning. In many cases, parents are the first educators of their children, and in seeking to achieve basic education for all, schools should exploit this fact to enhance student learning.

Social capital

Some authors have proposed that social capital is a precursor to PI and exerts an indirect effect on student achievement as evidenced by the fact that the level of PI is often modified by parents' socioeconomic status and educational attainment. Parental SES and educational attainment may influence students' achievement due to the role-model effect

of students striving to become as successful or learned as their parents; high SES parents also provide a resource-rich and stimulating academic home environment (Liu & Yi-Lin, 2019). Extant literature suggests that students from high SES backgrounds with access to rich academic home climates are more likely to be motivated to succeed compared to students from less privileged backgrounds (Liu & Yi-Lin, 2019). According to Epstein and Sanders (2002), educated parents are more involved than less educated parents, mothers more than fathers, parents of primary school students than parents of secondary school students, and high SES parents more than low SES parents. Extant literature has also shown that parents who have above high-school education and above average socioeconomic means are able to provide home environments that resonate with the learning environment of their children's school. According to Jeynes (2005a), academic achievement improves when there is little or no dissonance between the school and home environment.

Reviews and meta-analyses of the effects of PI show that home-based constructs have been found to be quite effective in positively influencing student achievement more conclusively than school-based constructs. Home-centered PI has been significantly associated with student motivation for achievement (Hoover-Dempsey & Sandler, 1997). However, overall, the pathways for PI are not finite processes. They vary across locations, families, school districts, and cultures. Although PI is strongly associated with positive student achievement, irrespective of socioeconomic status, ethnicity, race, or age, no one seems to know the exact combination of PI processes and in what measures they are required for maximum effectiveness. Many studies have examined the pathway of influence of parental involvement on achievement particularly in developed countries;

however, only a few (Campbell, & O'Connor-Petruso, 2008; Gorleku, Brancaccio & Campbell, 2018) have focused on the relationship of PI to motivation for achievement. Consequently, this study will examine that in adolescent learners in Nigeria. There is a paucity of research on the relationship of parental involvement to motivation for academic achievement for adolescent learners in secondary schools in developing countries, including Nigeria.

Adolescence

Adolescence involves cognitive and emotional development coupled with renegotiations of the parent-child relationship and increased academic or social demands on learners which may negatively impact achievement. This array of challenges to student achievement in secondary school makes it imperative to identify specific components of PI and motivation pathways that support student success. Knowing what works best is helpful as parents navigate raising successful children (Grolnick, Price, Beiswege, & Sauck, 2007). Schlegel & Barry (1991) opine that adolescence is a universal sociocultural construct which is also influenced by culture (Schlegel & Barry, 1991) and even more so in societies that are Confucian, much like the Nigerian home (Qu, Pomerantz, Wang, Cheung, & Cimpian, 2016). In comparison to many liberal societies, Nigerian adolescents do not experience autonomy until early adulthood, and must defer to authority figures (teachers and/or family members) which may foster apathy towards learning. In addition, secondary school is a departure from the relatively simple schedule of primary education where learners were accustomed to interacting with one teacher and had fewer number of subjects of study. During the period of primary education, the level of PI is reported to be high and quite hands-on because schools require more PI,

particularly for school-based activities. As students transition into secondary schools, PI declines as there are fewer opportunities to participate in school-based activities, and homework assistance becomes more challenging for parents due to the array and complexity of subject matter, particularly for parents with low-social economic status (Agunlana, 2007; Campbell, 2005). Research shows that decline of student motivation is associated with pubertal change, cognitive maturation, and the changes in the learning environments at school or home (Campbell, 2005). When parenting is democratic, friendly, and firm, it tends to affirm the child's identity and motivates student achievement, particularly in adolescence. Research has also shown that the positive effects of PI on motivation and achievement are more related to home-centered processes rather than school-centered processes.

Motivation

Motivation is defined as the driving force that influences goals and actions (Trevino & Defrietas, 2014). Motivation is an integral component of learning, and several factors play a role in building students' motivation to learn. Predictors of motivation include students' growth-mindset, cognitive abilities, the quality of teaching instruction, intrapersonal relationships between the students and teachers, learning supports (Wentzel, 1998), and PI (Dweck, 2000; Liu & Yi-Lin 2019). Studies have shown that parents who articulate expectations or aspirations for excellence and provide encouragement or support to their children contribute to student motivation (Campbell, 2005; Epstein, 2005; Grolnick, 2003).

Most middle school students are in adolescence, a period of change, angst, and reduced motivation. Providing effective learning support in the home can increase the

number of motivated students with growth mindsets and improve student achievement. Motivation may be intrinsic geared towards achieving mastery or extrinsic and geared towards performance goals. Motivated students are more likely to have a growth mindset geared towards attaining task mastery and learning goals (Blackwell, Trzesniewski, & Dweck, 2007; Cho & Lin, 2011).

Growth mindset

Growth mindset is a motivation construct associated with learning and achievement. It refers to the extent to which learners think their minds are malleable (Dweck, 2000). In studies with elementary and secondary school students, Dweck (2000) found that 40% had growth mindsets, 40% had fixed mindsets, and 20% were uncertain. Self-beliefs about intelligence have a profound effect on students' motivation, learning ability and achievement, irrespective of socio-economic background (Dweck, 2007, 2010; Dweck & Molden, 2017). Students with a growth mindset are more motivated, believe that effort can cause positive changes to their abilities/talents, welcome challenging tasks that result in learning, and are mastery goal oriented (Dweck & Molden, 2017). Students with a fixed mindset often lack motivation, believe that their abilities/talents cannot grow, reject challenging tasks and/or learning opportunities, and are performance goal-oriented (Ames & Archer, 1988; Blackwell et al 2007). There is extensive literature on growth constructs and student achievement and some gaps in the literature about specific pathways for nurturing a growth mindset. One of the gaps in the growth mindset research concerns how parents influence their children's mindsets. Research shows that young children could be identified as having a growth mindset, but

it is not yet known how mindsets develop nor if it can be transmitted from teachers or parents (Gunderson, Gripshover, Romero, Dweck, Goldin-Meadow, & Levine 2013).

Education in Nigeria

The Universal Basic Education policy mandates free, compulsory, basic education for all school-aged children in Nigeria funded by federal, state, and local governments and private donors. In addition to these public/government schools, there are independent schools that are mostly privately owned and founded by individuals or religious communities. Research has shown that students in privately owned schools often outperform other students academically on national examinations (Olatunde, 2010). The academic achievement gap is usually attributed to the availability of more educational resources to support effective learning in private schools (Okon & Archibong, 2015; Okonkwo, 2001). The typical Nigerian child from a low SES family attends public schools from elementary through secondary school. Such schools are plagued with limited institutional resources, unqualified teachers, high teacher–pupil ratio, and overcrowded classrooms (African Child Policy Forum [ACPF], 2013).

Although PI is encouraged in Nigeria, it is limited (Olatunde, 2010) and the most popular expression is school-based PI practiced as occasional attendance at PTA meetings with very little governing or decision-making functions especially in government secondary schools. The typical parent in such settings is often content to let the school handle almost all aspects of their child's education, much like African American parents with low SES in the Durant (2004) study.

Purpose of the study

The purpose of this study is to identify differences in students' perception of PI based on parents' social capital and its influence on mathematics achievement as measured by school level trimester examinations. Perception of PI was identified by examining student self-perception scores, as measured by individual responses to the inventory of PI (Campbell & Verna, 2007).

Parental involvement, which refers to several processes including communication with the school, participation in school activities, monitoring of students' progress, and parent-student interpersonal relationships has been shown to positively influence students' academic achievements, behavior, and motivation for learning (Cho & Campbell, 2011; Fan, 2001; Jeynes, 2007; Liu & Yi-Lin, 2019; Wentzel, 1998). Parental involvement has also been associated with reduction in negative behaviors such as truancy and absenteeism (Shute, Hansen, Underwood, & Razzouk, 2011). According to Campbell & Verna (2007), the mission of the effective parent is to get his or her child to do better at school. As reported in prior literature, PI often declines as children transition into secondary school, particularly among low SES parents who believe that all requirements for student success, excluding tuition, are the responsibility of the school, while parents who believe they should provide additional support to their wards feel unprepared to do so. Parental involvement dimensions (communication, support, recognition of children's talents, academic-rich home environment, etc.) operate in complex interactions that are funneled into parental expectations to contribute to their children's growth mindsets (Campbell, & O'Connor-Petruso, 2008). Understanding these interactions may allow us to maximize predictors of motivation for student success across grade levels. Some

research has been done on PI or growth mindset as predictors of motivation for academic achievement, but this study will be looking at both predictors in an integrated way.

In the face of continuing declining of mathematics grades and the challenges of parents maintaining involvement in adolescents' lives, it is important to understand the relationship of PI and growth mindset to motivation for student achievement so that the pathway can be successfully used to improve education outcomes for our children. This study used a school-wide measure of mathematics achievement in addition to student-perceived PI and examined the relationship between parental involvement, motivation, and mathematics achievement in an urban setting in mid-central Nigeria.

Significance of the study

The results of this study will provide insight from a student perspective on home-based PI and if it varies across home settings. Learning is influenced by what students believe about their abilities, and parents can support their children in improving academic achievement by expressing expectations and aspirations for student success which exerts an influence on their children's perceptions about their ability to succeed. This study is expected to contribute significant information on nurturing motivation for academic success in adolescents at a time when it is sorely needed. The study will contribute to research that addresses academic achievement in adolescents and positive strategies for parenting. It will also establish the role of PI and social capital in influencing motivation for math achievement in adolescents.

The following research questions will be employed in assessing the relationship between social capital, parental involvement, motivation, and math achievement among secondary school students in Nigeria.

Research Questions

1. Does Social Capital significantly predict Parental Involvement?
2. Does Parental Involvement significantly predict Growth mindset?
3. Does the Growth mindset significantly predict Learning goals?
4. Do social capital, parental involvement, and motivation significantly predict math achievement?

Hypotheses

H_o1 There is no significant relationship between social capital and parental involvement for secondary school students in Nigeria

H_o2 There is no significant relationship between parental involvement and growth mindset for secondary school students in Nigeria

H_o3 There is no significant relationship between students' growth mindset and learning goals for secondary school students in Nigeria

H_o4 There is no significant relationship between parental involvement, social capital, motivation (growth mindset or learning goals) and math achievement for secondary school students in Nigeria

Definition of Key Terms

Academic achievement. The term academic achievement refers to "a student's success in meeting short- or long-term goals in education". In the current study, the term academic achievement refers specifically to students' Math Achievement of a passing grade of at least 50 on the school trimester math examination

Growth mindset. The term growth mindset a motivation construct, refers to a person's belief that his or her intelligence and ability to learn can change through commitment and effort (Dweck, 2000) while fixed mindset refers to a person's belief that this or her

intelligence and ability to learn cannot change through commitment and effort (Dweck, 2000)

Junior Secondary School Students in year three (JSS3): in this study refers to adolescents aged 11 to 16 who are registered in a Nigerian secondary school to be educated in preparation for tertiary education or vocational study. JSS3 is equivalent to the 9^{th} grade in the American school system

Learning Goals, is a motivation construct which refers to the process of seeking to increase one's competence, to understand or master something new, (Dweck & Molden, 2017)

Motivation -in this study refers to a student's desire/commitment to learning. The motivation constructs of interest in this study are the *growth mindset* and *learning goals*

Parent/guardian/family: In this study, the term parent, guardian, or family will be used to describe person(s) overseeing the development and raising of a child.

Parental Aspirations/Expectations are used interchangeably in this study and refer to the presumption of parents that their child will perform well in school, now and in the future.

Parental Involvement: in this study can be defined as the summation of parent/guardian/family interactions with their children for social, cognitive and academic development (Fan & Chen, 2001)

Social Capital: in this study is the summation of a parent's wealth of experience, income, and time in support of his or her children's' learning and talent development. It also includes communication processes and the expressions of aspirations for students to do well in, and advance in, their education.

CHAPTER 2: LITERATURE REVIEW

The review of literature is divided into five major sections. First, the literature pertaining to the theoretical frameworks employed in the study are reviewed. In the next section, parental involvement and related research are reported. The third section focuses on the role of social capital in parental involvement processes. Motivation constructs are the focus of the fourth section, followed by a review of adolescence.

