

The Influence of Reciprocal Interactions in the Family on Academic Performance among Secondary School Students in Kenya

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ABSTRACT

This study investigated the influence of reciprocal interactions in the family on academic performance among secondary school students in Siaya District. Stratified and purposive sampling techniques were used to select the study participants. The sample comprised a total of 243 students (154 boys and 89 girls) drawn from 27 public coeducational secondary schools in the district. Data was collected using student questionnaires. The researchers' judgment of the representativeness of the items in the questionnaire to the study topic was used to determine content validity of the instrument while Cronbach's alpha coefficient was used to ascertain reliability of the instrument. Linear regression analysis and one way Analysis of Variance were used to analyze data. The results revealed significant relationship between reciprocal interactions in the family and academic performance of students. There was positive correlation between parental expectation, autonomy granting, cross-sex behaviour and students' academic performance. Siblings' sex dyads and birth order were also found to correlate with students' academic performance. The findings may be used by policy makers to sensitize parents and students on the significance of specific interactions in the family on academic performance.

Introduction

Reciprocal interactions in the family involve substantial interconnection and synchronization between members of the family making it a precursor in social and intellectual development of a child. Coleman (1997) suggested that it is through relationships that children gain access to economic, human, and cultural resources of their families that are critical in leveraging their academic performance. Kreppner and Lerner (1989) viewed the development of the child to follow probabilistic epigenetic course, according to which biology remains a prime mover but the developmental results depend on reciprocal interaction between biology and social context such as the family. Despite the significance of such interactions in the family on children's intellectual development, most related researches have focused on unidirectional model of socialization that disregards the influences of the child in the exchanges (Bigner, 2006). This paper focuses on the influence of bidirectional (reciprocal) interactions in the family subsystems of parent-parent-child, parent-child, and siblings on academic performance among secondary school students in Siaya District. The literature reviewed point to the influence of parental involvement, expectation, autonomy granting, cross-sex behaviour, sibling birth order, and sibling sex dyads

Literature Review

There are contradictory findings regarding the effect of parental involvement on children's academic success. Some studies reported positive associations with academic achievement (Tipor, Keane, Shelton, & Calkins 2010; Hong & Ho, 2005; Hill & Craft, 2003). Other studies indicated no association (Patall, Cooper, & Robinson, 2008; Barnard, 2004; Fan & Chen, 2001) and even others reported negative association (Coleman & McNeese, 2009; Domina, 2005; Fan, 2001) Several researchers suggested that parent-child communication, discussion, parental encouragement for academic success, and related forms of parental involvement are more effective in academic performance of children whenever parents possess economic, human, and cultural capital (Kim,

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Hwang, & Shin, 2009; Park, 2008; Lee & Bowen, 2006). However, the studies did not indicate the influence of both parent and the child in the interaction but only the influence of the parent making the child to remain passive in the exchanges.

Parental involvement and its effectiveness declines as children get older (Crosnoe, 2001; Muller, 1998; Singh et al., 1995). In elementary school, parental involvement exerts desirable effects because children have not developed study habits and parents have greater mastery of the subject matter covered in the early grades (Cooper, 2001). During adolescence, in secondary school, students try to be more independent from parents and parent child conflicts increase (Coleman & McNeese, 2009; Laursen, Coy & Collins, 1998). Some studies indicated differential outcome of mother or father support and Adrianes (2013) observed that having a supportive mother makes a slightly more positive difference but having a supportive father leads to slightly higher grades.

Research evidence has converged to show that parents attitudes, expectancies and beliefs about schooling and learning guide their behaviour with their children and have causal influence on the children's development of achievement attitude (Carpenter, 2008, Ames & Archer, 1987). Positive correlations between parental expectations for children's academic achievement and their educational outcomes have been reported in several studies (Yamamoto & Holloway, 2010; Moore, Whitney, Kinukawa, 2009; Jeyney, 2007; 2006; Davis-Kean, 2005). However, the relationship may not be straight forward and Goldenberg, Gallimore, Reese, & Garnier (2001) in their longitudinal study of Latino students and their parents, using structural equation models concluded that prior students' achievement influenced subsequent parental expectations. On the contrary, prior parental expectations were not found to affect the students' subsequent achievement.

