Socioeconomic Status, Student Engagement, and Academic Achievement in Secondary School Economics: A Mediation Analysis

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Abstract- Despite extensive policy efforts, socioeconomic disparities continue to create unequal academic opportunities for secondary school students, particularly in disciplines such as Economics that demand abstract and quantitative reasoning skills. This study investigated the mediating role of student engagement in the relationship between parental socioeconomic status (SES) and academic achievement among Senior Secondary II Economics students in the Nsukka Education Zone, Enugu State, Nigeria. A multistage sampling procedure was employed to select a sample of 356 students. Data were collected using the Questionnaire on Parental Socioeconomic Status and Student Engagement (QSE) and the Economics Achievement Test (EAT). Structural Equation Modeling (SEM) was utilized to analyze the data, yielding an acceptable model fit (χ^2/df = 2.91, GFI = 0.93, AGFI = 0.94, NFI = 0.95, CFI = 0.93, RMSEA = 0.06). Parental income emerged as the strongest predictor of academic achievement (β = 0.35), followed by student engagement (β = 0.28), occupational status (β = 0.21), and parental educational attainment (β = 0.15). Student engagement mediated 25% of the total effect of parental SES on academic achievement. These findings emphasize the need for educational policies that enhance student engagement and address socioeconomic inequalities to improve

academic outcomes in Economics at the secondary school level.

***Keywords*:** Academic Achievement, Economics Education, Educational Inequality, Socioeconomic Status, Structural Equation Modeling, Student Engagement

I. INTRODUCTION

Socioeconomic disparities remain a persistent influence on academic outcomes for secondary school students, despite extensive efforts to address these inequalities. According to a 2018 OECD report, students from low-income households are three times less likely to achieve academic excellence compared to their more affluent peers. This enduring gap highlights the importance of examining how socioeconomic factors shape performance in specific disciplines, such as Economics, which demands robust analytical and abstract reasoning skills.

Parental socioeconomic status (SES), encompassing income, educational attainment, and occupational status, is a well-established determinant of academic achievement (Liu et al., 2020; Bae and Wickrama, 2021). A 2022 UNESCO report underscored this disparity, noting that only 14% of students from low-SES backgrounds achieved advanced proficiency in Economics, compared to 48% of their high-SES counterparts. Such differences often arise from unequal access to educational resources: students from higher-SES families benefit from superior schools, private tutoring, and enrichment programs, whereas those from lower-SES backgrounds encounter barriers, including limited access to learning materials and fewer opportunities for extracurricular engagement.

Although the association between SES and academic achievement is well-documented, the mechanisms through which SES influences performance in cognitively demanding subjects like Economics are not fully elucidated. This study investigates the mediating role of student engagement, which includes behavioral (e.g., attendance), emotional (e.g., sense of belonging), and cognitive (e.g., critical thinking) dimensions, in this relationship. Grounded in Bourdieu's (1986) cultural capital theory and Tinto's (1975) integration model, we hypothesize that student engagement facilitates the utilization of educational opportunities, potentially attenuating SES-related disparities. In Economics education, where advanced reasoning, thinking and financial literacy are paramount (Walstad, 2019; Elder and Paul, 2020; Lusardi et al., 2020), SES-

driven cultural capital is particularly influential.

While prior research in STEM disciplines has demonstrated that engagement mediates the effects of SES on academic outcomes (Liu et al., 2020), comparable dynamics in Economics education remain underexplored. Existing studies frequently overlook Economics, rely on composite SES measures without disaggregating components such as income or education, and seldom employ Structural Equation Modeling (SEM) to examine mediation effects. This study addresses these gaps by analyzing how student engagement mediates the relationship between parental SES and academic achievement in Economics and by identifying the SES dimensions that most strongly predict engagement.

II. METHODOLOGY

A. Population and Sampling

This study was conducted in the Nsukka Education Zone, situated within the Enugu North Senatorial Zone of Enugu State, Nigeria. The Nsukka Education Zone, one of six educational zones in Enugu State alongside Agbani, Awgu, Enugu, Obollo-Afor, and Udi, encompasses 59 public secondary schools distributed across three Local Government Areas: Nsukka (30 schools), Igbo-Etiti (15 schools), and Uzo-Uwani (14 schools) (Post-Primary School Management Board [PPSMB], Enugu State, 2021).

