



EMOTIONAL REGULATION AS A PREDICTOR OF SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN COMPUTER STUDIES IN ANAMBRA STATE

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Abstract

This study examined emotional regulation as a predictor of academic achievement in Computer Studies among secondary school students in Anambra State, Nigeria. Guided by two research questions with two testable null hypotheses at 0.05 alpha levels, the study employed a predictive correlational research design. The target population consisted of 42,572 Senior Secondary year Two (SS2) students offering Computer Studies, from which a sample of 600 students was drawn using a multistage sampling procedure involving of random and purposive sampling techniques. Data were collected using the Emotional Regulation Questionnaire (ERQ), which was validated by three experts from Nnamdi Azikiwe University, Awka. Students' achievement scores in Computer Studies were obtained from teachers' records. The internal consistency of the instrument was confirmed using Cronbach's Alpha, yielding a reliability coefficient of 0.92. Data analysis was conducted using simple and multiple linear regression techniques. Findings indicated that emotional regulation accounted for 0.9% of the variance in students' achievement scores in Computer Studies. Moreover, emotional regulation significantly predicted students' achievement, with the suppression dimension emerging as the only statistically significant contributor. The study concluded that students who exhibit emotional regulatory capacity particularly through suppression tend to achieve slightly better outcomes in Computer Studies. It was recommended that educational psychologists and scholars develop and implement intervention strategies aimed at enhancing students' application of adaptive emotional regulation strategies, such as suppression and reappraisal, to improve learning outcomes.

Keywords: Achievement, Computer Studies, Emotional Regulation, Predictors, Suppression

Introduction

In today's rapidly evolving educational landscape, the role of affective factors in student learning has gained increasing attention, particularly as cognitive demands in subjects like Computer Studies continue to rise. As students navigate complex programming concepts, abstract thinking as well as problem-solving tasks, their ability to manage internal emotional states becomes essential for sustained engagement and academic success. In the context of secondary education in Nigeria, particularly in Anambra State where technology integration in classrooms is



advancing, understanding how learners regulate emotions is crucial in promoting effective learning outcomes. Despite efforts to improve instructional quality and access to digital resources, variations in students' achievement in Computer Studies remain evident, prompting a deeper investigation into psychological variables that may account for these differences. Research has increasingly suggested that students' emotional competencies influence their motivation, concentration, and ability to cope with academic stress, all of which are integral to performance in technical subjects like Computer Studies. Against this backdrop, there need arises to explore the extent to which students' ability to control, manage, and direct their emotional responses contributes to their achievement in Computer Studies, with particular emphasis on the construct of emotional regulation.

Emotional regulation refers to the ability to manage and respond to emotional experiences in a way that is socially acceptable and adaptive to the situation (Parker and Wood, 2021). According to Gross (2019), it involves both the processes of monitoring and modulating emotional reactions to facilitate personal well-being, achievement, and social interaction (Gross, 2019). Effective emotional regulation helps individuals cope with negative emotions, enhance positive ones, and maintain psychological balance, leading to better adjustment and outcomes in various contexts, including academic settings (Sadeghi & Alavijeh, 2019). As a factor influences cognition, Okeke (2022) affirmed that ER is a multidimensional construct with two dimensions; reappraisal and suppression.

Reappraisal is a cognitive emotion regulation strategy that involves changing one's interpretation of a situation to alter its emotional impact. By rethinking an emotionally charged situation in a more positive or neutral light, individuals can reduce negative emotions like anxiety or frustration. For instance, students might reframe a challenging examination as an opportunity for personal growth rather than a threat, which can reduce stress and enhance focus (Zhang *et al.*, 2019). Reappraisal is often linked to better emotional outcomes and academic success, as it encourages adaptive responses to stress and uncertainty. Suppression on the other hand refers to inhibiting the outward expression of emotions, typically to avoid conflict or negative social judgment. While it may provide short-term relief, suppression can have negative long-term consequences on emotional well-being, as it prevents individuals from processing their emotions fully. In academic settings, students who frequently suppress their emotions may struggle with



expressing difficulties or concerns, potentially leading to higher levels of academic stress, reduced cognitive performance, and lower academic achievement (Parker & Wood, 2021). Suppression is generally seen as a less adaptive strategy compared to reappraisal because it can lead to emotional suppression and internal distress, which can hinder academic performance over time. Emotional regulation, thus plays a pivotal role in students' academic success.

