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EDITORIAL

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Prof. Patrick C. Igbojinwaekwu
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ACADEMIC BURNOUT AS PREDICTORS OF SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN BIOLOGY IN ANAMBRA STATE

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Abstract

The study investigated academic burnout as predictors of secondary school students' achievement in Biology in Anambra State. Two research questions and two null hypotheses tested at a 0.05 level of significance guided the conduct of the study. A correlational research design was adopted. The population of the study comprised 16,507 senior secondary year two (SS2) students offering biology in the 201 government owned co-educational secondary school in Anambra State. A sample of 1,167 students was drawn using multi-stage sampling. Academic burnout scale (ABS) validated by three experts was used for data collection. The reliability of ABS was established using Cronbach Alpha coefficients of 0.80. The student achievement scores in Biology for 2024/2025 academic session were obtained from the teachers' score inventory and used for the study. The data collected was analyzed using simple and multiple linear regression. The findings of the study revealed among others that 0.2% of the variance in achievement in biology was predicted by students' academic burnout. Also, academic burnout does not significantly predict students' achievement in Biology. Based on the findings, it was recommended that biology teachers must be careful of how they implement biology curriculum in the classroom to avoid putting too much workload or pressure on the students. School should provide supportive learning environments that minimize excessive academic stress.

Keywords*:* Academic Burnout, academic achievement

Introduction

Education is an essential stepping-stone towards any societal development. Education boosts the opportunities for sustainable development and plays a crucial role in the overall development of the individual, society and nation at large. For this reason, education of every citizen should be taken seriously. Among the various disciplines in the educational system, science education holds a prominent role. Science education serves as the foundation for technological advancement, innovation, and problem-solving in any modern society.

Within the scope of science education, Biology stands out as a core subject that deals with the study of living organisms and life processes. According to Ihekwoaba, Chinweuba and Nduji (2020), Biology is a branch of natural science that deals with the study of living organisms, the structures, functions, evolutions, distribution and interrelationships. The importance of biology in our daily activities cannot be underestimated, as it has made significant contributions to the contemporary world. Biology serve as a foundation for medical breakthroughs and plays a crucial role in providing valuable instructions for the betterment of society. The problem of the study is therefore to examine how academic burnout predicts students' achievement in biology.

Academic burnout is a significant issue affecting students across various educational levels. Academic burnout is a feeling of chronic academic fatigue, reduced sense of accomplishment, and a tendency to detach from school tasks. Academic burnout is a multidimensional characteristic that encompasses emotional exhaustion, cynicism or detachment from studies, and a reduced academic efficacy, resulting from prolonged

academic stress and pressure (Salmela-Aro and Read, 2019). Students who are overwhelmed by their academic workload, expectations, and continuous assessments most commonly experience it. Wang and Eccles (2018) argue that academic burnout is not only an emotional condition but also a cognitive and behavioral syndrome that affects learning efficiency, especially in science subjects. Ezegwu and Chigbu (2019) note that students in urban areas often experience academic burnout due to long hours of after-school lessons, overloaded syllabi, and pressure from parents to excel. Scholars have explored this phenomenon from multiple perspectives, often focusing on its three major dimensions: emotional exhaustion, cynicism or depersonalization, and academic inefficacy.

Emotional Exhaustion is the central component of burnout and refers to the feeling of being emotionally over extended and depleted of one's academic energy. Salmela-Aro and Read (2019) explain emotional exhaustion as the chronic fatigue students feel due to persistent demands, lack of rest, and academic overload. Madigan and Curran (2017) emphasize that emotional exhaustion is the first sign of burnout in students, manifesting as a constant sense of fatigue, sleep disturbance, and inability to concentrate in class. Olorunjuwon and Adegoke (2021) found that emotional exhaustion was significantly high among Nigerian secondary school students, especially those preparing for high-stakes exams such as WAEC and NECO, as they reported sleepless nights, anxiety, and overwhelming workloads. Schaufeli, Martínez, Pinto, Salanova, and Bakker (2017) describe emotional exhaustion as the draining of emotional resources due to intense and prolonged academic demands. Students experiencing this form of burnout often feel tired before school starts and struggle to

complete their assignments. This sense of fatigue can gradually lead to a shift in students' attitudes towards school, often manifesting as cynicism.