The study population comprised 4,876 Senior Secondary II (SSII) Economics students enrolled in 59 public secondary schools (44 co-educational and 15 single-sex institutions) within the Nsukka Education Zone. A sample of 356 SSII Economics students was selected, adhering to the sample size recommendation of 200–500 participants for effective Structural Equation Modeling (SEM) analysis, as proposed by Celik and Yilmaz (2013). This sample size ensured sufficient statistical power. A multistage sampling procedure was employed, consisting of three stages:

- Stage 1: Two Local Government Areas, Nsukka and Igbo-Etiti, were purposively selected using a random sampling technique.
- Stage 2: Four co-educational secondary schools were randomly selected from the chosen Local Government Areas.
- Stage 3: A proportionate sampling technique was applied to select 356 students, using the formula: $(n \div N) \times$ sample size, where n denotes the number of students in a specific

school and N represents the total number of students across the eight selected schools. This approach accounted for variations in student populations across schools.

B. Validity, Reliability and Data Collection

Data were collected using two validated instruments: the Questionnaire on Parental Socioeconomic Status and Student Engagement (QSE) and the Economics Achievement Test (EAT). The QSE consisted of two sections: Section A collected demographic information from students, while Section B assessed parental socioeconomic status (SESP) through four items evaluating educational qualifications, occupational status, income category, and average monthly income. Additionally, Section B measured student engagement (behavioral, emotional, and cognitive dimensions) using 25 items adapted from the National Survey of Student Engagement (NSSE Annual Results, 2019). Responses were recorded on a four-point Likert scale: Very Often (4), Often (3), Sometimes (2), and Never (1).

The EAT, designed to evaluate academic achievement in Economics, comprised 30 multiple-choice questions drawn from West African Examinations Council (WAEC) examinations (2019–2021). The test was constructed using Bloom's Taxonomy of Cognitive Domains (Bloom, 1956) to ensure comprehensive coverage of cognitive skill levels relevant to Economics education. Both instruments underwent rigorous validation. Face validity was established by three Economics experts. Construct validity of the QSE's student engagement items was confirmed through Exploratory Factor Analysis using SPSS version 23, employing principal component analysis with Varimax Rotation. Items with factor loadings of 0.35 or higher, as per Meredith's (1969) criterion, were retained. The reliability of the EAT was assessed using the Kuder-Richardson-20 (KR-20) formula, yielding a coefficient of 0.75. The QSE's reliability, determined using Cronbach's alpha, was 0.76.

C. Data Analysis

Structural Equation Modeling (SEM) was conducted using Analysis of Moment Structures (AMOS) software to assess model fit and examine causal relationships between exogenous and endogenous variables. Model fit was evaluated using established indices: chi-square (χ^2), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI) (Jöreskog and Sörbom, 1984), Comparative Fit Index (CFI) (Bentler, 1990), Tucker-Lewis Index (TLI) (Hu and Bentler, 1999), and Root Mean Square Error of

Approximation (RMSEA) (Browne and Cudeck, 1993). Acceptable fit was defined by standard benchmarks: AGFI ≥ 0.90, CFI ≥ 0.90, TLI ≥ 0.90, and RMSEA ≤ 0.08. Standardized beta (β) coefficients were used to quantify the strength of relationships, with hypotheses tested at a 0.05 significance level. Bootstrapping with 5,000 samples was employed to evaluate indirect effects.

III. RESULTS

This section presents the findings from our Structural Equation Modeling (SEM) analysis, detailing model fit, path coefficients, and both direct and indirect effects. The proposed SEM model showed a good fit with the data, which aligns well with established benchmarks. Key fit indices included: $\chi^2/df = 2.91$ (acceptable ≤ 3.00), GFI = 0.93 (acceptable ≥ 0.90), AGFI = 0.94 (acceptable ≥ 0.90), NFI = 0.95 (acceptable ≥ 0.90), CFI = 0.93 (acceptable ≥ 0.90), and RMSEA = 0.06 (acceptable ≤ 0.08). Additionally, the chi-square statistic ($\chi^2 = 17.46$, df = 6, p = 0.18) was non-significant, further confirming the model's suitability for the sampled data. All pathways in the model were statistically significant, explaining 45% of the variation in student engagement ($R^2 = 0.45 \pm 0.03$, p = 0.00) and 35% of the variation in academic achievement ($R^2 = 0.35 \pm 0.02$, p = 0.02). These results, illustrated in Figure 1, demonstrate the model's ability to capture meaningful relationships among the variables.

Table 1 illustrates the positive associations among parental socioeconomic status (encompassing educational qualifications, occupational status, and income), student engagement, and academic achievement in Economics. Among the predictors of academic achievement, parental income emerged as the strongest factor (β = 0.35), followed by student engagement, occupational status, and parental educational qualifications, in descending order of influence. Further, Table 2 presents the direction and magnitude of the causal relationships between parental socioeconomic factors and student engagement in Economics. All relationships were positive, with no inverse associations observed, as indicated by the absence of negative path coefficients. However, the causal effects of parental educational qualifications, occupational status, and income on student engagement were relatively weak.