Parental Involvement Frameworks

There are several existing parental involvement (PI) frameworks and the most referenced one was proposed by Epstein in 1995. Epstein (1990, 1992, 1995, 2001, 2005) proposed six different contexts of parental involvement, namely parenting, communicating, volunteering, learning at home, decision making, and community collaboration. These contexts indicate that PI is practiced within the home, school, and the community. The six dimensions of PI espoused in Epstein's' (1995) framework are processes undertaken by parents often in conjunction with schools. Parenting refers to all activities that support child success, including establishing a learning environment and a conducive atmosphere for parent-child discussions, and the provision of necessities such as shelter, food, and financial resources to support daily living and education. Communication refers to the continuous dialog between school representatives and the learner's parents as the school is expected to partner with parents in educating their children. Communication lines should be kept open throughout the school year and particularly at transition periods from primary to secondary school. Volunteering is the offer of the parents' time to participate in school-based programs in support of the learner and the school community. Learning at home is assistance with homework and/or parent-guided learning in spaces outside of the school environment. Decision-making refers to

the participation of parents in school governance through parent-teacher associations, school board meetings, and community collaborations.

Another notable framework of PI was espoused by Grolnick and Slowiaczek (1994), a three-pronged approach which speaks to behavioral, cognitive-intellectual, and personal involvement of parents in their child's education. While behavioral is mostly school-based, such as attending school functions, the latter two are home-based and address issues such as providing stimulating environments or experiences for education and articulating expectations for student success. The home-based PI described by Grolnick and Slowiaczek (1994) is somewhat like the academic home climate (AHC) framework advocated by Campbell and Verna (2007), Campbell and Walberg (2011), and Cox, Daniel, and Boston (1985). In their study of the academic home climate (AHC), Campbell and Verna (2007) identified 24 factors of influence. These factors include family communication, discipline methods, how responsibility is fostered, and use of praise, pressure, or empathy (Campbell & Verna, 2007). Parental involvement can be operationalized through direct means such as homework supervision or indirect means such as participation in school-based activities, provision of an academic home environment or expressions of parental expectations concerning student success. Research has shown that when parents actively support their child's learning by expressing expectations of success and belief in the student's ability to succeed, the child strives for excellence (Grolnick & Slowiaczek, 1994). In a study that synthesized findings from nine meta-analyses of the relationship between PI and student achievement, the authors reported a positive and consistent relationship across diverse settings (Wilder, 2014). However, the strength of the positive relationship between PI and student

achievement was influenced by how achievement was evaluated and other modifiers such as social capital.

Theoretical frameworks

For the purpose of this study, PI will be evaluated based on selected components from two different frameworks namely "cognitive-intellectual and personal involvement of parents" from Grolnick and Slowiaczek (1994) and "academic home environment" from Campbell and Verna (2007) and its effect on creating motivation for success.

Personal and cognitive-intellectual involvement of parents

Grolnick and Slowiaczek (1994) proposed that parental involvement (PI) is multi-dimensional and consists of three components, namely the behavioral, personal, and cognitive-intellectual involvement of parents. The behavioral component includes parents modelling the importance of school and learning to children through participation in school events. Research shows that when parents display this component of involvement, teachers may become more invested in teaching such children. Personal involvement comprises of the interactive engagement of the parent in the child's learning which fosters affective feelings in children. In displaying the personal component of PI in this model, parents engage in processes such as provision of resources and environments to support learning. Children who experience this kind of parental involvement respond by believing that parents expect them to thrive academically and aspire to great things. In addition, children come to believe that they are an important part of their parents' lives and parents care about their schooling (Grolnick & Slowiaczek ,1994). Cognitive-intellectual involvement, however, speaks to the provision of academic enrichment, such as discussions of current events, museum trips, learning support and books to stimulate cognitive development (Grolnick & Slowiaczek, 1994). It is believed that cognitive-

intellectual involvement bridges the gap between the home and society. Parents' education level has been reported to exert an influence on cognitive-intellectual parental involvement (Grolnick & Slowiaczek, 1994; Grolnick, 2003; Hoover-Dempsey & Sandler, 1997). And all three components, (behavioral, personal, and cognitive-intellectual) have been associated with academic achievement, with motivation as a mediational path (Grolnick & Slowiaczek,1994).

In a study of mostly Caucasian 6th -8th graders (n=302) that investigated the multi-dimensional nature of PI and the effect of PI on academic performance with student motivation as a mediational pathway, the findings verified the multi-dimensional nature of PI. In addition, the data showed that specific components of PI (behavior and cognitive-intellectual) predicted two motivation constructs (control understanding and perceived competence/task mastery) which in turn predicted student achievement. This effect was more pronounced with mothers' rather than fathers' involvement (Grolnick & Slowiaczek, 1994).

The Academic Home Climate

The Academic Home Climate (AHC) framework consists of 24 constructs derived from a synthesis of 25 years of qualitative and quantitative studies with samples from five Asian countries, three European countries, and numerous cross-cultural studies in the United States (Campbell & Verna, 2007). The ideal AHC promotes high achievement by generating positive attitudes, attributions, and values in students (Campbell & Verna, 2007). The best way to conceptualize how the Academic Home Climate operates is to think of the constructs as predictors with varying contributions to student achievement. Each effective parent uses his/her own optimal mix of constructs, some more than others. The choice of the optimal mix of effective AHC constructs is varied given the existence

of 24 constructs and the diversity of family environments. However, when the Academic Home Climate meshes with the academic climate found in the child's school, achievement is enhanced (Campbell & Verna, 2007). This conclusion is shared by other researchers (Christenson, Godber, & Anderson, 2005; Coleman 1988, 1992). The AHC was developed as a robust response to the limitations of existing frameworks such as Epstein's' (1995) typology for six types of PI (Parenting, Communication between home and school, Volunteering, Learning at home, Decision-making and Collaborating with the community). The AHC builds on prior work including Bloom's (1985) curriculum of the home which highlights the influence of the home environment on children's learning and motivation.

Parental Involvement (PI)

Parental involvement can be defined as the summation of parents' interactions with schools and their children to support positive educational outcomes (Fan & Chen, 2001; Hill, Castellino, Lansford, Nowlin, Dodge, Bates, & Pettit, 2004) or according to the United States Code of law, it is "the participation of parents in regular, two-way, and meaningful communication involving student learning and other school activities" [USCS 7801 (32)]. Conversely, Jeynes, (2005b) suggests that PI may be a vague construct that means different things to different people. A review of metanalytic studies show that the operational definitions of PI differ, and a consensus is yet to be reached (Fan & Chen, 2001; Jeynes, 2003, 2005a) Several other social scientists have proffered research findings on parental involvement and the agreement is that PI is broad, complex, and dynamic but the effects are without doubt far-reaching and mostly positive across diverse settings (Campbell & Verna, 2007; Fan & Chen, 2001; Hill et al 2004; Jeynes, 2003; Wilder, 2014). In more recent times, research has been focused on the effects of PI

in adolescents (Benner, Boyle & Sadler, 2016; Gordon & Cui, 2012; Gorleku et al 2018; Jeynes, 2007; Wang & Sheikh-Khalil, 2014). But findings are inconsistent and there is limited understanding about the most beneficial PI processes for adolescents. In summarizing the results of his three metanalyses (Jeynes, 2003,2005a,2007), Jeynes (2010) stated that PI is not yet clearly understood in its entirety and that the most effective aspects of the construct, such as parent-child communication, maintaining high expectations of one's children, and parenting style (loving support and discipline) are often understated. Though PI is commonly classified based on Epstein's (1995) typology, it can also be broadly categorized as school-based, home-based, and academic socialization (Day & Dotterer, 2018; Hill & Tyson, 2009).

School-based involvement includes governance through membership in parent-teacher associations, school boards, and similar bodies and participation at school events, fundraisers, parent-teacher conferences, and other school-based activities. Home-based PI refers to events outside of school but not limited to the home, such as parent-child conversations about academics, provision of an academic home environment, learning support activities such as museum visits and homework assistance/monitoring (Fan & Chen, 2001; Hill & Tyson, 2009; Wang & Sheikh-Khalil, 2014). Academic socialization refers to parental communication on their expectations or aspirations for students' educational or career goals (Hill & Tyson 2009; Wang & Sheikh-Khalil, 2014). Sociologists like Coleman (1988) see PI as a means of acquiring social networks and enabling student access to such networks to support learning. For example, when parents participate at school events, they acquire useful information for supporting their children or they become known to school personnel (Grolnick et al 2007). Research shows that

teachers are likely to pay more attention to students whose parents are involved in school activities (Grolnick et al 2007; Jeynes, 2005a). Parental involvement is mandated through education policies such as the NCLB policy in the United States, but in Nigeria, it is optional and merely encouraged. However, in both countries, PI is practiced mostly through school-based processes especially school meetings and parent-teacher conferences and even more so among high SES families (Pomerantz, Moorman, & Litwack, 2007).

Parental involvement has been identified as being beneficial to student achievement, but the different types of PI exert different effects on student outcomes (Benner et al 2016; Fan & Chen, 2001; Day & Dotterer, 2018; Jeynes, 2007; Pomerantz, Moorman, & Litwack, 2007). For example, school-based parental involvement has been shown to have little or no effect on student achievement especially in high schools (Fan & Chen, 2001). On the other hand, in a correlational study of 10^{th} graders using data from the Education Longitudinal Study 2002–2013 (56% female, N=4429), Day & Dotterer (2018) reported that a combination of school-based PI and academic socialization was positively correlated with students' GPA, irrespective of race and especially for females. Other research shows that PI processes such as homework monitoring have been shown to be negatively associated with student achievement for low-performing students (Catsambis, 1998; Fan & Chen, 2001; Patall, Cooper, Civecy & Robinson, 2008) Catsambis (1998) reported a negative effect of PI on student achievement but only when she controlled for students' infractions like tardiness and absences. Using nationally representative, longitudinal data from the Education Longitudinal Study (ELS) of 2002, Benner et al, (2016) investigated the effects of four types of PI on student achievement to

see if the effect would be moderated by SES or student's prior academic achievement. The ELS data were collected using surveys in four waves starting with Wave 1 in 2002, followed by Waves 2, 3, and 4 in 2004, 2006, and 2012, respectively. Wave 1 collected information from students, parents, and school personnel while the other waves focused primarily on students. A total sample of 15,230 adolescent surveys were used for the Benner et al (2016) study. Parental involvement practices evaluated in the study were home-based, school-based, and academic socialization while the outcome variables were student GPA and educational attainment.

Another study, a meta-analysis, reviewed 52 quantitative studies of approximately 300,000 urban students for the effect of parental involvement on academic achievement across diverse settings, race, and gender. For the metanalysis, overall PI was a summation of processes that supported children's education while the specific PI variables included parental expectations, parent-child-communication about school activities, homework supervision, and parental style (i.e., helpful and supportive parental approach). The study data showed that PI produced considerable, consistent positive effects on student achievement. Among urban youths, overall PI yielded statistically significant outcomes of approximately 0.50 of a standard deviation, and an effect size of about 0.8 for parental aspirations (aka parental expectations) on student achievement. (Jeynes, 2005a). The study also reported that the most effective PI strategies were the subtle processes such as parents' expectations (Jeynes, 2005a).

Parental Aspirations/Expectations, Support & Pressure

Parental aspirations or expectations are often used interchangeably and refer to the belief that a child/ward will do well now or in the future (Fan & Chen 2001; Shute et al, 2011). Although some studies define aspirations as separate from expectations

(Murayama, Pekrun, Suzuki, Marsh & Lichtenfeld, 2016), for the purpose of this study, they both refer to the verbalized anticipation of a child's academic excellence. Research has shown that when parents actively support their child's learning by expressing expectations of success and belief in the student's ability to succeed, the child strives for excellence (Grolnick & Slowiaczek,1994). In meta-analytic studies of the PI effect on achievement, researchers report parental aspirations as the strongest predictor among other facets of PI (Fan & Chen, 2001; Jeynes 2007; Shute et al, 2011). Specifically, Fan and Chen's (2001) meta-analysis of 25 studies of a total of 133,577 students calculated correlations of overall PI and specific PI dimensions with student achievement. The PI dimensions were parental aspirations, communication, homework supervision, provision of learning support, and participation in school activities. The results yielded 92 correlation coefficients and showed that the correlation of overall PI to academic achievement is r = .25, with a medium effect size of .25. And among the individual PI dimensions, parental aspirations had the largest correlation with achievement, with an average value of r =.40. The least correlation value was reported for homework supervision at r =.09.

Similarly, Shute et al, (2011) examined the literature on the relationship between PI and academic achievement among adolescents in a review of 74 quantitative research documents, where PI was defined as either school or home-based. The results showed that overall PI was correlated with academic achievement in all the studies, and the most consistent correlations were reported for parent-child communication, aspirations/expectations, and authoritative parenting style. When parents express unrealistic aspirations for their child's success, coupled with over-involvement (support),

it may create unnecessary pressure in the child and exert a negative influence on achievement (Grolnick, 2003; Murayama et al, 2016).

