The Impact of Parental Involvement on Student Performance: A Case Study of a South African Secondary School

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Abstract

The purpose of this study was to ascertain how parental involvement in South African schools affects the academic performance of students in mathematics. Literature often claim that involvement of parents results in better academic performance than if parents are not involved. The aim of the research was to see if this relationship exists in South African high schools. The study used a quantitative research approach. Data was gathered using a questionnaire administered to 114 students' parents. The main findings are that all the parents who responded are highly involved with their children's education. They have high expectations towards their children's education and performance. Three parental involvement constructs, that is, parenting, parent –teacher communication and home and family support were found to be positively related to performance. Results further indicate that home and family support is the most significant factor that determines a learner's performance. Most of the parents consider themselves to have a good communication with their child's teachers and the school. Children's homework is considered to be important by each parent and they all assist their children with homework. Thus, it may be concluded that by staying involved with their children's education, parents do impact positively on the academic achievement of the students.

Keywords: *Parent involvement, parenting, communication, home and family support*

1. Introduction

Learning of mathematics is a national problem in South Africa (Howie, 2001). A number of approaches have been taken to remedy the problem, including in-service training conducted by higher education institutions and education departments. Included in the list of multiple factors that influence the students success in mathematics is parental involvement (Jeynes, 2010).There is little research about the underlying mechanisms through which parental involvement influences children's academic performance. The present study thus sought to extend the literature by examining potential pathways from parental involvement to students' achievement. Research findings suggest that parents' attitudes, together with their behaviour and activities with regard to their children's education, have an effect on academic achievement (Guðlaug, 2010). Parental involvement in schooling is a powerful force, and that 'parents are a child's first and most enduring educator, and their influence cannot be overestimated' (Department for Children, Schools & Families, 2008, p.67).

The study specifically intends to establish the relationship between parental involvement and students' mathematics performance. Parents have the distinct advantage over anyone else in that they can provide a more stable and continuously positive influence that could enhance and complement what the school fosters on their children. In this regard, parental involvement is undeniably critical (Mji & Makgato, 2006). However, with regard to the content of what children learn, many fall short because in general they do not possess the necessary education and therefore find it difficult to determine and understand what was done at school (Mji & Mbinda, 2005). This is a point also raised by a learner in a related study, "... my parents don't know maths and physics so how can they be involved...?" (Mji & Makgato, 2006, p.259).

Parental involvement, defined as motivated parental attitudes and behaviours intended to influence children's

educational well-being. It is a multidimensional and bidirectional construct (Christenson, 2004; Fantuzzo, Tighe, & Childs, 2000) that has been shown to have clear links with social and academic outcomes for children (Dearing, McCartney, Weiss, Kreider, & Simpkins, 2004; El Nokali, Bachman, & Votruba-Drzal, 2010). Traditionally parental involvement has been defined as engaging parents in school-based activities and events related to their child's education (Epstein, 2001). However, a more comprehensive view of parental involvement envisaged in this study goes beyond just parent activities in school settings but in subject- oriented participations. This comprehensive view of parental involvement is grounded in the understanding that children's success in mathematics is influenced by multiple contexts (e.g., home, school, and community) in a dynamic and bidirectional manner (Vukovic, Roberts & Wright, 2013).

Parenting involvement is one factor that has been consistently related to a child's increased academic performance (Topor, 2010; Kgosidialwa, 2010). While this relationship between parent involvement and a child's academic performance is well established, studies have yet to examine how parent involvement increases a child's academic performance. The goal of the present study was to test three variables that may mediate, or explain how, parent involvement is related to a child's academic performance. Parent involvement was defined as the teacher's perception of "the positive attitude parents have towards their child's education, teacher, and school" (Topor, Susan & Keane, 2010).

Many researchers recognise the important role of a strong positive bond between homes and schools play in the development and education of children (Sanders & Sheldon, 2009; Richardson, 2009; Sheldon, 2009). Research has also shown that successful students have strong academic support from their involved parents (Sheldon, 2009). Furthermore, research on effective schools, those where students are learning and achieving, has consistently shown that these schools, despite often working in low social and economic neighbourhoods, have strong and positive school-home relationships (Sanders & Sheldon, 2009; Sheldon, 2009). More importantly, these effective schools have made a real effort in reaching out to their students' families in order to bring about liaison and cooperation.