As presented in Table 3, direct effects constituted 87.60% of the total effects, while indirect effects accounted for 12.39%. Notably, student engagement mediated 25%

of the total effect of parental socioeconomic status on students' academic achievement in Economics. The majority of variables, including parental occupational status, income, educational qualifications, and student engagement, exhibited a direct influence on academic achievement. A significant causal relationship was observed among the variables predicting student engagement, evidenced by a positive correlation (r = 0.67) and a coefficient of determination (R^2 = 0.45), as depicted in Figure 1. Furthermore, Table 3 indicates a significant causal relationship among the variables influencing academic achievement, with a positive correlation (r = 0.59) and an R^2 value of 0.35. Collectively, the exogenous variables explained 35% of the variance in academic achievement among secondary school Economics students in the study area.

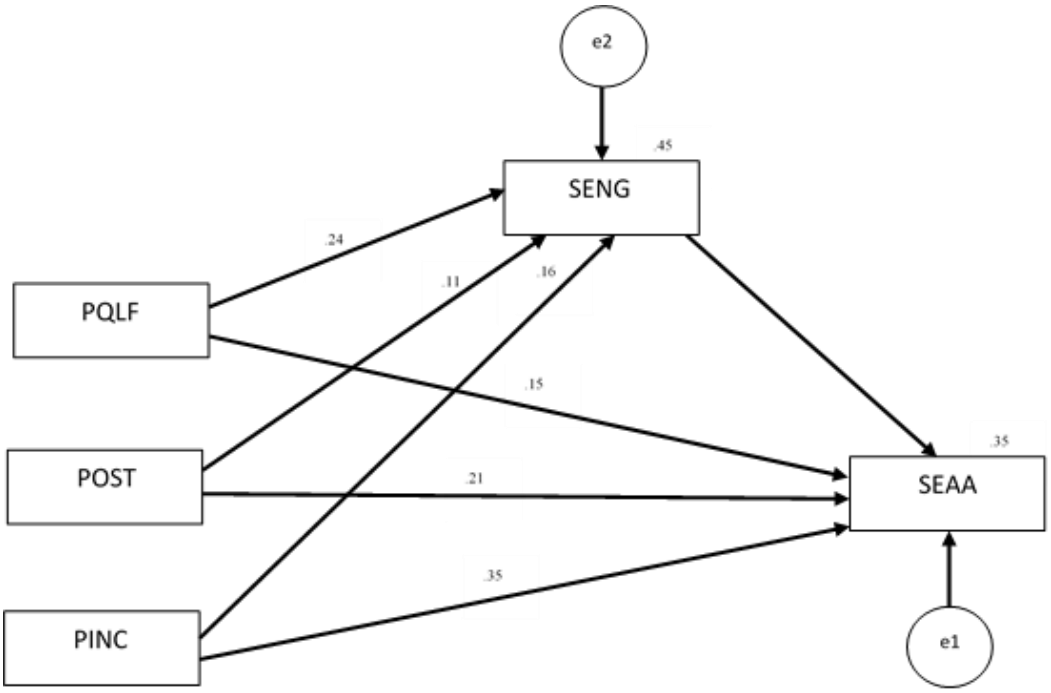

Figure 1: Structural Equation Model of parents' socioeconomic variables and students' academic achievement in economics as mediated by student engagement. PQLF – parent qualification, POST – parent occupational standard, PINC – parent income, SENG – student engagement, SEAA- students' economic academic achievement, e1/e2 – error terms

Table 1: The Directions and Strengths of Causation of Economic Students' Academic Achievement by Parents' Educational Qualification, Occupational Standard, Income Level, and Students' Engagement

Effect Variables		Causal Variables	Strengths	Directions	Strength
Achievement	←	Parent Qualification	0.15	Positive	Weak
Achievement	←	Occupation Status	0.21	Positive	Weak
Achievement	←	Parent Income	0.35	Positive	Moderate
Achievement	←	Student Engagement	0.28	Positive	Weak

Table 2: The Directions and Strengths of Causation of Academic Achievement in Economics by Parents' Educational Qualification, Occupational Standard, Income Level, and Students' Engagement

Effect Variables		Causal Variables	Strengths	Directions	Strength
Engagement	←	Parent Qualification	0.24	Positive	Weak
Engagement	←	Occupation Status	0.11	Positive	Weak
Engagement	←	Parent Income	0.16	Positive	Weak

Table 3: The proportion of the Total effects that are Direct and Indirect

Relationships			Total Effect	Direct Effect	Indirect Effect	Model Parameters		
						R	R^2	Prob.
Achievement	←	Occupation Status	0.24	0.21	0.03			
Achievement	←	Parent Income	0.39	0.35	0.04			
Achievement	←	Parent Qualification	0.22	0.15	0.07	0.59	0.35	0.02
Achievement	←	Engagement	0.28	0.28	-			
Total			1.13	0.99	0.14			
Percent (%)			100	87.60	12.39			