In a longitudinal study, Murayama et al (2016) examined the relationship between parental over-aspiration and children's mathematical achievement using a large intergenerational sample from Germany of grades 5-10 students (n=3,530). The results showed that the relationship between aspiration and student achievement can be positive or negative, and parents' over-aspiration was linked with pressure and deleterious effects on student achievement even after controlling for gender, prior achievement, and family SES. Parents, in a bid to support their child's development, may exert pressure to channel learning processes. Such controls may include love withdrawal, issuing of commands, or strict guidelines. Since as children grow into young adults, they tend to explore their environment, initiate processes such as problem solving, and seek autonomy, these controls may be unwelcomed and counterproductive and negatively impact student achievement (Pomerantz et al, 2007). The appropriate balance of parental pressure and support was reported to be positively associated with high student achievement (Campbell &Verna, 2007; Pitiyanuwat & Campbell, 1994; Sarcona-Navarra, 2007).

The relationship between PI, motivation, and student outcomes is dynamic, complex, and challenging to study due to the multifaceted interpretation of PI and mediator constructs such as social capital (Campbell & Verna, 2007; Yildirim, 2019).

Social capital

The initial theoretical development of the concept of "social capital" is attributed to French sociologist Pierre Bourdieu (1986) and American sociologist James Coleman (1988). Pierre Bourdieu (1986) proposed that social capital is grounded in theories of social reproduction and symbolic power and expressed in access to institutional

resources, which are aggregates of actual or potential resources reposed in a network of mutual acquaintances or relations (cited in Dika & Singh, 2002, p. 32) Members of that social network have access to the collective backing of the group and the volume of social capital enjoyed depends on the size of the network and the individual capital (economic, cultural and symbolic) of the members (Bourdieu, 1986).

According to Bourdieu (1997), social capital is "that which is convertible - on certain conditions - into economic capital and may be institutionalized in the form of educational qualifications" (p. 47). He goes further to describe social capital as existing in three entities: the embodied state ("long-lasting dispositions of the mind and body"), the objectified state ("in the form of cultural goods such as pictures, books, dictionaries, instruments, machines, etc.), and the institutionalized state ("a form of objectification of educational qualifications") (p. 47). A narrow explanation of Bourdieu's (1986) proposal sees social capital as a tool for perpetrating group dominance and suggests that only the connected have access and remain dominant in society (Dika & Singh 2002, p. 25).

Coleman (1988) defines social capital as a combination of social norms/structures that guide the actions of members of the group in a manner that promotes the common good. Coleman posits that social capital is unquantifiable and it requires the presence of the following: some level of trust, information sources, and norms/sanctions that promote the common good rather than self-interest (Coleman, 1992). Coleman's definition supports the notion that families are responsible for providing resources to support children to success and ties social capital to PI (Coleman, 1992). Social capital includes the concept of intergenerational closure which highlights the value of social networks where parents know the parents of their children's friends and leverage such connections

to provide communities of support and positive social control (Coleman, 1988). Findings from a study that used data from High School and Beyond (HSB) showed that greater amounts of social capital such as the presence of two parents in the home, a lower number of siblings, higher parental educational expectations, and intergenerational closure, lead to lower incidents of dropping out of school (Coleman, 1988). Other indicators of social capital include parent-teen discussions and parental education (Dyk & Wilson, 1999).

Social capital is a dynamic construct which requires individual or collective investment efforts (Kawachi & Berkman, 2000). Additionally, social capital refers to personal ties with others that produce benefits (Portes, 2000). Coleman (1990) corroborates this by stating that social capital refers to inbuilt resources that form the bedrock of relationships in the family, community, or institution. However, these definitions pose a challenge to the conceptualization of social capital. Firstly, one may confuse the sources (relationships) with the benefits (gains, resources, opportunities) accruing from social capital; and secondly, it becomes difficult to separate the possession of social capital from its activation`, such that the ability to assess it within the home/community and activate it within the institution (school) become amorphous (Coleman, 1990, 1992; Dika & Singh, 2002). Coleman (1992) further posits that social capital may be a causal construct of positive student outcomes through the pathway of family mediation. However, this definition emphasizes PI while ignoring the adolescent's agency in accessing his/her family's social capital (Dika & Singh, 2002).

Much of the data for social capital suggest that it is a catch-all for issues of sociability and access to social/cultural wealth with positive benefits. The literature has

somewhat neglected the effect of the intersectionality of race, income, and socio-economic status on social capital, plus the disparate effects on school outcomes (Dika & Singh, 2002; Morrow, 1999). In addition, extant literature suggests that social capital, as defined by Bourdieu (1986) and Coleman (1988), is vague, not easily tested by hypotheses, and exerts varying effects on school outcomes (Dika & Singh, 2002; Morrow, 1999; Portes, 1998). A critical synthesis by Dika & Singh (2002) of the application of social capital in education shows diverse evidence of association of social capital to positive education outcomes, such as reduced dropout rates, increased student achievement /enrollment in college, (Morrow, 1999; Portes, 1998) and specifically math achievement (McNeal, 1999; Morgan & Sorensen, 1999; Muller, 2001).

Social capital is positively associated with educational achievement and psychosocial factors that affect learning such as engagement, motivation, self-concept (Campbell & Verna 2007; Coleman, 1988; Dika & Singh, 2002; Filippin & Paccagnella, 2012) and math achievement (Çiftçi & Cin, 2017; Yildirim, 2019). While Bourdieu (1986) exemplifies social capital as access and Coleman (1988) defines it as norms/structures, Campbell & Verna (2007) see it as the summation of parents' income, socioeconomic status and wealth of experience and knowledge available to support their children to success. Campbell & Verna's (2007) definition of social capital is quite like the conceptualization of socio-economic status as parental income, education, occupation, home possessions, cultural possessions, and home educational resources seen in some studies (Chiu, 2010; Çiftçi & Cin, 2017; Dika & Singh, 2002). In defining social capital, this study draws upon components from previous definitions (Bourdieu, 1986; Coleman

1988) and Campbell and Verna's (2007) definition. Specifically, Campbell & Verna (2007) speak of the academic home climate (AHC) as a construct of social capital.

Academic home climate, as described by Campbell & Verna (2007), refers to the provision of educational resources, including books, parents' education/knowledge, wealth, and behaviors. The term academic home climate was coined after a thorough review of several cross cultural quantitative /qualitative studies internationally and within America (Campbell & Verna, 2007). The study reviewed data from students (n=10,026) and parents (n=2,866) to determine effective practices for home support of school-based learning fostering motivation and high achievement in students. The AHC supports the child's learning process by stimulating curiosity and a desire to pursue academic interests. Children who live in a functioning AHC, tend to accept responsibility for schoolwork, are willing to use their talents/abilities for problem-solving, and possess a high level of academic concept which supports math achievement (Campbell & Verna, 2007).

Similarly, a multi-level analyses of student data from diverse countries, which included developed (e.g., Switzerland) and developing (e.g., Indonesia) countries reported that family social capital in terms of family structure, socioeconomic status, and academic home climate were positively linked to math achievement (Chiu, 2010). The author reviewed data of fifteen-year-old students' (n=107,975) test scores across 41 countries from a study that examined students' understanding of math concepts and social capital variables at family, school, and country levels. The study instruments had been created and pilot-tested by international experts (Organization for Economic Cooperation and Development, 2002). In each country, 35 students per school were assessed in 150

schools using a stratified sampling method. The students completed a 30-40-minute questionnaire and a 2-hour math assessment. Chiu's (2010) analysis, which controlled for past achievement, showed that family characteristics had the strongest links to students' mathematics scores. Specifically, students with higher math scores were more likely to be from homes with two parents, above-average SES, and more books available to them. Yildirim (2019) conducted a multilevel analysis of the relationship between family socioeconomic status (SES), PI, and self-confidence and the direct or indirect effects on students' mathematics learning using data from Trends in International Mathematics and Science Study (TIMSS) 2011 in Turkey. The TIMSS 2011 is an assessment conducted by the International Association for the Evaluation of Educational Achievement (IEA) in 63 countries, using nationally representative data providing information about education and student achievement in math and science for fourth and eighth graders. For the Turkish study, a total of 6,928 eighth-grade students and 239 school principals were sampled using student and school-level questionnaires respectively (Yildirim, 2019). Math achievement was measured using the TIMSS booklets which evaluated students' content and cognitive levels, while students' self-reports were used to assess PI and students' self-confidence scale in learning mathematics. The school -level variables assessed through the principals' questionnaires evaluated the percentage of students' SES (home resources) and parental participation in school activities. The data were analyzed using sequential multilevel regression and correlation processes. The findings show that the highest correlations were between TIMSS math achievement, students' mathematics self-confidence, and home educational resources (SES). Specifically, home educational resources (SES) were a significant positive predictor of PI at home, which then predicted

math self-confidence, with the model explaining 7% of the variance in math self-confidence. Math achievement in the study was predicted by home educational resources, PI at home, and math self-confidence. And these variables explained 29% of the variance in student achievement (Yildirim, 2019). These student-level findings were similar to school-level results which showed that parents' SES predicted their participation in school activities which was associated with student math achievement.

Similar results were obtained from a correlation study of the relationship between PI and students' academic achievement among 1,895 sixth graders in South East Nigeria (Fajoju, Aluede, & Ojugo, 2016). In the study, PI, which included parent-teacher communication, homework monitoring and reading support in the home, was measured using students' self-reports. The results showed that PI was correlated with academic achievement in mathematics, English, and science (Fajoju, et al, 2016). Since Coleman (1988) believes that family structure is an indicator of social capital which mediates the effect of SES on student achievement, the next section will review some studies on family structure.

Family Structure

Family structure is often intentional and defined by the composition, membership, and relationship among the adult(s) and child(ren) in the household. For this dissertation, traditional households are defined as a two-parent family in which two adults are married or share a biological or adopted child. Many children in Nigeria live in non-traditional households of biological or non-biological adults, including extended family members (Agulanna, 1999; Oyefeso & Adegoke, 1992). The traditional family structure in many African countries, including Nigeria, is negatively impacted by migration trends, nonmarital fertility, female autonomy, death, and divorce (Martin, 2012; Agulanna,

1999). In addition, homes in Nigeria may be classified as monogamous consisting of a man, one wife and children, or polygamous consisting of a man, two or more wives and their children (Oyefeso & Adegoke, 1992). About 41% of Nigerian women are in polygamous marriages (Bamgbade & Saloviita, 2014). Due to size, polygamous homes may experience limited resources and rivalry and jealousy between siblings and co-wives (Oyefeso & Adegoke, 1992; Elbedour, Bart, Hektner, 2009). Also, in polygamous families, parents often exhibit lower emotional and financial investment in their children in comparison to parents who practice monogamy (Elbedour et al, 2009). Similarly, extant literature suggests that children from non-traditional monogamous households are more likely to experience reduced parental involvement, access to parents' time /resources, school attendance, educational aspirations, and academic achievement (Campbell & Verna 2007; Fan & Chen, 2001; Heard, 2007). However, some studies show that adolescents' academic achievement and attainment are not negatively impacted by polygamy (Elbedour et al, 2009) or single motherhood (Martin, 2012). A study comparing the academic achievement of 6^{th} graders (n = 206) from monogamous or polygamous homes in Nigeria reported no significant differences in family support and scholastic achievement. However, students from polygamous homes reported difficulty in studying math and English subjects (Bamgbade & Saloviita, 2014).

In Nigeria, as in many African communities, there is a considerable reliance on the extended family networks. Students who come from non-traditional households are more likely to rely on ties with extended family members, especially grandparents, who supply social capital in terms of shelter, community networks and repositories of family history. Extended family members including stepparents may have a vested interest in the

children and be willing to support their learning via school and home-based PI processes (Jeynes, 2010). However, the exact mechanism of the influence exerted by family structure on PI is not completely understood. Some researchers have suggested the obvious "that when "'four arms' and 'four legs' that love that child are available, it makes it easier for children to have a sense of parental involvement" (Jeynes, 2010, p. 15). In the context of social capital, the family structure (one-parent vs. two-parent families) is an important variable to consider since two parents are expected to have more social capital (time, resources, education, experience) to transmit to their children and more involvement in their learning (Campbell & Verna, 2007; Hornby & Lafaele, 2011; Jeynes, 2010). The common assumption is that two parents, through the combination of their physical, financial and psychological resources, provide an optimal environment for the physical, psychological and intellectual wellbeing of the child, and participate more frequently and consistently in all types of PI (Jeynes 2002, 2005b).