Guy, Tali and Mordechai (2008) hypothesized that parental involvement primarily influences children's attributes and behaviours, which in turn affect mathematics achievement. Similarly, the theoretical framework provided by Hoover-Dempsey and Sandler (1997) suggests that parental involvement enhances children's academic self-efficacy, intrinsic motivation to learn, self-regulatory use, and social self-efficacy, which in turn operate to enhance achievement. Similarly, Chowa, Masa and Tucker (2013) found that parental involvement (i.e., home involvement, school involvement, parent–teacher communication) was predictive of children's school engagement and socio-emotional adjustment. If parental involvement does indeed buffer the effects of children's mathematics anxiety on children's mathematics achievement, the importance of supporting parental involvement initiatives becomes even more evident.

Studies have shown that students performed better academically and had more positive school attitudes if they had parents who were aware, knowledgeable and involved (Anthony & Walshaw, 2007). Rich learning environments that incorporate meaningful mathematical experiences are associated with higher achievement and genuine home/school collaboration has also been found to lift children's achievement significantly (Biddulph, Biddulph & Biddulph, 2003). Results from a study conducted by Cai (2003) indicated that parental involvement is a statistically significant predictor of their children mathematical achievement and also promoted positive behaviours and emotional development.

2. Problem Statement

One of the problems facing South African secondary school mathematics teachers is how to involve parents in academic matters in order to enhance achievement. Parental involvement in the form of fostering interest and support has a major influence on pupils' educational outcomes and attitudes. However many parents feel uninformed about current educational practices and how they can be more involved with their child's learning. A number of initiatives have been implemented internationally to encourage home-school links, but the documentation of these initiatives; particularly in the area of mathematics education is limited. Legislation like the South African Schools Act of 1996 compels parents to participate in school governance schools, but other activities like participation in fund raising, assisting teachers with academic or extramural activities are voluntary and parents must be motivated and trained to participate actively. According to Shinn (2002) parents are usually very involved in their children's early education but this involvement tends to decrease when children proceed to high school. Therefore the study of this nature will seek to shed more light on the importance of parental involvement on students' performance at high school level.

3. The objectives of the study

The objectives of this study were:

1. To explore the impact of parental involvement on students' mathematics performance in South Africa.
2. To explore the contribution of parental involvement disparities in mathematics performance.
3. To investigate the relationships between students' academic performance in maths and their family background characteristics.

4. Significance of the study

Findings from this study could inform more inclusive school practices for encouraging active participation by parents in mathematics education to the overall benefit of the children.

5. Hypotheses

The following hypotheses were formulated:

H^1 : Parental educational level and gender have a significant effect on the student's performance.

H^2: There is a relationship between parental involvement (parenting, communication and home and family support) and students' mathematics performance.

6. Literature Review

Home experiences are vital in shaping children's future mathematical interests, beliefs, and motivations. The role of parents in shaping their children's future mathematics' attitudes and motivation is key during early childhood. Iruka and Barbarin and Aikens (2008) noted that parents and families are considered the most essential others who children encounter in the earliest stage of their lives. The reason why parents are considered the most essential others in their children's early and later lives is because children observe and learn from, and later apply as parallel their early observations. Because each parent provides different experiences at home, the observations of each child results in differences related to their parents' attitudes, values, and beliefs about mathematics. All of these parental behaviours lead to different educational emphases in the home (Cross, Woods, & Schweingruber, 2009). To provide more positive educational experiences at home, parents need to be informed about how their involvement affects their children's mathematical skills and knowledge.

Friedel, Cortino, Turner and Midgley (2010) noted that parental involvement in its many and varied ways is a vital parameter for increasing children's mathematics achievement. Current studies have indicated some specific factors that play an essential role in increasing children's mathematics achievement: Parental aspirations, parent-child communication, home structure, and parents' involvement in school's activities (Wang, 2004). Bicer, Capraro, and Cetin (2012) noted similar indicators affecting children's mathematical achievement either adversely or positively: parents' socio-economic status, parents' success expectations from their children's mathematics courses, parental beliefs about mathematics, and parent-child, teacher and school communication.

Demir, Kilic, and Unal (2010) demonstrated that students whose parents were highly educated and exposed to mathematics before in their lives tend to show more success in mathematics than their peers whose parents were less educated and not being exposed to mathematics. The reason for this correlation is because highly educated parents know the learning requirements and had the opportunity to provide the best educational environment for their children (Alomar, 2006). Parents can increase the potential development of their children mathematical knowledge and skills by setting high expectations and providing stimulating environments (Cross *et al*., 2009). Israel, Beaulieu, and Hartless (2001) concluded that parents' socioeconomic status is correlated with a child's educational achievement.

Farooq, Shafiq and Berhanu (2011) concluded that students whose parents are educated score higher on standardized tests than those whose parents were not educated. Educated parents can better communicate with their children regarding the school work, activities and the information being taught at school. They can better assist their children in their work and participate at school (Fantuzzo & Tighe, 2000). The academic performance of students heavily depends upon the parental involvement in their academic activities to attain the higher level of quality in academic success (Barnard, 2004).

