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Influence of some Parental Attachment Variables on Academic Achievement of Students in Biology in Calabar Education Zone of Cross River State, Nigeria

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ABSTRACT
This study was aimed at examining the influence of some parental attachment variables such as parent-child communication and parental involvement in school activities on the academic achievement of students in Biology in Calabar Education Zone of Cross River State, Nigeria. Causal comparative research design was adopted for the study. Two hypotheses were formulated and tested at .05 level of significance. The stratified and simple random sampling techniques were used to select 558 students from 80 public secondary schools from the zone. The research instruments "Parental Attachment Questionnaire" (PAQ) and an Academic Achievement Test in Biology were used for data collection. The instruments were well validated. The Cronbach alpha reliability co-efficient *got* from the variables ranged from 0.73 to 0.87 which showed that the instruments were reliable for the study. Data collected were adequately coded using the One-way analysis of variance statistics. Conclusions reached indicated that, there is need for strong parental attachment to enable students improve on their academic achievements. The findings of this study revealed that: parent-child communication and parental involvement in school activities significantly influenced students' academic achievement in biology. Consequently, recommendations were made amongst which is that, parents should create a free atmosphere at home where children can air their views. This will help them to express themselves on whatever issue bothering them be it academics or their general welfare.
Keywords: Parent-child communication, parental involvement in school activities, academic achievement.

INTRODUCTION AND THE PROBLEM
Biology is the study of life and living organisms. The various branches of Biology, ranging from genetics to physiology, offer

explanations on the make-up of the human body, its workings, how food affects the body, the air we breathe and our environment. It is one of the cornerstones of healthcare, medicine and agricultural science. Consequently, Biology is a prerequisite for secondary school students aspiring to study medicine/medical sciences, genetics/biotechnology, agricultural science, etc. If we have to be self sufficient in food production, improve our life expectancy and general healthcare, then our secondary school students must be well grounded in Biology.

Unfortunately, students' academic achievement in Biology is declining thus raising concerns amongst teachers, psychologists, and researchers including school administrators. The decline in the quality of education in Calabar Education Zone of Cross River State has resulted in the production of half-baked graduates from Secondary Schools who can barely pass the Joint Admission and Matriculation Board (JAMB) Examination for entry into higher institutions of learning. According to Dhawan (2007), "Even as institutions of learning churn out more and more batches of students every year, the quality of education is seriously on the decline".

Academic achievement here refers to students output as shown in whatever the students have learnt in Biology and their capacity to accomplish the different tasks their teachers assign to them. Poor academic achievement in Biology results when a student performs below average in a given task based on the school's achievement index. Furthermore, academic achievement provides a framework for assessing how students fare in school, based on the standard of assessment.

Poor academic achievement may be so devastating that it undermines the students' self-esteem. The School may, therefore, advise the student to withdraw or place him on probation. It could also lead to loss of confidence by parents in their ward's academic ability. Consequently, such parents may see their efforts at giving their wards good education, as a waste of time. Generally also, students'

poor academic achievement may rub off badly on the affected schools. This, therefore, calls for continuous effort at finding ways and strategies of improving the general academic achievement of students.

One of the goals of the National Policy on Education is to improve students' academic achievement because Education is a tool for national growth and development (National Policy on Education, 2004). Accordingly, it is necessary to tackle variables like parent-child communication and parental involvement in school activities which influence the academic achievement of Secondary School students in Biology (especially amongst SS2 students). Parental attachment can be described as that affectionate bond that exists between parents and their children during parenting; Attachment is the long-lasting affective link of strong passion - the initial and fundamental form of love a child has for another person. According to Bowlby (1988), attachments formed during childhood are not short-lived or limited to mother-infant relationship; they may last all through the person's life and extend to the father, teachers, fellow students, etc.

Because of the important part parents play on the overall development of the students, it follows that the closer they are to their parents, the better their academic achievement. Communication between parent and child (which is how verbal and non-verbal information are exchanged between family members) affects academic achievement. Communication between parent and child includes spoken conversations (verbal) written messages, and the use of body language which manifests in tone of voice, gestures, and facial expressions (non-verbal). These elements of communication are used to express respect, affection and concern for family members. Effective communication between parent and child helps to reduce academic problems and improves the academic success of the students.

Parental involvement in their ward's school activities gives him confidence and enhances his academic achievement. A student's

academic achievement may not necessarily be influenced by the quality of school he attends, but parental involvement in his school activities plays a significant role in such a student's academic success. It includes such activities as: helping him to read difficult areas, encouraging him to do his assignments independently, engaging him in extra lessons to improve his learning in different subjects and monitoring all his activities inside and outside the home. This impacts positively on the intellectual development of the student and enhances his academic achievement.