Jeynes (2005b) assessed the effect of PI and family structure on students' achievement using the 1992 National Education Longitudinal Survey (NELS) data set. The study sample was predominantly White (69%) twelfth graders who reported family structure, PI, income, occupation, and education. In the study, PI was measured as parent-child communication, monitoring of homework and friends, and parent participation at school events. Family structure was categorized as intact (two-biological parents) and non-intact (Divorced, Remarried, Single Parent Never Married, Cohabitation, Widowed Single Parent, & Widowed Remarried). General linear model regressions were used to analyze the data. Student achievement was measured using scores from standardized tests, developed by the education testing service (ETS) for math, English, social studies,

and science. The findings show that family structure, parent-child communication, and parent participation at school events positively impacted student achievement especially when SES was not included in the model. Family structure had the strongest statistically significant relationship with student achievement outcomes with regression coefficients ranging from .30 for the math test, $F (1, 12983) = 253.88$, $p < .0001$, to .20 for the reading test, $F (1, 12985) = 111.33$, $p < .0001$. The second statistically significant indicator of student achievement in the study was parent-child communication on school-related matters. Other findings from the study show that when SES was included in the model, monitoring homework and friends was associated with a negative effect on student outcomes. In reviewing these results, Jeynes (2005b) suggested that students who reported negative academic outcomes were struggling academically and required homework support.

Similarly, Martin (2012) evaluated the mediational effect of family structure on the relationship between parental education and student achievement using data from the 1988 National Educational Longitudinal Study (NELS:88), a two-stage stratified cluster sample representative of 1988 US 8th graders and data from resurveys in 1990, 1992, 1994, and 2000. The total sample size was 24,515, comprising of approximately 71% non-Latino Whites, 13% African Americans, 10% Latinos, 4% Asians, and 1% Native Americans. Student achievement in math was measured using self-reported GPA, teachers' reports and a NELS math achievement test. The study employed logistic regressions analysis and results showed that students from two biological/adoptive parents who had more than 13 years of education are more likely to report high 8th grade math achievement and attend four-year colleges compared to students from other family

types (single parents, stepfamilies, or extended) with lower or similar levels of education (Martin, 2012.) The interaction effect of number of biological parents and level of parental education was large and statistically significant ($p<.01$) for 8th grade NELS math achievement, GPA, and educational transitions to high school or college (Martin, 2012).

Another study (Heard, 2007) of the association of family structure with student achievement used data from the Program for International Student Assessment (PISA), an internationally standardized assessment administered by the Organization for Economic Co-operation and Development (OECD). Using nationally representative samples, PISA tests the math, science, and reading achievement of 15-year-old students in each participating country. Data from the 2012 PISA shows that the math achievement gap between students from two-parent and single parent households in the United states was 27 points, comparable to a year's worth of learning. This achievement gap was evident across all the countries in the PISA dataset and was strongly associated with socioeconomic status (measured as number of books in the home), and parents' education level. However, after controlling for parents' education, language spoken at home, immigration status and socioeconomic status, the achievement gap decreased by 60%. The longitudinal study of the influence of family structure on academic achievement, college aspirations and student infraction records of adolescents (n=11,318) utilized student questionnaires in Wave I (1994) and students and parents' interviews in Wave II (1995) with a nationally representative sample from 80 school communities in the United States. Race/ethnicity and student gender were identified as control variables and ordinary least squares (OLS) and logistics regressions were used for data analysis. Findings showed that adolescents in traditional two-parent household were more engaged

with learning, had higher GPAs, were more likely to go to college and had lower infraction records (Heard, 2007). Each year lived within a non-traditional household reduced the likelihood of attending college by at least 4% and could increase the likelihood of having discipline problems by 12% (Heard, 2007).

Parents' Education

Many Nigerian parents obtain little formal education, which could be detrimental to students' academic achievement and wellbeing due to a limited capacity to meet the household's financial needs. In the year 2010, data from the National Bureau of Statistics (NBS) showed that 68.7 % of Nigerians had no education, 48.7 % had only primary education, 44.3 % had secondary education while only 26.3 % had post-secondary education (NBS, 2010). And between 2007 -2010, only about 20% of Nigerian children lived in households where the father completed secondary school education (Lippman, Wilcox & Ryberg, 2014). Using data from the 1998 National Education Longitudinal Study, Kao (2004) reported that parents' educational attainment was positively associated with GPAs of high school students from immigrant families in the United States. Research also shows that parents' education is positively linked to parental expectations. In a study of the relationship between parental assets, involvement, and student achievement using data from the national longitudinal survey of youth (NLSY79), a total of 1,370 predominantly White women were interviewed in 1998 to provide data on income, education and expectations for their child's education. And in the year 2000, one child per woman from the 1998 survey - aged 7 to 14 years - was interviewed for data on parental involvement (Zhan, 2006). Additionally, school achievement grades in math and English for the children were measured using scores from the Peabody Individual Achievement Test (PIAT). Using a series of OLS regression models, the findings showed

that parental assets were related to student achievement, and after controlling for SES, mothers' education attainment was positively linked to expectations for their child's future success and current student achievement (Zhan, 2006).

Motivation: Learning goals and Growth Mindset

The two motivational constructs of focus in this study are interrelated and exert influence on student learning (Dweck, 2002). Motivated students are more likely to achieve educational and career goals (Grolnick, 2003; Grolnick & Ryan, 1989; Grolnick & Slowiaczek, 1994; Pintrich & Schunk, 2002). Motivation can be intrinsic, referring to an innate desire to pursue a goal or master a challenge solely for pleasure or the sense of accomplishment that comes with task completion. But motivation can also be extrinsic which refers to the desire to complete a task for the purpose of avoiding punishment, earning praise, reward, or recognition. The literature on motivation is guided by several concepts, notable among which is 1) the social-cognitive model (Pintrich & Schunk, 2002) which posits that motivation is a multidimensional, dynamic construct, and 2) the Self-Determination Theory (SDT) (Ryan & Deci, 2017), which is associated with intrinsic motivation. A continuum of extrinsic and intrinsic motivation may exist in the same child depending on context and environmental factors (Linnenbrink & Pintrich, 2002; Lippman et al, 2014). Intrinsic motivation, self -efficacy, goals orientation, attributions (Eccles & Wigfield, 2002; Pintrich & Schunk, 2002) and growth mindset (Dweck 2002) are motivational constructs associated with positive outcomes in learning (Linnenbrink & Pintrich, 2002)

Intrinsic motivation is based on the existence of three types of psychological needs in people, namely the need for autonomy(independence), expertise(competence) and connectedness to others and/or the environment (Pintrich & Schunk, 2002). Extant

literature shows that creativity, problem solving, and true learning are more likely to occur when students are intrinsically motivated (Cho & Campbell, 2010). Self-efficacy is the summation of beliefs in one's ability to perform a task or excel in a context, and it is related to students' cognitive engagement, achievement, and self-regulatory strategies (Linnenbrink & Pintrich, 2002). The Attributions concept is displayed when individuals evaluate the reason or cause of a success or failure and use that information to determine future actions (Linnenbrink & Pintrich, 2002; Pintrich & Schunk, 2002). Students may attribute their success in mastering a task to efforts applied in attaining that goal and use that strategy when faced with new or more challenging tasks as may be encountered in learning math (Cho & Campbell, 2010; Ames & Archer 1988).

Goals orientation refers to the attempt to actualize set goals and the theory suggests that individuals pursue mastery/learning or performance goals when engaging in a task (Ames & Archer 1988). Mastery goals may be pursued by individuals to develop new skills or attain competence in a context and are often associated with positive developmental outcomes and a growth mindset (Ames & Archer 1988; Dweck, 1986; Dweck & Leggett, 1988). Performance goals are often pursued in a bid to outperform others or showcase one's superior abilities, and it is often associated with adverse developmental outcomes such as fear of failure, helpless pattern, and fixed mindsets (Ames & Archer,1988; Dweck & Leggett, 1988). Students with a mastery goal orientation see learning as the task, express a desire to know more, and believe that their intelligence is not a fixed trait but can grow through effort (Dweck, 1986). Such students often strive to attain learning goals. On the other hand, students with a performance goal orientation strive to outperform others, sometimes employ the helpless orientation, tend

to shy away from challenges and believe that applying additional efforts will be to no avail since their intelligence is fixed. These beliefs about the ability or inability to grow intelligence are identified as Growth and Fixed mindsets respectively (Blackwell et al 2007; Dweck, 1986; Dweck & Leggett, 1998). In a study of middle school students, Dweck (2007) reported an increase in grades over two years of middle school for students who were categorized as having a growth mind set, while students with a fixed mind set experienced a decline in academic achievement in the same time period. Recent work by Gorleku, Brancaccio, and Campbell (2018) demonstrates that parents' aspirations, mothers' expectations, and motivation are direct predictors of the growth mindset.

Existing research suggests that beliefs about intelligence are implicated in the causal pathway for student motivation and achievement - specifically math achievement - in adolescents (Blackwell et al 2007; Dweck & Leggett, 1998; Haimovitz & Dweck, 2017). Blackwell et al (2007) found that students who had an incremental belief in the malleability of the mind for improved achievement demonstrated a willingness to attempt new tasks, achieve learning goals, and change a downward trajectory in math achievement. Math achievement and engagement have been found to decline from pre-adolescence into young adulthood, however. Thus, to investigate the role of implicit theories on sustained math engagement and achievement Blackwell et al. (2007) worked with a sample of adolescents spanning a 5-year period from high school into college. Their findings suggest that self-concept regarding ability and possibly prior knowledge are better predictors of motivation for math achievement. In addition, recent research has been focused on the natural nurture of growth mindset through parental and home factors, and the findings so far show that parental pressure is inimical to the growth mindset

(Haimovitz & Dweck, 2017). Student motivation is influenced by personal characteristics (self-perception, beliefs, values, attitudes) and social environmental factors (school, peers, parents) including transitions to adolescence. (Dweck, 2007; Ryan & Deci 2017). Parental perceptions of a child's abilities could affect the child's self-perception of his/her mindset, motivation, and achievement (Cho & Campbell, 2011; Haimovitz & Dweck, 2017). Parental involvement fosters motivation by supporting the child's needs for autonomy, competence, and connectedness to others and/or the environment. Expressing expectations and parent-initiated communication are some of the PI processes that have been positively associated with motivation for achievement (Cho & Campbell, 2011).

Since research has established that intrinsic motivation declines in adolescence and transitions into middle school, due to increased complexity of study and classroom control, PI processes become even more important for fostering motivation in students (Bronstein, Ginsburg & Herrera, 2005; Eccles et al 1984). Parental involvement effects positive education outcomes in students not by direct skills acquisition but by impacting attitudes, self-concepts and motivation (Jeynes 2010). The absence of parental involvement has been associated with lower levels of intrinsic motivation, self-esteem, and self-belief in academic abilities (Elmore & Gaylord-Harden, 2013).

Olatoye & Ogunkola, (2008) conducted a study in Nigeria, that evaluated the effect of PI and students' interest in schooling (motivation for learning) on science achievement among secondary schools in the South-West of the country. The sample of adolescents (n=360) was randomly selected from 12 schools and three instruments were used to collect data. The instruments - Students' Parental Involvement Questionnaire (SPIQ),

Students' Interest in School Questionnaire (SISQ), and Students' Science Achievement Test (SSAT) had a Cronbach alpha reliability co-efficient of 0.781, 0.701, and 0.776, respectively. The data were analyzed using regression analysis, Pearson product-moment correlations, and t-tests. The findings show that PI and students' interest in schooling accounted for at least 7% of the variance in science achievement (R square=.07, $p<.05$); and the highest positive significant relationship was between PI and motivation for learning ($r=.86$, $p<.05$). However overall, students in the study performed poorly as the average score on the science achievement, measured by the SSAT (total score of 50 points), was low at approximately 19.

Bronstein et al (2005), in a longitudinal study of 5th graders (n=93) that followed the students and their families for two years till the 7th grade (n=77), collected data on PI processes (homework surveillance, parental reaction to grades, parenting style) and child factors (GPA, Stanford Achievement Test scores, self-perceived competence and motivation). Using structural equation modelling, the findings showed that PI processes that supported autonomy, self-efficacy and student engagement encouraged intrinsic motivation, while the use of pressure, coercion, monitoring, and use of rewards/punishment were associated with fostering extrinsic motivation and reduced achievement. The results also showed that the PI processes from 5th grade predicted 7th grade academic outcomes and children's self-measured motivation and competence.

Education in Nigeria

Nigeria, like many other developing nations has been striving towards achieving education for all as a means for poverty alleviation (Senadza, 2012). Nigeria was created through the amalgamation of Northern and Southern Nigeria in 1914, and was colonized by Britain until 1960, when she obtained her independence. Nigeria is a democratic

country comprising of 36 States and a Federal Capital Territory (FCT), Abuja. Education in Nigeria is based on policies enacted primarily by the Federal government in collaboration with state and local government offices. The Nigerian educational system has undergone major structural changes in the last few decades. The National Policy on Education (NPE) which provides guidelines for the education sector, was first published in 1977, revised in 1981, 1995, 1998, 2004, and 2006. According to the Federal Government of Nigeria (NPE, 2006), the objectives of secondary education are to achieve the following:

- Provide primary school leavers with the opportunity for education of a higher level, irrespective of sex, social status, religious or ethnic background.
- Offer diversified curriculum to cater for the differences in talents, opportunities, and future roles.
- Provide trained manpower in the applied science, technology, and commerce at sub-professional grades.
- Develop and promote Nigerian languages, art, and culture in the context of the world's cultural heritage.
- Inspire students with a desire for self-improvement and achievement of excellence.
- Foster national unity with an emphasis on the common ties that unite us in our diversity.
- Raise a generation of people who can think for themselves, respect the views and feelings of labor, appreciate those values specified under our broad national goals and live as good citizens and,

- Provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial, and economic development.

