

The Influence of Family Income on Motivation and Learning Achievement among Tamil Medium Senior Secondary Students in the Colombo Educational Zone

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ABSTRACT

Differences in family income and socioeconomic status can impact students' motivation and learning achievement. This descriptive cross-sectional survey study examined the influence of family income on student motivation and learning achievement among Tamil-medium senior secondary students in the Colombo Educational Zone of Sri Lanka. The study also examined the moderator effect of family income on relationship between motivation and learning achievement. 360 students from Grades 10 and 11 were selected by stratified random sampling from Tamil Medium schools in Colombo Educational Zone with equal number of male and female participants. 24 class teachers, 72 parents, and twelve principals were also included in this study. Validated adapted Academic Motivation Scale was used to assess motivation, and average examination marks from recent common examination were used to assess the learning achievement. Nonparametric tests, correlation analysis, hierarchical regression, and bootstrap methods were used to analyze the data. The findings showed statistically significant differences in learning achievement, intrinsic motivation, and extrinsic motivation across family income groups. Learning achievement showed a small-to-moderate positive correlation with family income ($\rho = 0.244$, $p < 0.001$), suggesting better learning achievement with higher family income. Extrinsic motivation also showed a small positive association with income, whereas intrinsic motivation did not exhibit a significant monotonic relationship. Regression analysis indicated that both motivation and family income independently predicted learning achievement. Family income significantly moderates the relationship between motivation and learning achievement ($B = 0.49$, 95% CI [0.20, 0.79]). This suggests that students from higher family incomes are more likely to translate motivation into learning achievement. These findings suggest that motivation enhances learning achievement at all income levels. However, students from higher family income are more likely to translate motivation into learning achievement. This study underscores the influence of family income on motivation and learning achievement. Both motivational development and income-related inequalities should be addressed to ensure that all students have equal opportunities to succeed.

Keywords: *motivation, family income, socioeconomic status, school context, learning achievement*

INTRODUCTION

Motivation is a stimulus which gives an individual a purpose and changes their behavior to achieve their desired outcome. It can operate at both conscious and unconscious level in individuals (APA, 2018). Motivation shapes how individuals think, learn, and act toward their goals. Motivation can be divided into intrinsic and extrinsic motivation. Intrinsic motivation arises from inherent pleasure in doing the activity while extrinsic motivation arises from external incentives such as rewards, fear of punishment or failure (Deci & Ryan, 2000, 2020). In the education setting, intrinsic motivation arises when students find personal satisfaction and pleasure in learning and engage in learning activities. They identify the meaning and values of activities in case of intrinsic motivation. External motivation arises when students focus on achieving high grades, gaining approval, or avoiding failure or punishment.

Motivation types and levels differ among students. Studies have shown that higher levels of motivation were associated with better learning achievement (Athirathan, 2025; Deci & Ryan, 2020). Several studies have found out the positive effect of intrinsic motivation on learning achievement (Deci & Ryan, 2020; Howard *et al.*, 2021). Meta-analysis conducted by Howard *et al.* (2021) revealed comparable findings suggested by Deci and Ryan (2000, 2020). They revealed that external regulation of extrinsic motivation was not associated with positive outcomes while other subtypes of extrinsic motivation which had some autonomous components (introjected, identification, integration) showed positive association with positive learning outcomes. These studies have supported the influence of motivation on learning achievement.

Socioeconomic status (SES) is a composite measure of income, education attainment, occupational prestige, subjective perceptions of social status or social class (APA, 2023). Sirin (2005) found out that variations in measuring SES among studies and parental income, parental education and parental occupation were traditionally used in SES measurements. Parental income could indicate SES as it reflects the available social and economic resources available to the students (Sirin, 2005). Important finding in literature is that students with higher socioeconomic status tend to show better academic achievement. Three large meta-analyses revealed the positive association between SES and academic achievement with moderate or medium to strong association (Liu, Peng & Luo, 2020; Selvitopu & Kaya, 2021; Sirin, 2005). Selvitopu & Kaya (2021) and Sirin (2005) covered the studies from 1990-2000 and 2010-2019 respectively. However, another meta-analysis published in 1982 revealed that weak correlation between socioeconomic status and academic achievement (White, 1982). Strength of association might have varied by how SES is measured and by contextual factors such as country, school level or subject. However, recent meta-analysis revealed that socioeconomic status plays an important role in learning achievement (Selvitopu & Kaya, 2021). These literatures support the influence of family income on learning achievement.

Several studies have shown that higher SES was positively associated with motivation to learning (Akram & Ghani, 2013; Effiong, Ndidi, & Obogo, 2020). Effiong *et al.* (2020) conducted a large study with 3941 students in Nigeria and found out a significant relation between parental income and motivation level to study mathematics.

