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PSYCHOSOCIAL METRICS AND STUDENTS ACADEMIC PERFORMANCE IN BIOLOGY IN SECONDARY SCHOOLS IN NSIT ATAI LOCAL GOVERNMENT AREA, AKWA IBOM STATE

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ABSTRACT

The study examined psychosocial metrics and students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. The study was guided by three research questions and three research hypotheses. A correlational research design was adopted for the study. The population of the study consisted 2635 Senior Secondary Two (SS II) Biology students in public secondary schools in Nsit Atai Local Government Area. A sample size of 328 Biology SS II students obtained using Taro Yamane's formula was used for the study. A simple random sampling technique was used in selecting the sample size for the study. Two researcher-developed instruments were used in collecting data for the study. The instruments were tagged "Psychosocial Metrics Questionnaire (PMQ) and Biology Performance Test (BPT)". The instruments were duly validated by three experts in Faculty of Education, University of Uyo, Uyo. After which Cronbach Alpha statistics was used in obtaining reliability coefficients of 0.82 and 0.84 for the PMQ and BPT respectively. Pearson Product Momment Correlation Statistics was used in answering the research questions and in testing the hypotheses at 0.05 level of significance. The findings of the study revealed that self-esteem, motivation and peer pressure significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. Recommendations made among others included; Biology teachers should use motivating instructional approaches, such as practical activities, real-life applications and instructional technologies to improve students' academic performance. In addition, schools should adopt supportive teaching strategies and provide effective guidance services to help reduce students' academic anxiety in Biology.

KEYWORDS: Psychosocial Metrics, Students' Academic Performance, Biology, Nsit Atai, Akwa Ibom State.

INTRODUCTION

Students' academic performance in Biology has remained a major concern for educators, policymakers, and researchers across many educational systems worldwide. Biology, as a core science subject, provides foundational knowledge for careers in medicine, agriculture, environmental science, and biotechnology. Despite its importance, reports from examination bodies such as the West African Examinations Council and the National Examination Council consistently reveal fluctuating achievement levels among secondary school students. These trends suggest that a significant proportion of learners struggle to attain proficiency in key biological concepts. The abstract nature of topics such as genetics, cell division, and ecology often poses comprehension challenges for students (Frazer, 2021). In many classrooms, traditional lecture-based teaching methods continue to dominate instructional practice. Such approaches may limit students' engagement, critical thinking, and practical understanding of biological processes (Martins, 2021). Additionally, inadequate laboratory facilities and limited access to instructional materials further constrain effective learning experiences.

Learners' attitudes toward Biology, including their interest, motivation, and self-efficacy, significantly affect their academic performance (Dweck, 2018). Studies indicate that students who perceive Biology as difficult or irrelevant are less likely to invest effort in mastering the subject matter. Assessment practices that focus primarily on rote memorization rather than conceptual understanding may further hinder meaningful learning. Moreover, large class sizes and limited teacher-student interaction can reduce opportunities for individualized support (Akpan and Utibe, 2021). Gender differences in performance have also been reported in some contexts, raising concerns about equity in science education. The integration of innovative strategies such as inquiry-based learning and technology-enhanced instruction has been proposed as a means of improving achievement. Bassey (2022) posited that so many factors influences the academic performance of students but the outstanding one is influence of psychosocial metrics. Psychosocial variables are the psychological and social factors that influence an individual's thoughts, emotions, behaviours and general functioning. Vallerand (2022) opined that psychosocial variables represent the interaction between internal mental processes and the external social environment. These variables include attitudes, beliefs, personality traits, motivation and emotional states. Psychosocial variables also involve social influences such as family background, peer relationships, culture and socioeconomic status. Oke *et al.,* (2022) asserted that psychosocial variables play a critical role in shaping how individuals perceive situations and respond to challenges. These variables influence decision-making, coping strategies and interpersonal relationships. In educational and sports settings, psychosocial variables affect learning, performance, teamwork and discipline. In furtherance, positive psychosocial variables can enhance confidence, resilience and satisfaction. Furthermore, negative psychosocial variables may result in stress, anxiety, poor performance, or maladaptive behaviour. Kenyata (2020) asserted that although many psychosocial variables can enhance students' academic performance, the most outstanding ones are Self Esteem, motivation and peer pressure.