Although the Nigerian government's education policy has laudable goals as outlined above, according to UNICEF, (2019), 1/5th of the world's out of school children is a Nigerian. In addition, there is reported unequal achievement for those currently enrolled in institutions of learning (Okon & Archibong 2015; Okonkwo, 2001). Prior to Nigeria gaining its independence in 1960, its educational system was based upon the British system and consisted of six years of primary education, five years secondary, and two years of higher education or 'A' levels. In 1981, the educational system was revised and categorized as basic, secondary, and tertiary education popularly known as the 6-3-3-4 system. Basic education includes two years of kindergarten, six years of elementary and three years of junior high school, which is equivalent to the completion of the 9th grade in the US education system. This is then followed by three years of secondary education (high school grades 10-12) and then at least four years of tertiary education to obtain a baccalaureate degree. In more recent times (2013), the Universal Basic Education (UBE), also known as the 9-3-4 system replaced the 6-3-3-4 system of education and is viewed as a more robust response to the demands of the Millennium Development Goals (MGDs) and the Education for All (EFA) policy initiative in Nigeria (EFA, 2015) After the completion of basic education, all students are expected to take qualifying exams - the Basic Education Certificate Examination (BECE) for admission into vocational/technical or senior secondary schools. However, fewer students are prepared for the rigors of senior secondary schools and the majority seem to flounder academically in the first years of senior secondary school equivalent to grades 10 -12. In addition, only 43% of

eligible students in Nigeria are enrolled in junior secondary schools equivalent to grades 7 to 9, with approximately an 80% completion rate (UNICEF 2019). Mathematics education is essential for numerical, critical and spatial reasoning, and problem solving and forms a bedrock for science and creativity (Omenka & Otor, 2015; Venkat, Bomie, & Graven, 2009). In the Nigerian education system, the three mandatory core subjects at the Junior secondary school level are English, mathematics, and basic science (Nigerian Educational Research and Development Council, 2009). The knowledge of math concepts and reasoning is essential for learning the latter two of these core subjects. However, statistics show that less than 40% of Nigerian adolescents score passing grades in math.

Student motivation and achievement have been reported to decline during the start of middle school years, a period which coincides with the beginning of adolescence, and this lack of motivation persists into high school (Benner et al, 2016; Olatoye & Ogunkola, 2008; Ryan & Deci, 2017). Typically, adolescence is characterized by a myriad of conflicting emotions and/or actions as children transition into teenage years and self-discovery (Benner et al, 2016). Nigerian teenagers are not exempt from the malaise of reduced motivation, disengagement from learning, and declining achievement scores that plagues many adolescents all over the world. Although research has shown that early adolescence which coincides with the start of senior secondary school is a period fraught with conflicting emotions, self-discovery, and waning interest in academics, PI has been proven extensively to positively impact student achievement (Epstein, Eccles, Fan & Chen 2001; Jeynes,2005a;2007).

Adolescents

The adolescence years are a crucial period in the development of the total child, wherein school values are often different from peer-group values. Adolescence is often characterized by constant change physically, mentally, and psychologically (Blackwell et 2007; Eccles et al, 1991). Such changes include increased academic workload as students transition to secondary education, varied interactions with more teachers, and sometimes a disinterest in academics (Blackwell et al, 2007; Eccles & Wigfield, 2002). Parental involvement at this stage serves to reassure children of their importance or value to their parents and may ameliorate the challenges of the transition into adolescence and secondary education. Parents remain the most veritable and earliest form of support for children to identify and achieve their goals (Eccles, 2007; Hill et al, 2004) and exert a limited influence on peer relationships (Shute et al, 2011). Extant literature shows that peer relationships, like PI, exert a modest effect on student achievement, but since parents often influence peer relationships by determining schools, neighborhoods, and family associations, PI may be more effective for shaping student achievement (Eccles, 2007, Hill et al., 2004). This fact is quite important since adolescents tend to pull away from parents in seeking independence or autonomy.

In conclusion, the adolescence period is plagued by a high dropout rate often attributed to school factors but perhaps what we need to be looking at are home factors spearheaded by PI. How adolescents perceive life, situations, and their peers is colored by their personal experiences of home life and PI. This study will examine the influence of PI on creating motivation for mathematics achievement among Nigerian adolescents in 9^{th} grade using data from two schools.

CHAPTER 3: METHODS

This quantitative study employed a 46-question survey instrument, the Inventory of Parental Involvement (IPI) for assessing students' perceptions of parental involvement and its effect on academic achievement among 9th grade students from two secondary schools in Ilorin Nigeria. The IPI required students to select answers from the 46-question survey, with response items offered on a 9-point Likert scale. In addition, student demographics and Math achievement scores on the school trimester examinations were included as data for the study. The study was guided by the following hypotheses:

Hypotheses

H_o1 There is no significant relationship between social capital and parental involvement for secondary school students in Nigeria

H_o2 There is no significant relationship between parental involvement and growth mindset for secondary school students in Nigeria

H_o3 There is no significant relationship between students' growth mindset and learning goals for secondary school students in Nigeria

H_o4 There is no significant relationship between parental involvement, social capital, motivation (growth mindset or learning goals) and math achievement for secondary school students in Nigeria

Research Design

To explore the perceptions of parental involvement and its relationship with student achievement, with motivation as a pathway and social capital as a precursor, it was determined that an ex post facto study was the most appropriate research design to use in order to answer the research questions and to test the hypotheses. Ex post facto research, by its very design, investigates "the world as it naturally occurs" and explores

phenomena that have already occurred (Johnson & Christensen, 2008, p. 257). This research design involved neither manipulation of variables nor random assignment of subjects.

Participants and Setting

This study involved two junior high schools located in Kwara, a state in mid-central Nigeria. The schools are in Ilorin town, the state capital of Kwara. The town is home to many entrepreneurs, small-scale businessmen, and government workers, and the participating schools typically offer services to middle- or low-income homes. The schools were similar in terms of location, mission, and population served. Two hundred and eighty 9th grade students from the two secondary schools in Ilorin Kwara State, Nigeria participated in the study. The principals of the selected secondary schools were approached to explain the nature of the study and consent was sought from the principals and parent representatives. This study was conducted during the 2019/20 academic year. Initial contact was made through phone calls and site visits. Permission was then obtained from the school principals and representatives of the Parent Teacher Association (PTA) through a written request accompanied by study information, and after reviews of the survey instrument, to ensure appropriateness for their student population. The survey instrument, IPI, was administered to students during regular school hours with the assistance of school personnel, specifically the form teachers. The purpose of the research study was explained to the students and they were duly assured of confidentiality. Students shaded in their answers using pencils and pens, crossed out mistakes or left blank those items they had no idea about. Additional information was provided to students who required any clarification about the study purpose. The total time spent for the administration of the instrument was 30 minutes. The instrument also elicited

background information such as student's tribe (ethnicity), age, and gender. The researchers collected the completed survey instrument from the students after the 30-minute period with the help of the classroom teachers.

The current study questionnaire combined three scales into a single document which was administered to the study participants. The three scales are: **Inventory of Parental Influence** (Campbell, 2007), used to isolate students' perceptions of the following family processes, parental pressure and support, parental expectations, family communication, talent development, and academic home climate; **Student's Motivation** (Cho & Lin, 2011), measuring students' motivation, efforts, and self-efficacy; and **Growth Mindset** (Dweck, 1999) measuring beliefs about intelligence.

Descriptions of the research scales and Instruments Validity and Reliability

The study used an instrument, Inventory of Parental Involvement (Campbell, 2007) version 7, which comprised of two motivational constructs and five parental involvement constructs. All the scales measured constructs from the child's perspective.

Motivational constructs (2)

1. Cho & Lin's Student's motivation, efforts, and self-efficacy (Blackwell et al, 2007; Cho & Lin, 2011) (IPI S7 Part 1).
2. Dweck's Incremental Belief about Intelligence: growth and fixed mindsets (Dweck, 1999, 2007, 2010) (IPI S7 Part 2).

Parental Involvement Scale constructs (5)

1. Traditional Expectations/Aspirations (IPI S7 front page)
2. Campbell's Parental Support (IPI S7 Part 3)
3. Campbell's Pressure (IPI S7 Part 3)
4. Campbell's Family Communication (IPI S7 Part 4)

5. Campbell's Conducive Home Atmosphere comprising Academic Home Climate and Talent Development (IPI S7 Part 5)

Demographic questions that addressed the student's gender and family structure were included in the questionnaire. The tests were modified to reflect vocabulary in Nigeria that best matched the relevant word on the original scale. For example, the word "College" was interchanged with University/Polytechnique." Such changes are not expected to affect reliability or validity of the scales.

For this study, the PI scale was modified from the one used in prior studies in the USA. The adaptation was done to reflect the Nigerian ethnic and education settings. Specifically, the education settings were modified to reflect Nigerian levels of education from 1) Graduate from JSS3, through 3) Graduate from Polytechnique (OND), to 7) Doctor/PhD/Lawyer. Also, the item "ethnic groups" was modified to "major ethnic groups." These modifications, however, did not affect the validity or reliability of the instrument.

Motivational Scales

Student's Motivational Scale. The first part of the instrument (IPI S7) containing eleven questions assessed "Work and Efforts in school" (Cho & Lin, 2011), which was one of the motivational scales on the instrument. It had sentences such as "I have a strong interest in solving problems"; and "when something is hard, it just makes me want to work more on it, not less." These questions assessed how much effort students were willing to put in their schoolwork rated on a scale ranging from 1) Strongly Disagree to 9) Strongly Agree. A high score on this part of the scale suggested that the student was willing to work hard and is likely highly motivated. In addition, this "Work and Effort"

scale contained two reverse code questions: “If a subject is hard for me, it means I probably won’t be able to do really well at it” and “There are some things you won’t do well no matter how hard you try.” A high score on these two questions suggest that the student has low motivation. All the questions in this scale concerned solving problems. Students who got overall higher scores valued their ability to solve problems.

In evaluating the relationship between motivation and achievement, Blackwell et al (2007) used five motivational scales comprising (learning goals, positive effort beliefs, low helpless attributions, and positive strategies). The results showed a strong association between motivation fostered by an incremental learning mentality and achievement. For this study only two of the five scales will be used: learning goals (Blackwell et al, 2007; Midgley, Maehr, Hicks, Roeser, Urdan, Anderman, & Kaplan, 1996), and positive strategies for problem solving (Cho, & Campbell, 2011).

Dweck’s Belief about Intelligence (BOI) test. Carol Dweck’s BOI test (Dweck 1999, 2007, 2010) includes scales that isolate children who see their talents, including their cognitive ability. According to Dweck (1999, 2007, 2010), 40% of the population believe that their abilities are fixed at birth. They believe that fate controls their lives, and no one can change this reality. Another 40% of the population believe that people’s talents and /or cognitive abilities can grow with effort. The remaining 20% of the population are uncertain.

Growth mindset. The incremental belief about the Malleable intelligence scale (e.g., “I think my brain can grow by studying hard”).

Fixed mindset. The belief about the Fixed intelligence scale (e.g., “There is nothing that I can do to be more intelligent”).

The Part 2 of the IPI (S7) addressed the child's belief of the ability to grow smarter or not, using Dweck's Incremental Belief About Intelligence (BOI) test (Dweck 1999, 2007, 2010). The section contained ten statements depicting fixed or growth mindset with statements such as the following: "being smart is something that cannot be changed" (fixed mindset) or "I think my brain can become smarter by studying hard" (malleable/growth mindset). Responses were on a 9-point Likert scale of "1" being strongly disagree and "9" being strongly agree. A high score on the malleable/growth mindset statements suggests that the student has a growth mindset and believes that he/she can grow smarter with efforts over time, while a high score on the fixed mindset statements suggests that the students believe that intelligence cannot be changed no matter the amount or intensity of applied effort.