The skill of emotional regulation enables students to cope with stress, maintain focus, and persevere through challenging academic tasks (Gross & John, 2020). Studies have shown that students with strong emotional regulation skills are better equipped to handle the demands of technical subjects like computer studies, resulting in improved academic performance (Kalu & Obinna, 2021). Similarly, emotional regulation can characterize students' ability to adapt and thrive despite challenges, fostering persistence and problem-solving abilities that are vital for success in computer studies (Nwoye & Uche, 2018).

The relationship between the dimensions of emotional regulation suggests a complex interaction that affects students' ability to excel in computer studies. The dimensions of emotional regulation serve as protective factors that mitigate negative impacts of academic challenges associated with learning computer studies effects. Together, these dimensions of emotional regulation provide a comprehensive framework for understanding and addressing the challenges students face in computer studies. This study therefore explored these relationships in the context of secondary school students in Anambra State, Nigeria, focusing on how emotional regulation and its dimensions collectively predict achievement in computer studies. By identifying the predictive effects of the variables, the research seeks to contribute to the development of targeted interventions that enhance educational outcomes in this critical subject area.

Research Questions

The following research questions guided the study:

1. What is the predictive value of emotional regulation on students' academic achievement scores in Computer studies?
2. What are the relative contributions of the dimensions of emotional regulation (reappraisal, suppression) to students' academic achievement scores in Computer studies?



Hypotheses

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

Ho₁ Emotional regulation is not a significant predictor of students' academic achievement scores in Computer studies.

Ho₂ The relative contributions of the dimensions of emotional regulation (reappraisal, suppression) to students' academic achievement scores in Computer studies are not significant.

Methods

The study adopted the predictive correlational research design. Correlation study entails gathering data to assess whether and how strong a relationship exists between two or more quantifiable variables. According to Nworgu (2015), correlational investigations establish correlations between two or more variables. As a result, this study which determined the predictive correlation between the predictor variable namely emotional regulation and the outcome variable, academic achievement in Computer Studies, adopted the predictive correlational design. Predictive studies establish predictive associations between the variables using robust statistical tools.

The study was conducted in Anambra state, Nigeria. The population of the study comprised 42,572 senior secondary year two (SS2) students offering Computer studies in the year 2024/2025 academic session in the 228 public secondary schools in Anambra state. The sample for the study was 600 SS2 students offering Computer studies in Anambra state. The multistage sampling procedure was as follows: First, 4 education zones were selected at random from the six education zones in Anambra state. Secondly, in each education zone, five secondary schools were randomly selected for the study giving a total of 20 schools from the 228 public schools in Anambra state. Thirdly, purposive sampling was used to obtain one intact class from which 30 SS2 Computer studies students from each of the 20 school making up a total of 600 students.

The instruments for data collection was Emotional Regulation Questionnaire (ERQ). The ERQ, adapted from Gross and John (2003), is a 10-item measure designed to assess two primary strategies for regulating emotions: (a) cognitive reappraisal, which is an antecedent-focused strategy involving efforts to reinterpret or rethink a situation to change its emotional impact. It had 6 dimensions. The ERQ's format was modified to group items according to the two emotion



regulation strategies, clustering items 1–6 for reappraisal and 7–10 for suppression. The students' scores in Computer Studies was gathered using a proforma with results in Computer Studies for one academic year obtained and used to compute the which served as students' academic achievement.

The instrument was validated by three experts from the Department of Science Education and from the Department of Educational Foundations (Measurement and Evaluation Unit) all from Nnamdi Azikiwe University, Awka. As the instrument are polytomously scored, Cronbach Alpha was used to determine their reliability. The instruments were administered once on 40 SS2 Computer Studies students from a Secondary School, who did not participate in the study. The data obtained was used to calculate the instruments' coefficient of internal consistency using the Cronbach Alpha method. The coefficient of internal consistency obtained was 0.92.

The instrument was administered with the help of six research assistants, who are the researcher's colleagues and worked closely with the Computer Studies teachers in the selected schools. The researcher, in collaboration with the research assistants and Computer Studies teachers, administered the instruments to the students and collect them on the spot to ensure a high response rate. Following collection, the researcher scored the instruments and collated both the students' instrument scores and their academic achievement scores for data analysis purposes.