Self-esteem is the overall sense of value and worth that, a person places on themselves. It reflects how much individuals appreciate, accept, and respect who they are as a whole. Psychologist Morris Rosenberg described self-esteem as a favorable or unfavorable attitude toward the self (Collins, 2022). It develops gradually through childhood experiences, social interactions, and personal achievements. Family support, peer relationships, and cultural

influences all play important roles in shaping it. When people have high self-esteem, they generally feel confident in their abilities and decisions. They are more likely to handle criticism constructively and recover from setbacks. On the other hand, low self-esteem can lead to self-doubt, fear of failure, and negative self-talk. Self-esteem is closely connected to mental health and emotional well-being. It influences motivation, relationships, and the willingness to try new challenges. Cletus *et al.* (2018) posited that self-esteem promote academic performance of students.

Motivation is the internal and external drive that initiates, directs and sustains behaviour toward achieving a goal. Pintrich (2019) opined that motivation explains why individuals choose to act in certain ways and persist in those actions over time. Motivation can be intrinsic, arising from personal interest, enjoyment or satisfaction. It can also be extrinsic, driven by external rewards such as praise, recognition, or financial incentives. Motivation influences the level of effort, commitment and persistence a student displays through interest in learning (Zeinder, 2022). In furtherance, high motivation is often associated with improved performance, focus and resilience. Low motivation may result in reduced effort, lack of interest and poor achievement. Maxwell (2021) posited that in the school setting, motivation plays a key role in students' academic performance, training and skill development, especially when it is not negatively influenced by peer pressure.

Peer pressure refers to the influence that individuals or groups of similar age or status exert on a person's attitudes, behaviours and decisions. It occurs when an individual feels encouraged or compelled to conform to peers' expectations or actions. Ezeudu (2023) maintained that peer pressure could be direct, such as verbal persuasion or coercion. It can also be indirect, arising from the desire to gain acceptance or avoid rejection. Peer pressure plays a significant role during adolescence and young adulthood. It can have positive effects, such as encouraging healthy habits, academic effort, or teamwork. However, it can also result in negative behaviours like substance abuse, risky activities, or poor decision-making (Sha, 2018). In addition, peer pressure affects self-esteem and confidence, particularly in individuals seeking social approval. The effect of peer pressure on students' academic performance in any subject depends on personal values, self-control and social support (Tunde, 2023). In furtherance, when peers do not negatively influence peers, this would reduce anxiety in writing examination to enhance academic performance.

It is based on the roles of psychosocial variables such as self-esteem, motivation and peer pressure in determining students' academic performance that the researcher is motivated to conduct the present study on psychosocial metrics and students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area of Akwa Ibom State.

STATEMENT OF THE PROBLEM

Strong academic performance in Biology equips students with essential scientific knowledge and critical-thinking skills that support success across Science, Technology, Engineering and Mathematics disciplines. These competencies create opportunities for entry into competitive, high-demand careers such as medicine, engineering, biotechnology, and other science-related fields. Despite these benefits, the education sector continues to face the persistent challenge of poor student achievement in Biology. This low performance is often associated with various psychosocial difficulties, including low self-esteem, academic anxiety, and reduced motivation to learn. Students may also develop negative attitudes toward science,

experience shame or embarrassment, and in some cases withdraw socially or become more vulnerable to peer pressure. These challenges can escalate into behavioural problems, learned helplessness, increased stress, diminished aspirations, identity confusion, and a weakened academic self-concept, ultimately leading to reduced participation and engagement in school activities.