Positive parent-child relationship is related to a higher unanticipated educational outcome while perceptions of parental control predict grade point average scores for both males and females (Turley and Desmond, 2008; Fulton & Turner (2007) . Autonomy granting has been found to be related to children's autonomy in academic activities, motivation, and achievement (Ginsburg & Bronstein, 1993). Converging evidence of Xia, et al. (2011) study results revealed that parents' engagement with their child in every day decision making enhances the adolescents working memory. The study employed Iowa Gambling Task (IGT) and Self-Ordered Pointing Test (SOPT) with a sample of Chinese students.

Family conflicts between individual members and subsystems negatively affect the functioning of parents and siblings. Children may react to parental conflict through perceived threat and self-blame which are primary appraisals of the inter-parental stressors (Ghazarian & Buehler, 2008). Triangling may occur when inevitable anxiety in the parents' dyad is relieved by involving the child who is a vulnerable third party (Guerin, Forgaty, Fay, & Kautto, 1996). Children might attempt to intervene during inter-parental conflict or sib conflict by playing the role of mediator, peace keeper, or confidante. Chung, Flook, and Fulgini (2009) investigated the effects of daily spillover of conflict within the family setting and found that adolescents were more likely to argue with their parents on days in which their parents argued with each other. Parental argument was mediated in part by adolescents' distress. Flook and Fulgini (2008) investigated day-to-day spillover between family stressors and reported that family and school experiences reciprocally predicted adolescents' functioning in each setting. Family conflicts therefore negatively affects children's academic performance and Crowe (2011) argued that when a child is exposed over time to conflict; brain functioning can be altered due to stress hormones which might lead to impaired thinking, lack of problem solving, reasoning skills, and memory problems; consequently impairing academic performance.

Research on the contribution of parental sex-role beliefs to child academic achievement is one intriguing context and cross-sex behaviour found to be more associated with higher cognitive functioning and achievement motivation. Brooks-Gunn (1986) observed that daughters of mothers who had strong sex-type beliefs had lower intelligence scores than did daughters of mothers with less strong sex-type beliefs. However, the relationship was not found for sons. Research on mathematics has shown that despite equivalent levels of performance; mothers' attributions for success and failure differ on the basis of children's' sex and mothers of boys attribute success to ability and failure to lack of effort while mothers of girls attribute success to effort and failure to lack of ability (Holloway, & Hess, 1983). Such differential beliefs have profound influence on children's self-appraisals of ability, attribution for performance, and attitudes towards academic work. The interactions in the family form a basis for the sex-typed beliefs of parents about their children concerning their ability to perform in academic related activities.

The family economy model and the resource dilution thesis recognize that limited resources due to family

size, or low income constraints parents' abilities to pursue altruistic goals for their children (Buchman, 2000). The family economy model distinguishes between immediate and future needs of the family and stresses that poor families cannot afford to act on calculations of the future returns to education at the expense of immediate welfare. The allocation of children to productive activities at home or in the labour market is a common strategy for poor families to meet immediate needs. The families' reliance on child labour has often been blamed for low levels of educational participation in developing countries (UNICEF, 1993). Nyatuke and Nasongo (2010) study findings linked students' participation in domestic chores to low academic achievement and significant difference between gender and academic achievement with girls performing poorly than boys.

