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Consensual Parent-Child Communication Patterns as Correlates of Interest and Academic Achievement Among Secondary School Students in Abia State

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Abstract

The purpose of this study was to determine the extent consensual parent-child communication patterns correlate with interest and academic achievement in mathematics of secondary school students in Abia State. The study was guided by two research questions and two null hypotheses formulated and tested at 0.05 level of significance. The study adopted a correlational research design. The sample for the study consisted of 878 senior secondary school class II students drawn from a population of 8783 senior secondary class II students in Abia State. Three instruments titled "Parent-Child Communication Pattern Questionnaire (PCCPQ), Students Interest Questionnaire (SIQ), and Students' Academic Achievement in Mathematics Test (SAAMT)" were developed by the researchers and were used for data collection. These instruments were subjected to face validation by three experts. The stability of PCCPQ, SIQ was determined using PPMCC and reliability indices of 0.83 and 0.82 were obtained for PCCPQ and SIQ, respectively. The reliability of the SAAMT was determined using Kuder-Richardson (KR-21) formula and reliability coefficient calculated was 0.90. The data generated for this study were analyzed using Pearson's r, R^2 (coefficient of determination) to answer the research questions while linear regression analysis was used to test the null hypotheses. Results revealed that consensual parent-child communication pattern was a significant predictor of interest and academic achievement in mathematics of students. It was recommended that parents or guardians, teachers, psychologists/counsellors should educate students on the importance of parent-child communication patterns on interest and academic achievement.

Key Words: Consensual Parent-child communication patterns, interest and academic achievement

Introduction

Many countries of the world embark on repositioning their nation towards industrial and technological development. Nigeria as a nation is not exempted. Students are encouraged to take up mathematics and science related subjects to actualize this objective. Ale and Lawal (2020) stated that the line of demarcation between developed and underdeveloped nations is based on the level of mathematical attainment and ingenuity. The authors maintained that mathematics is an indisputable agent of national development and wealth creation. Mathematics is an important subject that not only gives academic qualification but also prepares students for the future; irrespective of whichever career they choose to be part of, as mathematics permeates every aspect of human endeavor such as politics, economy, science and technology (Davis & Hersh, 2022). Mefor (2014) confirms it all by saying that mathematics permeates into everything in life from smallest to the largest. Ummameh (2019) maintained that mathematics intimately is connected to our daily life and every body's lifelong planning. Humans are always involved in one mathematical operations or the other.

Mathematics is highly valued in the academic curriculum and frequently figured prominently in measures of achievement for level of placement and tertiary education admission relevant to science and technology. The entry requirement for any course in the university of any choice in Nigeria is five credit passes including English language and Mathematics. A good mathematical background is necessary in equipping the students to acquire advanced skills to contribute meaningfully to the growth of the society. Mathematics as a subject allows scientists to communicate ideas using universally accepted technology (Yusuf & Emmanuel, 2015). The benefits and outcomes of mathematical researches are immeasurable. No wonder why Nigerian government identified mathematics as one of the core subjects in the school curriculum to broaden students' knowledge, skills and outlook (Federal Republic of Nigeria, 2013).

In spite of the relative importance of mathematics in the overall economic and technological development of the country, as well as being a core subject in the secondary level of education, students' achievements in it have been very poor due to learning difficulties (Barrows, Dunn & Lloyd, 2016). Ahmed, Minnaert, Kuyper and vander-Werf (2016), stated that students refer to mathematics as being difficult. Moreover, students' negative experiences in mathematics in class and at home is often transferred, which impedes appropriate learning of mathematics

(Hong, Sas & Sas, 2016). The poor achievements in mathematics have been confirmed by the recent West African Examinations Council's reports from 2018 to 2022. For instance, the WAEC result analysis revealed that only 41.50%, 30.99%, 31.67%, 42.71%, and 52.87%, of the candidates obtained credit pass and above in the years 2018, 2019, 2020, 2021, and 2022 respectively (Ajayi & Awogbemi, 2023).