Dysfunctional family processes (e.g. conflict, substance abuse, child abuse, negative modelling, disturbed parent-child relationships, deprivation of stimulation and affection) can affect children's performance and behaviour. Children in such family circumstances are at increased risk of hyperactivity, truancy, mental health disorders (and suicide), delinquency, and low levels of literacy and self-esteem.

Smith and May (2006) emphasised the importance of children's interactions with the more competent members of

the culture (predominantly family members). She describes families as having a key function in providing responsive learning contexts which allow children to gradually take more and more initiative in their own learning, work cooperatively on shared tasks with others, and provide responsive feedback. The key elements of this process are dialogue, social interaction and graduated assistance based on the child's existing skills and knowledge.

The Competent Children Study revealed that children from low income homes and homes with low parental education, "…can go over these hurdles when they also take part in activities and interactions which feed their use and enjoyment of literacy and mathematics, and of words, patterns and other symbols generally." (Wylie, 2001:34).

7. Conceptual Framework

The framework that serves as a basis for this study is a research-based framework developed by Epstein (1995). The framework summarizes the theory of overlapping spheres of influence to explain the shared responsibilities of home, school, and community for children's learning and development. The framework contains six important factors with regard to parental involvement. The six factors are parenting, communicating, volunteering, learning at home, decision-making and collaborating with the community. However this study is going to be limited to parenting, communicating and learning at home since these are applicable at subject level while the whole spectrum applies to school-family partnerships.

Parenting pertains to helping all families to understand the development of both the child and the adolescent. The basic obligations of parents include responsibilities of families to ensure children's health and safety; to the parenting and child-rearing skills needed to prepare children for school; to the continual need to supervise, discipline, and guide children at each age level; and to the need to build positive home conditions that support school learning and behaviour appropriate for each grade level. It also helps establishing a supportive home environment for children as students.

Communicating involves designing and establishing two-way communication channels between school and home that are effective and reliable. Communication channels between the mathematics teacher and parents about the children's progress must be in place so that the learner benefits from the support from the two parties.

Learning at home pertains to providing ideas and information to parents about how they can best assist their children with homework and curricular related decisions and activities. Parent involvement in learning activities at home among others refers to parent-initiated activities or child-initiated requests for help, and ideas or instructions from teachers for parents to monitor or assist their own children at home on learning activities that are coordinated with the children's classwork. The framework helps educators develop more comprehensive programs of school and family partnerships.

These three types of involvement can guide the development of a balanced, comprehensive program of partnerships, including opportunities for family involvement at school and at home, with potentially important results for students, parents, and teachers. The results for students, parents, and teachers will depend on the particular types of involvement that are implemented, as well as on the quality of the implementation.

8. Research design and Methodology

8.1 Approach

This study utilised a quantitative design to identify specific parental influences that contribute to students' mathematics performance in South African secondary schools. An assessment of the contribution of parental support disparities in mathematics performance was carried out in order to investigate relationships between students' academic performance and their family background characteristics.

8.2 Population and Sample

The population for the study comprised of 150(N=150) parents of grade 12 students from a selected high school in South Africa. Using the Rao Soft sample size calculator, a minimum recommended sample size of 109 respondents was obtained. A probability sampling procedure was used and a simple random sample consisting of 44 male parents and 70 female parents was drawn.

9. Data collection

A self-generated questionnaire guided by Epstein's (1995) framework was used to solicit data for this study. A structured,

five point numerically scaled Likert–type questionnaire was used. The questionnaire was divided into two sections. Section A consisted of demographic variables and contained a nominal scale of measurement. Aspects covered included: age, gender, home language and educational level. Section B consisted of parental involvement constructs. Three constructs were explored: parenting, communication and home and family support.

9.1 Reliability of the Questionnaire

Cronbach's alpha coefficient was used to determine the internal consistence reliability of the questionnaire. As shown in Table1below, the overall Cronbach's alpha reliability coefficient for the whole questionnaire was 0.893.The Cronbach's alpha reliability coefficient for the other constructs are shown in table 1 below:

Table 1: Cronbach's alpha reliability coefficients

Cronbach's Coefficient Alpha		
Variable(s)	**Number of items**	**Alpha**
Parenting	8	0.793
Communication	8	0.685
Home and Family Support	13	0.680
Performance	12	0.780
Overall questionnaire	41	0.893

10. Data processing and analysis

The returned questionnaires were inspected to determine their level of acceptability. They were edited where necessary and coded. A statistical computer package, SPSS version 20, was used to process the data. The techniques used during data analysis included descriptive statistics, t-tests, correlation analysis, ANOVA and regression analysis.