Perceived support from older siblings is concurrently associated with younger siblings' academic performance (Brody, 2004; Jacobs & Bleeker, 2004; McHale, Crouter, Ugdegraff, Helms-Erickson, & Crouter, 2001). However, this pattern may be moderated by factors such as siblings' sex composition with the same sex sibling more influential than the mixed sex-dyad (Kim, McHale, Crouter, & Osgood, 2007). In contrast to the observations, McHale, et al. (2001) noted that children strive to de-identify from siblings especially those close in ages and carve their own niches by excelling in different domains. Children with older siblings who are excelling in academics may explore other domains such as co-curricular activities.

Downey (2001) noted that increases in the number of children results in progressive dilution of the family resources while according to Marjoribank (1997) age gap between siblings counteracts the negative effects of resource dilution and resource dilution mainly affects younger children. Margarin (2009) found significant relationship between birth order, assertiveness and academic success with first borns being achievement oriented while later borns are relational oriented. However, resource dilution thesis predicts that later borns should have more educational advantage over first borns (Buchman, 2000). Only children also appear to excel academically which supports resource dilution theory (Tshui & Cai, 2011). There are contradictions of the effect of resource dilution on academic performance of first born and later born children and the current study may show more evidence on the relationship between birth order and academic performance.

There are contradictions and inconclusive evidence in the literature reviewed rendering it difficult to ascertain the validity of the results with some studies revealing that reciprocal interactions in the family predict academic performance while others do not. The studies reviewed mostly considered one strategy in family interactions and family subsystems, for example parent-child or sibling subsystem and not the family as a system. This scenario further complicates the conclusion of the influence of reciprocal interactions in the family on students' academic performance. Therefore, the proposed hypothesis of this study was: There is relationship between reciprocal interactions in the family and students' academic performance.

Method

Research Design

This was a survey research design aimed to investigate the influence of reciprocal interactions in the family on academic performance among secondary school students in Form 3. The independent variable was reciprocal interactions while dependent variable was academic performance.

Sample

The study recruited 154 boys and 89 girls in secondary schools in Siaya District. Form 3 students were selected because they had been in school long enough and could give rich data concerning the influence of reciprocal interactions in the family on academic performance. The sample size for Form 3 students included in the study was determined using Raosoft (2004) Sample Size Calculator $p < .05$ and a representative sample of 243 students was attained. The study sampled 27 coeducational day secondary schools in the district. Stratified and purposive sampling was used to sample students who were included in the study and the students were stratified as boys and girls. The goal of using stratified sampling was to achieve the desired representation from various subgroups in the population. Purposive sampling was used to select students living with both biological parents and sat for exams for three consecutive terms in the same school while they were in Form 2.

Measures

In this study, students' questionnaire on reciprocal interactions in the family was used to collect data. The questionnaire was divided into four sections, ABC. Section A contained items that generated information on parent-child interactions, section B generated information on parent-parent-child interactions, and section C sibling interactions. The questionnaire comprised open and closed ended items for the sake of comprehensive feedback. These were Likert-type items designed to assess the perception of students regarding the interactions within the family subsystems. The questionnaires considered factors such as parental involvement in academic work of students, family conflict, sibling birth order and support.

The items in the questionnaire were scored using a five point Likert scale whereby the scores were allocated depending on favorableness or unfavorableness of the responses (Kothari, 2003). In the questionnaire, strongly agreed (SA), Agreed (A), Undecided (U), Disagree (D), and strongly Disagree (SD) were scored as 5, 4, 3, 2, and 1 where the statement is positive; 1, 2, 3, 4, and 5 in negative statements. Reciprocal interactions were categorized as healthy, average healthy, and unhealthy. Students whose mean scores were one standard deviation below the sample mean were considered to have unhealthy reciprocal interactions in their families while those whose scores were one standard deviation above the sample mean were considered to have healthy interactions in their families.