Sri Lanka has been facing economic volatility. National poverty rate was 22.4% in 2025 under the US\$4.20 international poverty line (World Bank, 2025). Abayasekara and Arunatilake (2018) found out that underprivileged schools showed lower exam outcomes in Sri Lanka. Lower family income could have partly contributed to that outcome. Another Sri Lankan study conducted by Perera (2021) found that, school conditions severely undermine

students' motivation and engagement in low socio-economic background districts. Recent national analyses revealed that disparity in allocation of teachers, infrastructure, and funding between National and Provincial schools, as well as between urban and rural sectors (Centre for Poverty Analysis [CEPA], 2024). In this background, family income could affect students' motivation and learning achievement, although Sri Lanka is known for its free education. Financial difficulties of family can limit access to learning materials, private tuition, digital resources and resourceful schools. Household income may influence students' school attendance, motivation, and academic performance. However, Limited data were available on studies conducted in Sri Lanka examining the effects of family income on learning achievement and motivation. Limited data were available in moderator effect of family income on relationship between family income and learning achievement both locally and internationally. Studies focusing on effects of family income on subtypes of motivation (intrinsic and extrinsic motivation) were also minimal. This present study focused on addressing these gaps in Sri Lankan literature and study the influence of family income on motivation and learning achievement. Although SES was widely studied in international literature, Sirin (2005) noted that SES was inconsistent in studies with family income was one of the frequently studied parameters in SES. Therefore, we used family income as proxy for SES with the background of limitations of reliable data collection in other SES parameters. Tamil-medium senior secondary students in the Colombo Education Zone were selected for this research as this group has not received much attention in earlier research on motivation and learning achievement. Aim of this study was to provide data on how economic inequalities could influence the students' motivation and academic outcome, which would be useful to improve the students' motivation and learning achievement. This article is based on a larger study which collected and analyzed large data from students including motivation, gender, family income, school resources, school types, location of school and parental education. However Detailed explanation of these factors is beyond the scope of this article. Those findings would be reported in a separate article.

THEORETICAL PERSPECTIVES

Family income can influence the learning achievement by several ways. It can directly improve the learning achievement due to increased educational opportunities, tuition and increased availability of resources. on the other hand, family income can also influence learning achievement through the motivation – learning achievement relationship. This study used both self-determination theory and expectancy value theory to explain the influence of family income on motivation and learning achievement.

SELF-DETERMINATION THEORY (SDT)

SDT developed by Deci and Ryan (2020) explains how quality of motivation differs among students and how fulfillment of basic psychological needs can affect the motivation. It argues that students who are intrinsically motivated are more likely to achieve better learning outcomes when compared to students who are extrinsically motivated. Deci and Ryan (2020) support that argument with several studies conducted on SDT. External regulation such as rewards, fear of punishment or failure could make the students not recognize the true value and meaning of learning. It can affect their learning achievement long term. SDT suggests that intrinsic motivation improves when students' basic psychological needs are supported. autonomy, competence, and relatedness were identified as basic psychological needs by Deci and Ryan. Autonomy is having sense of control over own's actions. Competency is the feeling that one can succeed. Relatedness is feeling of connection or belonging to the activity one is involved in. When these basic needs are satisfied, internal factors would contribute to motivation and intrinsic motivation improve. Di Domenico & Fournier (2014) found out that that basic psychological need fulfillment proposed by SDT was positively predicted by the subjective SES and objective household income. This study links the SDT with the family income. Family income could influence motivation through basic psychological needs.

EXPECTANCY VALUE THEORY (EVT)

Expectancy value theory proposes that achievement related behaviors are mainly determined by individual's belief of ability, anticipation of success and individual's task values to the activities (Wigfield & Eccles, 2000). It suggests when the students feel learning activity is meaningful and valuable along with their beliefs of their ability and success, they are more likely to engage in and persist with learning activities. If a person feels that he cannot be success in the effort, they will not be interested in engaging in the activity as per the EVT. Expectancy value theory also helps to explain how family income can affect the learning achievement. Students with higher incomes may develop stronger academic self-belief and expectancy of success compared to students with less family income due to access to tuition, learning materials, and a supportive and resourceful environment. They are more likely to anticipate success and engage in learning activities. It would help them to improve their motivation and achievement of learning. Students with less family income might lose interest in engaging in learning activities due to perceived cost of education and lack of resources.

INTEGRATING THE THEORIES FOR THE PRESENT STUDY

Both SDT and EVT complement each other in explaining how the family income can influence motivation and learning achievement. SDT explains that family income influence motivation through the fulfillment of basic psychological needs. EVT explains that family income influences motivation through self-belief and anticipation of success due to family support and resource availability.

These integrated theories also help to explain how family income can have a moderator effect on relationship between motivation and learning achievement. Motivation may not translate into learning achievement equally in different family income levels, because family income can possibly influence the student self-belief, fulfillment of basic psychological needs.