11. Results and discussion

11.1 Response rate

A follow up of the questionnaires showed a good response rate from the research participants. At the end of the data collection phase, the total number of the completed questionnaires was 114. Given that the sample size of the study was 150, this represented a response rate of 76%. This was considered sufficient enough to continue with the analysis of the data as eluded by Bryman and Bell (2011) who posit that a response rate above 60% is acceptable.

Table 2: Demographic variables: Gender

Variable		Frequency	Percentages (%)
Gender	Male	47	41.2
	Female	67	58.8
Total		**114**	**100**

The majority of parents who participated in this study (58.8%) were females. This finding is supported by Mooney, Oliver and Smith (2009) who argued that fathers contributed little to children's education except for their economic contributions. Rohner and Veneziano (2001) also posts that fathers are not genetically endowed for parenting. Mothers tend to display more encouraging behaviours that motivate the child to work hard while fathers often display more pressuring behaviours.

Table 3: Demographic variables: Age

Variable		Frequency	Percentages (%)
Age	31-50	73	64
	51-Above	41	36
Total		**114**	**100**

Parents in the 31-50 years age category dominated (64%) the study. Middle –aged parents participated in the study and showed a lot of concern than older parents. Middle-aged parents feel that they should collaborate with mathematics teachers' efforts while older perceive themselves as outside the school system and feel it is responsibility of teachers to do the teaching (McDermott, 2000).

Table 4: Demographic variables: Home language

Home Language	Frequency	Percentages (%)
Sepedi	81	71.1
Venda	5	4.4
Shangane	6	5.3
Other	22	19.3
Total	**114**	**100**

The sample of respondents was dominated (71.1%) by Sepedi-speaking parents. The study also postulates that family and language backgrounds have an effect on parental involvement. This concurs with Olusanjo (2012) who observed that socio-economic backgrounds of family structures aid children's academic attainments.

Table 5: Demographic variables: Educational level

Educational level	Frequency	Percentages (%)
Matric and below	15	13.15
Certificate	16	14.03
Diploma	11	9.65
Undergraduate Degree	42	36.84
Post-graduate Degree	30	26.33
Total	**114**	**100**

The educational level of respondents was evenly spread with undergraduate degree holders dominating the sample (36.84%). According to Seifert (2014) the education level of a parent is a significant predictor of a child's educational achievements. Eccles (2005) pointed out that parents with higher education levels have stronger confidence in their children's academic abilities, and they also have higher expectations of their child. These high expectations motivate their child to perform well in mathematics. The confidence they have in their children builds their own confidence in their academic abilities and makes them more likely to succeed.

11.2 Hypotheses testing

Table 6: T-Test

One-Sample Test: One-Sample Test: Gender and Educational Level						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	95%Confidence Interval of the Difference
					Lower	Upper
Gender	30.499	113	.000	1.4123	1.321	1.504
Educational level	34.785	113	.000	3.8421	3.623	4.06

A t-test was conducted to test whether there was a significant difference in parental involvement between male and female parents. The results for the test are shown in table 6 above (df=113, t = 30.499, p=0.000). Therefore, the null hypothesis was rejected since the p-value is less than 0.05. Hence we conclude that there is a significant difference in parental involvement between males and females parents.

A t-test was conducted to test the significance of parental educational level performance predictor. The results for the test are shown in table 6 above (df=113, t = 34.785, p=0.00). Therefore, the null hypothesis was rejected since the p-value is less than 0.05. Hence we conclude that parental education level significantly affects involvement and child

performance. The parent's educational level has an effect on his/her parenting style, level of communication with the teacher and his/her home and family support approach to the child's academic needs.

Table 7: T-TEST

One-Sample Test: Educational Level Parental Involvement Constructs						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	95% Confidence Interval of the Difference
					Lower	Upper
Parenting Communication	51.119	113	.000	25.4298	24.4442	26.4153
Home & Family Support	52.580	113	.000	23.9211	23.0197	24.8223
	58.184	113	.000	43.2632	41.7900	44.7363

A t-test was conducted to test the significance of parenting as a performance predictor. The results for the test are shown in table 7 above (df=113, t = 51.119, p=0.00). Therefore, the null hypothesis was rejected since the p-value is less than 0.05. Hence we conclude that parenting significantly affects performance.

A t-test was conducted to test the significance of parent –mathematics teacher communication as a performance predictor. The results for the test are shown in table 6 above (df=113, t = 52.580, p=0.00). Therefore, the null hypothesis was rejected since the p-value is less than 0.05. Hence we conclude that communication significantly affects performance.

