



# STEMJAS



## STEM JOURNAL OF ANAMBRA STAN

Volume 5(1);2025  
ISSN:2705-1579

EDITOR-IN-CHIEF  
PROF. EBELE C. OKIGBO



*STEM Journal of Anambra State (STEMJAS), 5(1); 2025*



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# **STEM JOURNAL**

## **OF ANAMBRA STATE**

### **(STEMJAS), 5(1); 2025**

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**ISSN:** 2705-1579

Published & Printed by:

**FAB ANIEH NIGERIA LIMITED**

**Fab Anieh House**

Opposite COFI Premium Lounge

Okpuno, Awka

Tel: 08035619395

G-mail: [fabprezz82@gmail.com](mailto:fabprezz82@gmail.com)



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## EDITORIAL

STEM Journal of Anambra STAN (STEMJAS) is a publication of **Science Teachers Association of Nigeria, Anambra State Chapter**. STEMJAS is developed to disseminate information on Science, Technology, Engineering and Mathematics (STEM) to teachers, teacher-trainers, researchers and other interested persons. Articles that are of relevance to STEM education are published in this journal.

We are grateful to the contributors and hope that our readers will enjoy reading these contributions.

Prof. Ebele C. Okigbo

**Editor-in-Chief**



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**PARENTING STYLES AS PREDICTORS OF ACADEMIC ACHIEVEMENT  
OF SECONDARY SCHOOL STUDENTS IN PHYSICS IN NKANU WEST  
LOCAL GOVERNMENT AREA OF ENUGU STATE**

**<sup>1</sup>Rose C. Anamezie, <sup>2</sup>Kingsley T. Onah**

<sup>1</sup>[rose.anamezie@esut.edu.ng](mailto:rose.anamezie@esut.edu.ng), <sup>2</sup>[kingsley.onah@esut.edu.ng](mailto:kingsley.onah@esut.edu.ng)

<sup>1,2</sup> Department of Science Education, Enugu State University of Science and  
Technology (ESUT)

**Abstract**

*The study investigated parenting styles as predictors of academic achievement of secondary school students in Physics in Nkanu West Local Government Area of Enugu state. Three research questions and four null hypotheses tested at 0.05 significance guided the study. A correlational survey research design was adopted for the study. The population consisted of 1,105 Senior Secondary one (SSI) students offering Physics in Nkanu West LGA. Random sampling technique was used to sample 164 students comprising 101 females and 63 males. The two instruments used for data collection were a structured questionnaire based upon Diana Baumrinds (1967) parenting style theory which was adapted and Physics academic Achievement scores which were extracted from the students' termly examination of 2022/2023 academic session conducted by the school. Cronbach's alpha statistic was used to test for the reliability of the instrument and the reliability index was found to be 0.86. Data collected were analyzed using mean, standard deviation and multiple regressions. The results indicated that the parenting styles contributed significantly to the prediction of academic achievement of physics with authoritative parenting style the most appropriate to promote academic achievement of students and the uninvolved the most severe in demoting academic success. Based on the findings, it was recommended among others that parents should adopt authoritative parenting styles that is characterized by warmth, support and reasonable expectations which positively correlate with academic success of students and also seminars and workshops should be regularly organized for parents and teachers in local communities and in schools during parents and teachers' association meetings.*

**Keywords:** Parenting styles, Physics achievement, Secondary school students





## **Introduction**

A nation's development is largely determined by the level of scientific, technological and industrialization advancement of that nation. The highly developed countries of the world such as United State of America, Japan, Europe and others are so distinguished across the globe because of the enviable height attained in their pursuit of innovative researches in sciences especially in the field of physics. This is because physics is the fundamental and the pivot of all the sciences. In contrast, the less developed countries across the globe that have failed to make much progress is as a result of their neglect in researches in physics and their inability to harness applications of physical laws (Okeke & Nwadinigwe, 2015).