The study's data was analyzed by employing simple linear and multiple regressions. The r-value was used to identify the degree and direction of the correlation between variables, while the r-squared value showed how much of the variance in Computer studies results is explained by the predictor variables. The unstandardized B coefficients was used to determine each variable's predictive power and relative contribution while the standardized Beta (β) coefficient indicated individual relationship between the dimensions of the predictor variables and academic achievement in computer studies. The significance of the predictive powers of the predictor variables was assessed using regression Analysis of Variance (ANOVA), and the significance of each predictor variables' dimension was checked using t-values and P-values. All null hypotheses were tested at a 0.05 significance level and were rejected whenever the P-value was less than or equal to 0.05 ($P \leq 0.05$), but was not be rejected where greater than 0.05 ($P > 0.05$).



Results

Research Question 1: What is the predictive value of emotional regulation on students' academic achievement scores in Computer studies?

Table 1: Prediction of Students' Achievement score in Computer studies by Emotional Regulation

Model	R	R ²	Adjusted R ²	Unstandardized coefficients (B)	Std. Error
Constant				65.245	11.891
Emotional Regulation	.102 ^a	.010	.009	.136	

a. Predictors: (Constant), Emotional Regulation

Table 1 shows that the R-Square value of 0.009 indicates that 0.9% of the variance in Computer studies achievement scores is predicted by emotional regulation. The unstandardized coefficient *B* of .136 shows that a unit rise in emotional regulation increases academic achievement score in Computer studies by 13.6%.

Hypothesis 1: Emotional regulation is not a significant predictor of students' academic achievement scores in Computer studies.