Poor academic achievement in Biology in Cross River State and especially in the Calabar Education Zone has continued to undermine the educational system since students cannot compete favourably with their counterparts in other States of the Federation thus making the State educationally disadvantaged. This is especially so because Biology is one of the compulsory science subjects that every student in Senior Secondary Two is required to offer. Poor students academic achievement in Biology affects the production of professionals in certain sectors of our national life because of the reduction in the number of students qualified to pursue careers in Medicine, Nursing, Pharmacy, Laboratory Science, Health Technology, etc. (Source: State Secondary Education Board, April, 2016).

Table 1 depicts the poor performance of students in the subject of Biology from year 2012 to 2016 with the percentage of those with F9 ranging from 47.2 to 74.12. In a bid to solve the above problem, Government has taken some positive steps, such as providing schools with functional laboratories, employment of qualified and experienced Biology teachers, provision of textbooks, etc.

In spite of these efforts, the problem of poor academic achievement in Biology persists. This low achievement is evident in the 2016 West African Council Examinations whereby only 32.5% of the students passed Biology. (Source: Ministry of Education, Inspectorate Department, Calabar).

This research is, therefore, to ascertain if parent-child communication and parental involvement in school activities have an influence on students' academic achievement in Biology in senior secondary schools in Calabar Education Zone of Cross River State.

TABLE 1: Achievement level of students in Biology in WAEC Examinations in Cross River State from 2012-2016

Year	Entry	A1	(%)	B2-B3	(%)	C4-C6	(%)	D7-E8	(%)	F9	(%)
2012	21,768	1209	5.6	2100	9.6	325	1.5	2000	9.2	16,134	74.1
2013	45,782	9016	19.7	10,987	23.1	3,500	7.6	1702	4.0	21,577	47.1
2014	37,190	2401	6.5	3,510	9.4	4,454	12.0	7800	21.0	9,025	51.2
2015	40,990	2150	5.3	5,879	14.3	5,431	13.3	2430	5.9	25,100	61.2
2016	38,102	2541	6.7	3,607	9.5	6,534	17.2	5597	14.7	19,823	52.0

Source: Inspectorate Department, Ministry of Education, Calabar

Purpose of the study

The purpose of this study was to investigate the influence of some parental attachment variables on students' academic achievement in Biology in Calabar Education Zone of Cross River State, Nigeria. Particularly, this work aims at:

1. Investigating the role of communication between parent and child on students' academic achievement in Biology;
2. Examining the role parental involvement in school activities plays on students' academic achievement in Biology;

LITERATURE REVIEW

Communication between parent and child is one important aspect of relationships that deserves serious attention. It can simply be defined as the communication that exists between a parent and a child. It involves enlightenment of parents to enable them connect with their

children so that they can live happily together. Communication between family members should be regular, two-way, purposeful and effective. In addition, it should be informal with the exchange of information; it could also be through tone of voice, body language, facial expression and gestures. This means therefore that communication could be both verbal and non-verbal. Through communication, parents can help resolve most challenges their wards face in school.

Suganthi (2013) carried out a study on parent-child interaction and academic achievement of students in senior secondary schools, the sample he used contained 300 students chosen through simple random sampling. In addition, he employed one-way analysis of variance as the statistical tool. The result was that students who had interactions with their parents were significantly different and had higher academic achievement, with respect to their study level, than students who had poor or no interactions at all.

Park (2008) conducted a study on communication between parent and child and academic achievement of pupils and students. His main objective was to investigate the link between parent-child communication and academic achievement of primary school pupils and secondary school students. The findings showed that pupils and students who engaged in meaningful communication with their parents performed better in their home work, tests and exams than pupils and students who had poor or no communication with their parents. This is because through communication parents were able to discover the students' areas of difficulties and help them adjust in school when there was need.

On parental involvement in school activities, Desforges and Abouchaar (2003) opined that parental involvement takes different forms and these include: being a good parent at home; providing an environment that is secure and stable; discussion between parent and child. In addition, parental involvement according to them includes: high aspirations leading to self fulfilment/ being a good citizen,

providing good models of constructive social/ educational values; taking part in events organised by the school; showing interest in how the school is run and sharing information.