Parental Involvement Measures & Scales

Traditional Expectation/Aspirations Items. These items on the front page of the IPI (S7) assess parents' education and living situation and how far parents expect the child to go with their education using different levels of study from less than high school to being a professional in a specific industry. These items are used in all the US Government Surveys, and parental expectations are linked to students' achievement in many research studies. The list of studies below summarizes national US studies (Desimone, 1999; Fan, 2001; Hong, & Ho, 2005; Keith, Keith, Troutman, Bickley, Trivette, & Singh, 1993; McNeal, 1999; Muller, 1998; Sui-Chi & Willms, 1996) that used government databases for evaluating these items. These studies used data from the National Education Longitudinal Study of 1988 (NELS:88) containing information from 8^{th}, 10^{th} and 12^{th} grade students and parents. In the present study, the inventory of parental involvement (Campbell, 2007) used two scales to evaluate the traditional

parental expectation or aspiration for their children regarding the child's expected level of educational attainment, assessed through seven levels of education and using language familiar to Nigerian adolescents as follows: 1) Below senior secondary school, through 3) University education, to 7) Master's degree or Graduate of a professional institution. Extant literature shows positive correlations between parental expectations/aspirations and students' achievement (Fan, 2001; Muller, 1998; Hong & Ho, 2005; Rumbaut, 2017).

Support Scale. This scale provides information about the supportive parent. The support scale captures parents who encourage and consistently try to instill confidence in their children for their education. This scale has been used in international and US studies (Campbell 1994, 1996, 2004, 2011; Campbell & Uto 1994; Campbell & Verna 2007; Flouris, Calogiannakis Hourdakis, Spiridakis, & Campbell, 1994; Gorleku, Brancaccio, & Campbell, 2018; Pitiyanuwat & Campbell 1994). Respondents are expected to express their degree of agreement or disagreement by choosing an option on the 9-point Likert scale: option 1- Strongly disagree, through option 9 - Strongly agree. The Support scale focused on students' perceptions of parental psychological support containing statements such as "I'm glad my parents care so much about my education" or "My parents expect me to go to college" or "My parents are proud of me." A high score on the Support scale indicates the student's agreement with the statement, signifying a sense of strong psychological support from the parents of such student. Extant literature shows that students who report more parental support have higher academic achievement (Campbell 1994, 1996, 2004, 2011; Campbell & Verna 2007).

Pressure Scale. This scale has been used in numerous international studies in Asia, Europe, and the U.S.A, and data show that students who reported higher pressure

exhibited low academic achievement (Campbell 1994, 1996, 2004, ; Campbell & Uto 1994; Campbell & Verna, 2007). A high score on the Pressure scale indicates students' strong agreement with the perception of pressure exerted by parents demanding better educational achievement by the respondent and is often perceived negatively by their children. A high score on the pressure scale is achieved if the student agrees or strongly agrees with such statements as "My parents pressure me too much with my homework" or "My parents are never pleased with my grades."

Family Communication Scales. The Part 4 of the IPI (S7) addresses communicating in the family, and it measures parent-initiated communication using four statements about test grades, homework, and the importance of education. This scale involves parent and/or child-initiated communication processes which focus on daily occurrences of relevant conversations (Napolitano, 2007; Wei, 2008). These scales were synthesized by Sarcona-Navarra (2007). Some of the statements of the scales are: "My parent(s) ask me about homework and projects" or "My parent(s) tell me how important it is to get an education" or "My parent(s) ask me about test grades" or "My parent(s) let me know what they expect from me in school." The instrument asks students to specify how often parent-initiated communication occurs using a 9-item Likert scale. Never=1 ranging to 9= every day. Responses were on a 9-point Likert scale of "1" being strongly disagree, and "9" being strongly agree with high scores indicating frequent parent-initiated communication of support, expectations, and interest in the child's education.

Conducive Home Atmosphere (Talent Development and Academic Home Climate Scale). The Part 5 of the IPI (S7) explores Talent Development using eight questions on the importance of certain processes for nurturing the child's talent. This is

another scale derived from, and validated in, the academic Olympians research (Campbell 1996; Campbell & Wu, 1996; Cho & Campbell, 2011). Parents that prioritize their child's talents are usually scored high on this scale. Families with Academic Home Climates are rewarded with higher achievement during the school years and high productivity when their children become adults. Research has shown that accomplished adults in the Olympian study (Campbell 1996; Campbell & Wu 1996; Cho & Campbell, 2011), some in their 40s or 50s, credit this Academic Home Climate as critical to their success. In the present study, responses were on a 9-point Likert scale of "1" being strongly disagree, and "9" being strongly agree. High scores in this section suggest that students consider the stated family processes as being essential for talent development and academic achievement.

Talent development scale. The Talent-Development scale measures those instances when the family recognizes the child's talents and encourages development by nurturing his/her talent. This scale is comprised of parents' recognition of their child's talents and their active encouragement to develop them. It contains phrases like "My parents' recognition of my talent" and "My parents' active encouragement."

Academic home climate. The Academic Home Climate scale evaluates the presence of books, magazines, and a reading culture in the home to stimulate the child's interest in reading and learning. This section contains phrases like "Lots of books in our home" and "Everyone in the family is always reading."

Student Data

Mathematics achievement scores from the schoolwide trimester exams were assessed as the dependent variable of interest.

Latent Variables

A Latent variable is a construct that is not directly or exactly measured and may be a combination of two or more measured variables. Social Capital was hypothesized based on extant literature as a combination of Family Structure (one-parent vs. two-parents), Parent's Education, Parent-Initiated Talk, and Academic Home Climate. Parental Involvement is hypothesized as a combination of Parental Support, Parental Pressure, Parent's Expectations, Mother's Aspirations, and Father's Aspirations (Campbell & Verna, 2007).

Motivation is hypothesized, based on extant literature, as a combination of Growth mindset (Dweck, 1999), Student's Motivation (Cho & Lin, 2011), and Learning Goals (Blackwell et al, 2007).

Data Analysis

Student responses were scanned to clean the data and then stored as an excel data file. The software, "Remark," was used to convert scanned students' responses into a Statistical Package of Social Science (SPSS) data file. The analysis of the data includes descriptive statistics to describe the sample, confirmatory factor analysis (CFA) to provide evidence of internal consistency reliability of the scales, and a structured path model for the path analysis to determine the unique contributions of the predictor variables to the dependent variable for each hypothesis, plus the most significant relationships of the model that best fits the data (Kock, 2010; Lleras, 2005).

The descriptive statistics and CFA were conducted using the SPSS software version 27. The descriptive analyses were examined to determine the mean and standard deviation on all measures as well as the correlations among them. The descriptive statistics included

the following variables: age, gender, major ethnicity, parental family status and expectations for education levels for their children.

Then, an exploratory factor analysis was conducted to select the most efficient set of items to measure correlates of Parental involvement, Social capital, Goals, Growth, and Motivation. Since the study constructs were backed by empirical evidence, CFAs were preferred and individual item score reliability was evaluated using criteria of factor structure coefficients greater than or equal to 0.7 with a minimum composite reliability of .60 that verifies the extent to which the scores are internally consistent and latent variables correlate with construct scores (Fornell & Larcker, 1981). Convergent validity of the constructs was measured using average variance extracted (AVE) values. An AVE value larger than 0.5 suggests empirical validity of the construct since it indicates that the latent construct explains more than half of the variance in the composite indicators while all other latent variables explain less than half. In this study, all AVE values were above 0.5 indicating convergent validity, while the factor loading estimate values address reliability. It is generally advisable for factor loading estimates to be greater than 0.70, indicating that more than 50% of the variance in a single indicator can be explained by the corresponding latent variable.

A path analysis was employed to determine the relationships between the selected variables and their influence on student math achievement. The path analysis was conducted with WarpPLS Version 7.0 software for Structural equation modeling (SEM), employing the partial least squares (PLS) method. Path analysis is based on simple regression techniques but allows for a more robust understanding of the relationships between and among the examined variables (Kock, 2010) The Path analysis procedure

allows for the prediction of the dependent variable (math achievement) based on a collection of independent variables (social capital, parental involvement, and the two motivational constructs: growth mindset, and learning goals) while examining their interrelationships and direct or indirect effects on math achievement. The analysis of the individual and collective contributions of the independent variables to the dependent variable also provide information about the fit of the model to the hypothesis (hypothesized model). The main goal of the study was to determine if the data support the hypothesis model and if parental involvement is moderated by other independent variables in influencing student math achievement as reported in prior literature.

The current study's hypothesized model is diagramed below:

Figure 3.1

Hypothesized Path model indicating latent variables

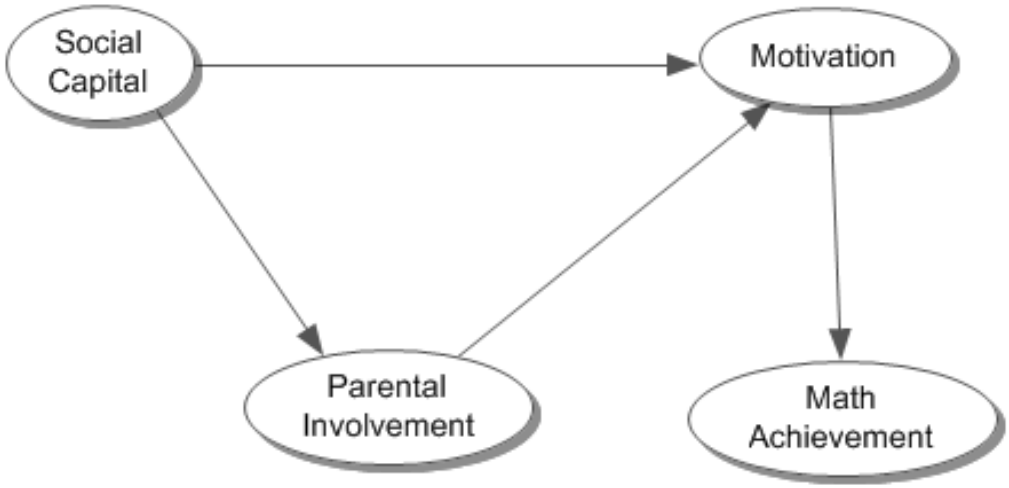


Table 3.1

Latent constructs and manifest variables/factors

Motivational Factors	**Social Capital Factors/Variables**
Growth mindset (Dweck, 2007)	Family Structure (one-parent vs. two-parents)
Student's Motivation (Cho & Lin, 2011)	Parent's Education
Learning Goals (Blackwell et al, 2007)	Parent-Initiated Talk
	Academic Home Climate (Campbell & Verna, 2007)

Parental Involvement Factors/Variables
Parental Support
Parental Pressure
Parents' Expectations
Mother's Aspirations
Father's Aspirations

CHAPTER 4: RESULTS

The purpose of this study was to examine the impact of parental involvement on students' math achievement for adolescents in junior secondary school year three (JSS3) in Nigeria. Following the procedures outlined in chapter 3, the findings from the data analysis and hypotheses testing are presented in this chapter.

Sample Participants

The sample population of this study was comprised of 280 students from the Junior Secondary school year three (JSS3) during the 2019/2020 academic school year. A total of 167 girls (59.6%) and 113 boys (40.4%) participated in the study. It is a purposive sample of students from two schools that self-selected into the study. The demographics (age, ethnicity & gender) and the first trimester math scores of each student in the sample were also collated as variables in the study.

Descriptives:

The descriptive statistics for all variables, and correlations between variables, are reported below. There were no statistically significant gender, age, or tribe differences for these variables, and correlation coefficients are reported for the whole dataset. However, gender, age, and tribe, are not included in the path analysis model.

Over half of the study population is female 167 (59.6%), and 158 (56.4%) were reported as thirteen years old. In terms of ethnicity, which was assessed using three major tribes in Nigeria, the sample was predominantly Yoruba and not reflective of the country's diverse population. Data on parents' education showed that 186 (66.6%) of the fathers had at least a four-year baccalaureate degree while 26 (9.3%) had an ordinary national diploma (OND), 30 (10.7%) had up to, or less than, a secondary school education, and 38 (13.6%) had missing values. Education data for mothers showed that

161 (57.5%) of the mothers had at least a four-year baccalaureate degree, 43 (15.4%) had an ordinary national diploma (OND), 37 (13.2%) had up to or less than a secondary school education, and 39 (13.9%) had missing values. Of this sample, 252 (90%) lived with both parents, 24 (8.6%) lived with one parent and 4(1.4%) students did not say whether they lived with both or one parent. In addition, 269 (96.1%) reported that both parents were still living, 7(2.5%) reported at least one parent dead, and 4 (1.4%) left the question unanswered. Frequency distributions were used to summarize demographic characteristics, parents' education, and living situations as shown in Tables 4.1 through 4.7 below.