In their respect studies (Anamezie, 2018; Anamezie & Nnadi, 2019) have noted that researches in physic have led to numerous brilliant inventions and discoveries which have been in applications in different areas of life such as in the field of health and medicine, agriculture, communications, transportation industries. In view of the laudable roles of physics in boosting the economy of a nation, there is much need to equip the physics students with necessary scientific knowledge and technological skills so that the aforementioned national development will be realized. Onah, Anamezie & Nnadi (2022) reported that despite the significant contributions of physics to national development, the achievement level in the subject area is on the low ebb. Many factors have been implicated as being responsible for student's poor achievement in this subject. While some researchers (Adedayo and Jegede 2013; Onah & Anamezie 2022; Onah, et al. 2022) in their independent studies implicated academic self-efficacy, academic interest, academic self-regulation as being determinants of students' academic achievements. While Nneji and Anamezie (2018) attributed the poor achievement to poor teaching methods, Odongo et al (2016) highlighted families and parenting styles as being responsible for poor academic achievement of their children.

The family is a vital society structure, playing crucial roles in both individual lives and society as a whole. The family structure's significance cannot be overstated; children are primarily influenced by their family, emphasizing the importance of balanced parent-child relationships for their physical, psychological and academic development. However, in this study the researchers want to find out the predicting potency of parenting styles on Physics students' achievement in secondary schools in Nkanu West LGA of Agbani education zone of Enugu state.

Parenting style is defined as a constellation of parents' attitudes and behaviors towards children and an emotional climate in which the parents' behaviors are expressed (Xiwen *et al.*, 2018). The four types of parenting styles which according to Pamela (2022) commonly used in psychology are based upon Diana Baumrinds (1967) parenting style theory. These parenting



styles are Authoritarian, authoritative, Permissive and Neglectful parenting styles. These four types of parenting styles are also known as Disciplinary, Democratic, indulgent and uninvolved respectively. Baumrind's theory posits that a close relationship exists between the type of parenting and children's behaviour, their development and the children's achievement outcomes. These four parenting styles could affect school children in their academic work and outcome. The characteristics of these parenting styles are examined in this study as follows;

Authoritarian parenting is strict, demanding, makes decision for the child, apply restrictive punitive style in which parents exhort the child to follow their directives, place firm limits and controls the child and allows little, verbal exchange. Children of authoritative parents are at higher risk of developing low self- esteem that is socially inactive because their opinions are not valued. Turner (2009) observed that the authoritarian parenting style is like a system of military regime. This is because rules and orders are not to be explained but are to be obeyed instantly and without question. The academic achievement of children from authoritarian homes may likely be high because such children know their parents' expectations from them are nothing but the best. It is very likely that these children may do very well in school.

Authoritative parenting is also referred to as democratic parenting. They have rules, use consequences; disciplines their children but they also recognize their children's opinion. They validate their children's feelings but at the same time make the children understand that the adults are ultimately in control. Authoritative parents spend time and energy to prevent behavioral problems before they start. Zahra *et al.* (2016) noted that the Authoritative parents are firm and make use of positive discipline strategies to reinforce the good behaviors. Children raised by this type of parents tend to be self-discipline and think for themselves. This is seen as a sort of middle ground between the authoritarian parenting and permissive parenting styles. Turner (2009) noted that the authoritative parents are more supportive and are involved in their children's performance academically. Children of authoritative parents are so close to their parents that if they face any difficulties with their school work, they will discuss it with their parents who proffer solutions to their problems. Children of authoritative parents tend to be academically sound and they are likely to do well in school since the Authoritative parenting styles is characterized by warmth, support and reasonable expectations which are likely to correlate positively with academic progress and growth of students.

In Permissive parenting, parents are lenient; they only step in when there is a severe issue. They give privileges if a child begs for something. They take more of a friend's role than parent role. They encourage their children to air their view concerning issue, but they don't put much effort to discourage poor choices or bad behaviour. The permissive parents play the role of a 'friend' rather than that of a 'parent'. They believe in the autonomy of the individual and are quick to



respond to their children's desires in an accepting and affective manner. Children of permissive parents may perform poorly academically as their parents rarely monitor them as to the kind of friends they keep and what they spend their day doing. These children have the freedom to decide their own cause of actions without reference to anyone and with the implication of being nonchalant towards their studies. Kelly (2004) states that children of permissive parents usually have drawbacks, and grow up to be juvenile delinquents.