(Sacker, 2002) observes that children whose parents spend time with them in outings, studying, visits, and picnics and also in talking to their teachers about their school progress excel academically. This kind of involvement positively affects the child since their parents know their areas of difficulty and assist them. Research on the outcome of parental involvement in school showed that parental involvement in the school activities of their wards gives rise to positive academic outcomes in grades, classroom behaviour, students' aspirations and school completion. Marshall (2006) and Oysterman (2007).

Similarly, a research was carried out in the United States, on the magnitude of the influence parental involvement in school activities had on academic achievement, in which Sui-Chu and Willms (1996) used 2,600 students drawn from 10 schools using the stratified sampling method based on ethnicity and social class. Their study revealed that a strong link exists between social class and parental involvement. Greater degree of parental involvement is related to higher social class.

Understanding the various forms of involvement of parents in their wards educational endeavour and how that affects their academic success will enhance parental support in their educational pursuits.

METHODOLOGY

Research Design

The research design used for the study is the causal comparative design. The study adopted causal comparative design because parental attachment has already taken place and therefore cannot be manipulated.

Area of Study and Subject

Calabar Education Zone of Cross River State is the area chosen for this study. It is one of the three Education Zones in the State. The area consists of seven Local Government Areas (Southern Senatorial district, Cross River State Government, 2007) and these are: Akamkpa, Akpabuyo, Biase, Bakassi, Calabar Municipality, Calabar South and Odukpani.

The Zone is bordered to the South by Akwa Ibom State, to the North by Yakurr Local Government, to the East by the Republic of Cameroon and to the West by Abi Local Government Area. It is situated between latitude 20°.18' and 30°.25' North of the Equator and longitude 40°.30' and 50°.16' East of the Greenwich meridian. It covers a land mass of 13,074km^2 (2006: Nigerian census publication).

Calabar Education Zone of Cross River State has many primary and secondary schools including St Patrick's College, Ikot Ansa, and the famous Hope Waddell Training Institution which are among the oldest schools which were founded in Calabar by Irish Catholic and the Scottish Presbyterian Missionaries respectively. The higher institutions in the zone are: University of Calabar, Calabar; Cross River University of Technology, Calabar; College of Health Technology, Calabar and the College of Education, Akamkpa.

Furthermore, the zone is naturally endowed with a heavy rain forest; vast vegetation; varieties of forestry products and trees like Mahogany, Obeche, Teak, Walnut, etc. Animals inhabiting the rainforest are monkeys, gorillas, chimpanzees, baboons etc. The major occupation of the people in the Zone includes: farming, fishing, and hunting. Many are civil servants and a few of them are engaged in agriculture. The major food crops grown in the zone are: yams, cassava, corn, palm fruit and rice. Mineral resources existing in the zone includes: limestone, oil and gas, clay, barite and quartzite.

The study population consists of the entire 5,584 Senior Secondary Two (SS2) students in the 80 secondary schools in Calabar

Education Zone. Table 2 shows the total population of SS2 students according to the Local Government Areas in the Zone.

Sampling Procedure

The stratified and simple random sampling techniques were employed to select the required sample subjects for the study from the population. The first stage was to stratify Calabar Education Zone proportionately and divide it into seven Local Government Areas.

The second stage was to randomly select 30% of schools from the 7 Local Government Areas, which gave a total of 31 schools. The next stage was to apply the simple random sampling in selecting the required sample of students that was used in this research, in doing this 10% was drawn from the population which gave a total of 558 respondents. However, students were picked using balloting method. Pieces of papers with "yes "and "no" written on them were rolled and put in a container and those that picked "yes" were used as sample for this research.

Instrumentation

A research instrument titled "Parental Attachment Questionnaire" (PAQ) was used to gather data for the study. Section A elicits personal information from the respondents such as name of school, class, etc while section B contained a 10-item likert-type sub-scale that measured the level of communication between parents and the respondents as well as level of parental involvement in school activities. Section C contained a 20-item test in Biology measuring respondents' academic achievement.

Validity and reliability

The validity of the instrument was ascertained using face validity conducted on the instrument by experts in educational psychology, research, measurement and evaluation. Data obtained were analysed using the Cronbach alpha coefficient to determine its internal consistency. The reliability figures for the different sub-scales ranged

from 0.73 to 0.87 showing that the instruments were reliable for the study.