A lot of efforts and suggestions have been put in place as regards students' poor achievement in mathematics. Many studies have suggested that to address the problem of poor mathematics achievement, there is the need to address the different factors that affect mathematics achievement such as lack of motivation on the part of students (Osibodu, 2020), lack of self-regulatory skills for mathematics learning (Woolfolk, 2020); teachers' persistent use of conventional/traditional teaching method that encourages rote learning; and the socio-cultural background of students (Awofala et al., 2021); lack of qualified mathematics teachers (Eze, 2023). All these suggested strategies look interesting in their theoretical orientations, but the problem of poor achievement and interest in Mathematics continues to persist. Parents, teachers, curriculum planners and evaluators are worried; especially when it is believed that if the poor achievement in Mathematics continues to persist, it could affect the economic and technological development of the nation.

However, research findings pertaining to the effect of academic interest and achievement are mixed due to various methodological and analytical issues (Jansen et al., 2016. Most studies have examined whether a relationship or effect exists among interest, academic achievement and parent-child communication patterns (such as grades) using either simple correlation or regression analyses. Nevertheless, many studies have quantified the relationship between interest and academic achievement without systematically controlling for alternative influence of factors such as child-parents communication pattern (Hulleman & Harackiewicz, 2019).

Parent-child communication patterns appear to be intensifying from the transition between the period of childhood and adulthood and involves biological, cognitive and social emotional changes (Aiger, 2019). Parent–child communication is the verbal and nonverbal interaction between a parent and child within a family system. Parents are biological or non-biological caregivers (such as adoptive parents or stepparents) and parent–child communication takes place throughout the child's ages and developmental stages (Zhaohua, 2019). Theories utilized by scholars of parent–child communication come from within and beyond the communication

discipline. Research on parent–child communication focuses on individual characteristics of the parent and the child, the quality and content of communicative exchanges, and child-level and relationship-level outcomes. Good communication between parents and child is important for developing a positive relationship and may make it easier for them to talk about difficult topics as they get to adolescence.

Statement of the Problem

Students' achievements in Mathematics have been very poor. Failure in Mathematics is therefore a big set back to the students. For instance, to be accepted in a University or admitted into a highly competitive professional training programmes, a student must have a very high academic grades in Mathematics. A lot of efforts and suggestions have been put in place as regards students' poor achievement in mathematics but the problem of poor achievement and interest in Mathematics continues to persist. Parents, teachers, curriculum planners and evaluators are worried; especially when it is believed that if the poor achievement in Mathematics continues to persist, it could affect the economic and technological development of the nation.

Research reports from outside Nigeria tend to suggest that parent-child communication patterns have the potentials of correlating with interest and academic achievement of students. However, the extent parent-child communication could correlate with the interest and academic achievement in mathematics of secondary school students in Abia State who operate in different socio-cultural circumstances has not been investigated. Therefore, the problem of this study put in a question form is: To what extent do consensual parent-child communication patterns (pluralistic, protective, consensual and laissez-fair parents) correlate with interest and academic achievement in mathematics of secondary school students in Abia State?

Purpose of the Study

The main purpose of this study was to find out the extent consensual parent-child communication patterns (pluralistic, protective, consensual and laissez-fair parents) correlate with interest and academic achievement in mathematics of secondary school students in Abia State.

Specifically, the study sought to:

1. Determine the extent consensual parent-child communication pattern correlates with interest in mathematics of secondary school students.
2. Determine the extent consensual parent-child communication pattern correlates with academic achievement in mathematics of secondary school students.

Research Questions

The following research questions guided the study:

1. What is the extent to which consensual parent-child communication pattern correlates with interest in mathematics of secondary school students?
2. To what extent do consensual parent-child communication pattern correlate with academic achievement in mathematics of secondary school students?