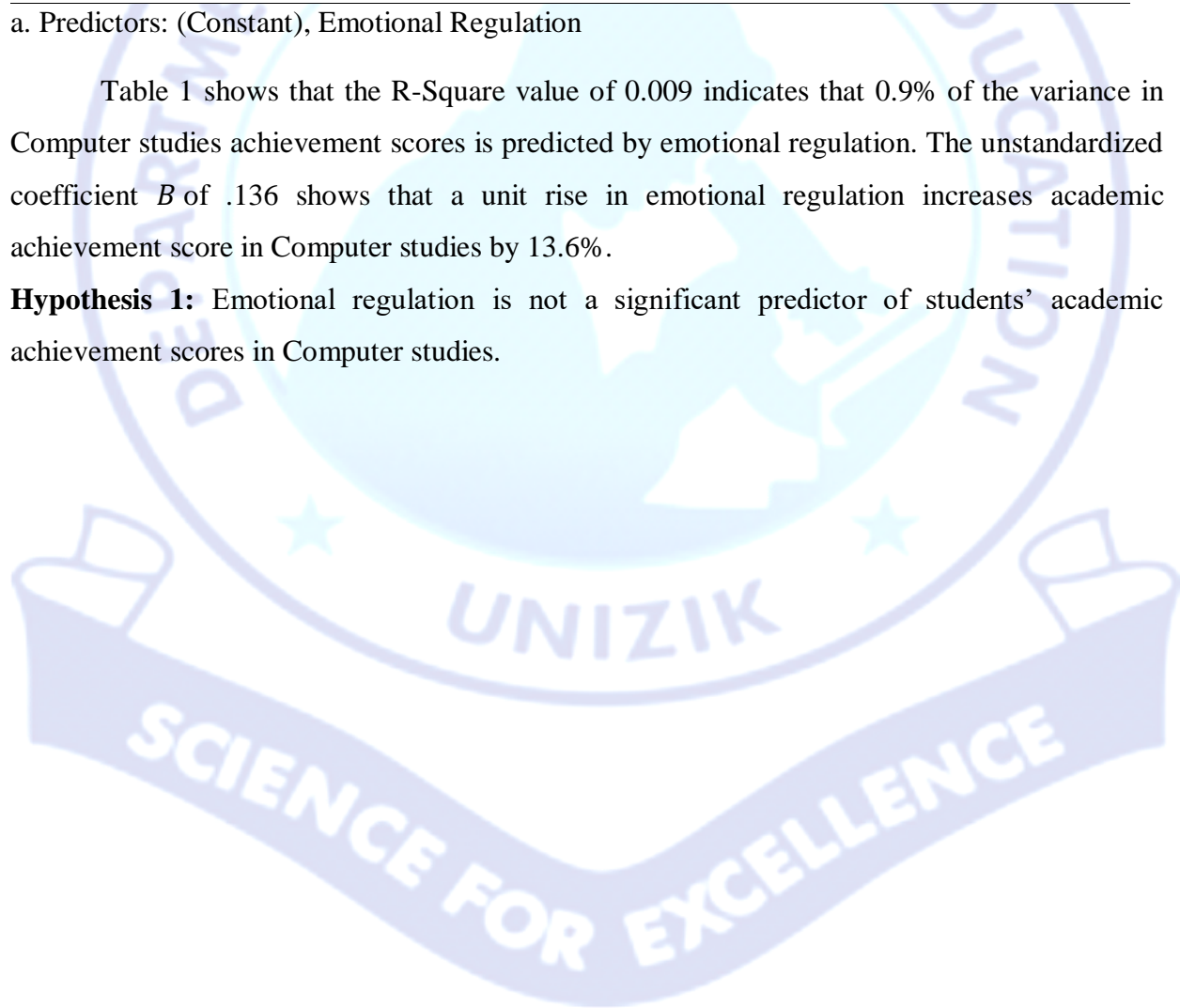




Table 2: Significance of Prediction of Achievement score in Computer studies by Students' Emotional regulation

Model	Sum of Squares	Df	Mean Square	F	Pvalue
1 Regression	895.632	1	895.632	6.334	.012 ^b
Residual	84556.361	598	141.399		
Total	85451.993	599			

a. Dependent Variable: Achievement score

b. Predictors: (Constant), Emotional regulation

Table 2 shows that emotional regulation is a significant predictor of achievement scores in Computer studies, $F(1, 598) = 6.334, p < 0.05$. The null hypothesis was therefore rejected meaning that emotional regulation is a significant predictor of achievement scores in Computer studies. Since emotional regulation is a significant predictor of achievement scores in Computer studies, the regression model ($Y = a + bX$) for the prediction of achievement score in Computer studies as derived from Table 1, where constant = 65.245 and b value = 0.136 is:

$$\text{Achievement} = 65.245 + 0.136(\text{EMR})$$

Where, Achievement = Achievement score in Computer studies and EMR = Emotional regulation.

Research Question 2: What are the relative contributions of the dimensions of emotional regulation (reappraisal, suppression) to prediction of students' academic achievement scores in Computer studies?

Table 3: Contributions of the Dimensions of Emotional regulation in the Prediction of Achievement scores in Computer studies

Model	Unstandardized Coefficients		Standardized Coefficients	t	Pvalue
	B	Std. Error	β		
(Constant)	65.043	2.420		26.873	.000
1 Reappraisal	.109	.067	.067	1.634	.103
Suppression	.183	.087	.086	2.101	.036

a. Dependent Variable: Computer studies Achievement score

Table 3 shows that achievement in Computer studies increases by 10.9% whenever a students' reappraisal increases by one unit whereas achievement increases by 18.3% for every



unit increase in suppression. The order of relative contribution to achievement score in Computer studies from the highest to lowest by each dimension of emotional regulation therefore is; suppression followed by reappraisal.

Hypothesis 2: The relative contributions of the dimensions of emotional regulation (reappraisal, suppression) to prediction of students' academic achievement scores in Computer studies is not significant.

Table 4: Significance of Prediction of Achievement score in Computer studies by the Dimensions of Emotional regulation

Model	Sum of Squares	df	Mean Square	F	Pvalue
1 Regression	961.830	2	480.915	3.398	.034 ^b
Residual	84490.163	597	141.525		
Total	85451.993	599			

a. Dependent Variable: Achievement

b. Predictors: (Constant), Suppression, Reappraisal

Table 4 shows that the dimensions of emotional regulation jointly predicted the students' achievement scores in Computer studies significantly, $F(2, 597) = 3.398, p < 0.05$. However, data contained in Table 3 shows the significance of the contributions of the individual dimensions of emotional regulation to the prediction of achievement scores in Computer studies.

Table 3 shows that reappraisal is a not significant predictor of achievement scores in Computer studies, $t(2, 597) = 1.634, p > 0.05$ and suppression is not a significant predictor of achievement scores in Computer studies, $t(2, 597) = 2.101, p < 0.05$. Thus, the only significant contributor to the achievement score of students in Computer studies in order of significance is suppression. However, since the joint prediction of all the dimensions of emotional regulation in the prediction of achievement score in Computer studies is significant, the regression model ($Y = a + bX_1 + cX_2$) for the prediction of achievement score in Computer studies as can be derived from Table 3 is:

$$\text{Achievement} = 65.043 + .109(\text{RAP}) + .183(\text{SUPP})$$

Where, Achievement = Achievement score in Computer studies and RAP = Reappraisal, SUPP = suppression.



