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The socio-economic rank of parents and students' academic and cognitive outcomes: Examining the physical, psychological and social mediators

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This study examined how the socioeconomic rank of parents correlates with students' academic and cognitive outcomes of science students in senior secondary school. Its objective was to examine the bedrock of physical and psychosocial mediators that influence students' learning and cognitive attitude. The sample comprised 548 science students drawn from 11 secondary schools in Calabar Municipality of Cross River State, Nigeria. A simple random sampling technique was used to select the sample from a population of 938 students. A cross-sectional observational type of survey design was used in this study. A self-reporting questionnaire labeled Socioeconomic Rank and Students Outcome Questionnaire (SERSOQ) was used for the study after validation and reliability. The results for reliability coefficients for SERSOQ range from 0.66 to 0.89 for Cronbach's alpha and 0.72–0.81 for Kuder Richardson's formula-20. Section "A" of SERSOQ was administered to the students in their schools by the research assistants, and students took section "B" home to their parents. Analysis of data collected was done using regression analysis, percentage, and mean. Results showed a great correlation between family income and academic achievement, cognitive attitude, and study habits. The study did not find a significant relationship between assignments with the variables under investigation. Importantly, the findings of this study found that parental control exhibited the greatest mediating function in providing family income impact on students' cognitive attitude. Other mediators like students' and peers' educational ambitions and mother-child verbal relationships were discovered as potent mediators. Findings also showed a slight impact of family income on parent-child and mother-father relationships. Parental control consists of an influential setting that is outside the school environment yet mounting a very powerful effect on determining school outcomes in teenagers. In conclusion, a

positive social environment is necessary for enhancing science students' cognitive ability, academic achievement, and study habits as money is not everything. Some of the recommendations made were that there should be an educative environment at home. Educators should encourage parents to provide the necessary means of academic success, such as a source of light, stationery, books, separate study rooms, and homework facilities in their respective homes.

KEYWORDS

cognitive ability, academic achievement, assignment, study habits, family income

Introduction

The type of family a child is born into is capable of influencing the overall development and growth of the child. This type of environment is recognized in terms of the social rank and the economic standing of the child's parents. Studies abound on how family background plays a vital role in the development of mental, emotional, physical, cognitive, and psychological, as well as their academic achievement and learning outcomes (Berkowitz et al., 2017; Lawson and Farah, 2017; Wen, 2017; Poulain et al., 2019; Nja et al., 2021). Families' dissimilitude in the developmental path shapes children differently and thereby resulting in man's capital formation and socioeconomic rank (SER) attainment in adulthood. This gives rise to a recurring generational rank that reproduces severe disparity (Duncan et al., 2010).

The basis of family background is SER of parents. The family structure that an individual comes from and its effect on learners' behaviors, as well as their academic achievement, has because a course of concern in studies that deal with social stratification (Black and Devereux, 2011), learners' growth (Wen and Lin, 2012), and academic outcomes (Bailey and Dynarksi, 2011).

The socioeconomic status of parents is represented by parents' social, economic, and cultural status index. It is made up of the occupation, level of education, family wealth, and culture of parents, as well as home educational resources (Organization for Economic Cooperation and Development [OECD], 2017). The SER comprised two factors: The social and the economic factors. The social status of an individual is the position a person occupies in society by acquisition, and the wealth of a person is the economic status (Miftahu and Melaiye, 2021).

A child's ability to excel in school is dependent on the extent to which the child was successfully managed by his/her parents in the home environment (Pant, 2020). **Many studies indicated** that the socioeconomic status of parents significantly contributed to learners' outcomes in the educational institution (Qasem, 2018; Fekadu et al., 2019; Maghra et al., 2019). Since low socioeconomic status families group tend not to have economic resources or do not have time to give their children, they needed academic support. Students from poor homes are most often exposed to feeding which is malnourish and thereby affects their cognitive functioning (Asiegbu and Ezeugbor, 2018). The level of vocabulary attained by students also influences academic ability, and openness to language is probably low in low socioeconomic cases (Pungello et al., 2009). Wadsworth and Raviv (2008) suggested that children from parents of low SER living in constant poverty grow up having physical, psychological, and educational health issues.

The problem with larger social digital inequality is that it hinders the implementation of distance learning as it is only the privileged few that can continue distance learning without dropping out of school (Aldama, 2020; Sindiani et al., 2020). The "homework gap" is very prominent as students are faced with no access to a high-speed connection in their homes, thereby not being able to perform their homework (Kelly, 2020). Investigation of the academic performance of students during the COVID-19 pandemic outbreak using distance education indicated that studying alone at one's parents' home instead of studying with friends increased the likelihood of poor academic performance. Students preferred the traditional face-to-face teaching method over the solo online teaching methods, implying that socialization is important in academic achievement (Alalawne and Tawalbeh, 2020; Giusti et al., 2021).

Academic and cognitive outcomes of secondary school science students are germane since they form the bedrock for man's capital and foretell an adulthood rank as well as the quality of life as gauged by various indicators like SER, family structure, and health (Hackman et al., 2010; Torr, 2011; Kell et al., 2013; Adler, 2013; Nja and Sampson, 2020). Erola et al. (2016) study indicated that more than half of the variance in the family level of children's SER is attributed to parents' SER. In another study by Chmielewski (2019), it was reported that the inequality between "they have" and they "have not" in terms of the academic achievement of low- and high-income SER origin has widened globally even though there is an increased opportunity to formal education.

Literature on the findings of different studies on the influence of the socioeconomic status of parents on the academic achievement of their wards among secondary schools

indicated a positive correlation between the socioeconomic status of parents and academic achievement (Mwariri et al., 2017; Onwukwe et al., 2017; Ovansa, 2017; Asiegbu and Ezeugbor, 2018; Esther et al., 2018; Osei-Owusu et al., 2018; Qasem, 2018; Fekadu et al., 2019; Maghra et al., 2019; Pant, 2020; Miftahu and Melaiye, 2021). Fekadu et al. (2019) study on the SER of parents' influence on their secondary school student's academic achievement indicated that parent income, occupation, and educational level made a significant contribution to students' academic achievement. Parents' educational level impacted more on the academic performance of secondary school students than their parents' occupation and income (Mwariri et al., 2017). In a related study by Pant (2020), the findings on the relationship between parental socioeconomic status and academic achievement of students showed that most of the students from low socioeconomic status have poor academic achievement. Miftahu and Melaiye (2021) study indicated that parents' occupation did not influence their children's academic achievement in secondary school, but their income affected their students. The income of parents is needed to pay the necessary levy and fees needed for their education. Parental care, good home parental practices, adequate facilities at home, involvement in the education of their students, and income enhanced their children's academic achievement (Mwariri et al., 2017; Osei-Owusu et al., 2018; Qasem, 2018).