CONCEPTUAL FRAMEWORK

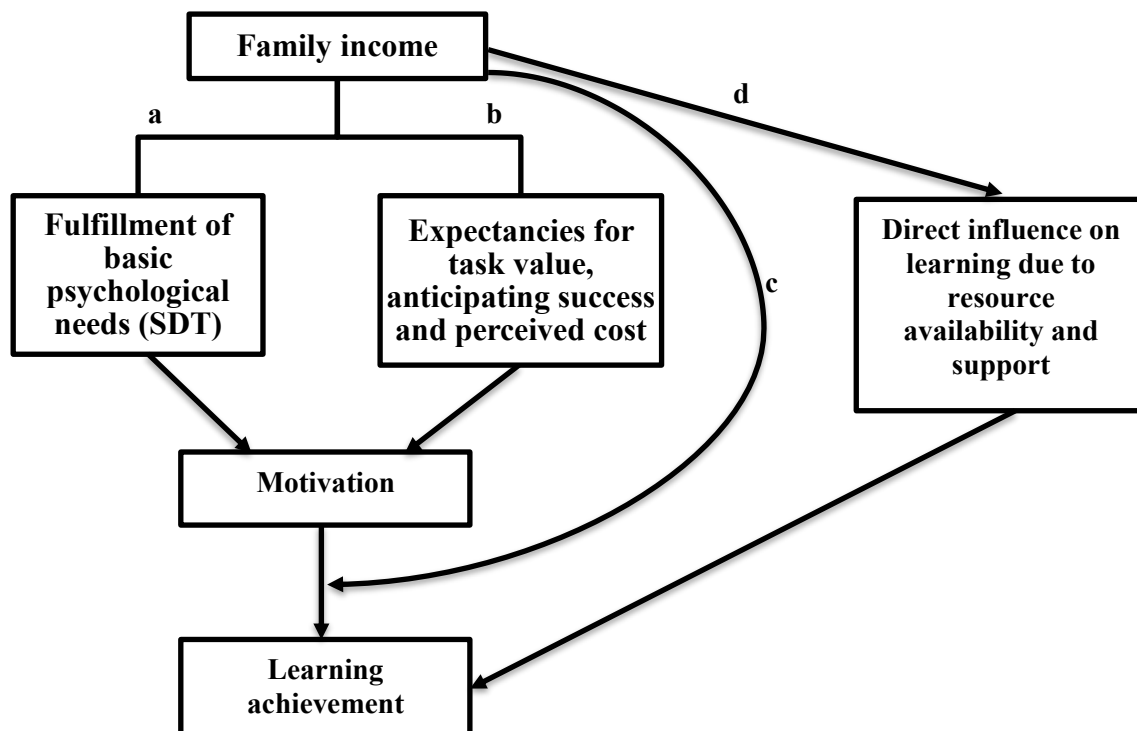


Figure 1

Conceptual framework of theoretical perspectives

Figure 1 shows the conceptual framework of this study. Influence of motivation on learning achievement was established in several studies and increase in motivation is associated with increased learning achievement. Family income can influence the learning achievement in multiple ways. Several pathways are shown in the figure such as a, b, c, d to present how the family income can influence both motivation and learning achievement. Pathway a point out how SDT links the family income with motivation and learning achievement by means of basic psychological needs. Pathway b demonstrates explanation by EVT that family income can influence motivation through self-beliefs and anticipation of success. Pathway C indicates how family income can influence the learning achievement through moderator effect on relationship between motivation and learning achievement. It also acknowledges that family income can directly influence the learning achievement in pathway d, due to financial support and availability of resources.

AIM

To study the influence of family income on motivation and learning achievement among senior secondary Tamil medium students in Colombo Educational Zone.

OBJECTIVES

1. To study difference in learning achievement across family income levels.
2. To study difference in intrinsic motivation across family income levels.
3. To study difference in extrinsic motivation across family income levels.
4. To study the moderator effect of family income on relationship between motivation and learning achievement.

NULL HYPOTHESIS:

H₀₁: There is no significant difference in learning achievement across different family income levels.

H₀₂: There is no significant difference in intrinsic motivation across different family income levels.

H₀₃: There is no significant difference in extrinsic motivation across different family income levels.

H₀₄: Family income does not moderate the relationship between motivation and learning achievement.

METHODOLOGY

Descriptive cross-sectional survey study was conducted among Grade 10 and 11 students in Tamil-medium schools of the Colombo Education Zone to study the influence of family income on motivation and learning achievement. In addition, moderation effect of family income on relationship between motivation and learning achievement. Study population is senior secondary students studying in Colombo Educational Zone. Study population comprises 5883 grade 10 and 11 students studying in 45 Tamil medium schools. Sample size was decided as 360 based on Krejcie & Morgan (1970) chart. Two stage stratified random sampling was used

to select the participants while making sure that there was adequate representation of students from different backgrounds. Proportionate stratified random sampling was applied in the first stage to select the 12 schools according to the school types and governance (provincial vs National). Disproportionate stratified random sampling was applied in second stage to select 180 female students and 180 male students from the selected schools. Additionally supplementary data was collected from 24 class teachers, 72 parents, and 12 principals.

Grade 10 and 11 Tamil medium students who gave consent were included in the study. Students who were absent during data collection or students who did not give consent were excluded from the study. This two-stage stratified random sampling ensured adequate representation of students across different school types, socioeconomic background with equal representation of both genders.

Data from students were collected from self administered questionnaire. It consists of mainly 3 sections. First section was regarding socioeconomic and demographic data. It collected information such as age, gender, grade level, parental educational status, and monthly family income. Second section assessed the motivation of students using a validated adapted version of the Academic Motivation Scale (AMS) which was based on the self determination theory by Deci and Ryan. Third section was regarding their learning achievement which was assessed by the average marks obtained in recent zonal level common examination.

Average marks obtained in the most recent school term examinations conducted by the Department of Education of Colombo Education Zone were used to assess the learning achievement. As all students sat the same common examination papers, the average marks could be a standard comparable measure of learning achievement. This method is also used to reduce the variability associated with assessments conducted by individual teachers and schools.

This study used family income as a proxy to socioeconomic status. Monthly Family income was collected from the participants. Monthly family income was divided into 6 groups such as Less than Rs 30000, Rs 30000-59999, Rs 60000- Rs 89999, Rs 90000- 119999, Rs 120000- 149999 and Rs 150000 or above. Quantitative data analysis was done using SPSS. As motivation scores did not follow normal distribution, nonparametric statistical tests were used in analysis.

AMS was originally developed by Vallerand et al. (1992). It was translated into Tamil as study population consisted of Tamil medium students. It was reviewed for linguistic accuracy and preservation of original content by experts in education and psychology. Scales, subscales and response format were preserved in the translated version. Its wordings were adapted and modified to local cultural and social context with input from experts.