For Uninvolved parenting, parents tend to have little knowledge of what children are doing. Children may not receive much guidance, nurturing, parental attention. These parents expect children to raise themselves. They don't devote much time and energy to meet children's basic needs. Uninvolved parents may be neglectful but it is not always intentional. This is due to lack of knowledge about child's development. Children with uninvolved parents are likely to struggle with self-esteem issues. They tend to perform poorly in school and rank low in happiness and exhibit frequent behavior problems due to the type of poor relationship between them and their parents.

From the foregoing, it is obvious that a person's upbringing is likely to influence how such an individual sees the world and process information starting from the nuclear family. Stevenson (1998) noted that the way a child is brought up and the information that is available to such a child in the forms of values can shape the disposition of such a child towards educational goals and achievement. Hence, an investigation into how parenting styles affect academic achievement of secondary schools' students in physics is necessary. Also, not much literature is available on the influence of parenting style on physics achievement in secondary school in Nkanu West LGA of Enugu, this work tends to fill the gap.

### **Purpose of the study**

The purpose of the study was to determine the prediction of Parenting styles on academic achievement of secondary school students in physics in Nkanu West LGA of Enugu State. Specifically, the study sought to determine the;

1. Relationship between parenting life style and the academic achievement of secondary school students in physics.
2. Prediction of the authoritative parenting life style on the academic achievement of secondary school students in Physics.
3. Prediction of the authoritarian parenting life style on the academic achievement of secondary school students in Physics.
4. Prediction of the permissive parenting life style on the academic achievement of secondary school students in Physics.



5. Prediction of the uninvolved parenting life style on the academic achievement of secondary school students in Physics

### **Research Questions**

The following research questions guided the study;

1. What is the relationship between the parenting life style and achievement of secondary school physics students'?
2. What is the Prediction of the authoritative parenting life style on the academic achievement of secondary school students in Physics?
3. What is the Prediction of the authoritarian parenting life style on the academic achievement of secondary school students in Physics?
4. What is the Prediction of the permissive parenting life style on the academic achievement of secondary school students in Physics?
5. What is the Prediction of the uninvolved parenting life style on the academic achievement of secondary school students in Physics?

### **Hypotheses**

The following null hypotheses were formulated for the study and was tested at 0.05 level of significance;

1. There is no significant prediction of authoritative parenting style on the academic achievement of secondary school physics students.
2. There is no significant prediction of authoritarian parenting style on the academic achievement of secondary school students in Physics.
3. There is no significant prediction of permissive parenting style on the academic achievement of secondary school students in Physics.
4. The prediction of uninvolved parenting style on the academic achievement of secondary school students in Physics is insignificant.

### **Method**

A correlational survey research design was employed for the study. The correlational survey is most appropriate because it is the kind of study that establishes the type of relationship that exists between two or more variables under study and predicts how more important one is over the other Nworgu (2016). The study was carried out in Nkanu West LGA of Enugu state. The researchers chose Nkanu West due to the fact that most of the secondary schools have qualified physics teachers, laboratories and instructional materials and yet students experience difficulties in answering questions in physics in their external examinations hence the need for the study in the area. The population of this study was 1105 Physics Students in Senior



Secondary School 1 (SS1) in Nkanu West (PPSMB, Enugu 2024 The sample for the study consisted 164 Physics students 101(females) and 63 (males). Simple random sampling was used to draw the sample size.

The instruments used for data collection were adapted from the Baurmind's (1967) Parenting style questionnaire (PSQ) and Physics achievement scores (PAS) extracted from the termly examination of students. The instrument (PSQ) was face validated by three experts, from Departments of Science education, educational Psychology and measurement and evaluation all from Enugu State University of Science and Technology Enugu. PSQ was also tested for reliability using Cronbach alpha which yielded a coefficient of 0.86. Data collected were analyzed using mean, standard deviation and correlation analysis. The null hypotheses were tested using multiple regression analysis. The null hypothesis was rejected when the p-value is less than 0.05, but if it is greater than 0.05, the null hypothesis is not rejected.