The total score that a student could obtain in academic performance was 100% and the average academic performance of students was 50.02%. Students who scored one standard deviation below the sample mean were considered to have poor academic performance while those who scored one standard deviation above the sample mean were considered good in academic performance. Students who scored between one standard deviation below the sample mean and one standard deviation above the sample mean were considered average in academic performance. The academic scores were standardized by converting them into T-scores because the mean and the standard deviation are the same for all and the students' and their relative performance on various tests can be directly compared. Content validation was used to ascertain the validity of the items in questionnaire. The questionnaire was pretested in one of the co-educational secondary schools in Siaya District to ensure the items give the required information.

Cronbach's alpha test as a measure of internal consistency was used to estimate the reliability of items in the questionnaire. The Cronbach's alpha is an index of reliability associated with the variation accounted for by the true score of the underlying construct (Hatcher, 1994). The study adopted George and Mallery (2003) levels of alpha coefficients to make judgment on reliability of the instrument; Excellent $> .9$, Good $.9 > .8$, Acceptable $.8 > .7$, Questionable $.7 > .6$, Poor $.6 > .5$, Unacceptable $< .5$. In parent-child subsystem, the reliability was excellent $\alpha = .97$, parent-parent-child subsystem $\alpha = .94$, and sibling subsystem $\alpha = .87$. The alpha values were high enough to judge items homogenous (unidimensional).

Procedure

The participants consent was sought before data collection. A letter of introduction seeking participants' consent, stating the study topic, and the proposed date of visit was given to the head teachers two weeks before research began. The researcher explained the purpose of the questionnaire to the head teachers and respondents in order to dispel fears and to increase the respondents' response rates. The participants were identified with the help of the class teachers and guidance and counseling teachers. The scores on students' academic performance were obtained from the school records.

Analysis

In this study, both descriptive and inferential statistics were used in data analysis. The analyses employed Computer Statistical Package for Social Science (SPSS) 16.0; the statistical level of significance was set at .05. The data was analyzed using linear regression analysis, one way Analysis of Variance (ANOVA), mean, frequencies, and standard deviation. Linear regression was used to determine the relationship between reciprocal interactions in the family and academic performance while one way ANOVA was used to test for significant difference between means of students' academic performance from families of healthy, average healthy, and unhealthy reciprocal interactions

Ethical Considerations

The researcher recognized participants' rights to be informed about the study, and freely decide whether or not to participate in the research. Therefore, the participants were not expected to write their names on the questionnaire but their admission numbers were used to identify their academic scores for anonymity purposes. The respondents were informed that the results will be published for research purposes and their approval to use the data in the publication of the research report was requested.

Results

The null hypothesis stated that there is statistically significant relationship between reciprocal interactions in the family and academic performance of students. To test this hypothesis, the scores on reciprocal interactions in the family and academic performance of students calculated for three consecutive terms while they were in Form 2 were correlated using linear regression analysis. The results of data analysis indicated that reciprocal interactions in the family statistically and significantly predicted academic scores of students, $\beta = .87 = p < .05$. Reciprocal interactions in the family also explained a significant proportion of variance in academic scores of students, $R^2 = .76 p < .05$.

The hypothesis was tested further by comparing the means of academic performance obtained by students from healthy, average healthy, and unhealthy reciprocal interactions. The descriptive statistics (frequencies and means) of their responses are presented in Table 4.1.1. The mean scores of academic performance obtained by students from the three types of reciprocal interactions in the family were compared using one way ANOVA. The results of the analysis showed that there was a statistically significant difference in academic performance of students from healthy, average healthy, and unhealthy reciprocal interactions, $F(2, 240) = 121.62, p < .05$. It was concluded that reciprocal interactions in the family influence academic performance of students in Siaya District. Students brought up in families with healthy reciprocal interactions have good academic performance than students from families with average healthy and unhealthy interactions.