IV. DISCUSSION

This study investigated the mediating role of student engagement in the relationship between parental SES and academic achievement among senior secondary school students in Economics. The findings confirm that parental SES significantly influences academic achievement, with student engagement serving as a partial mediator. These results are consistent with prior research by Liu et al. (2020); Bae and Wickrama (2021) who demonstrated that parental SES shapes academic outcomes through access to educational resources, parental involvement, and motivational support. However, while student engagement enhances academic performance in Economics, it does not fully account for disparities in achievement. Other factors, such as school quality, peer influences, and students' psychological well-being, also play critical roles (García and Weiss, 2020).

Structural Equation Modeling (SEM) analysis validated the hypothesized model, demonstrating a good fit with the data (χ^2 = 17.46, df = 6, p = 0.18; χ^2/df = 2.91). Fit indices met established thresholds (GFI = 0.93, AGFI = 0.94, NFI = 0.95, CFI = 0.93, RMSEA = 0.06), aligning with criteria outlined by Hooper et al. (2008). These results corroborate findings by Lawal (2023), who reported similar model fit in a study of non-cognitive predictors of Economics performance in southwest Nigeria. Among SES components, parental income was the strongest predictor of academic achievement (β = 0.35), followed by occupational status (β = 0.21) and educational qualifications (β = 0.15). These findings align with Madu and Akobi (2014), who identified direct effects of parental education, occupation, and income on academic outcomes in Benue State, Nigeria, and with Islam and Khan (2017), who reported a positive correlation between SES and achievement. The prominence of parental income supports resource-based theory, which posits that higher-income families provide superior learning environments, tutoring, and academic support (Bradley and Corwyn, 2002; Revuluri, 2020; Atamosa and Dioso, 2024). Notably, parental income exerted a stronger influence than educational qualifications, suggesting that financial resources may have a more immediate impact on academic outcomes, particularly in Economics, where access to materials and financial literacy is critical (Davis-Kean, 2005). Future research should examine how financial stability interacts with parental expectations and academic support to influence achievement in Economics.

Student engagement mediated approximately 25% of the total effect of parental SES on academic achievement, confirming its role as a partial mediator. This finding aligns with self-determination theory, which emphasizes that support from parents and institutions fosters motivation and engagement (Deci and Ryan, 2000; Fredricks et al., 2016). For students to achieve good academic performance, there is always the need to create a conducive environment and conditions that would inculcate into the student the ability to perceive rapid changes in their subject area and become active participants (Fiialka and Kornieva, 2024), especially in situations of poor or unstable socioeconomic background of their parents. However, the weak path coefficient from parental SES to engagement ($\beta = 0.16$) suggests that engagement alone cannot fully bridge achievement gaps. This observation is consistent with Duncan and Murnane (2014), who argue that structural barriers, such as inadequate school funding and disparities in teacher quality, limit the mediating role of engagement. In contrast, Lawal (2023) found no significant contribution of engagement to Economics performance, possibly due to differences in study context, cultural factors, or analytical methods. Additionally, non-cognitive skills and school climate may outweigh SES in certain contexts (Wang and Degol, 2016).

The positive and significant influence of all SES components on student engagement underscores the need for parental guidance in fostering motivation, persistence, and curiosity, which enhance academic outcomes (Gottfried et al., 1994, Yang et al., 2023). Direct SES effects (87.6%) dominated over indirect effects (12.39%), highlighting the primary role of financial and environmental factors in shaping achievement, as supported by Lareau (2011), who emphasized the impact of school funding, neighborhood quality, and extracurricular opportunities. Conversely, Tomaszewski et al. (2020) suggest that student agency and resilience can mitigate SES constraints, with some low-SES students achieving high academic success. The significant direct effects of SES underscore its immediate impact, while the indirect effects via engagement point to opportunities for targeted interventions (Yang et al., 2023).

V. CONCLUSION

In conclusion, this study affirms the importance of student engagement in academic success but highlights its limited capacity to fully address socioeconomic disparities. Policy interventions should

prioritize equity-based funding to ensure access to quality education for low-SES students, alongside interactive teaching methods and mentorship programs to boost engagement (Appleton et al., 2008). Introducing financial literacy programs in secondary schools could further support low-income families in advancing their children's education (García and Weiss, 2020). Limitations of this study include its focus on a single educational zone in Nigeria, which may restrict generalizability, and its examination of a limited set of variables. Future research should explore additional mediators and moderators, such as teacher quality, psychological resilience, and school climate, to provide a more comprehensive understanding of the interplay among parental SES, student engagement, and academic achievement.

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