## Results

**Research Question 1:** What is the relationship between the parenting life style and achievement of secondary school physics students'?

**Table1: Mean, standard deviation, and bivariate correlations among variables.**

	Mean	SD	AUTIVE	AUTRIAN	PERMIVE	UNINVED
AUTIVE	26.38	1.27	1			
AUTRIAN	28.22	7.62	-.200	1		
PERMIVE	29.84	5.34	-.296	.341	1	
UNINVED	26.64	4.60	-.089	.667	.373	1
ACHIEVT	34.50	11.77	.563	-.133	-.029	-.488

Table 1 shows the mean and standard deviation of different parenting life styles and the academic achievement of secondary school physics students. The data revealed that the parenting style with highest mean score is permissive parenting style with 29.84 and standard deviation of 5.34; while the lowest of the parenting style mean is authoritative parenting style with 26.38 and standard deviation of 1.27. Authoritative parenting life style also showed most appropriate as the standard deviation is the smallest; meaning they cluster around the mean.



Results in Table 1 displayed the bivariate correlation amongst the parenting life styles of secondary school physics students on their academic achievement. The results showed that the relationship between authoritative parenting style is positive at .563 (56%) while other parenting styles like authoritarian, permissive and uninvolved parenting style showed negative relation with indices of -.133 (13%), -.029 (2.9%) and -.488 (49%) respectively. This shows that uninvolved parenting life style is more severe in demoting students' academic success in physics.

**Table 2: Moderated multiple regression analysis of parenting life style of secondary school physics students on their academic achievement.**

Model Summary				
Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.563 <sup>a</sup>	.318	.315	9.74646
2	.130 <sup>a</sup>	.017	.013	11.69757
3	.029 <sup>a</sup>	.001	-.003	11.79289
4	.488 <sup>a</sup>	.238	.235	10.29945

a. Predictors: (Constant), Uninvolved, Authoritarian, Permissive, Authoritative

Table 2 shows that the independent variable (parenting life style) as seen in model 1, has significant influence on the academic achievement of the students with the parental authoritative style in model 1 with value of  $R^2 = .318$  and adjusted  $R^2 = .315$ , authoritarian parenting style in model 2 with values of  $R^2 = .017$  and adjusted  $R^2 = .017$ , permissive parenting style in model 3 with values of  $R^2 = .001$  and adjusted  $R^2 = -.003$  and uninvolved parenting style as seen in model 4 with values of  $R^2 = .238$  and adjusted  $R^2 = .235$ . These implies that the independent variables; parenting life styles at their levels contributed to the prediction of academic achievement of Physics students.



**Table 3: Relative Contribution of Parenting life style to the prediction of their academic achievement in Physics**

Coefficients <sup>a</sup>							
Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error				Lower Bound	Upper Bound
(Constant)	-115.456	9.378		-12.311	.000	-133.925	-96.986
Authoritative	6.307	.319	.679	19.792	.000	5.680	6.935
1 Authoritarian	.723	.069	.468	10.547	.000	.588	.858
Permissive	.740	.080	.336	9.198	.000	.582	.899
Uninvolved	-2.212	.114	-.865	-19.338	.000	-2.437	-1.987

a. Dependent Variable: Achievement

Table 3 shows the unstandardized coefficients with t- and p-values of the predictor variables. The table showed that the independent variables made a significant contribution to the prediction of physics academic achievement. Considering the extent of contribution, authoritative parenting style, the un-standardized coefficient ( $B = 6.307$ ) and standardized coefficient or slope ( $\beta = .679$ ) was significantly different from 0.000 ( $t = 19.792$ ;  $P < 0.05$ ). This indicates that for every one-point increase in students' parenting style of authoritative, their academic achievement increased by 631/100. Therefore, null hypothesis was thus rejected. There was significant contribution of students' parenting style to the prediction of their academic achievement in Physics.