A t-test was conducted to test the significance of home and family support as a performance predictor. The results for the test are shown in table 6 above (df=113, t = 58.184, p=0.00). Therefore, the null hypothesis was rejected since the p-value is less than 0.05. Hence we conclude that home and family support significantly affects performance.

To test if there are significant differences in performance among students receiving different parental treatments, an Analysis of Variance test was conducted to test the following hypothesis.

H^0 : There is no difference in math performance among students receiving different parental treatments.

H^1 : There is a difference in math performance among students receiving different parental treatments.

Table 8a: ANOVA

Parenting And Perfomance					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3591.383	23	156.147	20.882	.000
Within Groups	672.976	90	7.478		
Total	4264.360	113			

The results of the test in table 8a above show that (df = 23, df =90, F= 20.882, p=0.000).Therefore, we reject the null hypothesis since p<0.05 and conclude that there are significant differences in mathematics performance among students receiving different parental treatments.

Table 8b: ANOVA

Communication And Perfomance					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3415.755	22	155.262	16.649	.000
Within Groups	848.605	91	9.325		
Total	4264.360	113			

The results of the test in table 8b above show that (df = 22, df =91, F= 16.649, p=0.000).Therefore, we reject the null hypothesis since p<0.05 and conclude that communication is a significant factor that affects mathematics performance.

Table 8c: ANOVA

Home & Family Support And Perfomance					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3758.005	30	125.267	20.533	.000
Within Groups	506.355	83	6.101		
Total	4264.360	113			

To test if there are significant differences in performance among students receiving different home and family support, an Analysis of Variance test was conducted to test the following hypothesis.

H^0: There is no difference in math performance among students receiving different home and family support.

H^1: There is a difference in math performance among students receiving different home and family support.

The results of the test in table 8c above show that (df = 30, df =83, F= 20.533, p=0.000).Therefore, we reject the null hypothesis since p<0.05 and conclude that there are significant differences in mathematics performance among students receiving different home and family support.

Table 9: Correlations

		Parenting	Communication	Home &Family support	Performance
Parenting	Pearson Correlation	1	.831**	.917**	.904**
	Sig. (2-tailed)		.000	.000	.000
	N	114	114	114	114
Communication	Pearson Correlation	.831**	1	.811**	.868**
	Sig. (2-tailed)	.000		.000	.000
	N	114	114	114	114
Home &Family support	Pearson Correlation	.917**	.811**	1	.922**
	Sig. (2-tailed)	.000	.000		.000
	N	114	114	114	114
Performance	Pearson Correlation	.904**	.868**	.922**	1**
	Sig. (2-tailed)	.000	.000	.000	
	N	114	114	114	114

**. Correlation is significant at the 0.01 level (2-tailed)

Hypothesis two examined the association and the nature of relationships between performance and the three constructs of parenting, communication and home and family support. The correlation between any two variables (or sets of variables) summarizes a relationship, whether or not there is any real-world connection between the two variables. Analysis of the data resulted from the Pearson correlation analysis (see Table 9), indicates that performance is positively correlated with all the three components of parental involvement and the association is significant at the 0.01 level.

The results of this study show that there is a significant relationship between parenting and performance (r=.904**, p=.000).These findings concurs with findings by Fan and Williams (2010) who showed that parental academic aspirations for their children had greater effect on students' academic growth.

The results of this study also show that there is a significant relationship between communication and performance (r=0.868, p=0.000).

The results of this study show that there is a significant relationship between home and family support and performance (p=.922**, p=0.000). A correlation greater than 0.8 is generally described as strong, whereas a correlation less than 0.5 is generally described as weak. Thus, all the three constructs are positively linearly related to performance.

The correlation analysis also reveals that the relationships are highly significant and the strengths of the relationships between independent (parenting, communication and home and family) and dependent variables are very strong between performance and the three components of parental involvement.

However since we have more than one predictor variable, it is not conclusive to compare the contribution of each predictor variable by simply comparing the correlation coefficients. Further tests of beta regression coefficients are carried out in order to make such comparisons and to assess the strength of the relationship between each predictor variable to the response variable.

11.3 Test of Multi-collinearity

The term multi-collinearity (or collinearity) is used to describe the situation when a high correlation is detected between two or more predictor variables. Table 9 shows that (parenting/communication=.831**, parenting/home and family support=.917**, communication/ home and family support=.811**).These high correlations cause problems when drawing inferences about the relative contribution of each predictor variable to the success of the model (Laursen, Pulkkinen & Adams, 2002).The variance inflationary factor (VIF) for each explanatory variable was used in this study as suggested by Bersenson et al. (2004). If variance inflationary factor (VIF) in each independent variable is equal to 0, it means that the variables are uncorrelated to each other. If the variance inflationary factor (VIF) is greater than 5, it means that the

independent variables in the model are not highly correlated to each other. The requirements for employing regression analysis were fulfilled since all the VIFs were more than zero but less than 5.