Table 4.1

Frequency Table – Students' Gender (N = 280)

	Frequency	*Percent*
Male	113	40.4
Female	167	59.6
Total	280	100

Table 4.2

Frequency Table – Students' Age (N=280)

	Frequency	*Percent*
11	9	3.2
12	59	21.1
13	158	56.4
14	38	13.6

15	14	5.0
16	2	0.7
Total	280	100

Table 4.3

Frequency Table – Students' Ethnicity (N=280)

	Frequency	*Percent*
Hausa	4	1.4
Igbo	33	11.8
Yoruba	243	86.8
Total	280	100

Table 4.4

Frequency Table – Father's Education (N = 280)

	Frequency	*Percent*
JSS3	10	3.6
SS3	20	7.1
OND	26	9.3
HND	66	23.6
Masters	56	20
Dr/PHD/Lawyer	66	22.9
Missing	39	13.9
Total	280	100

Table 4.5

Frequency Table – Mothers' Education (N = 280)

	Frequency	*Percent*
JSS3	5	1.8
SS3	32	11.4
OND	43	15.4
HND	63	22.5
Masters	59	21.1
Dr/PHD/Lawyer	39	13.9
Total	280	100

Table 4.6

Frequency Table – "Are both parents living?" (N=280)

	Frequency	*Percent*
No	7	2.5
Yes	269	96.1
Missing	4	1.4
Total	280	100

Table 4.7

Frequency Table – "Both parents live with you?" (N=280)

	Frequency	*Percent*
No	24	8.6
Yes	252	90.0
Missing	4	1.4
Total	280	100

Exploratory Factor Analysis of the IPI version 7 (Campbell, 2007)

For the present study, composite reliability coefficients calculated in the path analysis were 0.68 for learning goals, 0.69 for social capital; 0.79 for parental involvement and 0.81 for the growth mindset. To confirm reliability and validity of the IPI as reported by prior studies (Campbell, 1994, 1996; Campbell & Verna 2007), exploratory factor analyses (EFA) on all the measures were performed to confirm the constructs to be explored in this study, and reliabilities were analyzed by calculating Cronbach's alpha using the participants' responses. Exploratory factor analyses (EFA) confirmed the measurement models for the hypothesized latent variables and examined bivariate relationships and correlations among the latent variables.

To determine the interrelationships among the questionnaire items, a principal components analysis (PCA) was performed and the number of factors to be extracted was based on the following criteria: minimum eigenvalues of 1.0; each factor contained individual items with a minimum loading of 0.32 (Mori & Gobel, 2006). To determine the best items for each of the constructs being studied, only items which had factor loadings of over .45 were retained and factors which accounted for the highest total variance were reported. In addition, factors must be understood within theoretical constructs and timing. For example, social capital is hypothesized as a precursor of PI based on theoretical frameworks.

Overall, the 46 items on PI for 280 students in junior secondary school were analyzed by PCA and yielded four factors on 31 items, Social Capital, Parental Involvement, Growth mindset, and Learning goals with Cronbach alpha coefficients ranging from 0.3 to 0.7. The inventory of parental involvement was validated in prior

studies (Campbell, 2004; Gorleku et al 2017) and found to have the internal consistency reliability for factors ranging from 0.63 for parental pressure exerted on students to 0.83 for perceived support. In the present study reliability coefficients calculated in the path analysis are 0.68 for learning goals, 0.69 for social capital; 0.79 for parental involvement and 0.81 for the growth mindset. The reliability coefficients measured by Cronbach α for each of the 31 items ranged from .45 to .87 and that for items altogether was .89.

Path Analysis

The structural model addresses the relationships between the constructs based on extant literature, logic, and time, by examining path coefficients in terms of directions and significance of their contributions (Chin, Marcolin & Newsted, 2003; Crossman, 2020). The R^2 values reflect the amount of variance explained by the latent variables. The significance and the beta coefficient of the paths provide valuable information about the fit of the model to the data set. Path analysis requires the usual assumptions that one commonly finds in regression. It is important to have an adequate sample size to determine and assess the significance of a path analysis. The recommended ratio is 20 cases per parameter (or variable measured) in the model (Klein,1998). In general, the accuracy and stability of a path analysis declines with decreasing sample size. This study meets and exceeds the recommended levels at more than 20 cases per variable measured. Two of the model constructs in this study are explained by formative indicators while the other three are explained by reflective indicators denoted by F and R respectively in the oval shaped construct boxes in Figure 4.1. According to Kock (2010), a reflective latent variable is one in which all the indicators are expected to be highly correlated with one another and with the latent variable itself, while formative latent variables measure different facets of the same latent variable (Kock, 2010).

Hypotheses Testing

The study set out to test the following hypotheses:

H_o1 There is no significant relationship between social capital and students' perceived parental involvement for secondary school students in Nigeria.

H_o2 There is no significant relationship between students' perceived parental involvement and growth mindset for secondary school students in Nigeria.

H_o3 There is no significant relationship between student's growth mindset and learning goals for secondary school students in Nigeria.

H_o4 There is no significant relationship between students' perceived parental involvement, social capital, motivation (growth mindset or learning goals), and math achievement for secondary school students in Nigeria.

Path Analysis Results

A model (Figure 3.1) was hypothesized to explore the assumption that PI exerts a positive influence on student math achievement with social capital, growth mindset, and motivation as mediational constructs. The path analysis produced the model (Figure 4.1) which tells us the following:

As social capital increases, parental involvement increases in a statistically significant way (beta = 0.48; $p < 0.01$) and accounts for at least 23% of the variance in parental involvement.

As parental involvement increases, the student's growth mindset increases in a statistically significant way (beta = 0.31; $p < 0.01$) and parental involvement accounts for at least 10% of the variance in students' growth mindsets.

In addition, as parental involvement increases, the student's motivation to achieve learning goals increases in a statistically significant way (beta = 0.40; $p < 0.01$) and

parental involvement accounts for at least 23% of the variance in students' motivation for learning goals.

And as students' motivation to achieve learning goals increases, there is a statistically significant increase in math achievement (beta = 0.13; p =0.02), and learning goals account for at least 2% of the variance in math achievement for this population.

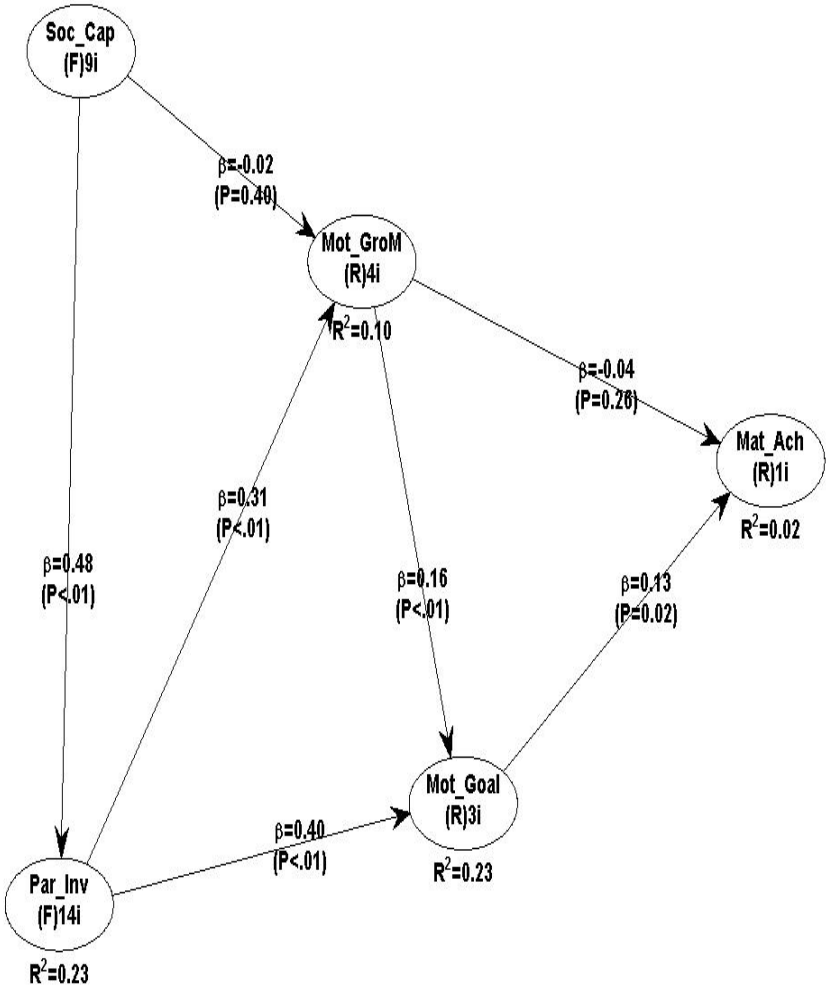
However, there was no statistically significant direct effect of social capital on the growth mindset and no significant direct effect of the growth mindset on math achievement. Overall, the model fit the data moderately with a small effect size of .02.

Summary of Results

All latent variables of interest in the current study, except social capital and the growth mindset, are significantly related to math achievement, and learning goals have the strongest and only direct effect with a beta coefficient of 0.13. A main effects regression model, including social capital, parental involvement, growth mindset, and goals to predict math achievement accounted for approximately 2% of the variance. The model, (Figure 4.1) shows that only goals has a direct contribution to math achievement and explains approximately 2% of the observed variance in math scores of the present study. The path analysis shows that the influence of social capital was mediated by parental involvement for growth mindset, and growth mindset was mediated by learning goals for math achievement.

Figure 4.1

Path model indicating latent variables and the dependent variables



Variables in the model: Social Capital (Soc_Cap), Parental Involvement Par_Inv), Growth mindset (Mot_GroM), Learning Goals (Mot_Goals), & Math Achievement (Mat_Ach)

CHAPTER 5: DISCUSSIONS AND CONCLUSIONS

Some promising evidence on social capital, parental involvement (PI), motivation, and math achievement in Nigeria emerged based on the collected data, with several implications for further research. This chapter will first interpret the results of the analysis of the relationship of the predictor and dependent variables. Next, limitations of the study will be discussed, followed by implications and recommendations for research and practice.

This study set out to explore the relationships between PI, motivation, growth mindset and math achievement among secondary school students in Ilorin, Kwara State Nigeria. In this study the focus is on math achievement as a measure of student achievement and a gateway subject to individual and national development.

The study set out to answer the following research questions (RQ) using the related hypotheses:

1. Does Social Capital significantly predict PI?
2. Does PI significantly predict the Growth mindset motivational construct?
3. Does the Growth mindset significantly predict Learning goals motivational construct?
4. Do social capital, PI, and motivation significantly predict math achievement?

RQ1: Does Social Capital significantly predict PI?

The study findings show that a significant relationship exists (p=.01) between parents' social capital and their children's perception of their involvement in their lives for educational achievement, and social capital accounts for 23% of the variance in PI for secondary school students (JSS3) in the selected schools. The specific components of social capital examined in this study were Family Structure (one-parent vs. two-parents),

Parents' Education, Parent-Initiated Talk, and Academic Home Climate. However, family structure and parents' education had no statistically significant contribution to social capital in this study. This finding underscores the research by Bamgbade and Saloviita (2014) and Elbedour et al., (2009) who reported no statistical effect of family structure on PI and student achievement.

Parents with higher levels of education and access to a network of support in society are reported to have more time and resources available to spend on supporting their children. Such parental support includes access to learning experiences outside of school, provision of an academic home environment and parent-initiated talks. In Nigeria, the typical parent with a post-secondary school degree works an eight-hour day while parents with less than secondary school education are more likely to have unstable employment and irregular work hours which make it difficult to participate or provide learning experiences outside of school to their children. Many low-income families that desire quality education often seek it from public or low-cost private schools such as the schools in this study. A parent who works long hours on a low pay grade may not prioritize providing books in the home or textbooks for learning at school or the provision of relevant learning experiences like library /museum visits. Consequently, students who come from homes with limited social capital may not experience adequate support for learning to maximize academic achievement. Although free basic education from elementary through secondary school is financed by the federal and state governments, many parents still bear the brunt of the costs of textbooks, feeding, health care, and transportation to school, such that students from low-income homes are disadvantaged in accessing education. Post-secondary education is offered by private and public

universities at cost to families that can afford the tuition. Naturally, the government universities are relatively cheaper and desired by all, including students from wealthy homes; thus, the competition for college admissions is often challenging for families with low social capital. The process of leveraging societal and business networks to open doors for one's children is referred to as socialization by Coleman (1988) and creates unequal access to higher education for Nigerian students, such that students with higher social capital are more likely to acquire professional degrees in a timely manner. Since education is a gateway out of poverty, it is doubly important that children from poor backgrounds should have high scores in required subjects, including mathematics, to propel them past institutional and societal barriers that are more pronounced after secondary school. This study's findings agree with prior research that report considerable and significant effect of family processes on student achievement (Campbell & Verna 2007; Fan & Chen, 2001; Heard, 2007; Hornby & Lafaele, 2011; Jeynes, 2005b).

RQ2: Does PI significantly predict the Growth mindset motivational construct?