Researchers conducted pilot study prior to main study in three Tamil medium schools which were not included in the study sample. One school, each of school types 1AB, 1C and II were selected. Total 36 students from selected schools were included in the pilot study with 12 each from one school. Cronbach's alpha coefficient was used to assess the reliability of questionnaire and adapted AMS scale. Personal details of students (socioeconomic and demographic details) got Cronbach's Alpha value of 0.837. AMS scale got Cronbach's Alpha value of 0.832 while intrinsic motivation scale and extrinsic motivation scale got Cronbach's Alpha values of 0.751 and 0.727 respectively. These Cronbach's Alpha values indicate the satisfactory reliability of the questionnaire. Several modifications were made to improve the internal consistency based on the pilot study.

Approval of the study was obtained from the Dean, Faculty of Education, University of Colombo after review by expert team of Faculty of Education, University of Colombo. Permission was taken from Zonal Education office and principals of selected schools.

Participation in the study was voluntary. Participants were informed about the purpose of study, potential benefits of the study and confidentiality of the data. Only the students who volunteered and gave consent were included in the study.

Data collection was done during school hours with help from teachers and staff of the school. Questionnaires were directly given to students and were provided with adequate time to complete the questionnaire independently. No personal identification details were collected from the participants. Data would remain anonymous. All the information collected would be used only for research purposes. All the data collected would be stored confidentially in a safe place which would only be accessible to authors. It would be stored for a period of 5 years and discarded permanently thereafter.

Data entering and analysis were done in statistical Package for the Social Sciences (SPSS) software. Median, interquartile range, minimum and maximum values were used to present descriptive data since the motivation levels did not follow normal distribution. However mean and standard deviation were also presented to supplement the findings. Nonparametric tests such Kruskal Wallis test, Spearman's rank order correlation analysis were used in the analysis as the data did not follow normal distribution. Kruskal Wallis test, was used to study the difference in motivation and learning achievement across family income groups. Spearman's rank order correlation analysis was used to analyze the relationship between family income, motivation and learning achievement.

Hierarchical multiple regression analysis supplemented with Bootstrap confidence intervals were used to examine the moderator effect of family income on relationship between motivation and learning achievement. A p-value less than 0.05 was considered statistically significant. Disproportionate stratified random sampling was used in the second stage of sampling. Therefore, sample was not proportionate representation of study population. We used weighting procedure to calculate statistical weights. Calculated weights were applied during data analyses (weighted post hoc analyses of Kruskal Wallis Test, Weighted spearman correlation and weighted regression analyses) to correct the disproportion in the study population and samples. It helped to improve the true representation of study population.

RESULTS

LEARNING ACHIEVEMENT ACROSS FAMILY INCOME LEVELS

We have examined the learning achievement across family income levels and applied nonparametric tests to study the difference across family income levels and correlation between family income and learning achievement.

Table 1

Descriptive Statistics for Learning Achievement Across Six Family Income Levels

Family Income Level	Mean	SD	Median	IQR	Min	Max
Less than Rs 30000	41.99	17.61	42.89	28.00	2.78	82.67
Rs 30000-59999	49.81	16.57	50.11	22.95	14.67	87.78
Rs 60000- Rs 89999	45.60	21.45	44.33	32.69	9.11	91.56
Rs 90000- 119999	60.34	17.55	63.56	23.78	25.67	87.77
Rs 120000- 149999	53.42	22.84	52.84	41.23	17.44	88.67
Rs 150000 or above	58.67	16.87	63.00	22.89	21.56	85.67

Note. IQR = Interquartile Range, SD- Standard Deviation

Table 1 presents the learning achievement across family income groups. Students from higher family income group showed higher learning achievement than students from lower family income group. The median values followed a general increasing trend, although middle income groups showed fluctuations.

LEARNING ACHIEVEMENT ACROSS DIFFERENT FAMILY INCOME LEVELS

Table 2 shows that statistically significant difference was noted in learning achievement across family income levels ($p < 0.001$) with the rejection of the null hypothesis (H_{01}). This indicates that learning achievement differs across different income groups. A moderate effect was noted in effect size calculation ($\eta^2 = 0.09$). It suggests that family income accounts for approximately 9% of the variance in learning achievement.

Table 2

Kruskal–Wallis test comparing learning achievement across family income levels

Variable	H	df	p
Learning Achievement across Family Income Levels	35.77	5	< 0.001

Figure 2 presents the box plot chart of the independent samples Kruskal Wallis Test of learning achievement with the family income levels (Less than Rs 30000, Rs 30000-59999, Rs 60000- Rs 89999, Rs 90000- 119999, Rs 120000- 149999 and Rs 150000 or above). It reveals a general increasing trend in median value along with increasing family income. This finding is statistically supported by Spearman's rank-order correlation. As shown in Table 3, the relationship between family income and learning achievement showed a statistically significant positive correlation ($\rho = 0.244$, $p < 0.001$) with small to moderate strength. It indicates that learning achievement increases with increasing family income.