Table 10: Test of Multi-collinearity

Variables	VIF
Parenting	3.39
Communication	3.69
Home and Family Support	4.89

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics				
					R^2 Change	F Change	df1	df2	Sig. F Change
	.947[c]	.898	.895	1.9916	.005	5.861	1[c]	110	.017

Predictors: (Constant), Parenting, Home & family support, Communication)

The results of multiple regression analysis indicate that multiple regression coefficients of parenting, communication and home and family support on performance is 0.947 and the adjusted R square is 0.898. Therefore, the findings confirmed and suggested that the overall 89.5% of the variance (adjusted R square) in performance has been significantly explained by these three factors of parenting, communication and home and family support. The p-value for the adjusted R square is (p= 0.017) and is less than 0.05. Thus we conclude that the three variables are significant predictors of mathematics performance.

Table 12: ANOVA: Performance and Home & family support, Parenting& Communication

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	3828.036	3	1276.012	321.691	.000[d]
	Residual	436.324	110	3.967		
	Total	4264.360	113			

Table 12 above reports an ANOVA, which assesses the overall significance of the model. In the ANOVA table, the F statistic is equal to 1276.012/3.967 =321.691. The distribution is F (3, 110), and the probability of observing a value greater than or equal to 321.691 is less than 0.05. There is strong evidence against the null hypothesis. As $p < 0.05$ the model is significant. To measure the contribution of each variable to the response variable beta tests were carried out.

The standardized beta coefficients give a measure of the contribution of each variable to the model. A large value indicates that a unit change in this predictor variable has a large effect on the criterion variable. The *t* and *Sig* (p) values give a rough indication of the impact of each predictor variable – a big absolute *t* -value and small p value suggests that a predictor variable has a great impact on the criterion variable.

Table 13: Influence of each variable on Performance: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.998	1.065		2.816	.006
Home And Family support	.383	.061	.494	6.307	.000
Communication	.381	.071	.301	5.352	.000
Parenting	.231	.096	.200	2.421	.017

Performance=Constant + β_1 Home & Family support+ β_2 Communication+ β_3 Parenting + Error term
Performance=2.999 + 0.494 Home &Family support+ 0.301Communication+0.200Parenting+ Error term

The beta value is a measure of how strongly each predictor variable influences the response variable (performance). The beta is measured in units of standard deviation. The higher the beta value the greater the impact of the predictor variable on the response variable. The beta regression coefficient is computed to make comparisons and to assess the strength of the relationship between each predictor variable to the response variable.

From the result presented in table 13, home and family support appeared as the strongest explanatory variable

with standardized beta of 0.494. A t-test for this regression coefficient gives (t=6.307, p=.000). Since the p<0.05 we conclude that the regression coefficient is significant and home and family support is a predictor of performance.

This is followed by communication with a standardized beta value of 0 .30 .A t-test for this regression coefficient gives (t=5.352, p=.000). Since the p<0.05 we conclude that the regression coefficient is significant and communication is a predictor of performance.

Parenting has a standardized beta value of 0 .200.A t-test for this regression coefficient gives (t=2.421, p=.017). Since the p<0.05 we conclude that the regression coefficient is significant and parenting is a predictor of performance.

12. Conclusion and Recommendations

The present study explored the impact of parental involvement as a predictor variable on students' mathematics performance. The research hypothesized that parental education and gender have a significant effect on the student's performance. The results showed that parents' education level and gender were directly related to students' mathematics performance**.** This means that the educational level and gender of parents play a vital role in students' performance. Therefore, because highly educated parents know the learning requirements and had opportunities to provide the best education environment for their children.

The research also proposed that there is a relationship between parental involvement (parenting, communication and home and family support) and students' mathematics performance. The results indicated that there is a significant positive relationship between parental involvement and student performance. A regression model was used to find the most contributing parental involvement construct**.** Home and family support is the most contributing predictor of students' mathematics performance. This suggests that parents' involvement through home works, creating conducive home environments for studying and motivating and setting realistic expectations enhances performance. Therefore it can be concluded that performance and dimensions of parental involvement are positively related and if teachers and parents need to improve students' performance, they should ensure children's health and safety and to build positive home conditions that support school learning.