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance to guide the study;

$H0_1$: There is no significant correlation between consensual parent-child communication pattern and interest in mathematics of secondary school students.

$H0_2$: There is no significant correlation between consensual parent-child communication pattern and academic achievement in mathematics of secondary school students.

Methodology

The study adopted a correlational research design. A total of 878respondents drawn through two-stage sampling procedure from population of 8783 (4195 males and 4588 female) senior secondary class two students in Abia State, Nigeria made up the sample for the study. Three instruments titled "Parent-Child Communication Pattern Questionnaire (PCCPQ), Students' Interest Questionnaire (SIQ) and Student's Academic Achievement in Mathematics Test (SAAMT)" were developed by the researcher from information got from literature. The instruments were face validated by three experts in Psychology, Guidance and Counselling and Measurement and Evaluation; all from the Michael Okpara University of Agriculture, Umudike respectively. The Mathematics Achievement Test (SAAMT) was face validated by three

specialists; one from Measurement and Evaluation and two specialists from Mathematics Education. The SAAMT was validated using the Content Validity which was derived using the Table of Specification or Test Blue Print. The PCCPQ and SIQ were structured based on 4-point ratings scale and weighed on the following scale: Very High Extent (VHE) 4 points, High Extent (HE) 3 points, Low Extent (LE) 2 points and Very Low Extent (VLE) 1 point. The decision rule of 0.00 – 0.20 = Very Low Relationship, 0.21 – 0.40 = Low Relationship, 0.41 – 0.60 = Moderate Relationship, 0.61 – 0.80 = High Relationship and 0.81 – 1.00 = Very High Relationship were used for the interpretation. The stability of the instruments was determined using Pearson's Product Moment Correlation Coefficient and reliability indices of 0.83 and 0.82 were obtained for Parent-Child Communication Pattern Questionnaire (PCCPQ) and Students' Interest Questionnaire (SIQ) respectively. The internal consistency of the items was determined using Cronbach's Alpha method which yielded reliability estimates of 0.85 and 0.86 for Parent-Child Communication Pattern Questionnaire (PCCPQ) and Students' Interest Questionnaire (SIQ) respectively. The reliability of the SAAMT was determined using Kuder-Richardson (KR-21) Formular and reliability coefficient calculated was 0.90. Data obtained through the administration of the three instruments were organized and analyzed using Pearson's r, R^2 (coefficient of determination) to answer the research questions while linear regressions were used to test the null hypotheses at 0.05 levels of significance.

Results

The results of this study were presented in line with the research questions and hypotheses that guided the study.

Research Question 1: What is the extent to which consensual parent-child communication pattern correlates with interest in mathematics of secondary school students?

Table 1: Correlation Matrix of Consensual Parent-Child Communication Pattern and Interest in Mathematics of Secondary School Students

Source		CPCCP	IM
CPCCP	Pearson correlations	1	.817
	Sig (2-tailed)		.000
	N	820	820
IM	Pearson correlations	0.817	1
	Sig (2 tailed)	.000	
	N	820	820
	R^2	.667	

CPCCP = Consensual parent-child communication pattern**,** IM =Interest in mathematics of secondary school students N = Number of respondents * Correlation Significant at 0.05 level.

Data in Table 1 indicated a correlation coefficient (r) of .817 which was positive and within the coefficient limit of ± 0.81- 1.00. This indicates that consensual parent-child communication pattern to a very high and positive extent correlated with the interest in mathematics of secondary school students. The coefficient of determination (R^2) .667 indicates that 66.7% of the variance observed interest in mathematics of secondary school students was accounted for by consensual parent-child communication pattern. Consequently, consensual parent-child communication pattern predicted 66.7% of the interest in mathematics of secondary school students.

The research question was subjected to inferential statistics as follows:

Hypothesis One: There is no significant correlation between consensual parent-child communication pattern and interest in mathematics of secondary school students.