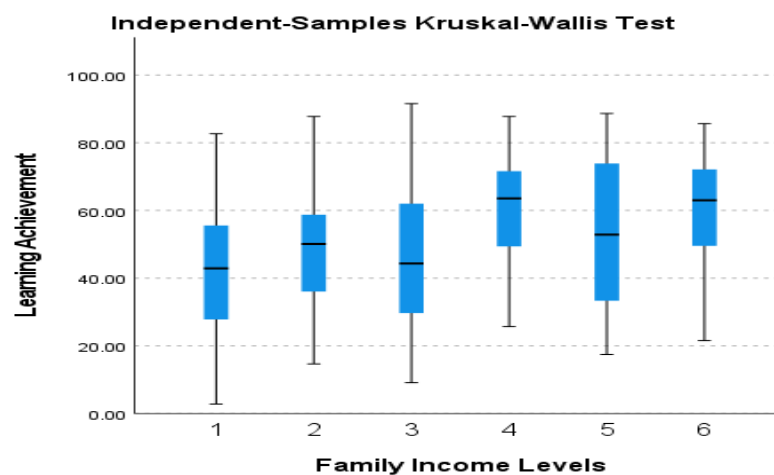


Figure 2

Boxplot of Learning Achievement Across Family Income Levels

Note. 1-Less than Rs 30000, 2-Rs 30000-59999, 3-Rs 60000- Rs 89999,4-Rs 90000- 119999, 5-Rs 120000- 149999 and 6-Rs 150000 or above

Table 3

Spearman's rank-order correlations between family income and study variables (n = 360)

Variable	ρ (Spearman)	p
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Intrinsic Motivation (IM)	0.084	0.110
Extrinsic Motivation (EM)	0.134*	0.011
Academic Motivation (AMS)	0.112*	0.034
Learning Achievement	0.244**	< 0.001

Note. Spearman's ρ reported (two-tailed), * $p < 0.05$, ** $p < 0.01$.

Table 3 demonstrates Spearman's rank order correlation between family come groups and extrinsic motivation, intrinsic motivation and overall academic motivation. Extrinsic motivation and academic motivation showed significant correlation with family income groups although strength was small.

MOTIVATION DIMENSIONS ACROSS SIX FAMILY INCOME LEVELS

Table 4 presents the motivation parameters across family income groups. Motivations dimensions showed fluctuations when family income increased from lowest to highest levels. Students from higher family income (Rs 90000-Rs119999 and Rs 150000 or above groups) showed comparatively higher mean motivation scores. On the other hand, lower income groups (less than Rs 30000 and Rs 60000- Rs 89999) showed comparatively lower motivation scores.

Table 4.

Descriptive statistics for motivation dimensions across six family income levels

Family Income Level	IM M (SD)	IM Md (IQR)	EM M (SD)	EM Md (IQR)	AMS M (SD)	AMS Md (IQR)
Less than Rs 30000	4.33 (2.33)	5.50 (4.92)	4.40 (2.38)	5.58 (4.96)	4.37 (2.34)	5.71 (4.94)
Rs 30000-Rs59999	5.21 (2.08)	6.21 (2.10)	5.18 (2.14)	6.21 (2.75)	5.20 (2.10)	6.27 (2.33)
Rs 60000- Rs 89999	4.56 (2.28)	5.88 (4.83)	4.61 (2.38)	6.08 (5.08)	4.59 (2.32)	5.96 (5.00)
Rs 90000- Rs119999	5.69 (1.67)	6.25 (0.83)	5.85 (1.74)	6.58 (0.83)	5.77 (1.69)	6.38 (0.92)
Rs 120000- Rs149999	4.52 (2.34)	5.96 (4.92)	4.52 (2.39)	5.96 (5.08)	4.52 (2.36)	6.04 (4.93)
Rs 150000 or above	5.40 (1.75)	6.00 (1.54)	5.72 (1.82)	6.46 (0.73)	5.56 (1.77)	6.25 (1.13)

Note. IM = Intrinsic Motivation; EM = Extrinsic Motivation; AMS = Academic Motivation Scale total score; M = Mean; SD = Standard Deviation; Md = Median.

INTRINSIC MOTIVATION ACROSS FAMILY INCOME LEVELS

Kruskal Wallis test was conducted to assess differences among intrinsic motivation across family income levels.

Table 5

Kruskal Wallis test for differences in intrinsic motivation across family income levels

Variable	H	df	p
Intrinsic Motivation Across Family Income Levels	16.41	5	0.006

According to Table 5, Intrinsic motivation showed statistically significant difference among six family income groups ($p < 0.05$). It rejected the null hypothesis (H_{02}). It indicates

that intrinsic motivation was not similar among different family income groups. Effect size calculation revealed small effect ($\eta^2 = 0.03$) with approximately 3% of the variance in intrinsic motivation associated with family income.

Although the Kruskal Wallis test showed a statistically significant difference in intrinsic motivation across family income groups, Spearman's rank correlation was not significant (Table 4). This suggests that, although intrinsic motivation differed among certain family income groups, intrinsic motivation did not show a monotonic pattern. That means intrinsic motivation did not increase consistently with increasing family income levels.

EXTRINSIC MOTIVATION ACROSS DIFFERENT FAMILY INCOME LEVELS

Table 6

Kruskal Wallis test for differences in extrinsic motivation across family income levels

Variable	H	df	p
Extrinsic Motivation Across Family Income Levels	22.35	5	< 0.001

Statistically significant differences in extrinsic motivation across six family income groups ($p < 0.001$) were observed according to Table 6. The null hypothesis (H_{03}) was rejected. Therefore, there are significant differences in extrinsic motivation along with differences in family income.

A Moderate effect was found in the effect size calculation ($\eta^2 = 0.05$). This suggests that approximately 5% of the variance in extrinsic motivation was associated with family income. Statistically significant positive correlations were observed between family income and extrinsic motivation with small strength as per Table 4 ($\rho = 0.134$, $p < 0.05$). This indicates that an increase in family income was correlated with an increase in extrinsic motivation, although the strength of this correlation was small.

MODERATING EFFECT OF FAMILY INCOME ON THE RELATIONSHIP BETWEEN MOTIVATION AND LEARNING ACHIEVEMENT

Hierarchical regression analysis was performed to study the moderating effect of family income on the relationship between motivation and learning achievement. An interaction term between motivation and family income was included in the regression model to analyze the moderator effect of family income.