DATA ANALYSIS

TABLE 1: The outcome of One-way analysis of variance of the influence of parent-child communication on students' academic achievement in Biology

Group			N	X	SD
High			303	17.56	3.05
Moderate			148	16.74	2.79
Low			102	16.76	2.28
Total			553	17.02	2.71
Sources of variance	Sum of squares	Degrees of freedom	Mean square	F-value	Sig.
Between Groups	88.961	2	44.481	5.452*	.05
Within Groups	4487.335	550	8.159		
Total	4576.297	552			

*P<.05 df=2, 550 F-critical =3.00

Table 2: Post-hoc mean comparison with Fisher's Least Significance Difference (LSD) with the influence of Parent-child communication on students' academic achievement in Biology

Parent child communication	N	High	Moderate	Low
High	303	17.56	.82*	.80*
Moderate	148	2.83	16.74	-.02
Low	102	2.50	-0.05	16.76
	MSW=8.159			

*<.05, critical t = 1.960, df = 551

a = the principal diagonal is where the group means are placed

b = above the principal diagonal is where the differences between group means are placed

c = below the principal diagonal is where Fisher LSD is placed

Table 3: One-way analysis of variance of the influence of parental involvement in school activities on students' academic achievement in Biology

Group	N	X	SD
Highly involved	283	17.89	2.84
Moderately involved	149	17.17	2.98
Lowly involved	121	16.90	2.26
Total	553	17.32	2.69

Sources of variance	Sum of squares	Degrees of freedom	Mean square	F-value	Sig.
Between Groups	102.791	2	41.40		
				6.735*	.001
Within Groups	4197.220	550	7.631		
Total	4300.011	552			

*P<.05; df=2, 550; F-critical =3.00

Table 4: Post-hoc mean comparison with Fisher's Least Significance Difference (LSD) with the influence of the parental involvement in school activities on students' academic achievement in Biology

Parental involvement in school activities	N	High involved	Moderately involved	Lowly involved
High involved	283	17.89	.72*	.99*
Moderate involved	149	2.48	17.17	.27
Lowly involved	121	3.30	.79	16.90
		MSW=7.631		

*<.05, critical t = 1.960, df = 551

a = the principal diagonal is where the group means are placed

b = above the principal diagonal is where the differences between group means are placed

c = below the principal diagonal is where Fisher LSD is placed

DISCUSSIONS OF RESULTS

As shown in Table 1, there is a significant difference on parent-child communication and students' academic achievement in Biology. The descriptive statistics shows a total of 553 respondents used in the study. Three levels of communication between parent and child were used which were: high, moderate and low. High had a total of 303 respondents, with a mean and standard deviation of 17.56 and 3.05 respectively. Moderate had 148 respondents with mean and standard deviation of 16.74 and 2.79 respectively. 102 respondents were categorised as low with mean and standard deviation of 16.76 and 2.28 respectively.

The table also presents the outcome of one-way analysis of variance of the influence of communication between parent and child on students' academic achievement in Biology. It shows that between and within groups, the sums of squares were 88.961 and 4487.335 respectively. This occurred at 2 and 550 degrees of freedom with the values of mean squares between and within groups of 44.481 and 8.159 respectively.

The calculated value of F was 5.452 and the critical value of F was 3.00 which means that the null hypothesis which is that parent-child communication does not significantly influence students' academic achievement in Biology is rejected (F=5.452; P=.005). Therefore, communication between parent and child significantly influences students' academic achievement in Biology.

To test for mean differences, Fisher's Least Significance Difference (LSD) was employed as shown in table 2. The result shows the statistical mean difference for high and moderate levels of communication between parent and child as (*P<.05; t=-2.83; P=.005, $\bar{X}$=.82). For high and low levels of communication between parent and child on academic achievement, there is a statistical mean difference, given as (*P<.05; t=2.50; P=.005, $\bar{X}$=.80), while for

moderate and low level of communication, there is a statistical mean difference as (P>.05; t=-0.05; P=.956, $\bar{X}$= -.02). This indicates that communication between parent and child significantly influences students' academic achievement in Biology.

The findings of this study agrees with that of Suganthi (2013) who used 300 students to research on parent-child interaction and academic achievement of higher secondary school students. From his results, students who had interactions with their parents had higher academic achievement with respect to their study level, greater success in exams and tests etc compared to students who had poor or no interactions at all. The significance of this study is heightened when compared with the work of Park (2008), who carried out a study on parent-child communication and academic achievement. He made use of pupils in primary school and students in secondary school. The study showed that pupils and students who engaged in meaningful communication with their parents excelled better in their home work, tests and exams than pupils and students who had poor or no communication with their parents. This is because through communication parents were able to discover the students' areas of difficulties and help them make needed adjustments in school.

The result of hypothesis two reveals that there was a significant influence of parental involvement in school activities on students' academic achievement in Biology. The descriptive statistics in Table 3 show a total of 553 students used in the study; 283 are highly involved with a mean and standard deviation of 17.89 and 2.84. Moderately involved are 149 with a mean of 17.17 and a corresponding standard deviation of 2.98. Lowly involved are 121 with 16.90 and 2.26 as mean and standard deviation respectively.