Table 4.1.1 Frequencies of Reciprocal Interactions and Means of Academic Performance

Reciprocal Interactions	Frequency	Academic Performance Mean	Standard Deviation
Healthy	109	57.81	6.86
Average Healthy	16	48.91	4.21
Unhealthy	118	43.05	7.45
Total	243	50.02	9.98

Discussion

The study investigated the relationship between reciprocal interactions in the family and academic performance. The results revealed significant relationship between reciprocal interactions in the family and academic performance of students with students from families with healthy reciprocal interactions in the family having better academic performance than those from families with average and unhealthy reciprocal interactions. The findings are consistent with Coleman (1997) observation that it is through relationships that children gain access to economic, human, and cultural resources of their families that are critical in leveraging their academic performance. Children from families with healthy reciprocal interactions have available family human and economic resources at their disposal that support their learning activities in school unlike children from families with unhealthy interactions.

The results indicated that there was no marked difference in academic performance of students who reported that their parents are involved in their academic activities and those who perceived their parents to be less involved. The observation is consistent with some of the reviewed studies that indicate negative or no associations between parental involvement and academic performance (Patall, Cooper, & Robinson, 2008; Barnard, 2004; Fan & Chen, 2001; Coleman & McNeese, 2009; Domina, 2005, Fan, 2001). Possible explanation could be that parental involvement and its effectiveness declines as children get older (Crosnoe, 2011). The

participants in the current study were adolescents in secondary school who are striving to be independent from their parents and their development stage is characterized by increased parent-child conflicts which possibly lead to reduced parental involvement. The study did not consider prior performance and may have overlooked the impact of parental involvement at an early stage of learning. Students who had higher academic score from the beginning of their school life, possibly due to their ability, may not make much difference with the current involvement as those who started with low test scores.

Students who indicated that their parents do not allow them to make own decisions had lower academic performance (41.18%) than those who disagreed and strongly disagreed scoring a mean of (56.42%). The result replicates observations of different researches that reveal association between parental control and academic performance (Ogwari, 2008; Turley & Desmond, 2008; Ginsburg & Bronstein, 1993). Overly controlling parents stifle their children's ability to develop autonomy in decision making concerning academic achievement. The children are dependent and fearful in adventuring in novel areas such as school work. Engaging the children in decision making serves as a scaffold that provides framework in their problem solving skills in tasks that require independence like choosing subjects.

Students whose parents encourage cross-sex behaviour had better academic mean score (58.38%) than those whose parents did not (45.72%). Brooks-Gunn (1986) observed that daughters of mothers who had strong sex-type beliefs had lower intelligence scores than did daughters of mothers with less strong sex-type beliefs. Androgynous parents give equal treatment to their children and do not use attribution to explain the performance of daughters or sons. This enables the children to have positive self-appraisals of their ability in academic activities.

Parental expectation for children's academic performance was found to be positively correlated to academic performance of students. The results replicate studies that indicate positive relationship between parental expectation and academic performance (Yamamoto & Holloway 2010; Moore et al., 2009; Jeyney, 2007; Davis-Kean, 2005). Students who perceived that their parents had high expectations on their academic performance had better scores than those who perceived that their parents had lower expectations. High expectations motivate the students to work hard to meet or even break the targets set for them by the parents. However, the poor academic performance reciprocally influences the low expectations of the parents disposing the child and the parents to self-fulfilling prophecy. This study however, did not investigate whether it is students' prior performance that influences subsequent parental expectation or prior parental expectation that influenced students' academic performance as done by Gallimore, Reese, & Garnier (2001).

The results indicated that family conflicts have negative influence on students' academic performance. Students who disagreed and strongly disagreed that their parents rarely have conflict had lower academic performance (42.53%) than those who agreed and strongly agreed with a mean score of (59.25%) and those who were undecided scoring a mean of (48.28%). The results supports studies in the reviewed literature that points to negative relationship between family conflicts and academic performance (Crowe, 2011; Chung, et al., 2009; Flook & Fulgini, 2008). The parents' attention is diverted from attending to the child to addressing conflicts while the children get consumed with conflicts that eat into their learning time resulting into poor performance which ignites conflict in the family making the situation to be cyclic.