Table 7

Hierarchical regression analysis testing the moderating effect of family income on the relationship between motivation and learning achievement

Predictor	B	SE (HC3)	95% CI for B	t	p
Motivation	6.66	0.24	[6.19, 7.13]	27.69	< 0.001
Family Income	2.12	0.39	[1.35, 2.89]	5.41	< 0.001
Motivation × Family Income	0.49	0.15	[0.20, 0.79]	3.29	< 0.01

Note. HC3 robust standard errors reported. Model fit: $R^2 = 0.608$, Adjusted $R^2 = 0.605$, $F(3, 356) = 274.30$, $p < 0.001$. Interaction effect: $\Delta R^2 = 0.0068$, $F(1, 356) = 10.84$, $p = 0.001$.

The regression model had three variables motivation, family income and interaction between motivation and family income. Analysis demonstrated that all three variables

predicted the learning achievement as per the data presented in Table 7. Motivation significantly predicted the learning achievement with the interaction coefficient value of 6.66. It suggests that higher motivation is associated with higher learning achievement. Family income also significantly predicted learning achievement with interaction coefficient value of 2.12. It indicates that students from higher family incomes tend to achieve better in learning. The interaction term (Motivation $\times$ Family Income) significantly predicted the learning achievement with interaction coefficient of 0.49. This indicates that family income strengthens the impact of motivation on learning achievement. These three variables explained 60.8% of the variance in learning achievement. Adding the motivation $\times$ family income interaction term improved the model although the increase in the variance was 0.68%. However, variance was statistically significant ($p < 0.05$) and confirmed the presence of moderation.

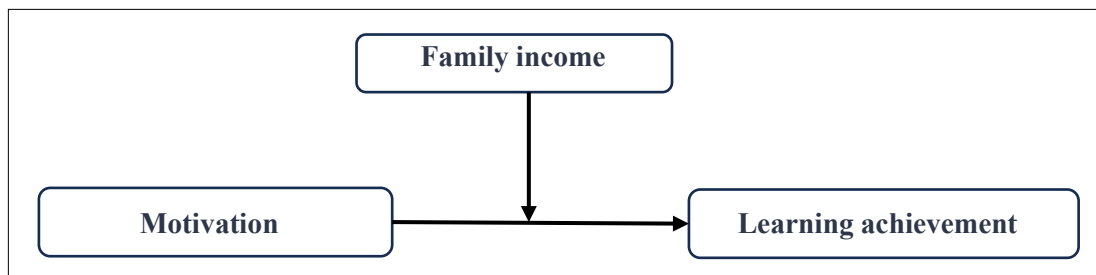


Figure 3

Conceptual moderation model (Family income as moderator)

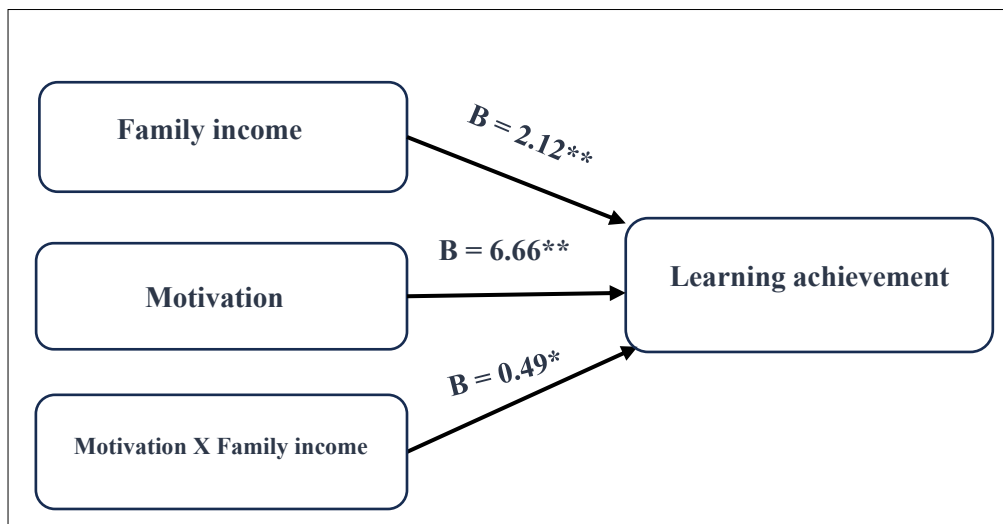


Figure 4

Statistical moderation model (Family income as moderator)

Conceptual moderation model of this moderation analysis is shown in Figure 3. It shows that motivation is expected to influence learning achievement directly. At the same time, family income is expected to moderate the effect of motivation on learning achievement. Statistical results of the moderation analysis is also presented as statistical moderation mode in Figure 4.

Table 8

Conditional effects of motivation on learning achievement at different levels of family income

Family Income Level	B	SE (HC3)	95% CI for B	t	p
Low (16th percentile)	5.73	0.39	[4.97, 6.50]	14.71	< 0.001
Median (50th percentile)	6.72	0.24	[6.25, 7.19]	28.08	< 0.001
High (84th percentile)	7.70	0.38	[6.96, 8.44]	20.46	< 0.001

We did the conditional effects analysis to study how the effect of motivation on learning achievement changes at different levels of family income. Table 8 presents the findings of the analysis. When the family income levels increase from low to high, unstandardized regression coefficient (B) increases from 5.73 to 7.70. However, family income had significant positive effect at all the income levels ($p < 0.001$). This analysis indicates that although motivation significantly improves the learning achievement at all income levels, impact of motivation increases with family income. This supports the moderation effect of family income on relationship between motivation and learning achievement.