Table 2: Linear Regression on Consensual Parent-Child Communication Pattern and Interest in Mathematics of Secondary School Students

Variables	Term	Sum of square	DF	Mean square	F –cal	F-critical	Sig	Decision
CPCCP & IMSSS	Regression	2115.405	1	2115.405	127.804	1.96	.000	S
	Residual	13556.183	819	16.552				
	Total	14971.588	820					

Df= degree of freedom, F = F-calculated, Correlation is significant at the 0.05 level (2-tailed)

The data in the Table 2 showed that consensual parent-child communication pattern significantly correlated with academic interest in mathematics of secondary school students. The calculated f-value of 127.804 in respect of the correlation between consensual parent-child communication pattern and interest in mathematics of secondary school students was greater than f-critical value of 1.96 with degree of freedom of 1 and 819 at 0.05 levels of significance. Therefore, the null hypothesis of no significant correlation between consensual parent-child communication pattern and interest in mathematics of secondary school students was rejected.

Hence, consensual parent-child communication pattern served as a significant correlate of interest in mathematics of secondary school students.

Research Question 2: To what extent do consensual parent-child communication pattern correlate with academic achievement in mathematics of secondary school students?

Table 3: Correlation Matrix ofConsensual Parent-Child Communication Pattern and Academic Achievement in Mathematics of Secondary School Students

Source		**CPCCP**	AAM
CPCCP	Pearson correlations	1	.847
	Sig (2-tailed)		.000
	N	820	820
AAM	Pearson correlations	0.847	1
	Sig (2 tailed)	.000	
	N	820	820
	R^2	.717	

CPCCP = Consensual parent-child communication pattern, AAM =Academic achievement in mathematics of secondary school students N = Number of respondents * Correlation Significant at 0.05 level.

Data in Table 3 indicated a correlation coefficient (r) of .847 which was positive and within the coefficient limit of ± 0.81- 1.00. This indicates that consensual parent-child communication pattern to a very high and positive extent correlated with the academic achievement in mathematics of secondary school students. The coefficient of determination (R^2) 0.717 indicates that 71.7% of the variance observed in the academic achievement in mathematics of secondary school students was accounted for by consensual parent-child communication pattern. Consequently, consensual parent-child communication pattern predicted 66.7% of the academic achievement in mathematics of secondary school students.

The research question was subjected to inferential statistics as follows:

Hypothesis Two: There is no significant correlation between consensual parent-child communication pattern and academic achievement in mathematics of secondary school students.

Table 4: Linear Regression on Consensual Parent-Child Communication Pattern and Academic Achievement in Mathematics of Secondary School Students

Variables	Term	Sum of square	Df	Mean square	F –cal	F-critical	Sig	Decision
CPCCP & AAM	Regression	2585.415	1	2585.415	145.166	1.96	.000	S
	Residual	14586.193	819	17.810				
	Total	17171.608	820					

Df= degree of freedom, F = F-calculated, Correlation is significant at the 0.05 level (2-tailed)

The data in the Table 4 showed that consensual parent-child communication pattern significantly correlated with academic achievement in mathematics of secondary school students. The calculated f-value of 145.166 in respect of the correlation between consensual parent-child communication pattern and academic achievement in mathematics of secondary school students was greater than f-critical value of 1.96 with degree of freedom of 1 and 819 at 0.05 levels of significance. Therefore, the null hypothesis of no significant correlation between consensual parent-child communication pattern and academic achievement in mathematics of secondary school students was rejected. Hence, consensual parent-child communication pattern served as a significant correlate of academic achievement in mathematics of secondary school students.

Summary of Findings

The findings of the study were that:

1. Consensual parent-child communication pattern predicted 66.7% of the interest in mathematics of secondary school students. Protective parent-child communication pattern was a significant correlate of the interest in mathematics of secondary school students.
2. Consensual parent-child communication pattern predicted 71.7% of the interest in mathematics of secondary school students. Protective parent-child communication pattern was a significant correlate of the academic achievement in mathematics of secondary school students.