Cynicism (Depersonalization) involves developing a distant or indifferent attitude toward one's academic work. Students become disengaged, lose interest, and often display negative attitudes toward school and learning. According to Salmela-Aro et al. (2016), students with academic cynicism detach themselves from school activities and adopt a "why bother?" mentality. Mokgele and Rothmann (2016) add that this detachment can lead students to become passive in class, reduce participation, and avoid academic responsibilities. As students continue to disengage from school activities, they may begin to internalize failure, leading to a decline in their academic self-belief-a state referred to as academic inefficacy.

Academic inefficacy refers to students' feelings of incompetence and lack of accomplishment in their academic work. Madigan and Curran (2021) argue that students with burnout often feel they are not achieving enough, regardless of the effort they put in, leading to a diminished academic self-concept. Obi and Ifelunni (2022), in a study of senior secondary school students in Southeastern Nigeria, found that students experiencing burnout often doubted their abilities even when they had the potential to perform well, especially in challenging subjects like Biology and Mathematics. Together, these three dimension-emotional exhaustion, cynicism and academic inefficacy form a cycle that negatively affects students' academic engagement and achievement, particularly in demanding subjects such as biology.

Academic burnout of student plays a role in their academic achievement. The need arises that a study be conducted to determine whether the variation in academic burnout could predict achievement in biology. Most studies like those of

Abdolvahed, Nematollah, and Khourosh (2020), Jeremich, and Noralyn (2023), Syprine, Peter, Theresia and Josephine (2020) and Marialyn, Gonzaga, Leomar, and Oblianda (2022) on academic burnout were conducted in different subject areas using students at different level of education. The results of the studies were mixed and the study have not been conducted among secondary school biology students in Anambra state.

Statement of the Problem

Despite the importance of Biology in science education, students' academic achievement in the subject remains a concern in Anambra State. Although academic burnout has been identified as a factor that may influence students' academic achievement, previous studies have reported inconsistent findings regarding its predictive role. Moreover, little empirical evidence exists on the predictive influence of the dimensions of academic burnout n secondary school students' academic achievement in Biology in Anambra State. This study, therefore, examined academic burnout as predictors of secondary school students' academic achievement in Biology in Anambra State.

Purpose of the Study

The purpose of this study was to investigate the predictive power of academic burnout on secondary school students' academic achievement in biology in Anambra State. Specifically, the study sought to determine the:

1. Predictive power of academic burnout on secondary school students' achievement in biology.

2. Contribution of the dimensions of academic burnout (Emotional exhaustion, Cynicism and academic inefficacy) to the prediction of secondary school students' achievement in biology.

Research Questions

The following research questions guided the study:

1. What is the predictive power of academic burnout on secondary school student achievement in Biology?
2. What are the contribution of the dimensions of academic burnout (Emotional exhaustion, Cynicism and academic inefficacy) to the prediction of secondary school students' achievement in Biology?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

1. Academic burnout is not a significant predictor of achievement of secondary school students in Biology.
2. The contribution of the dimensions of academic burnout (Emotional exhaustion, Cynicism and academic inefficacy) on the achievement of secondary school students' in Biology are not significant.

Methods

The study adopted the correlational design. The area of the design of the study was Anambra state. The population of the study was 16,507 senior secondary year two (SS2) students offering Biology in Anambra state. The sample of the study is 1167 SS2 students offering Biology. The sample was obtained using a multi-stage

sampling procedure. The instrument for data collection was Academic Burnout Scale (ABS). ABS was adapted from Maslach burnout inventory student-survey (MBI-SS) (2002) who developed the instrument to measure burnout among university students. ABS is a fifteen item instrument which has three dimensions namely: emotional exhaustion, cynicism and academic inefficacy. ABS was designed on a four-point scale of strongly agree, agree, disagree and strongly disagree. Students' achievement was obtained from the schools' biology score folder where the Biology teachers record the students' academic achievement in Biology each term. The objectives of the study, research instrument, research questions, and hypotheses were given to three lecturers, one from the Department of Science Education, one from Guidance and Counselling and one from Educational Foundations, all from Nnamdi Azikiwe University, Awka, for validation. The validators will be required to vet the items in terms of clarity and suitability for the level of students under study. Their corrections, suggestions and recommendations were effected in the instrument. The reliability of ABS was established using Cronbach Alpha. The coefficient of internal consistency obtained for ABS was 0.80. The instruments were administered with the aid of two research assistants who were briefed about the study and how to administer and collect data using the instrument. Data generated from the study was analysed using simple linear and multiple regression. The R-value was used to determine the direction of the relationship while the R-square value was used to determine the variance in achievement that is caused by the predictor variables. The relative contribution was determined using the beta coefficients. The null hypotheses were tested at 0.05 level of significance. In taking decision, whenever p-value is less than