Table 9

Bootstrap analysis of the interaction effect between motivation and family income

Predictor	B	Boot SE	Boot LLCI	Boot ULCI
Motivation × Family Income	0.49	0.15	0.20	0.79

Note. 5,000 bootstrap samples; 95% confidence interval. The interaction effect is significant because the confidence interval does not include zero.

The bootstrap analysis (5,000 samples) was done to confirm the reliability and stability of the results. As shown in Table 9, Bootstrap analysis confirmed the interaction effect with interaction coefficient value of 0.49 and boot standard error of 0.15. Since the confidence intervals did not reach zero, the moderation effect is statistically significant. This strengthens the findings and confirms that the moderating effect is not due to sampling error. The bootstrap results confirm that family income significantly moderates the relationship between motivation and learning achievement. Therefore, the null hypothesis (H_{04}) is rejected.

CONCLUSION

This study examined the influence of family income on motivation and learning achievement among Tamil-medium senior secondary students in the Colombo Educational Zone. The results indicate that significant difference was seen in learning achievements across different family income groups. Students with higher family income showed higher learning achievement than the students from the lower family income groups. Learning achievement showed a small-to-moderate positive association with family income.

Intrinsic motivation differed among certain family income groups with significant difference. However intrinsic motivation did not show a monotonic increasing or decreasing pattern with the family income. Extrinsic motivation showed significant differences among family income groups. Overall motivation and extrinsic motivation showed small positive correlation with family income group, indicating increase in extrinsic motivation levels when the family income increased although effect strength was small.

Family income also independently predicted learning achievement in the regression analysis. Regression analysis also revealed that motivation positively predicted achievement across all income level with significantly stronger effect among students from higher family income. This suggests that students from higher family incomes are more likely to translate motivation into learning achievement. This gives an additional advantage for economically advantageous students. Self determination theory and expectancy value theory were used to

partly explain the differences observed in motivation and learning achievement across family income levels.

These findings highlight the influence of motivation and family income on learning outcomes. Educational policies and reforms should focus on addressing disadvantages caused by low family income. Further studies in Sri Lanka are warranted incorporating large diverse samples and longitudinal study design across the country addressing the limitations of this study.

DISCUSSION

The present study examined the influence of family income on motivation and learning achievement among Tamil-medium senior secondary students in the Colombo Educational Zone. It also studied the moderating role of income. The findings showed strong empirical evidence that family income influences both motivation and learning achievement and moderates the relationship between motivation and learning achievement. This study showed statistically significant differences in learning achievement across family income groups. Learning achievement also showed small to moderate positive correlation (Spearman's $\rho = 0.244$) with family income levels, suggesting better learning achievement with the higher family income. These findings are comparable to large international studies (Liu, Peng & Luo, 2020; Selvitopu & Kaya, 2021). Family income independently predicted learning achievement in the regression models, further supporting the influence of family income on the learning achievement. Another significant finding in this study is that family income significantly strengthens the relationship between motivation and learning achievement by moderator effect. Although motivation positively predicts learning achievement at all income levels, students from higher family income are better able to translate motivation into learning achievement. Students with higher family income tend to have access to private tuition, resourceful schools and quality teaching than the students with lower family income. These factors could directly contribute to a supporting and demanding environment for learning achievement.

On the other hand, Family income could influence learning achievement through pathways explained by SDT and EVT. Several studies have established positive relationship between motivation and learning achievement (Athirathan, 2025; Deci & Ryan, 2020). Students with higher family income tend to fulfill the basic psychological needs that the students from lower family income which would be advantageous for them to develop the motivation (Ryan & Deci, 2000). Expectancy Value Theory suggests that students' academic performance depends on their belief that they can succeed and their understanding of the value of the task (Wigfield & Eccles, 2000). Students from higher family income backgrounds may develop stronger beliefs of success because they have greater access to private tuition, quality schooling, academic support, and clearer career pathways. These could contribute to improving motivation among students. Therefore, family income can act through pathways explained by SDT and EVT to influence the learning achievement by directly or indirectly improving motivation.

This study confirmed the significant differences in motivation, intrinsic motivation, extrinsic motivation across family income levels while overall motivation and extrinsic motivation showing positive correlation with family income. These findings were comparable to international studies which showed positive correlation between SES and motivation to learn (Akram & Ghani, 2013; Effiong, Ndidi, & Obogo, 2020). The results were supportive of theoretical explanation by SDT and EVT on how the family income can influence the learning achievement.

Educational inequalities were pointed out by national reports in Sri Lanka. Notably CEPA (2024) revealed disparity in allocation of teachers, infrastructure, and funding between National and Provincial schools, as well as between urban and rural sectors. These inequalities could reflect in the learning achievement of students. Students with low family income could further be affected as present study revealed the significant influence of family income on learning achievement and motivation. The results highlight the importance of both motivation and family income on learning achievement. Future educational policies and educational reforms in Sri Lanka should prioritize both motivational enhancement and appropriate resource allocation to ensure that students from lower family income have equal access to similar resources and school environment available to students from higher family income.

