

Authoritarian Parenting Style as a Predictor of Students' Interest and Academic Achievement in Senior Secondary School Mathematics

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Abstract

This study investigated authoritarian parenting styles as a predictor of students' interest and academic achievement in senior secondary school mathematics. Three (3) research questions and Three (3) corresponding null hypotheses were raised to guide the study. The correlational research design was adopted. Multistage sampling procedure were used to select a sample of 300 participants from a population of 1203 senior secondary class two (SS11) students in the forty (40) public secondary schools in Idah Education Zone, Kogi State. Three instruments were used for data collection namely; Students Mathematics Achievement Pro Forma (SMAP), Students' Interest Inventory on Mathematics (SIIM), Authoritarian Parenting Style Questionnaire, (APSQ). The instruments were validated by three experts from measurement and evaluation, mathematics and Guardians and counseling unit. The reliability coefficient of 0.896 was obtained for APSQ using Cronbach alpha method, while reliability coefficient value of 0.817 and was obtained for SIIM. The data collected were analysed using regression analysis (correlation). The "r" obtained was used to answer all the research questions. However, the hypothesis were tested at 0.05 level of significance using the regression t-test for simple linear regression. Findings of the study reveal that authoritarian parenting style significantly predicts the interest and academic achievement of students in mathematics. It was recommended among others that Teachers and parents are encourage to always educate the students on the need to have interest in school as doing so will implant in them the curiosity for education and this will enhance their interest and achievement in mathematics.

Introduction

Parenting style is one of the ways of improving students' academic interest and achievement in education. Education is the process of transmitting what is worthwhile to member of the society. Education embraces all those experiences of the individual through which knowledge is acquired and intellect enlightened. It is the process of socializing a child to grow up as a fulfilled member of the society through informal and formal education. Informal education is the process of acquiring knowledge about the environment and beyond through living with one another while formal education is a consciously planned and systematic form of socialization in a formal setting such as school. These forms of education cannot be achieved without the influence of the parents (Nwaoboli, 2022). There are different ways, parents use in bringing up their children, which are regarded as parenting style which to some extent may

contribute to students' interest and achievement in mathematics.

Mathematics as the foundation of scientific and technological knowledge that is important in the social economic development of a nation. According to Nwoye (2017), Mathematics is the knowledge of shapes, numbers and operations on the shapes that helps to describe and predict things about the world around us, the author further describes mathematics as the backbone of science and technology and a tool inevitable for human survival in everyday life. According to Ibok, Nwoye and Oton (2024), Mathematics is a crucial topic in schools and the language of science and technology. It is a subject that affects every aspect of human life at different levels.

Despite the fact that, the objectives of mathematics teaching and learning at secondary school have been stated above, the subject made compulsory and taught almost everyday, student's

interest and achievement in mathematics is still discouraging at this level. In spite of some of the efforts made by professional bodies such as Mathematical Association of Nigeria (MAN), Science teacher Association of Nigeria (STAN), some companies such as cowbell Nigeria PLC by organizing annual mathematics competitions, quiz and mathematics Olympiad, examinations as well as awarding of scholarships to pupils and students, there is still problem of poor academic achievement of students in mathematics especially in senior secondary schools. The student's poor academic achievement in mathematics in secondary schools became a worry and concern as to what could be the major cause of students' consistent poor achievement in mathematics considering that it is one of the major subjects that students need to pass before they transit to post secondary education.

Earlier researcher's attributed the causes of the students' poor interest and achievement in mathematics to various factors such as student factors (Bar & Yahaya, 2022), teachers factors (Esezi, Isaac & Obilor 2020, Ibok, 2024), environmental factors (Helen, Idubamo & Wankari, 2022), psychological factor (Eduwem, Umoinyang & Out, 2017). But from the literature carried out it was discovered that many works has been carried out on parental factors on students interest and achievement in mathematics such as parental support, parental involvement and from the knowledge of the researcher less work has been done on parenting style and the researcher saw it as a gap as those reviewed were done on other subjects such as English, some others on parenting style as a single variable, others were outside the country hence the researcher felt that there is need to carry out this research on parenting style as a predictor of student academic interest and achievement in mathematics mostly Idah Education Zone of Kogi State, Nigeria.