The findings in Sirin (2005) research on socioeconomic status and academic achievement indicated that many studies combine one or more factors including parents' education, occupation, and income; others include parental expectations. This paper looked at SER in terms of parents' education, income, home facilities, and educational resources.

The obvious fact of the dissimilitude in socially relevant attributes that are related to family background prompted the curiosity of the researchers to investigate this inclination as they underscore social justice and impede growth (Adler, 2013; Jackson, 2013). Hitherto, studies centered on the description that is related to family SER and students' academic achievement. Recently, SER's influence on adulthood and investigation of the mechanisms through which these relationships occur are being studied. The majority of the studies were done with a sample drawn from international countries. The culturally based home environment is the fundamental pathway that connects family SER to students' academic and cognitive outcomes and, therefore, should be studied to ascertain this relationship in their unique setting (Lareau, 2002).

The majority of the studies carried out earlier are multifaceted and dealt with one dependent variable even though learners are enveloped in diverse ecological systems that are concurrently affected by external variables in many environments (Bronfenbrenner, 1979). The ability to provide relevant, specific areas of family SER background is the first step in the right direction to develop efficient remediation aimed at the intervening route to minimize perjured diverseness.

This paper addresses these questions in Nigeria. The study attempted to fill the gaps by the analysis of the relationships between family income and learners' academic achievement, cognitive attitude, students' study habits, and multidimensional routes as the key to the relationships. This paper also focused on the design and mediators of the intergenerational dissemination of the merit or demerit on the whole, and how family income affects senior secondary school students' academic and cognitive outcomes in the Nigeria setting.

Theoretical underpinning. A child is reared in a family, and the family is a multidimensional system that is made of the very near social environment. Theories of sociology and psychology of development have furnished good conceptual frameworks on how a family impacts children's growth. It may not be out of place to say that the family's economic power enhances students' development since their parents purchase whatever they need (Kaushal et al., 2011). Students whose parents earn high income most probably will live in affluent environments and will have all their educational materials like computers books, reading tables, internet services, and so on at home. Such children will attend the best schools and will have home teachers for extra tutelage (Chin and Phillips, 2004), these activities that learners engaged in at home stimulates cognitive growth which enhances children's academic achievement.

In the meantime, impalpable benefits in the home, although cannot be directly consumed or measured by money, are crucial in a child's development (Heckman, 2006). Social resources of the family, which parents practice, and the cultures presented in terms of the beliefs and values system, as well as the characters exhibited in the home environment, can also affect students' learning in school (Bourdieu, 1984). Developmental theories of children have enumerated the advantages of a democratic family setting. In this parenting style, the environment is such that there is a combination of warmth, responsiveness is high, and children only make reasonable demands. The implication of using this style of parenting is that parents provide their children with love, support, and self-governance, as well as they set realistic goals for their children (Pinquart, 2016, 2017; Kuppens and Ceulemans, 2019).

Studies have indicated the relationship between SER and children's upbringing. It has been reported that lower-SER parents are more likely to be harsh and punitive compared to higher-SER parents. Roubinov and Boyce (2017) study on parental SER and parenting practices indicated that parents with low SER are not happy parents and, as such, are harsh and bully their children more than the high-SER parents. Family conflicts are more prevalent among the low SER, giving rise to low levels of support for their children, and, also, the risk of exposure of children to family violence is high (Repetti et al., 2002).

The socioeconomic rank of parents has the capability of influencing the development of their children's outcomes

through a student's agency. For instance, studies have reported that students' academic ambition is a propelling factor in their eventual educational attainment and academic achievement (Khattab, 2015). Burger and Walk (2016) study on students' agency evaluated by their self-control, self-concept, and work value positively correlated with the social class of the students and their academic performances. Hitherto, studies have targeted majorly on the influence of external and contextual factors in the intergenerational distribution of ranks and little or less focus on students' role in the distribution.

Bandura's social learning theory (Bandura, 1977) has intensified the influence of other factors that play a vital role in the development of children. Other than parents and all others living in the home, peers make up a significant key group. This is relevant for adolescents because, at that stage in life, they have begun yearning for their own identity and rank. Studies on the effect of peer influence on students' learning, educational pursuit, and educational outcomes abound (Wilkinson et al., 2000). It can be contended that the impact of peer influence and family impact are interwoven; this is so as families most times influence the formation of children's peers through identifying which schools their children should attend, the type of neighborhoods, as well as extracurricular activities outside the school environment. Despite this, studies indicated that peers' educational achievement ambition influences one's performance without recourse to family and school impacts (Hoxby, 2000).

Many studies have not been done to concurrently examine the intervening role of both physical and material resources of the home environment, socialization patterns in the home, students' agency, and peers' impact and their influence on students' academic outcomes. The literature reviewed so far is majorly from studies conducted in developed countries and the Western world and, therefore, there is a need to carry out this type of research in the third world and African cultural contexts.

The Nigeria families scenario

Nigerian families today are faced with frail merits of education that have disconnected students from economic recourses. In Nigeria, instead of people getting access to education, they get access to poverty. Unequal educational opportunities and children's poverty are like Siamese twins. The disadvantaged family is seen in their children's educational prospects. Oftentimes, children whose parents have low qualifications or low-status jobs, living in dilapidated houses and poor neighborhoods, are more likely not to gain good qualifications themselves at school (Reay, 2019).

For a nation like Nigeria to advance, the education of its citizenry is a propeller for the development of individuals, society, and Nigeria in general (Olusegun, 2010). The relationship with all elements in the society in terms of social, economic, and political gains is harnessed through education as it is an important tool for social growth and capacity building and the acquisition of skills (Osonwa et al., 2013; Dagbo, 2014; Olayanju, 2014).

Studies have shown that there exists a relationship between parents' SER, parenting style, and academic achievement of secondary school students. Results obtained from the research showed that parents' SER and methods of parenting were significantly correlated to their children's academic achievement (Abdu-Raheem, 2015; Usman et al., 2016). Inasmuch as there is information in foreign countries on the effect of mediators on students' learning outcomes, little or nothing has been done in Nigeria as regards to mediators between the SER and the students' learning. This, therefore, informed this study to specifically examine potential means that are involved as the mediator variables in the investigation of students' academic and cognitive outcomes in science.