Discussion

The findings of the study reveal that students' emotional regulation significantly predicted their Computer studies achievement scores. While the contribution may appear modest, it underscores the role of emotional regulation as a meaningful factor in academic success, particularly in a cognitively demanding subject like Computer studies. The study further breaks down emotional regulation into its constituent dimensions, suppression and reappraisal, finding that suppression was the only significant contributor and predictor of achievement, followed by reappraisal, which did not exhibit a statistically significant effect. This suggests that, in the context of Computer studies, the ability to suppress or inhibit emotional responses may be more directly linked to achievement than the cognitive reframing of emotional experiences (reappraisal). The prominence of suppression as the key predictor may reflect the high-pressure nature of Computer studies, where students often face complex problem-solving tasks that require sustained focus and emotional control. In such an environment, the immediate regulation of disruptive emotions through suppression may be more immediately beneficial than the longer-term cognitive restructuring involved in reappraisal.

The unexpected dominance of suppression over reappraisal challenges some conventional assumptions in emotional regulation research, where reappraisal is often considered the more adaptive strategy due to its long-term psychological benefits. However, the study's findings suggest that in academic settings particularly those requiring intense concentration and technical skill, suppression may serve a more immediate functional role in maintaining task focus. This aligns with prior research by Gross and John (2020), who noted that the effectiveness of emotional regulation strategies can vary depending on contextual demands, with suppression sometimes being more advantageous in high-stakes performance environments. Similarly, Kumar and Sharma (2018) found that suppression was a significant predictor of achievement in STEM subjects among Indian high school students, supporting the idea that certain academic disciplines may benefit more from emotion-inhibiting strategies.

The broader literature on emotional regulation and academic achievement provides additional context for these findings. Adetunji (2018) demonstrated that emotional regulation mediated the relationship between emotional intelligence and academic success among Nigerian secondary school students, highlighting its role as a critical psychological resource. Obiora



(2019) further reinforced this by showing that students with better emotional regulation strategies tended to achieve higher grades, particularly in science-related subjects. Ruiz-Aranda and Cabello (2020) found similar patterns among Spanish adolescents, where emotional regulation was linked to improved academic outcomes, though their study emphasized reappraisal rather than suppression. This discrepancy may be due to cultural or educational differences, as Akinyemi (2020) noted that Nigerian students often face unique stressors that make suppression a more viable short-term coping mechanism.

Further supporting evidence comes from Okeke (2021), who found that emotional regulation strategies significantly influenced achievement among Anambra State students, with suppression playing a notable role in high-pressure exam settings. Parker and Wood (2021) extended these findings to STEM education in Canada, suggesting that emotional regulation is particularly crucial in technical subjects where frustration and anxiety can impede problem-solving. Hunter and White (2022) added that emotional regulation interacts with resilience to bolster achievement, particularly in demanding academic environments. Yusuf (2022) specifically examined science subjects in Ogun State, Nigeria, and found that students who effectively regulated their emotions performed better, reinforcing the discipline-specific relevance of these findings. Finally, Omaka and Okigbo (2024) explored emotional regulation in Biology achievement, further validating the importance of emotion management in STEM education. Collectively, these studies suggest that while emotional regulation generally supports academic achievement, the specific strategies that prove most effective such as suppression in Computer studies, may depend on subject-specific demands and contextual factors.

Conclusion

The study also concludes that emotional regulation has a statistically significant positive influence on students' achievement in Computer Studies, accounting for a small portion of the variance. Among the dimensions, suppression contributed more significantly than reappraisal, suggesting that managing outward emotional expressions may support better academic engagement in this context. Overall, the findings highlight that students who can regulate their emotions particularly through suppression tend to perform slightly better academically in Computer Studies.



Recommendations

The following recommendations are made based on the findings of the study:

1. Teachers and school counselors should incorporate emotional regulation training such as mindfulness and reflective practices into the school curriculum to help students manage emotions that may hinder academic engagement.
2. Educational psychologists and researchers should design intervention programs that specifically enhance students' ability to use constructive emotional strategies like suppression and reappraisal during learning activities.
3. Curriculum planners and policymakers should embed emotional intelligence development, including emotional regulation skills, into teacher education and student development frameworks to improve academic achievement in Computer Studies and other cognitively demanding subjects.

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