Parenting style are the various ways parents or guardian guides, control, teach, direct or bring up their children. According to Echedom, Nwankwo and Nwankwo, (2018), parenting style is the collection of parenting behaviors and goals that are primarily characterized by combinations of warmth, demandingness and autonomy granting which affects the child's personality. Succinctly, the style of parenting adopted in different homes affect the children's disposition.

Authoritarian parenting style is a component of parenting style in which children are expected to obey their parents' orders. According to Nnani, et al. (2020), authoritarian style of parenting involves

children being expected to follow strict rules established by parents without any questioning and failure to follow such rules usually results in punishment. According to Ibukunolu, (2014), Authoritarian style of parenting demands obedience from the child and tries to shape and control the child's behaviors with an absolute set of standards. From the foregoing, the researcher therefore defines authoritarian parenting style as a component of parenting styles where parents exhibit total control and very low warmth or demand total obedience from their children or ward. Hence, this authoritarian style of parenting leads to students' interest in mathematics.

Interest is a persisting tendency to pay attention and enjoy some activity or context, interest promotes learning because very little learning can take place without the learner becoming interested in the subject matter and activities. In the same vain interest is a subjective feeling of concentration or curiosity over something, Harackiewicz, Smith and Priniski (2016). The authors pointed out that Interest can be seen also as attention because once there is direct interest, attention is guaranteed and learning is assured. This can possibly influence achievement in mathematics.

Academic achievement is excellence in all academic discipline, in classes as well as in extracurricular activities. According to Bruno and Lawyer, (2020) Academic achievement refers to marks or grades obtained in subject taught in school after examination, be it written or oral. It is directly related to students' growth and development of knowledge in educational situation where teaching and learning take place. Achievement is a result gained by effort; it is a great or heroic deed. Achievement is the act of accomplishing or finishing a race. The grade student obtained in test or examination is usually called academic achievement.

Despite the importance of mathematics, reports on students' academic achievement in external examinations like WASSCE have been unsatisfactory. Further investigation by the researcher revealed that there are consistent and continuous decline in academic achievement especially in mathematics. The poor academic achievement of students in mathematics has been great concern to researchers, parents, teachers, students and educational stakeholder among others. The student poor achievements in mathematics are likely caused by different factors.

The problem of students' poor academic interest and achievement made the researcher to carry out more investigation on parental factors,

precisely parenting style which is a major concern to the researcher as some parents nowadays do not have time for their children, some parents do not have time to train and guide their children. This parental style became a worry and problem to the researcher and led to these questions: what are the possible issues this parental style may create for the students in mathematics learning that may lead to the students' poor interest and achievement in mathematics. Some of these problems may be: parental styles, these includes but not limited to: parents being; authoritarian in their children/wards upbringing. How can this style of parenting predict student's interest and achievement in mathematics? Hence to answer this question, the researcher consider it worthy of investigating if authoritarian parenting styles as predictors of students interest and achievement in mathematics among senior secondary school students.

Research Questions

The following research questions guided the study:

1. What is the predictive power of authoritarian parenting style on secondary school students' interest in mathematics?
2. What is the predictive power of authoritarian parenting style on secondary school students' academic achievement in mathematics?
3. What is the predictive power of authoritarian parenting style on secondary school students' academic interest and achievement in mathematics?

Hypotheses

The following hypotheses guided the study and were tested at 0.05 level of significant:

- H₀₁:** Authoritarian parenting style does not significantly predict secondary school students' academic interest in mathematics
- H₀₂:** Authoritarian parenting style does not significantly predict secondary school students' academic achievement in mathematics
- H₀₃:** Authoritarian parenting style does not significantly predict secondary school

students' academic interest and achievement in mathematics

Design of the Study

The study adopted a correlation research design. Tan (2014) defined correlation research design as the type of design that analyzes whether a rise or decrease in one variable with the correspondent corresponds to an increase or decrease in another, it may determine whether or not two variables change together as well as the degree to which they change together too. This research design suits the study because it aimed at establishing the relationship that exists among variables used in this study. Similarly, the present intends to determine how authoritarian parenting styles can predict students' interest and achievement in mathematics. Hence, the design is appropriate for the study.

Population of the Study

The population of this study consisted of 1203 Senior Secondary school Two (SSS2) students in the 40 public secondary schools in Idah Education Zone of Kogi State for 2023/2024 academic session.