The purpose of this study was to investigate the correlation of the SER of a parent with multiple cognitive and academic outcomes of senior secondary school science students. Its objective was to examine the bedrock of physical and psychosocial mediators that influences students' learning and cognitive attitude. This paper examined four learners' outcomes: academic achievement, cognitive attitude, study habit, and assignment. This was done using secondary school science students. The null hypothesis stated that family income does not influence children's cognitive and academic achievement through better resources at home, friendly family socialization patterns, positive child ambition in terms of having higher academic aspiration, as well as peer influence investigated through peer university pursuits. This research also sought the effect of family income on learners' outcomes either directly or indirectly through many routes. These routes included a net of socio-demographic variables. The strengths of relative mediating effects were not hypothesized because the conflicting theoretical perspectives and findings from earlier work did not agree.

Materials and methods

A cross-sectional observational type of survey design was used for the study. It was suitable for this research as it enabled the researchers to analyze data across a sample population at a particular point in time and also a host of many variables at a time (Mahmutovic, 2021).

Participants and data collection

The research was conducted in Calabar Municipality Local Government Area of Cross River State, Nigeria during the 2020/2021 academic session. There are 11 public secondary schools in Calabar Municipality, with a total population of

938 students opting for science. The choice of science students was because the performance of science students in external examinations has been very poor (Nja et al., 2021). Secondary school students were used in this study as the study attempted to meet the scope of Frontiers in Education Journal, which emphasizes PreK-16 education that leads to the flourishing of all human beings. To obtain a representative sample for this study, a simple random sampling procedure was adopted in selecting the subjects for the study. One of the criteria for a student to belong to this research was that the student should have both parents living as the research required the father and the mother to respond to some items in the questionnaire.

For an equal spread of the sample across the 11 schools, 58% of the population in each school was selected for the study. This was done by writing numbers as appeared on the students' register on pieces of paper folded and put in a bucket. The research assistant blindfolded a student who was not part of the study and asked him/her to pick one at a time the folded papers from the bucket. Any paper picked was returned to the bucket after recording. This was also done until 58% of the respondents were selected; if a number was picked and it was discovered that the student's both parents are not living, the number was dropped in the bucket and another was picked. Only students whose numbers were picked were used for the research. The sample for the study was 548 senior secondary science students. Parents whose children were picked to form the sample of the research automatically became part of the sample as the research involved students with their parents.

Data collection

A questionnaire labeled SER and Students Outcome Questionnaire (SERSOQ) was the instrument that was used for data collection in this study. SERSOQ was an instrument developed by the researchers for data collection. It was made up of two sections. Section A comprised of questions for the students to respond to and Section B comprised of questions for the students' parents to respond to. SERSOQ was face and content validated by experts in test and measurement; they examined the items in the instruments and checked for their appropriateness, relevance, and coverage of the traits under consideration before carrying out reliability. Five items were deleted because they were not suitable. Ten items were modified/revised to arrive at the final number. The outcome of this study was made up of two cognitive abilities and academic achievement outcomes. Academic achievement was investigated by a student reporting his or her academic achievement scores. The questionnaire for academic achievement was made up of 3 items and had 4 responses on the Likert scale strongly agreed (SA), agreed (A), disagreed (D), and strongly disagreed (SD). SA = 4 points, A = 3 points, D = 2 points, and SD = 1 point. Students' responses to SA indicated better scores in school. The highest score a student should have was 12, and the lowest was 3; this was divided by the number of items in the questionnaire to get the actual value. The reliability test for SERSOQ was carried out with 30 science students and their parents in Calabar South Local Government Area of Cross River State, who were equivalent to the students that were used for the study but were not part of the study. This test aimed to ascertain the reliability of the instrument. The Cronbach's alpha reliability coefficient for academic achievement, during the trial test, was 0.85, which is appropriate. A reliability coefficient of 0.50 and above is good and high enough to justify the usage of an instrument (Joshua, 2005). The mean score was 2.05, just an "average" academic achievement score.

The Socio-Economic Rank and Students Outcome Questionnaire section for cognitive abilities that had 20 items was divided into two sections: Critical thinking and problem-solving abilities. It was made on a 4-point response Likert scale of SA, A, D, and SD. This was used to evaluate students' cognitive abilities. The highest score for the 20 items was 80, and the least was 20. The score was divided by the number of items; the mean was 2.88, slightly higher than average. The problem-solving questionnaire was adopted from Pandit (2011). The original questionnaire had 20 items, but this study used 10 items. The highest score for the ten items was 40, and the least was 10. The critical thinking questionnaire was adopted from Castle (2006). The questionnaire had 12 items originally, but 10 items were adapted and used in this study (**Supplementary Appendix A**). The Cronbach's alpha reliability coefficient for cognitive abilities during the trial test was 0.75.

Attitude outcomes categorized into two groups were also examined; study habit and assignment. Study habits of the students were investigated through their parents' responses on a 3-item questionnaire that used a 4-point Likert scale of SA, A, D, and SD. SA = 4, A = 3, D = 2, and DA = 1. The questions were my child is very serious with his/her study. My child does not joke with his/her studies. I will rate my child as a very serious scholar. A score of 12 (12/3 items = 4) is the highest score, and a score of 3 (3/3 items = 1) is the least score. A score of 4 indicates the most serious study habit. The mean score was 3.07, well above average.

The assignment was examined by students' ticking the 3-item questionnaire on a 4-point Likert point of SA = 4, A = 3, D = 2, and *SD* = 1, with the statement: I do my best on an assignment even when I do not like it. I do my assignment before anything else when I get back from school. Doing my assignment is not a burden to me. A higher value indicated greater assiduousness in doing an assignment. The mean score was 3.18, which was well above average. The Cronbach's alpha reliability coefficient for study habit and assignment, during the trial test, was 0.82 and 0.88, respectively.

Parents responded to the family income by responding to this statement; Tick the statement below that appeals to your income: "very difficult," "pretty difficult," "average," "pretty

affluent," and "very affluent." This was used to assess parents' absolute income. Very difficult score = 1, pretty difficult score = 2, average score = 3, pretty affluent score = 4, and very affluent score = 5. The relative income of parents was investigated through parents' responses to the statement: when you compare your income with that of others where you are resident, what would you rate your income? Low, somehow low, average, somehow high, and high. Their scores were Low = 1, low = 2, Average = 3, somehow high = 4, and high = 5. A high score implies that parents had high absolute or relative family income. The means of the two income variables were 2.26 for absolute income and 2.39 for relative income. All the income variables were about the average level. The Cronbach's alpha reliability coefficients for absolute income and relative income, during the trial test, were 0.66 and 0.71, respectively.

This mediators section of SERSOQ had nine categories. First, home superfluity took into cognizance home essentials. The questions were 9, and the respondents were requested to give either a yes or no answer to the questions. The statements were as follows: in my home, there is electricity for studying. There is pipe-borne water running in the house. I have my private toilet. I have my private bathroom. My bathroom is modern. I have a reading table. I have a computer. I have internet facilities. I have educational videos. The score on 9 items on superfluity ranges from 0 to 9. The mean score was close to 2.47. Kuder Richardson's formula-20 analysis of the reliability test of dichotomously scored data of home superfluity had a reliability coefficient of 0.81.