It can also be observed from the One-way analysis of variance of the influence of parental involvement in school activities on students' academic achievement in Biology that "between groups" sum of square is 102.791 while the "within groups" sum of square is 4197.220. Their respective degrees of freedom were found to be 2 and 550

respectively. The mean square was 41.40 for between groups and 7.631 for within groups. The F-calculated value of 6.64 was greater than the critical F-value of 3.00 which means that the null hypothesis which is that parental involvement in school activities does not significantly influence students' academic achievement in Biology is rejected (F=6.65; P=.001). Consequently, parental involvement in school activities significantly influences students' academic achievement in Biology.

To further test the direction of the mean differences, the Fisher Least Significant difference (LSD) was performed as shown in Table 4. From the result, parents who were highly involved and parents who were moderately involved in their children schooling statistically differ as (*P<.05; t=2.48; P=.010, $\bar{X}$=.72). Those highly involved and those lowly involved significantly differs as (*P<.05; t=3.30; P=.001, $\bar{X}$= .99). There was no significant difference for moderately involved and lowly involved as (P>.05; t=.79; P=.430, $\bar{X}$= .27).

The findings are in harmony with that of Sacker (2002) whose work demonstrated that children whose parents stay with them when they are reading, during outings, visits, picnics and talk to their teachers about their school progress excel academically. This kind of involvement positively influences the child since their parents know their areas of difficulty and can assist them.

Similarly, the result also agrees with that of Sui-Chu and Willms, (1996). They did a Meta analysis of 2,600 students drawn from 10 schools using stratified sampling method. Their study showed that a direct proportional relationship between social status and parental involvement. Students from background with high social status, have parents who show greater level of involvement in their affairs than students from background with low social status.

CONCLUSION AND RECOMMENDATIONS

From the study above, it can be deduced that parental attachment variables such as parent-child communication and parental

involvement in school activities impact on students' academic achievement in Biology. Based on these findings, the following recommendations are made:

- Leaders, teachers and educationists should create awareness on the need for parents to get involved in their wards' educational aspirations. Parents should be made to understand that they can contribute to the educational success of their children by way of providing the necessary encouragement, and actively assisting them among other ways.
- In addition to knowing the role they are to play in the educational success of their children, parents should also be made to perform these roles so that, when their children fail to perform well in their examinations, they do not lay all the blame on the doorstep of teachers.
- Interactions between principals, teachers and parents, during fora like Parents Teachers Associations (PTA) meetings, School Open Days etc should be detailed enough so that parents can have rapport with their children on areas where they have challenges and do a follow-up.
- Parents should endeavour to create time at home to look at their children's home work/assignments so that they can help throw more light on their areas of difficulty.

- Parents should create a free atmosphere at home where children can air their views. This will enable them to freely express themselves on issues bothering them be it academics or their general welfare.

REFERENCES

Bowlby, J. (1988). A secure base: *Parent-child attachment and healthy human development.* New York: Basic Books.

Desforges, C., & Abouchaar, A. (2003). *The impact of parental involvement, parental support and family education on pupil achievement and adjustment:* A literature review. Research Report 443. London: DFES Publications.

Dhawan, S. (2007, November 20). Change the Course. *The Tribune (India)*, 17.

Federal Republic of Nigeria (2004). *National Policy on Education*. Nigeria: Federal Printing Press.

Marshall, M. (2006). Parent involvement and educational outcomes for Latino students. *Review of Policy Research*, 23(5), 1053–1076.

Oysterman, D. (2007). School success, possible selves, and parent school involvement. Family Relations, 56, 479–489.

Park, H. (2008). The varied educational effects of parent-child communication: A comparative study of fourteen countries. *Comparative Education Review*, 52 (2), 219– 243.

Sacker, A., (2002). Social inequality in educational achievement and psychological adjustment throughout childhood: magnitude and mechanisms. *Social Science and Medicine*, (55), 863-880.

Suganthi, M. (2013). Parent child interaction and academic achievement of higher secondary students. *Indian Journal of Applied Research*, 3(11), 67-69.

Southern Senatorial district, Cross River State communities (2007): *A memorandum*. Retrieved from www.akpakiporo.org/uploads/request. 24th October,

Sui-Chu, E. H., & Willms, J. D. (1996). Effects of parental involvement on eighth-grade achievement. *The Sociological Quarterly*, 69, 126–141.