Discussion of the Findings

The findings of the study indicated that consensual parent-child communication pattern predicted 66.7% of the interest in mathematics of secondary school students. Protective parent-child communication pattern was a significant correlate of the interest in mathematics of secondary school students. The findings of this study are in support of the findings of the study

by Omotere (2017) showed that the academic performance of students in the selected schools was significantly positively correlated with good consensual parent-child. The findings of this study are also in agreement with the findings of the study by Charles and Rudolf (2020) revealed that there was significant relationship between interest and seeking social support. There is similarity between the findings of this study and the former studies is a confirmation that consensual parent-child communication pattern has a strong and significant correlation with the interest in mathematics of secondary school students. Family communication with a consensual pattern, marked by consensus deliberation. This pattern encourages and provides opportunities for each family member to express ideas from various perspectives, without disturbing the family's power structure. Consensual communication pattern stresses both relational harmony and free communication exchange. In this type of family, children are allowed to express their ideas as long as the family's internal harmony is maintained.

The findings of the study also indicated that consensual parent-child communication pattern predicted 71.7% of the interest in mathematics of secondary school students. Protective parent-child communication pattern was a significant correlate of the academic achievement in mathematics of secondary school students. The findings of this study are in accord with the findings of the study by Vien, Salami and Alawade (2016) which showed that consensual parent-child communication pattern had significant correlation with the academic achievement of adolescent in secondary school in Ejibo Local Government Area of Osun State. The findings of this study are also in line with the findings of the study by Balarebe (2015) reported that students who used positive adjustment strategies experienced significantly less relationship in social stress, interest, academic stress and anxiety compared to those who did not use much of the positive interest strategy. Based on the similarity between the findings of the present study and the former studies, one may advocate that families that adopt consensual family communication pattern may experience moderate level of cohesion which is connected between adolescents and parents. This may be due to the fact that consensual communication pattern reflects a tension between exploring ideas through open communicative exchanges and the pressure to agree in support of the existing family hierarchy. This may imply that in consensual communication pattern, adolescents may adopt their parents' views, retreat from interactions with their parent(s) into an internalized fantasy world or engage in conflict with their parent(s). More so, adolescents raised under consensual communication pattern may be compelled to submit to parental decisions in order to maintain peace and tranquility even when it contradicts

their perceptions. It is possible that parents high on both patterns may be labelled consensual. Consensual parents may stress both relational harmony and free communication exchange.

Conclusion

Based on the findings of the study, it could be concluded that consensual parent-child communication pattern was a significant predictor of interest and academic achievement in mathematics of secondary as it predicted 66.7% and 71.7% of their interest and academic achievement in mathematics respectively. In this regard, the orientation children received from their parents, teachers, psychologists/counsellors and peers may provide supportive frameworks needed for them to develop interest and achieve higher in Mathematics which could help them to develop the ability to think critically about information, manage their time, get along with their peers and instructors and persist through difficulties and navigate the different requirements and challenges that they may face throughout their college experience.

Recommendations

Based on the findings of this study the following recommendations are made by the researcher: -

1. Students should be provided with information by psychologists and guidance counsellors about the different parent-child communication patterns and how they could relate with school guidance counsellor for effective learning outcomes.
2. Parents/guardian, teachers, psychologists/school guidance counsellors and other stakeholders in education should be provided with information on the implications of the parent-child communication patterns and how to interact with their wards/students. The parents should see the need to spend quality time with their children in order to offset whatever emotional deprivation the children may have suffered which could have impinged on their interest and academic achievement.

References

Ahmed, W., Minnaert, A., Kuyper, H., & vander-Werf, G. (2016). Reciprocal relationships between math self-concept and math anxiety. *Learning and individual differences, 22*(3), 385-389.