Many scholars have explored various factors, such as instructional strategies and parental involvement, to address students' poor academic performance in Biology. Despite these efforts, the persistence of the problem indicates that previous approaches have not produced consistently reliable results. This situation necessitates further investigation into other possible causes of students' underachievement in the subject. In particular, it raises concerns about the potential role of psychosocial variables in influencing academic outcomes. Psychosocial factors are widely acknowledged as significant in shaping students' learning experiences and overall academic performance. These factors may affect students' attitudes, motivation, emotional stability, and self-perception in relation to learning. Consequently, this study is undertaken to examine the predictive influence of psychosocial variables on students' academic achievement in Biology, focusing on secondary schools in Nsit Atai Local Government Area of Akwa Ibom State.

PURPOSE OF THE STUDY

The main purpose of the study is to determine the extent to which psychosocial metrics predict academic performance in Biology in secondary schools in Nsit Atai Local Government Area. Specifically, the study sought to determine;

1.) The extent to which self-esteem predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

2.) The extent to which motivation predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

3.) The extent to which peer pressure predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

SIGNIFICANCE OF THE STUDY

This study on psychosocial metrics and students' academic performance in Biology would be of immense benefit to the students, teachers, school administrators, parents, Federal/State/Local Government Areas, curriculum planners in education, educational psychologist and researchers.

The students would benefit from the findings of the study, as it would enable them to better understand how their mindset, motivation and social environment affect their academic performance in Biology.

The findings of the study would be beneficial to the teachers, as it would enhance adjusting teaching methods and classroom environments to foster positive psychosocial conditions for learning.

The findings of the study would be useful to school administrators, as it would boost developing policies and support systems that improve student academic performance.

To the parents, the findings of the study would be essential, as it would provide better emotional and academic support at home

The findings of the study would be beneficial to the Federal/State/Local Government Areas, as it would enhance developing targeted interventions to improve students' academic performance by addressing factors like motivation, self-esteem and classroom environment.

Curriculum planners in education would benefit from the findings of the study, as it would enable them to design Biology curricula that integrate student-centered and psychologically supportive approaches. Educational psychologies would benefit from the findings of the study, as it would enable them to tailor interventions that address emotional and social factors influencing learning.

To the researchers' the findings of the study would be useful to them as it would provide literature and reference point in this area of the study and other related areas.

RESEARCH QUESTIONS

The following research questions were formulated to guide the study

1.) To what extent does self-esteem predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

2.) To what extent does motivation predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

3.) To what extent does peer pressure predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

RESEARCH HYPOTHESES

The following research hypotheses were formulated to guide the study;

1.) Self-esteem does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

2.) Motivation does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

3.) Peer pressure does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

METHODOLOGY

A correlational research design was adopted for this study. This design was considered appropriate because it enables the identification of patterns and relationships among variables, thereby allowing predictions to be made based on observed correlations. In this study, the extent to which psychosocial variables of anxiety, motivation, and peer pressure and parents involvement predict students' academic performance in Biology is examined. The study was conducted in Nsit Atai Local Government Area of Akwa Ibom State. Nsit Atai Local Government Area is one of the thirty-one Local Government Areas in Akwa Ibom State and lies between latitudes 4°25′N and 5°32′N of the equator and longitude 7°29′E of the Greenwich

Meridian. The area was chosen for the study due to the observed poor academic performance of students in Biology.

The population of the study comprised 736 Senior Secondary Two (SS II) students in public secondary schools in Nsit Atai Local Government Area. A sample size of 259 SS II students, determined using Taro Yamane's formula, was used for the study. A simple random sampling technique was employed in selecting the sample. Two researcher-developed instruments were used for data collection, namely the Psychosocial Metrics Questionnaire (PMQ) and Biology Performance Test (BPT). The instruments were validated by three experts from the Faculty of Education, University of Uyo, Uyo. Thereafter, Cronbach Alpha was used to obtain the reliability coefficients, yielding values of 0.82 for the PMQ and 0.84 for the BPT. Pearson Product Moment Correlation statistics was used in answer the research questions and in testing the hypotheses at the 0.05 level of significance.

RESULTS

Method of Data Analysis

The data collected is statistically analyzed using Pearson Product Moment Correlation Statistics in answering the research questions and in testing the hypotheses at 0.05 level of significance.