or equal to 0.05, the null hypothesis was rejected. Conversely, when the p-value is greater than 0.05, the null hypothesis was accepted.

Results

Research Question 1: What is the predictive power of academic burnout on secondary school students' academic achievement in Biology?

Table 1: Prediction of Secondary School Students' Achievement in Biology by their Academic Burnout

Model	R	r^2	Adjusted r^2	Unstandardized coefficients (B)	Std. Error
Constant	0.019[a]	0.002	-0.001	67.604	
Academic Burnout				-0.085	20.251

a. Predictors: (Constant), Academic Burnout (AB)

b. Dependent: Achievement in Biology (AB)

Result in Table 1 shows an R-value of -0.019 (indicating a low negative relationship between AB and AB) and an R^2 (coefficient of determination) value of 0.002. The coefficient of determination (r^2) value obtained reveals that 0.2% variance in students' achievement scores in biology is predicted by academic burnout. Also, the unstandardized coefficient *B* of -0.085 shows that a unit rise in academic burnout, reduces students' achievement in biology by 8.5%.

Research Question 2: What are the contributions of the dimensions of academic burnout (emotional exhaustion, cynicism and academic inefficacy) to secondary school students' academic achievement in Biology?

Table 2: Contributions of the Individual Dimensions of Academic Burnout to Secondary School Students' Academic Achievement in Biology

	Unstandardized Coefficients		Standardizd Coefficient		
Model	**B**	**SD. Err.**	**Beta**	**T**	**Sig.**
1 (Constant)	67.651	5.055		13.382	.000
Emotional Exhaustion	-.016	.236	-.002	-.069	.945
Cynicism	-.268	.265	-.030	-1.010	.313
Academic Inefficacy	-.023	.215	-.003	-.109	.913

a. Dependent Variable: Academic Achievement

Data in Table 2 shows the unstandardized Beta coefficients that indicate the predictive value of the contributions of each dimension of academic burnout to students' achievement score in Biology. The table reveals that a unit rise in emotional exhaustion decreases students' achievement score in Biology by 1.6%, a unit rise in cynicism decreases it by 26.8% and finally, a unit rise in academic inefficacy decreases achievement score by 2.3%. Based on the table, the order of contributions of each dimension of academic burnout to students' achievement score in biology from highest to lowest is; cynicism (26.8%), followed by academic inefficacy (2.3%) and lastly, emotional exhaustion (1.6%).

Hypothesis 1: Academic burnout is not a significant predictor of secondary school students' academic achievement in Biology

Table 3: **Significance of Prediction of Students' academic achievement in Biology by their Academic burnout**

	Model	Sum of Squares	Df	Mean Square	F	P-value	Decision
1	Regression	167.307	1	167.307	.408	0.523[b]	Not. Sig.
	Residual	477774.613	1165	410.107			
	Total	477941.919	1166				

a. Dependent Variable: Academic Achievement
b. Predictors: (Constant), Academic Burnout

Table 3 data reveals that at an F-value (Df 1 and 1165) of 0.408, the P-value is 0.523. Since the P-value is greater than 0.05 alpha levels, the null hypothesis was not rejected, indicating that academic burnout is not a significant predictor of secondary school students' achievement in Biology. This result affirms that even though academic burnout negatively contributes to secondary school students' academic achievement in Biology, the contribution is not statistically significant.

Hypothesis 2: The contributions of the dimensions of academic burnout (emotional exhaustion, cynicism and academic inefficacy) to secondary school students' academic achievement in Biology are not significant.