Sample and Sampling Technique

The sample for this study was 300 SSS II students which was drawn using Taro Yamene formula. Multistage sampling procedure was used by the researcher. According to Datta and Sahu, (2023). At the first stage, simple random sampling technique by balloting without replacement was used to draw two Local Government Areas out of the 4 Local Government Areas in the Zone. At the second stage, purposive sampling was used to select four schools, two from the each selected Local Government Area. At the third stage, purposive sampling was equally used to select intact class SSII students from each of the schools across the two LGAs, given the required sample size of three hundred.

Instruments for Data Collection

Three instruments were used for the data collection where; Students Mathematics Achievement Pro Forma (SMAP), Students' Interest Inventory on Mathematics (SIIM) and Authoritarian Parenting Style Questionnaire (APSQ)

Research Question One

What is the predictive power of authoritarian parenting style on students' interest in mathematics?

Table 1: Linear regression analysis of predictive power of authoritarian parenting style on students' interest in mathematics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.391 ^a	.153	.150	7.82070

(R²) = Coefficient of Determination

The result in Table 1 shows that the correlation coefficient between authoritarian parenting style and students' interest in mathematics was .391. The result implies that there exists a positive low relationship between authoritarian parenting style and students' interest in mathematics. The result also revealed that the coefficient of determination (R²) associated with the correlation

coefficient of .391 was .153. The coefficient of determination (R²) of .153 indicates that authoritarian parenting style predicts or account for up to 15.3% of students' interest in mathematics. This is an indication that 84.7% of the variation in students' interest in mathematics is attributed to other factors other than authoritarian parenting style.

Hypothesis One

Authoritarian parenting style does not significantly predict students' interest in mathematics.

Table 2: Regression t-test of significant predictive power of authoritarian parenting style on students' interest in mathematics

Model		Unstandardized Coefficients		Standardized Coefficients	
		B	Std. Error	Beta	T
1	(Constant)	24.612	2.705		9.100
	Authoritarian PS	.465	.062	.391	7.449

The result in Table 2 shows that t-value of 7.449 with associated exact probability value of .000 was obtained. This probability value of .000 was compared with 0.05 set as level of significance for testing the hypothesis and it was found to be

significant since the p-value of 0.000 is less than 0.05. Hence, findings asset that authoritarian parenting style significantly predicts students' interest in mathematics.

Research Question Two

What is the predictive power of authoritarian parenting style on students' academic achievement in mathematics?

Table 3: Linear regression analysis of predictive power of authoritarian parenting style on students' academic achievement in mathematics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.560 ^a	.313	.311	5.04667

(R²) = Coefficient of Determination

The result in Table 3 shows that the correlation coefficient between authoritarian parenting style and students' academic achievement in mathematics is .560. The result implies that there exists a positive moderate relationship between authoritarian parenting style and students' academic achievement in mathematics. The result also

revealed that the coefficient of determination (R²) associated with the correlation coefficient of .560 was .313. The coefficient of determination (R²) of .313 indicates that authoritarian parenting style predicts or accounts for up to 31.3% of students' academic achievement in mathematics. This is an indication that 68.7% of the variation in students'

academic achievement in mathematics is attributed to other factors other than authoritarian parenting style.

Hypothesis Two

Authoritarian parenting style does not significantly predict students' academic achievement in mathematics

Table 4: Regression t-test of significant predictive power of authoritarian parenting style on students' academic achievement in mathematics

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	19.866	1.745		11.382	.000
	Authoritarian PS	.476	.040	.560	11.829	.000

The result in Table 4 shows that t-value of 11.829 with associated exact probability value of .000 was obtained. This probability value of .000 was compared with 0.05 set as level of significance for testing the hypothesis and it was found to be

significant since 0.00 is less than 0.05. Thus, findings revealed that authoritarian parenting style significantly predicts students' academic achievement in mathematics.

Research Question Three

What is the predictive power of Authoritarian parenting styles on students' interest and achievement in mathematics?

Table 5: Multiple regression analysis of predictive power of authoritarian parenting styles on students' interest and achievement in mathematics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.416 ^a	.173	.162	7.76688

(R²) = Coefficient of Determination

The result in Table 5 shows that the correlation coefficient between authoritarian parenting style and students' interest and achievement in mathematics is .416. The result indicates that there exists a positive moderate relationship between authoritarian parenting styles and students' interest and achievement in mathematics. The result also revealed that the coefficient of determination (R²) associated with the

correlation coefficient of .416 was .173. The coefficient of determination (R²) of .173 indicates that authoritarian parenting styles predict or account for up to 17.3% of students' interest and achievement in mathematics. This is an indication that 82.7% of the variation in students' interest in mathematics is attributed to other factors other than authoritarian parenting style.