The study recommends that parents should take a leading in supporting their children's educational endeavors since they are the first educators to expose them to the academic world. The research also recommends a strong parent –teacher partnership for students to excel in mathematics. Parents should also set realistic expectations on their children's performance. These high expectations motivate their child to perform well in mathematics. The confidence they have in their children builds their own confidence in their academic abilities and makes them more likely to succeed.

References

Abreu, G. & Cline, T. (2005). Parents' representations of their children's mathematics learning in multiethnic primary schools. *British Educational Research Journal*, 31 (6), 697-722.

Anthony, G. & Walshaw, M. (2009). Characteristics of Effective Teaching of Mathematics: A View from the West. *Journal of Mathematics Education*, 2(2): 147-164.

Barbarin, O & Aikens, N. L. (2008). Socioeconomic differences in reading trajectories: The contribution of family, neighborhood, and school contexts. *Journal of Educational Psychology*, 100(2):235-251.

Barnard, W. M. (2004). Parent involvement in elementary school and educational attainment. *Children and Youth Services Review*, 26, 39-62.

Belsky, J. (1998). *Paternal influence and children's well-being: Limits of, and new directions for, understanding*. In A. Booth & A. Crouter (Eds.), Men in families Mahwah, NJ: L Erlbaum.

Bicer, A., Capraro, R. M., & Cetin, S. C. (2012). *Parental involvement effects on students' mathematics achievement*. Paper presented at the annual conference of Southwest Educational Research Association (SERA), New Orleans, LA.

Biddulph, F., Biddulph, J. & Biddulph, C. (2003).*The Complexity of Community and Family Influences on Children's Achievement in New Zealand: Best Evidence Synthesis Iteration (BES)*. Ministry of Education. New Zealand.

Bryman, A. & Bell, E. (2011). *Business Research Methods,* (3rd edn.). London: Oxford University Press.

Cai, J. (2003). Investigating parental roles in students' learning of mathematics from a cross-national perspective. *Mathematics Education Research Journal*, 15(2), 87-106.

Chowa, G., Masa, R., & Tucker, J. (2013). The effects of parental involvement on academic performance of Ghanaian youth: Testing measurement and relationship using structural equation modeling. *Children and Youth Services Review*, 35(12), 2020-2030.

Christenson, S. L. (2004). The family-school partnership: An opportunity to promote learning competence of all students.*School Psychology Review*, 33(1), 83–104.

Cross, C. T., Woods, T. A., & Schweingruber, H. (Eds.). (2009).*Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: National Research Council.

Dearing, E., McCartney, K., Weiss, H. B., Kreider, H., & Simpkins, S. (2004). The promotive effects of family educational involvement for low-income children's literacy. *Journal of School Psychology*, 42, 445-460.

Demir, I., Kılıç, S., & Ünal, H. (2010). Effects of students' and schools' characteristics on mathematics achievement: Findings from PISA 2006,