Table 4: **Significance of Prediction of Students' academic achievement in Biology by individual dimensions of Academic burnout**

	Model	Sum of Squares	Df	Mean Square	F	P-value	Decision
1	Regression	428.498	3	142.833	.348	0.791[b]	Not. Sig.
	Residual	477513.422	1163	410.588			
	Total	477941.919	1166				

a. Dependent Variable: Academic Achievement
b. Predictors: (Constant), Academic Inefficacy, Cynicism, Emotional Exhaustion

Result in Table 4 reveals that all the dimensions of academic burnout jointly are not significant predictors of students' achievement scores in biology, since the p-value (0.791) obtained is greater than 0.05 alpha levels, at an F-value (3 and 1163) of 0.348. Further analysis of data contained in table 7 also reveals that all the three dimensions; emotional exhaustion (0.945), cynicism (0.313) and academic inefficacy (0.913) individually, at their respective t-values of -0.069, -1.010 and -0.109, are not significant predictors of students' achievement scores in Biology, since the p-values obtained for each is greater than 0.05 level of significance. Thus, jointly or individually, academic burnout and its dimensions are not significant contributors to students' achievement scores in biology.

Discussion

The findings of the study revealed that academic burnout has a low negative relationship with secondary school students' academic achievement in Biology and does not significantly predict their academic achievement. This implies that although increased academic burnout may slightly reduce students' achievement, its influence is minimal and statistically insignificant. The R-square value of 0.002 indicated that academic burnout explained only 0.2% of the variation in students' academic achievement in Biology. This suggests that academic burnout contributes very little to students' performance in Biology, confirming that other academic and environmental factors play a more dominant role. The non-significant p-value ($p = 0.523$) further confirms that academic burnout is not a reliable predictor of academic achievement. This finding is consistent with findings in earlier studies, which reported that academic burnout has a weak or insignificant influence on students' academic achievement, particularly when students possess coping skills and academic

resilience (Madigan and Curran, 2021). These studies noted that students may still perform well academically despite experiencing burnout.

On the predictions of the dimensions of academic burnout to students' academic achievement in biology, the study revealed that although all the three dimensions (emotional exhaustion, cynicism, and academic inefficacy) contributed negatively to students' academic achievement, none of them made a statistically significant contribution, either jointly or individually. The regression results showed that cynicism had the highest negative contribution to students' academic achievement, followed by academic inefficacy and lastly, emotional exhaustion. This indicates that students who develop negative and detached attitudes toward learning Biology tend to show greater declines in academic achievement than those experiencing emotional tiredness alone. However, despite these negative contributions, the effects were weak and not statistically significant. The joint analysis further revealed that emotional exhaustion, cynicism, and academic inefficacy did not significantly predict students' academic achievement in Biology, as indicated by the non-significant p-value ($p = 0.791$). This suggests that the combined influence of the burnout dimensions was insufficient to meaningfully explain variations in students' academic achievement. This finding is in line with recent studies which reported that the dimensions of academic burnout may not significantly predict academic achievement when students possess effective coping strategies, resilience, or academic engagement (Salmela-Aro & Upadyaya, 2017; Madigan & Curran, 2021). These studies suggest that students can remain academically functional despite experiencing symptoms of burnout, especially in structured school environments. However, the present finding contradicts with that of Abdolvahed, Nematollah, and Khourosh (2020) who reported

that all the dimensions of academic burnout significantly contribute to students' academic achievement. Differences in findings may be attributed to variations in subject area, cultural context, measurement instruments, or students' adaptive capacities. Overall, the finding suggests that while the dimensions of academic burnout negatively influence students' academic achievement in Biology, their effects are not strong enough to serve as significant predictors. This support the position of academic buoyancy theory which explains that students are often able to cope with everyday academic stressors without substantial decline in academic performance.

Conclusion

Based on the findings, the study concluded that academic burnout is not a strong predictors of secondary school students' academic achievement in Biology. This suggests that students' academic performance in biology is influenced by a complex interaction of multiple factors beyond burnout alone.

Recommendation

Based on the findings of the study, the following recommendations were made:

1. Biology teachers must be careful of how they implement the Biology curriculum in the classroom to avoid putting too much workload or pressure on the students.
2. Students on their part should learn to be optimistic about academic challenges and perceive it as a call for personal development.
3. Schools should provide supportive learning environments that minimize excessive academic stress while promoting effective study routines and time management among students.

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