Aiger A. (2019). The Effects of low self-esteem in children. *https://scholar.google.com/scholar?q=Awofala,+Adeneye+%26+Nneji,+2021 &hl=en&as_sdt=0&as_vis=1&oi=scholart*

Ajayi, I. S. & Awogbemi, A. C., (2017). A Correlational Analysis of Students' Achievement in WAEC and NECO Mathematics. *Journal of Education and Practice,* 3(1): 23-36.

Ale, P. & Lawal, G. (2020). Mathematics performance in stressful situations. *Current Directions inPsychological Science*, *17*, 339–343.

Awofala, A. O Adeneye, A. O & Nneji, M (2021) Efffect of team assisted individualisation strategy on senior secondary school students' motivation to learn mathematics. *https://scholar.google.com/scholar?q=Awofala,+Adeneye+%26+Nneji,+2021 &hl=en&as_sdt=0&as_vis=1&oi=scholart*

Balarebe, M. (2015). Stress, anxiety, adjustment and mental health. *Journal of Psychology and Mental Health.* 1(1), 35-47.

Barrows, J., Dunn, S., & Lloyd, C. A. (2016). Anxiety, self-efficacy, and college exam 71 grades. Universal Journal of Educational Research, 1(3), 204-208.

Charles, K. & Rudolf, J. (2020). Adjustment patterns and psychological outcome in California adults.*54*

Davis, P. J. & Hersh, R. (2022) Varieties of mathematical experience.

Eze, P. I. (2013) Influence of Educational Technology Centres on Students' Skill Acquisition for Self Employment.

Federal Republic of Nigeria, (FRN, 2013). *National policy on education.* NERDC Press

Hong, E., Sas, H, & Sas, J., (2016). Effects of gender, math ability, trait test anxiety, statistics course anxiety, statistics achievement, and perceived test difficulty on state test anxiety. *Contemporary Educational Psychology. 27(2),* 348-367.*http://www.emis.de/proceedings/PME29/PME29RRPapers/PME29Vol3Mous o lidesPhilippou.pdf*

Hulleman, C. S, & Harackiewicz, J. M. (2019). Promoting interest and performance in high school science classes. *Science (80-). 326:1410–2.*

Jansen, M, Lüdtke, O, & Schroeders, U. (2016). Evidence for a positive relation between interest and achievement: examining between-person and within-person variation in five domains. *Contemporary Educational Psychology; 46:116–27.*

Mefor, J (2014). The causes of poor performance in mathematics among public senior secondary school students in Azare metropolis of Bauchi State, Nigeria. *https://www.researchgate.net/publication/284472076_The_Causes_of_Poor_Performance_in_Mathematics_among_Public_Senior_Secondary_School_Students_in_Azare_Metropolis_of_Bauchi_State_Nigeria*

Omotere, B.A. (2017). Pioneer style communication pattern on the academic performance of students in secondary schools in Agege local Government Area of Lagos State. *Journal of international Social Research* 3(10) 498-508.

Osibodu 2020), Necessitating teacher learning in teaching mathematics for social justice to counter anti-Black racism. *Contemporary Educational Psychology; 50:416–427.*

Ummameh (2019) Effect of cognitive behaviour therapy on mathematics test anxiety. *https://scholar.google.com/ citations?user= zU8hSo0AAAAJ&hl=en*.

Vien, Salami and Alawade (2016) conducted a study on consensual parent-child communication pattern on the academic achievement of adolescent in secondary school in Ejibo Local Government Area of Osun State. University of Lagos.

West African Examination Council (2018-2022). *Chief examiners' report*. WAEC

Yusuf, Y. O & Emmanuel, A. Y (2015). Mathematics education. Ilorin Journal of Education (IJE). *http//: www.musero.org.ng /mathematics_ education.pdf*.

Zhaohua, W. (2019). *The relationship between parent adolescent communication and adolescents' sexual risk-taking behaviour.* University of Stellenboseh. Department of psychology.