The second category of mediators was a family association type, which was measured using six variables: parental control, verbal relationship with mother, verbal relationship with father, affinity to mother, affinity to father, and father-mother relationship. The parental control section of SERSOQ had eight items on a 4-point Likert scale of SA = 4, A = 3, D = 2, and DA = 1. The items were my parents are strict with me on my homework and exams. My parents insist that I go to school every day. My parents monitor the time I come back from school. My parent checked who should be my friend. My parents check my dress and my appearance. My parents check the time I will be on the internet. My parents have TV watching time. My parents check my performance in school. My parents insist that I get to school before morning assembly. The lowest score for the 9/9 items was 1, and the highest was 36/9 = 4. Reliability was done using Cronbach's alpha, and the coefficient was 0.86. The mean score was 3.15, corresponding to a bit more than the third level of strictness.

Parent-child verbal relationship of SERSOQ had five items on a 4-point Likert scale of SA = 4, A = 3, D = 2, and *SD* = 1 for the student to respond. The items were My father/mother often discuss occurrences at school. My father/mother often discuss my relationships with friends. My father/mother often discuss my relationships with teachers. My father/mother often discuss my mood. My father/mother often discuss my worries or concerns. The highest score for this section of this questionnaire, which was made up of five items, was 20/5 items, and the lowest was 5/5 items. The reliability of the parent-child verbal relationship of SERSOQ was good, with a 0.80 Cronbach's alpha coefficient.

The Socio-Economic Rank and Students Outcome Questionnaire also examines students' affinity with their mothers/fathers. One question was used to check parents' affinity with their children, and it was "My association with my father is" "not close," "somehow," and "very close," and "not close," scored 1 point; "somehow," scored 2 points; and "very close," scored 3 points. "My association with my mother is" "not close," "somehow," "very close," and "not close," scored 1 point;

TABLE 1 Sample descriptive statistics.

Variable	Mean%	SD
Outcome		
Students' academic score	2.05	2.404
Students' cognitive attitude score	2.88	31.616
Students' study habit	3.07	2.861
Students' assignment	3.18	2.731
Principal predictors		
Family absolutely income	2.26	1.102
Family relative income	2.39	1.037
Mediators		
Home superfluities	2.47	0.542
Parental control	3.15	6.667
Mother-child verbal relationship	3.06	1.889
Father-child verbal relationship	2.95	2.363
Daddy-child affinity	2.18	0.757
Mummy-child affinity	2.00	0.829
Parents' relationship (good)	52.4%	0.784
Student academic pursuit	83.6%	
Not above SSS 3	19.3%	
Bachelor's degree,	40.5%	
Master's degree	38.5%	
Ph.D. degree	1.4%	
Students' close peers' academic ambition		
Control variables		
Age	2.00	0.390
Male	46.5%	
Female	53.5%	
Rural	36.70%	
Urban	63.30%	
Parental education (mother/father)		
No schooling	5.3%	
Not above SSS 3	36.6%	
Bachelor's degree	28.2%	
Master's degree	19.6%	
Ph.D. degree	10.3%	
Parents education	2.95	1.092

"somehow," scored 2 points; and "very close," scored 3 points. The results indicated that children's verbal relationship was more toward their mothers than their fathers, and their affinity to their mothers was also more than their fathers. The reliability of the parent-child verbal relationship of SERSOQ was good, with a 0.89 Cronbach's alpha coefficient. The mother-father relationship variable required students to respond to a yes or no answer to the two items; my parents do not quarrel most times (yes/any). My parents are like friends (yes/no). For the yes answer, the score is 1, and, for a no answer, the score is zero. Students responded that parents had a 52.4% good relationship. This result is a pointer to the level of parental disagreement in the home. Kuder Richardson's formula-20 analysis of the reliability test of dichotomously scored data of mother-father relationship had a reliability coefficient of 0.72.

The students' ambition section of SERSOQ was investigated by students' educational pursuit concerning students' responses to the question: "Tick the peak of educational attainments you desire" "The response categories were?" "Not above SS3," (coded 1), "bachelor's degree," (coded 2) "Master's degree," (coded 3) and "Ph.D. degree" (coded 4). The students who responded that they would like to go to university were about 80.7%.

Peer influence in this SERSOQ was examined through SSS students' ambition among their close friends in their classes. The statement for the students to respond was "How many of your best friends at school want to go to the university?" "few/none" or "many"; For "many," it was (coded 1), and few/none was (coded 0). The students responded that 83.6% of their close friends at school have the ambition of studying up to the university level.

Four demographic moderator variables were involved in this study: Location (urban/rural), age (measured in years), gender (male or female), and parents' highest educational attainment as responded by their children. These included five response levels: No school, secondary school certificate, first degree, master's degree, or Ph.D. degree.

The sample of this study was made up of students aged 12–17, having a mean age close to 14 years. Gender distribution was

TABLE 2 Regression statistics of the relationship between family income, academic achievement, cognitive ability, and assignment.