The findings in this study show that a statistically significant relationship exists between students' perception of PI and growth mindset for these secondary school students, with PI accounting for 10% of the variation for this study population. In this study, PI is a formative construct comprising of support, expectations, and aspirations. The parents in this study showed support by displaying interest, pride, and expectations toward their children achieving great things. Existing literature shows that when PI occurs through processes that demonstrate support, affective processes including growth mindset are fostered in the child (Campbell & Verna, 2007; Grolnick & Slowiaczek, 1994). This study's findings show that the effect of PI on growth mindset is irrespective

of social capital, ethnicity, and age, which adds to existing literature which states that self-beliefs about intelligence have a profound effect on students' motivation, learning ability, and achievement, irrespective of socio-economic background (Dweck, 2006; 2008; Dweck & Molden, 2017). It may also be argued that the Nigerian culture which involves delayed autonomy in adolescents due to the tradition of deferring to elders may also increase parental expectations for their children. Students may defer to their parents' expectations and so strive for academic achievement to live up to the parents' expectations. On the flip side, decreased autonomy in adolescents has been associated with reduced motivation (Lin & Cho, 2011).

RQ 3: Does the Growth mindset significantly predict Learning goals?

For this research question, the null hypothesis was rejected based on the findings which showed that there was a statistically significant effect of growth mindset on learning goals for the students in the study. Math is a needed resource for the 21st century development (Chiu, 2010; Olatunde, 2010), and creative problem-solving ability is a requirement for math achievement (Cho & Lin, 2011). It is a noted fact that creative thinking and reasoning occur during the process of problem solving and promote a "can do' mentality akin to growth mindset. This is particularly important for adolescents as they navigate puberty, maturity, and education processes. Education is widely believed to be a trusted and major pathway to wealth and health in Nigeria and problem-solving skills for math achievement are a "must have." According to Cho and Lin, (2011), creative problem-solving and motivation which focus on learning goals are intricately linked, and together with family environment, indirectly predict math achievement. The motivation scales in this study were adapted from motivation instruments that focused on

problem-solving, were originally created in Asia, and were used in international studies; in view of the fact that African and Asian cultures are somewhat similar in terms of self-belief and morality, the similarity in study findings was not unexpected. According to Qu et al (2016), adolescents in authoritarian societies such as Nigeria tend to defer to authority, have reduced autonomy, and are likely to display apathy towards learning, hence PI processes are much more needed. As in the Cho and Lin (2011) study, growth mindset, as a motivational construct, exerted an indirect influence on math achievement by predicting learning goals and explains 23% of the variance in such goals. The findings in this study also corroborate with extant literature (Blackwell et al, 2007; Dweck, 2007) as the data showed a statistically significant relationship between growth mindset and learning goals ($p=0.01$) for academic achievement.

However, unlike prior studies (Blackwell et al, 2007; Dweck, 2007), this current study model shows the influence of social capital and PI as precursors in the model, providing more robust information on how parenting can be tweaked to nurture adolescents to maximize their learning potential. More recent work by Gorleku, Brancaccio, and Campbell (2018) demonstrates that parents' aspirations, mothers' expectations, and motivation are direct predictors of the growth mindset much like the findings of this study. These findings show that PI is a significant predictor of growth mindset and contributes to narrowing the gap in literature about how growth mindset can be nurtured (Gunderson et al, 2013). Other prior research (Bronstein et al, 2005; Olatoye & Ogunkola, 2008) show a positive effect of PI on intrinsic motivation and goals orientation for academic achievement.

RQ 4: Do social capital, PI, and motivation significantly predict math achievement?

Similar to the previous research questions, the null hypothesis was also rejected based on the findings of this study. Social capital and PI were found to be significant indirect predictors of math achievement with learning goals, as a mediatory pathway. The findings suggest that students who come from homes with social capital, where parents are involved by providing support and an academic home environment, and who communicate frequently with their children, are more likely to excel in mathematics. In addition, motivation, specifically learning goals, is a significant direct predictor of math achievement.

Relationship Between Results and Prior Research

The findings show that the parents in this study seem to be much more educated than the typical Nigerian population. More than half of the parents in this sample have a post-secondary degree and can provide an academic home climate that nurtures motivation for achievement (Epstein & Sanders, 2002; Jeynes, 2005b). This finding is contrary to existing literature which shows that most Nigerians have below secondary school education (Lippman, Wilcox & Ryberg, 2014; NBS, 2010). This finding may be a result of selection bias as the two participating schools in this study belong to the upper echelon of secondary schools with more stringent admission requirements in comparison to other government schools in the area. The data on family structure show a low percentage of non-traditional families in this study. This data may not be a true reflection of the existing reality as the word "family" was interchangeable with "parents" and typically, Nigerian adolescents may classify an older non-biological relative as "parent."

Overall, the findings of this study seem to agree with prior research, including a study by Grolnick and Slowiaczek (1994), that states that PI components (behavioral, personal, and cognitive-intellectual) have been associated with academic achievement and motivation as a mediational path (Grolnick & Slowiaczek,1994). In the Grolnick and Slowiaczek, (1994) study of Caucasian adolescents, one of the mediatory motivational constructs was "Perceived Competence/ Task Mastery" which is like learning goals in this study. Previous research has also shown that students with a growth mindset who believe in the possibility of increased intelligence are also usually motivated and more likely to strive to achieve learning goals and mastery of tasks. The path analysis results of this study show that motivation, specifically learning goals and growth mindset, are mediational pathways to math achievement. However, only learning goals was statistically significant ($p=.02$) and accounted for at least two percent of the variance in math achievement for the study population. Other research, which controlled for past achievement, showed that family characteristics had the strongest link to students' mathematics scores. Specifically, students with higher math scores were more likely to be from homes with two parents, had above-average SES, and more books available (Chiu, 2010). Similarly, the results of this study align with Yildrim's (2019) findings which showed that parents' SES predicted parents' participation in school activities which was associated with student math achievement.

The findings of the current study differ, however, from that of a prior study done by researchers Ogunshola and Adewale (2012) in the same local government and similar school setting. The researchers reported that social capital in terms of parents' socioeconomic status had no statistical effect on student achievement, but parental

education exerted a moderate significant and direct influence on student achievement. In the current study, PI functioned as an indirect predictor of student achievement with no significant relationship, and parental education had no significant contribution to the study model. Similarly, Bamgbade and Saloviita (2014) reported family support as having no significant effect on scholastic achievement (Bamgbade & Saloviita, 2014).

Overall, the study findings show that Social capital, PI, and Motivation are important predictors of math achievement for this study population. The findings of this study are quite important in the light of the fact that extant literature shows that children from homes with high social capital in terms of parents' education, family income and structure perform significantly better on math achievement tests than do their peers from families with lower social capital (Chiu, 2010; Desimone, 1999; Epstein, 2005; Yildrim, 2019). Improved parental involvement may be a tool for changing the narrative to a more positive one.

Limitations

The study examined the relationship between social capital, parental involvement, selected motivation constructs and math achievement. One primary limitation of the study and a threat to internal validity is selection bias since participant schools and students self-selected into the study, and these participants may differ in some way from other schools and/ or eligible student populations., thereby limiting the generalizability of study findings. According to Babbie (2015), internal validity asserts the possibility that experimental results may not necessarily reflect the exact nature of the relationship between the variables. Another limitation is the snapshot / cross-sectional approach of administering the study instrument wherein students' self-report of PI was assessed only once and not in depth. A more robust assessment can be provided by using qualitative

methods in addition to this study's quantitative method. Individual interviews may likely shed additional information about PI processes unique to each family. In addition, parental self-reports of PI processes may enrich the data. Other limitations include the fact that student achievement data could only be assessed using values from just one trimester, and the scoring scale was unique to each school that participated in the study, making it challenging to compare across schools. Additionally, the sample size was small, and results may not be generalizable; however, it fulfils the requirement for a path analysis of at least 200 (Crossman, 2020; Kock, 2010).

Implications of the findings

Historically, informal education processes in Africa culminated in attainment of a certain social status after initiation (graduation) ceremonies which often coincided with the post-adolescence period. As Western/formal education gained widespread acceptance, attention shifted to it as a vehicle for attaining required social status in the modern world, so Nigerian parents are vested in education. However, as shown by empirical evidence, financial constraints and limited social capital are barriers to attaining this first step on this social ladder. In a bid to educate more of her citizenry, alleviate poverty, and improve nation building, the Nigerian government mandated free basic education for all from elementary through secondary school years. However, social capital is a determinant of access to education and achievement in education, specifically math, and it has been empirically verified that low-income students have unequal access to education in many developing countries including Nigeria (Salihu & Jamil, 2015). Many government/public schools in Nigeria are poorly funded, lack adequate instructional materials, and have high pupil to teacher ratio, much like the schools in the present study (Salihu & Jamil, 2015); but it is also of great concern that after gaining admission to

institutions for basic education, only parents who can afford to be involved can support their children to succeed. In response to the current unstable financial polity in Nigeria, many parents work one or more jobs that take them away from home, with little time to interact with their children. And most parents believe that sourcing finances to cover the costs of schooling is the only required support for their children. However, children who perceive a lack of parental attention and involvement may tend to be disengaged from learning. Since social capital has been reported as a direct predictor of parental involvement and an indirect predictor of learning goals for math achievement, then the current state of affairs where adolescents are relatively disengaged from learning calls for attention to be focused on home processes that support effective learning. If parents understand how they can better support their children to success, they may be willing to create academic home environments and participate in effective communication with their children. Parents might also be willing to freely express their aspirations/ expectations to their children to convey parental belief in the child's ability to excel at school. The typical parent in many low-income Nigerian homes, has time constraints and limited income and is often content to let the school handle almost all aspects of their child's education. But the findings of this study may be a wake-up call to action. Since adolescence involves a renegotiation of the parent-child relationship and a probable decline in academic achievement, notably math, knowing that PI processes can predict student achievement is relevant to effective parenting.

Recommendations

The following recommendations are based on the findings of this study and are focused on reducing the existing inequities in education in Nigeria.

Research. In terms of methodology, a larger sample size is recommended for future research to adequately test the study hypothesis and student achievement may be tested using other areas including English language scores, school attendance, and science achievement scores. Additional research methods including qualitative processes, such as individual interviews, may be employed to obtain rich data regarding PI in daily living and to better understand how students perceive these processes. According to Stake (1995), "the interview is the main road to multiple realities" (Stake 1995, p.65) which enables access to diverse views of shared experiences such as the perception of PI by adolescents. According to Desimone, (1999) student reported parental involvement often differs from parent-reported perceptions so, perceptions of parental involvement may also be evaluated from the perspective of the parents via quantitative and/or qualitative research methods to see if parents' self-reported PI corroborate or differ from student-reported PI. Also, the study sample may be expanded to include other school grades including Junior secondary one and two which are also comprised of adolescents.

Parents and Schools. In view of the relevance of PI to math achievement, school communities should be enlightened through outreach efforts and workshops to foster targeted home-based PI processes. The aim of such enlightenment programs is to improve parents' knowledge and commitment to support student achievement. Parents and teachers should encourage student autonomy to foster student agency for seeking increased PI. Parents should also create time and space for parent-initiated communication to express expectations and support for their children's achievements. Moreover, the school community should organize workshops that provide research findings in layman's terms to the school community to emphasize the importance of PI

processes for student success. Schools may also provide community access to enrichment experiences outside of the classroom by partnering with local libraries, museums, zoos and other resources that support learning. This may enable low-income parents to afford the costs of accessing these supports for the academic enrichment of their children.

Policy makers. The information from existing literature and this study should be disseminated for the purpose of enlightenment and to influence policy making to mandate PI beyond attending PTA meetings. Schools should be mandated through government policies to provide enlightenment and support to parents for effective PI practices for student achievement.

Also, the government should provide free or affordable learning-enrichment facilities like libraries and museums, particularly in low-income communities, and facilitate the provision of free or affordable books to enrich the household environment. Additionally, the government at the local, state, and federal levels should provide awareness campaigns about the importance of targeted parental practices for improving student access to successful learning. Policies should be enacted to ensure that the attendant costs of accessing free education do not limit access to education for low-income students. Specific actions should include provision of free textbooks, transportation services, and well-stocked libraries at each school location. The government should also be willing to commit to improving access to education and support to parents in order to minimize inequities and improve student achievement for economic development purposes.

APPENDIX: INSTITUITIONAL REVIEW BOARD APPROVAL

ST. JOHN'S UNIVERSITY

Federal Wide Assurance: FWA00009066

Jul 17, 2020 9:44 AM EDT

PI: Atinuke Ayeni
CO-PI: James Campbell
Dept: Ed Admin & Instruc Leadership

Re: Initial - IRB-FY2021-6 The Relationship of Parental Involvement and Motivation to Student Achievement

Dear Dr. Atinuke Ayeni:

The St John's University Institutional Review Board Institutional Review Board has approved your initial submission for The Relationship of Parental Involvement and Motivation to Student Achievement. The approval is effective from July 17, 2020 through July 16, 2021.

PLEASE NOTE: If you have collected any data prior to this approval date, the data must be discarded.

Sincerely,

Raymond DiGiuseppe, PhD, ABPP
Chair, Institutional Review Board
Professor of Psychology

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