Data Analysis and Results

Answers to research questions and hypotheses testing are done in this section:

Research Question 1

To what extent does self-esteem predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

Table 1: Summary of Regression Analysis of the extent to which Self Esteem Predict Students' Academic performance in Biology (N=259)

Variables	R	R^2	Adjusted R^2
Self Esteem (X)			
	.645	.416	.416
Students' Academic Performance (Y)			

Source: Field Work (2025)

Table 1 shows the extent to which anxiety predict students' academic performance in Biology. The coefficient of correlation (R) of .645 shows that self-esteem predict students' academic performance in Biology to a moderate extent. Also, the coefficient of determination (R^2) value of .416 indicates that self-esteem predict up to 41.6 percent variation in students' academic performance in Biology. This result shows that self-esteem predict students' academic performance in Biology to a moderate extent.

Research Question Two

To what extent does motivation predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

Table 2: Summary of Regression Analysis of the extent to which Motivation Predict Students' Academic performance in Biology (N=259)

Variables	R	R^2	Adjusted R^2
Motivation (X)	.725	.526	.526
Students' Academic Performance (Y)			

Source: Field Work (2025)

Table 2 shows the extent to which motivation predict students' academic performance in Biology. The coefficient of correlation (R) of .725 shows that motivation predicts students' academic performance in Biology to a high extent. Also, the coefficient of determination (R^2) value of .526 indicates that motivation predict up to 52.6 percent variation in students' academic performance in Biology. This result shows that motivation predicts students' academic performance in Biology to a high extent

Research Question Three: To what extent does peer pressure predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

Table 3: Summary of Regression Analysis of the extent to which Peer Pressure Predict Students' Academic performance in Biology (N=259)

Variables	R	R^2	Adjusted R^2
Peer Pressure (X)	.819	.671	.671
Students' Academic Performance (Y)			

Source: Field Work (2025)

Table 3 shows the extent to which peer pressure predict students' academic performance in Biology. The coefficient of correlation (R) of .819 shows that peer pressure predicts students' academic performance in Biology to a very high extent. Also, the coefficient of determination (R^2) value of .819 indicates that peer pressure predict up to 81.9 percent variation in students' academic performance in Biology. This result shows that peer pressure predict students' academic performance in Biology to a very high extent.

Hypotheses Testing

Research Hypothesis One: Self-esteem does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

Table 4: Regression Analysis of the prediction of Students Academic Performance in Biology by Self Esteem (N=259)

Model	Sum of Square	DF	Mean square	F	Sig	Remarks
Regression	453.337	1	453.337	3.100	.007	Significant
Residual	37498.913	257	145.910			
Total	37952.250	258				

·= Significant at .05 alpha level. Source: Field Work (2025)

The results of Table 5 shows that the p-value of .007 is less than .05 at 1 and 257 degrees of freedom and at .05 level of significance. Therefore the null hypothesis which stated that anxiety does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area is rejected. Therefore the researcher concludes that self-esteem significantly predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State.

Research Hypothesis Two: Motivation does not significantly predict students' academic performance in Biology in Nsit Atai in secondary schools in Nsit Atai Local Government Area.

Table 5: Regression Analysis of the prediction of Students Academic Performance in Biology by Motivation (N=259)

Model	Sum of Square	DF	Mean Square	F	Sig	Remarks
Regression	382.529	1	382.529	2.31	.010	Significant
Residual	42423.471	257	165.070			
Total	42806.000	258				

·= Significant at .05 alpha level. Source: Field Work (2025)

The results of Table 6 shows that the p-value of .010 is less than .05 at 1 and 257 degrees of freedom and at .05 level of significance. Therefore the null hypothesis which stated that motivation does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area is rejected. Therefore the researcher concludes that motivation significantly predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State.

Research Hypothesis Three

Peer pressure does not significantly predict students' academic performance in Nsit Atai in secondary schools in Nsit Atai Local Government Area.