Hypothesis Three

Authoritarian Parenting styles does not significantly predict students' interest and achievement in mathematics

Table 6: Regression ANOVA of significant predictive power of authoritarian parenting styles on students' interest and achievement in mathematics

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3832.553	4	958.138	15.883	.000 ^b
	Residual	18338.631	304	60.324		
	Total	22171.184	308			

The result in Table 6 shows that F-ratio of 15.883 with associated exact probability value of

.000 was obtained. This probability value of .000 was compared with 0.05 set as level of significance

for testing the hypothesis and it was found to be significant since 0.00 is less than 0.05. Thus, the null hypothesis which stated that authoritarian parenting styles does not significantly predict students' interest and achievement in mathematics was rejected. The researcher therefore, concludes that authoritarian parenting styles significantly predict students' interest and achievement in mathematics.

Discussion of findings

Findings of the study reveal that, the predictive power of authoritarian parenting style on students' academic interest in mathematics was a positive low relationship. The low coefficient of determination indicated that authoritarian parenting style predicts or accounts for low students' academic interests in mathematics. In other words, a high percentage of the variation in students' academic achievement in mathematics is attributed to other factors other than authoritarian parenting style. These other factors could be authoritarian and permissive styles of parenting, among others, which might have attributed to the high percentages in variation in the students' academic interest in mathematics. From the test of hypotheses one, it was revealed that the predictive power of authoritarian parenting style on students' academic interest in mathematics is significant. Thus, the null hypothesis which stated that authoritarian parenting style does not significantly predict students' academic interest in mathematics was rejected. This implies that authoritarian parenting style significantly predicts students' academic interest in mathematics.

This finding is consistent with the findings of Echedom, Nwankwo and Nwankwo (2018) who revealed that authoritarian parenting style is positive and highly encouraging towards reading habit and therefore predicts students' academic interest.

The results of the findings showed that, the predictive power of authoritarian parenting style on students' academic achievement in mathematics was a positive moderate relationship. The moderate low coefficient of determination indicated that authoritarian parenting style predicts or accounts for a moderate low students' academic achievement in mathematics. In other words, a moderate high percentage of the variation in students' academic achievement in mathematics is attributed to other factors other than authoritarian parenting style. These other factor could be permissive styles of parenting, teachers' factor, students' factor, among others, which might have attributed to the moderate high percentages in variation in the students' academic achievement in mathematics. From the test

of hypotheses one, it was revealed that the predictive power of authoritarian parenting style on students' academic achievement in mathematics is significant. Thus, the null hypothesis which stated that authoritarian parenting style does not significantly predict students' academic achievement in mathematics was rejected. This implies that authoritarian parenting style significantly predicts students' academic achievement in mathematics.

This finding is consistent with the findings of Khalida, Rauf, Junaid and Ahmed (2020) who posited that authoritarian parenting style predicts students' academic achievement. The finding also agrees with the findings of Echedom, Nwankwo and Nwankwo (2018) who revealed that authoritarian parenting style is positively and highly encouraging reading habit and therefore predicts students' academic achievement. On the contrast, the finding study disagrees with the finding of Obiunu (2018) who found that there is no significant relationship between authoritarian parenting style and academic performance of secondary school students. Therefore, the students' academic achievement in mathematics is being significantly predicted by other factors other than authoritarian parenting style.

The results of the findings showed that, the predictive power of authoritarian parenting style is a predictor of students' academic interest and achievement in mathematics and that there exists a positive moderate relationship. The positive moderate coefficient of determination indicated that authoritarian parenting style predicts or accounts for a positive moderate relationship of students' academic interest and achievement in mathematics. This finding may be possible because, For instance, when a student is coerced to study books sighting possible punishment when the child's failed to do it, such a child will always ensure to study harder to avoid possible penalty from parents and when this child keeps studying, such child will eventually develop interest in mathematics and will definitely lead to better achievement. This is as Vygostky's social development theory and cognitive theory of parenting to some extent influences students' academic interest through the social interaction and through that which the mimic from the parents or caregiver respectively.