	Absolute family income				Relative family income			
	Academic achievement	**Cognitive attitude**	**Study attitude**	**Assignment**	**Academic achievement**	**Cognitive attitude**	**Study attitude**	**Assign ment**
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
Absolute family income	1.669* (0.086) Beta = 638 t = 19.36 Sig = 0.000	8.166* (1.177) Beta = 0.285 t = 6.94 Sig = 0.000	0.391* (0.110) Beta = 151 t = 3.563 Sig = 0.000	0.042 (0.106) Beta = 0.017 t = 0.398 Sig = 0.691				
Relative family income					1.565* (0.098) Beta = 0.565 t = 16.000 Sig = 0.000	8.262* (1.250) Beta = 0.272 t = 6.611 Sig = 0.000	0.295* (0.117) Beta = 0.108 t = –2.527 Sig = 0.012	0.151 (0.112) Beta = 0.057 t = 1.345 Sig = 0.179
Age	0.294 (0.707) Beta = 0.017 t = 0.416 Sig = 0.677	0.072 (0.209) Beta = 0.015 t = 0.343 Sig = 0.732	130 (0.81) Beta = 0.067 t = 1.603 Sig = 0.110	0.095 (0.089) Beta = 0.045 t = 1.067 Sig = 0.287	0.048 (0.041) Beta = 0.051 t = 1.184 Sig = 0.237	0.083 (0.011) Beta = 0.011 t = 0.332 Sig = 0.740	4.453 (3.402) Beta = 0.055 t = 1.309 Sig = 0.191	0.042 (318) Beta = 0.006 t = 0.133 Sig = 0.894
Gender	–0.183 (0.198) Beta = 0.033 t = –0.927 Sig = –0.354	1.609 (2.700) Beta = 0.026 t = 0.596 Sig = 0.552	1.239* (0.246) Beta = 5.028 t = 5.028 Sig = 0.000	0.796* (0.241) Beta = 0.151 t = 3.305 Sig = 0.001	–0.293 (0.214) Beta = –0.052 t = –1.370 Sig = 0.171	1.594 (2.733) Beta = 0.026 t = 0.583 Sig = 0.560	1.351* (0.249) Beta = 0.244 t = 5.424 Sig = 0.000	0.910* (0.242) Beta = 0.172 t = 3.760 Sig = 0.000
Location	0.110 (0.196) Beta = –0.019 t = –0.563 Sig = 0.574	3.757 (2.673) Beta = 0.058 t = 1.405 Sig = 0.160	1.159* (0.245) Beta = 0.196 t = 4.731 Sig = 0.000	0.963* (0.238) Beta = –0.171 t = 4.050 Sig = 0.000	0.204 (0.210) Beta = 0.034 t = 0.971 Sig = 0.332	4.277 (2.684) Beta = 0.066 t = 1.594 Sig = 0.112	1.146* (0.247) Beta = 0.194 t = 4.643 Sig = 0.000	0.977* (0.237) Beta = 0.173 t = 4.115 Sig = 0.000
Parent education	0.046 (0.098) Beta = 0.017 t = 0.468 Sig = 0.640	6.210* (1.314) Beta = 0.215 t = 4.727 Sig = 0.000	0.137 (0.125) Beta = –0.052 t = 1.098 Sig = 0.272	0.010 (0.121) Beta = 0.004 t = 0.086 Sig = 0.932	0.099* (0.239) Beta = 0.091 t = 2.407 Sig = 0.016	6.735* (1.245) Beta = 0.233 t = 5.411 Sig = 0.000	0.218 (0.119) Beta = 0.083 t = 1.827 Sig = 0.068	0.027 (0.115) Beta = 0.011 t = 0.236 Sig = 0.813

Sample size = 548; Coefficients presented; Standard errors in parentheses; * $p < 0.05$.

TABLE 3 Regression statistics of the relationship between absolute family income and mediators hypothesized.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Home super fluity	**Parental control**	**Discussion with father**	**Discussion with mother**	**Affinity to mother**	**Affinity to father**	**Parents relation ship**	**Students pursuit**	**Peer influence**
A									
Absolute family income	0.101* (0.021) Beta = 0.205 t = 4.903 Sig = 0.000	2.058* (0.243) Beta = 0.340 t = 8.456 Sig = 0.000	0.072 (0.073) Beta = 0.042 t = 0.976 Sig = 0.329	0.365* (0.090) Beta = 0.170 t = 4.037 Sig = 0.000	0.170* (0.208) Beta = 0.248 t = 5.983 Sig = 0.000	0.258* (0.030) Beta = 0.343 t = 8.533 Sig = 0.000	0.259* (0.028) Beta = 0.362 t = 9.077 Sig = 0.000	0.175* (0.029) Beta = 0.249 t = 5.999 Sig =	0.016 (0.014) Beta = 0.048 t = 1.124 Sig = 0.262
Gender	0.280* (0.046) Beta = 0.267 t = 6.126 Sig = 0.000	5.72* (0.502) Beta = 0.444 t = 11.403 Sig = 0.000	0.103 (0.168) Beta = 0.028 t = 0.613 Sig = 0.540	0.729* (0.205) Beta = 0.160 t = 3.553 Sig = 0.000	0.145* (0.065) Beta = 0.099 t = 2.224 Sig = 0.027	0.415* (0.067) Beta = 0.259 t = 6.180 Sig = 0.000	0.101 (0.065) Beta = 0.066 t = 1.541 Sig = 0.124	0.059 (0.067) Beta = 0.039 t = 0.884 Sig = 0.377	0.238* (031) Beta = 0.335 t = 7.650 Sig = 0.000
Location	0.184* (0.046) Beta = t = Sig =	0.789 (0.553) Beta = 0.057 t = 1.428 Sig = 0.154	0.009 (0.167) Beta = 0.002 t = 0.055 Sig = 0.956	0.497* (0.205) Beta = 0.102 t = 2.427 Sig = 0.016	0.110 (0.065) Beta = 0.070 t = 1.695 Sig = 0.091	0.158* (0.068) Beta = 0.092 t = 2.304 Sig = 0.022	0.770* (0.056) Beta = 0.474 t = 13.792 Sig = 0.000	0.040 (0.066) Beta = 0.025 t = 0.597 Sig = 0.551	0.009 (0.032) Beta = 012 t = 0.275 Sig = 0.784
Parents education	0.284* (0.020) Beta = 0.572 t = 14.141 Sig = 0.000	1.033* (0.274) Beta = 0.169 t = 3.773 Sig = 0.000	0.028 (0.083) Beta = 0.016 t = 0.331 Sig = 0.741	0.595* (0.100) Beta = 0.275 t = 5.960 Sig = 0.000	0.082* (0.032) Beta = 0.118 t = 2.527 Sig = 0.012	0.282* (0.32) Beta = 0.371 t = 8.729 Sig = 0.000	0.379* (0.028) Beta = 0.526 t = 13.484 Sig = 0.000	0.34 (0.033) Beta = 0.049 t = 1.039 Sig = 0.299	0.111 (0.016) Beta = 0.330 t = 7.150 Sig = 0.000
R squared	0.042	0.116	0.072	0.029	0.062	0.118	0.131	0.062	0.002
B									
Relative family income	0.105* (0.022) Beta = 0.202 t = 4.819 Sig = 0.000	1.863* (0.262) Beta = 0.291 t = 7.108 Sig = 0.000	0.079 (0.078) Beta = 0.044 t = 1.018 Sig = 0.309	0.164 (0.097) Beta = 0.072 t = 1.695 Sig = 0.091	0.166* (0.030) Beta = 0.229 t = 5.489 Sig = 0.000	0.194* (0.033) Beta = 0.244 t = 5.877 Sig = 0.000	0.243* (0.31) Beta = 0.322 t = 7.939 Sig = 0.000	0.166* (0.031) Beta = 0.223 t = 5.351 Sig = 0.000	0.008 (0.015) Beta = 0.023 t = 0.527 Sig = 0.598
Gender	0.282* (0.046) Beta = 0.269 t = 6.102 Sig = 0.000	6.014 (0.512) Beta = 0.467 t = 11.744 Sig = 0.000	0.928* (0.208) Beta = 0.203 t = 4.463 Sig = 0.000	0.111 (0.170) Beta = 0.030 t = 0.656 Sig = 0.512	0.152* (0.066) Beta = 0.104 t = 2.305 Sig = 0.022	0.482* (0.069) Beta = 0.301 t = 6.961 Sig = 0.000	0.086 (0.067) Beta = 0.057 t = 1.293 Sig = 0.196	0.069 (0.068) Beta = 0.046 t = 1.020 Sig = 0.308	0.249 (0.031) Beta = 0.351 t = 7.982 Sig = 0.000
Location	0.191* (0.046) Beta = 0.171 t = 4.134 Sig = 0.000	0.682 (0.563) Beta = 0.050 t = 1.210 Sig = 0.227	0.004 (0.167) Beta = 0.001 t = 0.024 Sig = 0.016	120 (0.065) Beta = 0.077 t = 1.846 Sig = 0.065	0.501* (0.207) Beta = 0.103 t = 2.419 Sig = 0.016	0.168* (0.071) Beta = 0.098 t = 2.376 Sig = 0.018	0.786* (0.057) Beta = 0.484 t = 13.865 Sig = 0.000	0.050 (0.067) Beta = 0.031 t = 0.744 Sig = 0.457	0.009 (0.032) Beta = 0.012 t = 0.282 Sig = 0.778
Parents education	0.269* (0.019) Beta = 0.542 t = 14.078 Sig = 0.000	1.303* (0.262) Beta = 0.214 t = 4.975 Sig = 0.000	0.667* (0.095) Beta = 0.309 t = 7.042 Sig = 0.000	0.018 (0.079) Beta = 0.010 t = 0.222 Sig = 0.825	0.100* (0.031) Beta = 0.144 t = 3.248 Sig = 0.001	0.316* (0.031) Beta = 0.416 t = 10.214 Sig = 0.000	0.385* (0.027) Beta = 0.532 t = 14.464 Sig = 0.000	0.060 (0.032) Beta = 0.084 t = 1.885 Sig = 0.060	0.106* (0.015) Beta = 0.314 t = 7.154 Sig = 0.000