Table 6: Regression Analysis of the prediction of Students Academic Performance in Biology by Peer Pressure (N=259)

Models	Sum of Square	DF	Mean Square	F	Sig	Remarks
Regression	552.182	1	552.182	3.1029	.003	Significant
Residual	45734.532	257	177.955			
Total	46286.714	258				

.= Significant at .05 alpha level. Source: Field Work (2025)

The results of Table 7 shows that the p-value of .003 is less than .05 at 1 and 257 degrees of freedom and at .05 level of significance. Therefore the null hypothesis which stated that peer pressure does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area is rejected. Therefore the researcher concludes that peer pressure significantly predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State.

FINDINGS OF THE STUDY

From the Findings, it was observed that:

1.) Self-esteem significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

2.) Motivation significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

3.) Peer pressure significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

DISCUSSION OF FINDINGS

The result of the first research hypothesis shown that self-esteem significantly predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. This is achievable because Students with high self-esteem tend to believe in their capacity to understand biological concepts and solve scientific problems effectively. This confidence encourages active participation in classroom activities, laboratory experiments, and group discussions. When learners value themselves, they are more willing to ask questions and seek clarification on difficult topics. High self-esteem also promotes persistence when students encounter challenging areas such as genetics, ecology, or physiology. In contrast, students with low self-esteem often doubt their competence and may avoid engaging fully in learning activities. Such self-doubt can reduce motivation, limit effort, and negatively affect study habits. Self-esteem further shapes emotional responses to tests and assessments, influencing levels of anxiety and performance outcomes. Students who feel competent are more likely to set higher academic goals and remain committed to achieving them. The findings of the study is in lined with the submission made by Emeka (2021) that self-esteem significantly predicts students' academic performance.

The result of the second research hypothesis shown that motivation significantly predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. This is achievable as motivation determines the level of effort and persistence they apply to learning. Highly motivated students are more likely to approach difficult chemistry concepts with curiosity and determination. Motivation fuels their desire to understand rather than simply memorize formulas and reactions. When students are motivated, they set clear academic goals and work consistently to achieve them. This inner drive enhances concentration and problem-solving skills during laboratory and theoretical work. Intrinsic motivation, in particular, fosters deeper learning and long-term retention of chemistry knowledge. Extrinsic motivation, such as grades or future career aspirations, can also push students to perform better academically. The findings of the study is in agreement with the submission made by Eze (2023), that motivation boost academic performance of the students.

The result of the third research hypothesis shown that peer pressure significantly predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. This achievable because peers strongly influence learning behaviours and attitudes. When students interact with motivated and high-achieving peers, they often adopt similar study habits and positive attitudes toward Biology. Such influence can encourage collaboration, healthy competition, and the exchange of academic ideas. Peers who value success in chemistry can create a learning culture that promotes persistence and discipline. Positive peer pressure often motivates students to attend classes regularly and participate actively in laboratory activities. Conversely, negative peer pressure can lead to distractions and reduced focus on academic goals. Students who associate with peers uninterested in chemistry may lose motivation and perform poorly. The findings of the study is in lined with the submission made by Tunde (2023) that peer pressure influences students' academic performance.

CONCLUSION

Based on the data collected, it could be concluded that self-esteem, motivation, peer pressure and anxiety significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State.

RECOMMENDATIONS

- Schools should implement supportive teaching strategies and guidance services that help reduce students' academic anxiety in Biology. Teachers should adopt learner-friendly instructional methods and assessment practices that build confidence and minimize fear associated with the subject.
- Biology teachers should employ motivating instructional approaches such as practical activities, real-life applications, and the use of instructional technologies to sustain students' interest. Schools should also provide incentives, encouragement and recognition to boost students' intrinsic and extrinsic motivation toward learning Biology.
- Schools should promote positive peer interactions through cooperative learning, group projects, and peer mentoring programs that encourage academic engagement in Biology. Guidance counselors should educate students on resisting negative peer influence and making independent academic decisions.

- Parents should be encouraged to actively participate in their children's academic activities by monitoring homework, providing learning materials, and offering emotional support. Schools should strengthen home, school collaboration through regular communication and involvement of parents in academic programs related to Biology.

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