This finding is consistent with the findings of David, Baidoo-Anu, Abiauw and Kaedebi-Donkor (2019) who revealed that parenting style correlate high with academic interest and as such parenting styles have relationship with the academic interest of students and therefore predicts students' academic interest. The finding is also in uniform with the

findings of David and Orluwene (2020) who averred that parenting styles have significant influence on academic interest of students in their study. On the contrast, the finding of the study is however, in disagreement with the finding of Atanda, Ademola and Ibukunolu (2018) who found that there existed significant difference between the academic interest of students from democratic and autocratic parenting homes, also a significant difference existed between the level of involvement of parents of male and female students in their education. Therefore, the students' academic interest in mathematics is being significantly predicted by other factors other than parenting style.

Conclusion

From the findings of the study, the following conclusions were made that: authoritarian parenting style significantly predict the academic interest and achievement of students in mathematics.

Recommendations

In the light of the findings of this study, the following recommendations were made:

1. The predictive power of authoritarian parenting style on students' academic interest and achievement in mathematics was found to be significant predictors of academic interest and achievement. Therefore, teachers should squeeze out time to meet with individual students' parent informing them of the need to enforce strict rules on study time table after school.

References

- Bruno, B., & Lawyer, D. B. (2020). The Effect of Whatsapp Use on Students' socio-Emotional Development and Academic Achievement. *European Journal of Education Studies*.
- Datta, S., & Sahu, T. N. (2023). Credit Utilization Pattern of the Borrowers. In *Financial Inclusion and Livelihood Transformation: Perspective from Microfinance Institutions in Rural India* (pp. 103-113). Singapore: Springer Nature Singapore.
- Echedom, A. U., Nwankwo, T. V., & Nwankwo, E. (2018). Influence of authoritative, authoritarian, permissive, and the uninvolved parenting styles on the reading attitudes of students in Anambra State, Nigeria. *Journal of Library and Information Sciences*, 6(2), 1-25.
- Ibok, E. O. (2024) Teachers discipline styles and classroom practices as predictors of student academic achievement in mathematics in Etinan education Zone, Akwa Ibom state, Nigeria. (Unpublished M.Ed thesis), University of Nigeria, Nsukka.
- Ibok, E. O, Nwoye M. N. & Oton, M. G. (2024) Teachers' preventive, supportive and corrective discipline styles as predictors of students' achievement in mathematics. *African Journal of Science, Technology and Mathematics Education*, Volume. 10, Issue 4. 475-482 <https://www.ajstme.com.ng>
- Ibukunolu, A. A. (2014). Parenting style and students' academic achievement in junior secondary schools in Ogun State, Nigeria. *Journal of Emerging Trends in Educational Research and Policy Studies*, 5(1), 20-24.
- KhalidaRauf, Junaid Ahmed. (2017). The Relationship of Authoritarian Parenting Style and Academic Performance in School Students. *Pakistan Journal of Psychology*, 48(2). Retrieved from <http://www.pjpku.com/index.php/pjp/article/view/48>
- Nnani, P. C., Enemu, J. O., & Onwuka, L. N. (2020). Parenting Styles and Academic Achievement of Primary School Pupils in Mathematics in Awka South Local Government Education Authority. *International Journal of Multidisciplinary and Current Research* (8). Retrieved from: <http://ijmcr.com>.
- Nwaoboli, E. P. (2022). A survey on parental influence on academic performance of secondary school students in Oredolga, Edo state.
- Nwoye, M. N (2017). Multiple representation as factors on pupils' achievement, interest, and retention on world wood problem in primary school Mathematics. Unpublished Ph.D. Thesis, University of Nigeria, Nsukka.
- Obiunu, J. J. (2018). Influence of parenting styles on the academic performance of secondary school students in Ethiopia East local government area Delta State. *Int J Educ Technol Learning*, 2(2), 54-8.
- Odame-Mensah, S., & Gyimah, E. K. (2018). The role of permissive and neglectful parenting style in determining the academic performance of adolescents in the senior high schools in the Birim Municipality. *Journal of Education and Practice*, 9(4), 73-82.
- Olubukola, A. (2015). An investigation of difficult topics in the Senior Secondary School Mathematics Curriculum as perceived by student teachers. *American Journal of Educational Research*, 3(7), 844-848.
- Opiyo, P. O., Aloka, D. P. J., Raburu, P. A., & Aomo, J. A. (2018). Relationship between permissive parenting style and examination cheating tendencies among Kenya secondary school students.