Regression statistics of the relationship between relative family income and the mediators hypothesized. Sample size = 548; Coefficients presented; Standard errors in parentheses; * $p < 0.05$.

perfectly balanced. About average parental education was at the secondary school certificate level.

Procedure for data collection

In carrying out this research, approval was received from the ethical committee of the Secondary School Education Board of Cross River State. The participants were intimated about the aim of the research; they were told that the exercise was purely for research purposes, and it was highly confidential and anonymous in terms of data collection and analysis. The respondents willingly gave their consent and participated in the research. This research was carried out during the first semester of the 2020/2021 academic year. Non-science teachers were used as research assistants and administered SERSOQ to the students

TABLE 4 Regression statistics of the relationship between the hypothesized mediators and cognitive and academic outcomes.

Mediators	Academic achievement	Cognitive attitude	Study habit
Home superfluity	1.005* (0.224) Beta = 0.189 t = 4.493 Sig = 0.000	5.285 (2.486) Beta = 0.091 t = 2.125 Sig = 0.034	0.239 (0.226) Beta = 0.045 t = 1.059 Sig = 0.290
Parental control	0.103* (0.018) Beta = 0.237 t = 5.705 Sig = 0.000	0.023 (0.203) Beta = 0.005 t = 0.115 Sig = 0.908	0.024 (0.018) Beta = 0.056 t = 1.300 Sig = 0.194
discussion with mother	0.189* (0.052) Beta = 0.154 t = 3.653 Sig = 0.000	0.671 (0.716) Beta = 0.070 t = 0.937 Sig = 0.349	0.019 (0.065) Beta = 0.013 t = 0.296 Sig = 0.767
Affinity with mother	1.038* (0.157) Beta = 0.272 t = 6.617 Sig = 0.000	1.087 (1.786) Beta = 0.026 t = 0.609 Sig = 0.543	0.363* (0.147) Beta = 0.105 t = 2.470 Sig = 0.014
Affinity with father	1.311* (0.138) Beta = 0.377 t = 9.508 Sig = 0.000	3.012 (1.627) Beta = 0.079 t = 1.851 Sig = 0.065	0.008 (0.162) Beta = 0.002 t = 0.052 Sig = 0.959
Parents relationship	0.759* (0.153) Beta = 0.207 t = 4.946 Sig = 0.000	15.494 (1.586) Beta = 0.386 t = 9.769 Sig = 0.000	131 (0.155) Beta = 0.036 t = 0.842 Sig = 0.400
Academic pursuit	1.142* (0.152) Beta = 0.307 t = 7.525 Sig = 0.000	1.831 (1.746) Beta = 0.045 t = 1.049 Sig = 0.295	0.096 (0.158) Beta = 0.026 t = 0.606 Sig = 0.545
Peers influence	0.484 (0.335) Beta = 0.062 t = 1.445 Sig = 0.149	7.322* (3.669) Beta = 0.085 t = 1.996 Sig = 0.046	0.932* (0.331) Beta = 0.120 t = 2.818 Sig = 0.005
Control			
Age	0.886* (0.315) Beta = 0.120 t = 2.815 Sig = 0.005	0.430 (3.476) Beta = 0.005 t = 0.124 Sig = 0.902	0.183 (0.314) Beta = 0.025 t = 0.583 Sig = 0.560
Gender	1.473* (0.230) Beta = 0.264 t = 6.399 Sig = 0.000	7.820* (2.594) Beta = 0.128 t = 3.015 Sig = 0.000	1.378* (0.229) Beta = 0.249 t = 6.010 Sig = 0.000
Parent education	0.743* (0.108) Beta = 0.281 t = 6.852 Sig = 0.000	8.693* (1.181) Beta = 0.300 t = 7.358 Sig = 0.000	0.291 (0.111) Beta = 0.111 t = 2.608 Sig = 0.009
Location	0.058 (0.225) Beta = 0.010 t = 0.230 Sig = 0.818	3.502 (2.787) Beta = 0.054 t = 1.257 Sig = 0.209	1.171* (0.248) Beta = 0.198 t = 4.730 Sig = 0.000

Sample size = 548; Coefficients presented; Standard errors in parentheses; * $p < 0.05$.

in the Assembly hall during a break period for 40 min. Science teachers were not used as their presence can elucidate biased responses from the students. Non-science teachers were used in this survey as their presence provided a familiar atmosphere for responses from the students as against the use of total strangers.

The same students took Section B-required responses from their parents at home and were brought back to school the next day. A total of 552 SERSOQs were administered, and 548 were retrieved.