Procedia Social and Behavioral Sciences, (2), 3099–3103.
Department for Children, Schools and Families (DCSF). (2008). *The Williams Report of the Independent Review of Mathematical Teaching in Early Years Settings and Primary schools*. DCSF Publications.
Department of Education (DoE), 1996a. *South African Schools Act. Act 84 of 1996.* Pretoria.
El Nokali, N. E., Bachman, H. J. & Votruba-Drzal, E. (2010). Parent Involvement and Children's Academic and Social Development in Elementary School. *Child Development*, 81 (3): 683-1024.
Epstein, J. L. (1995). *School, family and community partnerships: Caring for the children we share*. In J. Epstein (Ed.), School, family, community partnerships: Preparing educators and preparing schools. Boulder, CO: Westview Press.
Fan, W. & Williams. C. M. (2010). The effects of parental involvement on students' academic self-efficacy, engagement and intrinsic motivation. *Educational Psychology*, 30(1):53-74.
Fantuzzo, J. W., Tighe, E., & Childs, S. (2000). Family involvement questionnaire: A multivariate assessment of family participation in early childhood education. *Journal of Educational Psychology*, 92, 367-376.
Farooq, M.S. Chaudhry, A.H., Shafiq M. &Berhanu, G.(2011). Factors affecting students' quality of academic performance: a case of secondary school level. Journal of *Quality and Technology Management*, 7 (2): 01 - 14.
Friedel, J., Cortina, K. S., Turner, J. C., & Midgley, C. (2010). Changes in efficacy beliefs in mathematics across the transition to middle school: Examining the effects of perceived teacher and parent goal emphases. *Journal of Educational Psychology*, 102, 102-114.
Govender, V.P. (2008). *A multiple case study of parent involvement with grade 8 learners of mathematics*. Unpublished PhD dissertation. Nelson Mandela Metropolitan University.
Guðlaug, G. (2010). *Effects of Parental Involvement in Education*: A Case Study in Namibia. Unpublished PhD dissertation Faculty of Education Studies, University of Iceland.
Guy, R. Tali. R., & Mordechai, B. (2008). Mothers' parenting practices and adolescents' learning from their mistakes in class: The mediating role of adolescent's self-disclosure. *Learning and Instruction*, 19: 506-512.
Hoover-Dempsey, K. V., & Sandler, H. M. (1995). Parental involvement in children's education: Why does it make a difference? *Teachers College Record*, 97(2), 310–331.
Howie, S.J. (2001). *Third International Mathematics and Science Study Repeat (TIMSS-R*). Pretoria: Human Sciences Research Council.
Iruka, I., & Barbarin, O. (2008). *African American children's early learning and development: examining parenting, schools, and neighborhoods*. In H. Neville, N. Tynes, &S. Utsey (Eds.), Handbook of African American psychology. Thousand Oaks, CA: Sage.
Israel, G. D., Beaulieu, L. J., & Hartless, G. (2001). The Influence of Family and Community Social Capital on Educational Achievement. *Rural Sociology*, 66 (1), 43-68.
Jeynes, W. H. (2010). The salience of the subtle aspects of parental involvement and encouraging that involvement: Implications for school-based programs. *Teachers College Record*, 112, 747–774.
Kgosidialwa, T.K. (2010). *Parental involvement and expectations of children's academic achievement goals in Botswana: Parent's perceptions*. Unpublished PhD dissertation Faculty of Education Studies. University of northern Colorado.
Laursen, B., Pulkkinen, L. & Adams, R. (2002).The Antecedents and Correlates of Agreeableness in Adulthood. *Developmental Psychology*, 38(4): 591–603.
Mji, A. & Makgato, M., 2006. Factors associated with high school learners' poor performance: A spotlight on mathematics and physical science. *South African Journal of Education*, 26(2): 253–266.
McDermott, P. & Rothenberg, J. (2000). Why Urban Parents Resist Involvement in their Children's Elementary Education. *The Qualitative Report*. (5), 3-4.
Mji, A. & Mbinda, Z. (2005). Exploring high school science students' perceptions of parental involvement in their education. *Psychological Reports*, 97:235-336.
Mooney, A., Oliver, C. & Smith, M. (2009*). Impact of Family Breakdown on Children's Well-Being.* Evidence Review. Institute of Education, University of London.
Neuman, W. L. (2011). *Social research methods: Qualitative and quantitative approaches*. Boston: Allyn & Bacon.
O'Toole, S., & Abreu, G. (2005). Parents' past experiences as a mediational tool for understanding their child's current mathematical learning. *European Journal of Psychology of Education*, 20 (1), 75-89.
Remillard, J. T., & Jackson, K. (2006). Old Math, New Math: Parents' experiences with Standards-Based Reform. *Mathematical Thinking and Learning*. 8 (3), 231-259.
Richardson, S. A. (2009). Principal's perceptions of parental involvement in the "big 8" urban districts of Ohio. *Research in the Schools*, 16(1), 1-12.
Rohner, R. P. & Veneziano, R. A. (2001). The Importance of Father Love: History and Contemporary Evidence. *American Psychological Association. 5(4). 382-405.*
Sanders, M. G. & Sheldon, S. B. (2009). *Principals matter: A guide to school, family, and community partnerships*. Corwin: A SAGE Company.
Sheldon, S. B. (2009). *In School, family, and community partnerships: Your handbook for action* (3rd ed.). USA: Corwin Press.
Shinn, K. (2002). Luring high school parents onto our turf. In: *The education digest*, 67(3), 34-36.
Shumox, L., & Lomax, R. (2001). Parental efficacy: Predictor of parenting behavior and adolescent outcomes. Parenting, 2(2): 127-150.
Smith, A. B., & May, H. (2006*). Early childhood care and education in Aotearoa* – New Zealand. In E. Melhuish & K. Petrogiannis (Eds.), Early childhood care and education: International perspectives. London: Routledge.
Topor, D. R., Susan, P. Keane, B. & Terri, L. (2010). Parent involvement and student academic performance: A multiple mediational analysis. *Prev interv Community*. 38(3):183-197.
Vukovic, R. K., Roberts, S. O. & Wright, L. G. (2013). From Parental Involvement to Children's Mathematical Performance: The Role of Mathematics Anxiety. *Early Education and Development*, 24: 446–467.
Wang, D. B. (2004). Family factors and mathematics success: A comparison of Chinese and US student. *International Journal of Educational Research*, 41: 40-54.
Wylie, C. (2001). Making Sense: Relations between literacy, television and computer use and other uses of children's time. Wellington: NZCER.