Table 3 also shows the unstandardized coefficients with t- and p-values of the predictor variables. The table showed that the independent variables made a significant contribution to the prediction of physics academic achievement. Considering the extent of contribution, authoritative parenting style, the un-standardized coefficient ( $B = .723$ ) and standardized coefficient or slope ( $\beta = .468$ ) was significantly different from 0.000 ( $t = 10.547$ ;  $P < 0.05$ ). This indicates that for every one-point increase in students' parenting style of authoritarian, their academic achievement increased by 72/100. Therefore, null hypothesis was thus rejected. There was a significant contribution of students' parenting style to the prediction of their academic achievement in Physics.





Table 3 again, shows the unstandardized coefficients with t- and p-values of the predictor variables. The table showed that the independent variables made a significant contribution to the prediction of physics academic achievement. Considering the extent of contribution, permissive parenting style, the un-standardized coefficient ( $B = .740$ ) and standardized coefficient or slope ( $\beta = .336$ ) was significantly different from 0.000 ( $t = 9.198$ ;  $P < 0.05$ ). This indicates that for every one point increase in students' parenting style of authoritative, their academic achievement increased by 74/100. Therefore, null hypothesis was thus rejected. There was statistically significant contribution of students' parenting style to the prediction of their academic achievement in Physics.

Table 3 also shows the unstandardized coefficients with t- and p-values of the predictor variables. The table shows that the independent variables made a significant contribution to the prediction of physics academic achievement. Considering the extent of contribution, uninvolved parenting style, the un-standardized coefficient ( $B = -2.212$ ) and standardized coefficient or slope ( $\beta = -.865$ ) was significantly different from 0.000 ( $t = -19.338$ ;  $P < 0.05$ ). This indicates that for every one point increase in students' parenting style of uninvolved, their academic achievement decreases by -221/100. Therefore, null hypothesis was thus rejected. There was statistically significant contribution of students' parenting style to the prediction of their academic achievement in Physics.

## **Discussion**

The study determined the prediction of parenting styles as predictors of academic achievement in physics in Nkanu West L.G.A. of Enugu State, Nigeria. These parenting styles are Authoritarian, Authoritative, permissive and uninvolved. From the findings, the results showed that though Permissive parenting style may be associated with higher mean of academic achievement in physics among students, Authoritative parenting life style showed the most appropriate that may lead to more consistent academic achievement due to its lower standard deviation. Therefore, Authoritative with the lowest standard deviation showed the most appropriate to promote academic achievement of students. This result is in tandem with the findings of Euthemia et al., (2020) and Moon-Seo et al (2021) who posited in their respective studies that authoritative parenting style is an important factor that impacted and improved academic wellbeing of college students.

On the relationship between parenting styles and academic achievement, the results in (Table 1) showed that the relationship between authoritative parenting style is positive at .563 (56%) while other parenting styles like authoritarian, permissive and uninvolved parenting style





showed negative relation with indices of  $-0.133$  (13%),  $-0.029$  (2.9%) and  $-0.488$  (49%) respectively. This showed that uninvolved parenting life style is more severe in demoting students' academic success in schools. This result is in disagreement with the results of Candelan et al (2021) whose test on the relationship between academic performance of students and parenting style was insignificant. The researchers also highlighted that parents are not the only factors affecting their children's academic progress. This means that there are other factors that can contribute to poor academic achievement of students in school.

On the joint prediction of parenting style on the academic achievement of secondary school physics students, the researchers observed (Table 2) that parenting life styles jointly contributed approximately 73% prediction of academic achievement of Physics students. The results showed that when parenting style increased by 1% students' academic achievement in physics increases by 73%. On further testing of the hypotheses using multiple regression analysis (Table3), the results indicated that there was significant contribution of parenting styles to the prediction of academic achievement. This is in agreement with the findings of Zahra et al., 2016).

### **Recommendations**

Based on the findings, the following recommendations were made;

1. Parents are encouraged to adopt Authoritative parenting styles that is characterized by warmth, support and reasonable expectations which positively correlate with academic success of physics students.
2. Parents are encouraged to get involved in their children's homework and study routines to ensure adequate and consistent support and guidance at home
3. School management should organize parenting workshops and seminars that will create awareness to help parents and teachers understand the importance of their children's education.
4. Open communications should be fostered between parents, teachers and students to create a supportive academic environment that strengthens comprehension.



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