Statistical analysis

The data analysis process was done by first coding the result obtained from the participants. Data analysis was done using Statistical Package for the Social Sciences software (26). A trial test was done using 30 science students and their parents who were not part of the research but were equivalent to the science students used for the research. This was used for the analysis of reliability using Cronbach's alpha coefficient for Likert scales and Kuder Richardson formula 20 for dichotomous scales. Counterfactual Variable Control (CVC) was conducted using two different counterfactual control: (i) Principal variables control only and (ii) mediator variable control only. The thought of CVC was to preserve only the strong predictions (Morgan and Winship, 2015).

Data obtained from SERSOQ were analyzed using inferential and descriptive statistics. Descriptive statistics used mean and percentage. Inferential statistics used were linear regression statistics and Sobel-mediating test analysis.

Results

Descriptive Statistics: The study involved 4 learning outcomes; the family variable was in two levels: Absolute income and relative income; these were used as major predictors, nine mediators, and six control variables.

Table 1 presents sample statistics of all the variables included in the analysis.

Family income and cognitive and academic outcomes

The regression statistics in Table 2 show that the correlation between absolute income, academic achievement, cognitive ability, and study habits was statistically significant. However, on the regression statistics in Table 2, the relationship between relative income and academic achievement, cognitive ability, and study habits was statistically significant. The regression statistics showed that the interaction between parent education and absolute income on cognitive ability is significant. Table 2

also indicates that the interaction between parent education and relative income on students' academic achievement and cognitive ability was statistically significant.

The regression statistics in Table 3 show the interaction between parents' education and absolute income on mediating variables of home superfluity), parental control discussion with father affinity to mother, affinity to father, father/mother relationship, and peer influence was statistically significant. The regression statistics in Table 3 also show that the correlation between absolute income and the father/mother relationship was statistically significant. Table 3 also shows that the interaction between parents' education and relative income on mediating variables of parental control was statistically significant.

The regression statistics in Table 4 show that the relationship between home superfluities with academic achievement was statistically significant. The regression statistics in Table 4 show that the correlation of parental control with academic achievement was statistically significant. Table 4 also indicates that the relationship between discussion with the mother and academic achievement was statistically significant. Same on that regression statistics in Table 4, the correlation between affinity with mother and academic achievement and study habits was positively correlated.

The same regression statistics in Table 4 indicate that affinity with father for academic achievement was statistically significant. The regression statistics in Table 4 indicate that the father/mother relationship and academic achievement were statistically significant. Table 4 also indicates that academic pursuit was positively correlated with academic achievement. The regression statistics in Table 4 also indicate that parent education was related to academic achievement, cognitive ability, and study habits of students. All non-significant variables were deleted from the regression analysis.

Mediating effects

The regression statistics for mediating effects in Table 5 show that, while controlling for the independent variable (absolute family income), the mediating variable (home superfluity, parental control, discussion with mother, affinity to mother, affinity with father, parents relationship, and academic pursuit) significantly predicted the dependent variable (academic achievement). When absolute family income was controlled in Table 5, the mediating variable (peers' influence) was a significant predictor of the dependent variable (cognitive ability). Table 5 also shows that, when absolute family income was controlled, parent education was a significant predictor of the dependent variable of academic achievement, cognitive ability, and study habit. The Sobel mediation test was also done individually for each mediator, and the result is presented in Table 6.

TABLE 5 Regression statistics of the mediating effects.

	School grades	Cognitive attitude	Study habit
	Model 1	Model 2	Model 3
Absolute family income	0.623* (0.119) Beta = 0.179 t = 5.228 Sig = 0.000	0.587* (0.124) Beta = 0.158 t = 4.723 Sig = 0.000	0.258* (0.030) Beta = 0.343 t = 8.533 Sig = 0.000
Home superfluity	1.005* (0.224) Beta = 0.189 t = 4.493 Sig = 0.000		
Parental control	0.103* (0.018) Beta = 0.237 t = 5.705 Sig = 0.000		
discussion with mother	0.189* (0.052) Beta = 0.154 t = 3.653 Sig = 0.000		
Affinity to mother	1.038* (0.157) Beta = 0.272 t = 6.617 Sig = 0.000		0.363* (0.147) Beta = 0.105 t = 2.470 Sig = 0.014
Affinity with father	1.311* (0.138) Beta = 0.377 t = 9.508 Sig = 0.000		
Parents relationship	0.759* (0.153) Beta = 0.207 t = 4.946 Sig = 0.000		
Academic pursuit	1.142* (0.152) Beta = 0.307 t = 7.525 Sig = 0.000		
Peers influence		7.322* (3.669) Beta = 0.085 t = 1.996 Sig = 0.046	0.932* (0.331) Beta = 0.120 t = 2.818 Sig = 0.005
Gender	1.473* (0.230) Beta = 0.264 t = 6.399 Sig = 0.000	7.820* (2.594) Beta = 0.128 t = 3.015 Sig = 0.000	1.378* (0.229) Beta = 0.249 t = 6.010 Sig = 0.000
Parent education	0.743* (0.108) Beta = 0.281 t = 6.852 Sig = 0.000	8.693* (1.181) Beta = 0.300 t = 7.358 Sig = 0.000	0.082* (0.032) Beta = 0.118 t = 2.527 Sig = 0.012
Location	1.171* (0.248) Beta = 0.198 t = 4.730 Sig = 0.000	3.502 (2.787) Beta = 0.054 t = 1.257 Sig = 0.209	1.165 (0.235) Beta = 0.078 t = 1.601 Sig = 0.126

Sample size = 548; Coefficients presented; Standard errors in parentheses; * $p < 0.05$.

TABLE 6 Proportions of total effect mediated.

Mediators	Academic achievement	Cognitive ability	Study attitude
Home superfluity	44.7%	NIL	NIL
Parental control	47.6%	NIL	NIL
Mother-child verbal relationship	22.8%	NIL	NIL
Mother-child affinity	9.3%	NIL	9.3%
Father-child affinity	8.9%	NIL	5.6%
Parental closeness	42%	NIL	NIL
Educational pursuit	NIL	15.8%	NIL
Peer influence	NIL	18.0%	12.7%
Gender	23.5%	20.2%	18.6%
Parent education	19.5%	29.5%	18.9%
Location	31.2%	NIL	23.2%

Sobel mediation test results

The mediating test results using Sobel mediation test results in **Table 6** showed that the indirect effect *via* parental control was the strongest among all the mediating effects of the total effect of family income on academic achievement. Educational aspiration and peer college aspiration were the two mediators that significantly mediated between absolute income and cognitive ability. Parent education was the largest indirect effect on cognitive ability. The location had the highest indirect effect on study habits when absolute income was controlled.