Students who had healthy reciprocal interactions in the sibling family subsystem had better academic performance than those from families with average and unhealthy interactions in the sibling subsystem. Students with healthy interactions in the sibling subsystem scored a mean of 57.19%, average 49.64% and unhealthy interactions 43.2%. The results points to Brody (2004) observation that older siblings provide more relevant academic support to their younger siblings and this is higher especially when older siblings excel in academic performance. The younger siblings can equally pose a challenge to the older siblings when they are performing well in school activities motivating them to make improvements. However, contrary to resource dilution hypothesis, middle born, last born, and only children in the study had academic mean scores higher than those of first born children. First borns may be overburdened with the responsibility of taking care of the later born children consequently reducing the time dedicated for academic work.

Kim, et al. (2007) noted that the pattern in siblings' interaction can be moderated by factors such as sex composition of the sibling dyad with same sex dyads being more influential than mixed dyads. The observation is consistent with study results in which boys who had more brothers performed better than those with more sisters, although girls with more sisters had lower academic performance than those with more brothers. Possible explanation is that through social learning, the girls are influenced by the feminine

traits of the older sister siblings that leads to poor academic performance while those with brothers imitate the masculine traits which are achievement oriented positively affecting their academic performance.

Siblings strive to deidentify from each other in an effort to reduce psychological tension and relational conflict within the dyad and to enhance their own feelings of self-worth (McHale et al., 2001). The view explains why children who indicated that they would want to be more successful in academics than their siblings had higher academic mean score (60.02%) than those who did not (42.15%). McHale et al., (2001); Feinberg and Hetherington (2000) argues that adolescents who have small age gaps often experience deidentification than sibling dyads composed of different sex. The current study did not investigate the influence of age gaps on deidentification of the students.

Limitations

There are three main limitations to the current study that constrain the generalizability of the results and suggest alternative explanations of the findings. First, is the survey research design that establishes correlation and not causation. The study cannot explicitly conclude that reciprocal interactions in the family causes good or poor academic performance of students as there could be other confounding variables such as student ability, school factors, and peer influence that also explain academic performance. The study focused on between-family and not within-family analysis making it difficult to control for other variables that could explain academic performance such as family socio-economic status. Future researches should involve within-family investigations. Alternatively, greater control, evidence of causation, and understanding the relationship would only be possible with randomized experimental design, for example experimental families are encouraged to have healthy family interactions and control group are not.

Secondly, the definitions of the different variables of reciprocal interactions such as parental involvement, and parental expectation are ambiguous and therefore one cannot be sure exactly what the students were responding to by providing their ratings. On parental involvement in students' academic work, it is possible that some students were rating for parents provision of learning materials, communication with the teachers, or attending school meetings. On parental expectations, it is also possible that some students were responding to the parents' realistic judgment about their future, while other students responded to how far their parents hope they will achieve in future. Future research should clearly define these variables to ensure researchers are clear as to what the respondents are providing ratings on.

Thirdly, the lack of significant difference in academic performance of students who perceived their parents to be involved in their academic work and those who indicated that their parents are less involved could be an effect of reactivity. The parents could have become more involved in reaction to their children poor academic performance while other parents do not find a reason for being involved since their children are performing well. Future research should be longitudinal and control for academic performance of students by recording the scores before and after the experiment. The analysis is likely to disentangle the extent of association attributed to reactivity from that explained by parental involvement.

In conclusion, the findings of this study and other existing studies indicate that reciprocal interactions in the family influence academic performance of students. The results can be used to improve academic performance of students when stakeholders in education address the family factors and the bidirectional interactions. Based on the findings, policy makers should sensitize parents and students on the concept of reciprocal interactions so that they can conceptualize the interconnectedness of interactions in the family system. They should also be informed that interactions in the family are bidirectional and the behaviour of any member elicits reaction from other members and therefore academic performance is a product of behaviour of the parents, siblings, and the child.

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