Discussion and conclusion

This study investigated the influence of the SER of parents on students' academic and cognitive outcomes in senior secondary school science in Nigeria. The findings from the analysis of data received collaborated with contemporary foreign research on this topic similar to the case of Nigeria. Broberg et al. (1997) and Reynolds and Temple (1998) investigation of the United States and Sweden indicated that previous outcomes of the children are very important. This study indicated the same result for Nigeria. The results of this research indicated that both absolute and relative income had a positive influence on cognitive ability, academic achievement, and study habits of senior secondary school science students. It also showed the indirect effect of mediating variables (home superfluities, parental control, mother-child verbal relationship, father-child verbal relationship, daddy-child affinity, mummy-child affinity, parents' relationship, a student academic pursuit, and peers' influence) on students' outcomes (students' cognitive ability, academic achievement, and study).

In addition, the influence of the home environment (mediating variables) seems even more crucial for learners' outcomes. These findings showed the essence of controlling for mediating variables to have positive learner outcomes. Hence, a study on development should permanently be longitudinal to control for this. Without that, the impact of some variables could be exaggerated. The findings indicated that social inequality exists in PreK-16 school years. Parents who are highly educated may upbring their children more positively than the low level of educated parents. This would have provided a relaxed atmosphere to encourage students' academic outcomes. In line with previous studies (Reynolds et al., 2014), friendly parent-child and mother-father relationships contributed to positively affecting students' learning outcomes, not minding the effect of SER factors. It is obvious from this study that money is not everything in child upbringing.

Becker and Tomes (1986) study in agreement with this study indicated that basic educational materials like desks, computers, and the Internet are necessary for students' academic achievement. Evans (2006) has emphasized the important role a good physical environment and good housing conditions play in the overall development of students. Furthermore, the SER of parents has a strong influence on cognitive abilities, academic achievement, and study habits. Hence, parents with a low education level should be advised to be actively involved with their children; this is so as combined activities motivate the cognitive enhancement of their wards. This study collaborated with earlier studies by Cole-Henderson (2000) and Hornby and Blackwell (2018) whose works indicated that parental involvement was associated with greater academic achievement. Parents' SER determines the type of association and the style of interaction that occurs between siblings in the family. The upper-class and middle-class children are given the freedom to decide on the home. Children are expected to take responsibility for their actions (Usman et al., 2016).

On the other hand, low-income families may not have an interest in education and, therefore, will have low educational aspirations for their children. The findings also indicated the strength of absolute income as it correlated more strongly to learners' outcomes than relative outcomes. This may be connected to the fact that what matters is if the income can provide the basic family needs, not if your income is comparable to your colleagues around the place of residence. With a good family income, children's fees are paid on time, and students will not be driven out of school. This is so as students who do not attend classes because school fees are not paid promptly do miss classes and, as such, do not do well in academic achievement. The cognitive ability of students is enhanced because, if students

come from homes where parents' income can provide the basic need, hunger which is a threat to cognitive ability is eliminated. Thus, when a child is well fed, the mental processes are active to get involved in cognitive ability. Absolute and relative incomes were positively and significantly related to parent-child verbal relationships and mother-father relationships. It can be said that a family's economic rank brought about the calmness in the minds of parents and, as such, enables the constant exchange of thoughts and feelings, increasing the affinity of the parent to the child. This would have provided a relaxed atmosphere to encourage students' cognitive and academic outcomes. Hitherto, researchers have indicated that absolute, unlike relative income, is more formidable in indicating socioeconomic predictors both in the physical or objective development of children's outcomes (Joseph et al., 2018). Zhou et al. (2019) study in agreement with this study emphasized relative income as it has prominent effects on the emotional/subjective outcomes of students. The explanation is that, while an absolute income takes care of material benefits with an emphasis on monetary gain, a relative income takes care of emotion, which is the psychological aspect of children. It is related to how children feel satisfied or deprived and can lead to diverse levels of learning and cognitive outcomes (Adler, 2013).

The inferences, which were drawn from the findings of this research, are connected to the positive effect of family income on science students' cognitive ability, academic achievement, and study habits. Family income affected students' learning directly, but there were also indirect variables that affected students' outcomes. Mediators' variables like parental control, friendly parent-child, and parental closeness contributed positively to students' learning outcomes, not minding the effect of SER factors. It is obvious from this study that money is not everything in child upbringing. Looking at the strongest and consistent mediating impact of parental control, students and peer educational ambition, as well as the mother-child verbal relationship, it can be concluded that both economic and a positive social environment are necessary to enhance science students' cognitive ability, academic achievement, and study habits.

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Implications for further research

The following implications for further research might be suggested, given the results of the study; both absolute and relative incomes were statistically significant for academic achievement and cognitive attitude. Absolute income was also significant for study habits. The result also indicated that absolute and relative income were not significant for assignment. This result implies that, when one's parents are rich and or richer than others, it enhances the academic achievement and the cognitive abilities of adolescents. When this occurs, intergenerational transmission of ranks is facilitated.

The crux of the matter in this paper is that, even though teaching and learning take place in a school setting, the home atmosphere plays a vital role in influencing learners' outcomes. Research should be conducted to investigate youth irrational behavior on what is more influential, "the school or the youth environments." This paper aims to request that studies be conducted to investigate the impact of students' wellbeing in relation to schools, families, peers, and communities on socio-psychological, cognitive advancement, and socioeconomic outcomes in Nigeria. The cause, extent, composition, and predictors of peer impact should be investigated in future studies in the Nigeria setting. This study indicated that higher family SER is positively and significantly related to higher educational ambition, yet the route-joining SER to educational ambition is not known. Therefore, a study should focus on investigating the predictors of students' outcomes, such as educational ambition, locus of control, and self-concept to supply proof of how education, family, and community can support students' knowledge that helps their socio-emotional wellbeing and ranks actualization when they become adult.

Recommendations

Keeping in view the findings of this research, the following recommendations are given below: students should be provided with a serene home environment for studies, which could help to control mediators' variables and promote students learning and cognitive outcomes. This can be done by giving proper time to children and having an educative environment at home. Educators should encourage parents to provide the necessary means of academic success, such as a source of light, stationery, books, separate study rooms, and homework facilities in their respective homes. Children should be given enough space and opportunity to air out their views on family issues. Parents should raise their children in a loving, caring, secure, consistent, and stable home environment as this will make them

develop well socially, psychologically, physically, emotionally, and morally to cope with learning outcomes.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

CN: substantial contributions to the conception and design of the work; or the acquisition, analysis or interpretation of data for the work. HN: substantial contributions to the acquisition of data for the work. RO: substantial contributions to the interpretation of data for the work. JU: substantial contributions to the coding of data for the work. MI: substantial contributions to the analysis of data for the work. BC-U: drafting the work to critically assess the important intellectual content. RN: provide approval for publication of the content of this manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2022.938078/full#supplementary-material

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