LIMITATIONS

This study had several limitations. Self administered questionnaires might have introduced social desirability bias among students. As descriptive cross-sectional survey design was used in this study, cause and effect relationship could not be established from this study. Longitudinal studies are recommended to study changes with time. This study was limited to Tamil medium schools in Colombo Educational Zone, which consists of an urban setting. This affects the generalization of results to whole population of Sri Lanka. Further studies are recommended incorporating students from rural areas, Sinhala and English medium schools and other district students to generalize the findings to Sri Lankan populations. Independent effect of basic psychological needs such as autonomy, competence and relatedness explained in SDT were not studied in the present study. This study used family income as a proxy to socio economic status. Parental education, occupation and other SES parameters should be incorporated in a standard way in future studies in Sri Lanka. This article is based on a larger study which collected and analyzed data on family income, gender, school resources, school types, location of school and parental education. Detailed explanation of these factors is beyond the scope of this article. Those findings would be reported in a separate article.

RECOMMENDATIONS

Based on the findings of this study, researchers would like to give several recommendations to both educators and policy makers. Students with lower socioeconomic backgrounds and low family incomes should be identified and targeted programmes should be implemented with psychological support to improve motivation. It can help them to overcome the disadvantage due to low family income.

Teachers should be trained to support the autonomy and competence of students with regular workshops. Teachers and learning environment should be supportive to give the students self-belief that they can succeed. Regular awareness programmes and counselling sessions can be arranged to improve the motivation of students while focusing on improving intrinsic motivation.

Resource poor schools should be identified, and inequalities should be addressed to promote equal learning opportunities for all the students. Policymakers should implement targeted financial and educational support for the disadvantaged students with low family income. Policymakers should implement policies to support a learning environment that encourages fulfillment of basic psychological needs and improve motivation among students.

Regular school-based motivation programmes can be conducted to improve motivation, self-efficacy and psychological well-being with more emphasis on students with low socioeconomic status. Regular in-service teacher training should be implemented with inclusion of modules on motivational psychology, socioeconomic inequalities in education, inclusive pedagogy, and strategies to support disadvantaged learners.

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REFERENCES

- Abayasekara, A., & Arunatilake, N. (2018). School-level resource allocation and education outcomes in Sri Lanka. *International Journal of Educational Development*, 61, 127–141. <https://doi.org/10.1016/j.ijedudev.2017.12.010>
- Akram, M., & Ghani, M. (2013). The relationship of socioeconomic status with language learning motivation. *International Journal of English and Education*, 2(2), 406–413. <https://ijee.org/assets/docs/32.89115333.pdf>
- American Psychological Association (APA). (2018). *Motivation*. In *APA Dictionary of Psychology*. Retrieved February 20, 2026, from <https://dictionary.apa.org/motivation>
- American Psychological Association (APA). (2018). Socioeconomic status. In *APA Dictionary of Psychology*. Retrieved February 20, 2026, from <https://dictionary.apa.org/socioeconomic-status>
- Athirathan, S. (2025). The influence of academic motivation on the academic performance of senior secondary grade students (A study based on Tamil medium schools in the Colombo south education zone, in Sri Lanka). *International Journal of Research and Innovation in Social Science*, 5(8), 3748–3752. <https://doi.org/10.47772/IJRIS.2024.8120312>
- Centre for Poverty Analysis (CEPA). (2024). *Educational inequalities: Policy brief 2*. <https://www.cepa.lk/wp-content/uploads/2024/06/Educational-Inequalities-Policy-brief-2.pdf>
- Deci, E. L., & Ryan, R. M. (2020). Self-determination theory: Basic psychological needs in motivation, development, and wellness. *Current Directions in Psychological Science*, 29(4), 316–321. <https://doi.org/10.1177/0963721420969833>
- Di Domenico, S. I., & Fournier, M. A. (2014). Socioeconomic status, income inequality, and health complaints: A basic psychological needs perspective. *Social indicators research*, 119(3), 1679–1697. https://www.selfdeterminationtheory.org/wp-content/uploads/2015/01/2014_DiDomenicoFournier.pdf
- Effiong, I. E., Ndidi, M. A., & Obogo, A. I. (2020). Parental Socio-economic Status as Correlates of Students' Motivation in Studying Mathematics in Calabar Education Zone of Cross River State, Nigeria. *Journal of the Social Sciences*, 48(3), 1586–1596.
- Howard, J. L., Bureau, J., Guay, F., Chong, J. X., & Ryan, R. M. (2021). Student motivation and associated outcomes: A meta-analysis from self-determination theory. *Perspectives on Psychological Science*, 16(6), 1300–1323. <https://doi.org/10.1177/1745691620966789>
- Liu, J., Peng, P., & Luo, L. (2020). The Relation Between Family Socioeconomic Status and Academic Achievement in China: A Meta-analysis. *Educational Psychology Review*, 32, 49–76. <https://doi.org/10.1007/s10648-019-09494-0>

- Perera, K. D. R. L. J. (2021). Students' perceptions of school-related conditions impacting their motivation and engagement in learning. *Open Journal of Social Sciences*, 9(3), 353–377. <https://doi.org/10.4236/jss.2021.99025>
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67. <https://doi.org/10.1006/ceps.1999.1020>
- Selvitopu, A., & Kaya, M. (2021). A Meta-Analytic Review of the Effect of Socioeconomic Status on Academic Performance. *Journal of Education*. 203(4). <https://doi.org/10.1177/00220574211031978>
- Sirin, S. R. (2005). Socioeconomic Status and Academic Achievement: A Meta-Analytic Review of Research. *Review of Educational Research*, 75(3), 417–453. <https://doi.org/10.3102/00346543075003417>
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Senecal, C., & Vallieres, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, 52(4), 1003–1017. <https://doi.org/10.1177/0013164492052004025>
- White, K. R. (1982). The Relation between Socioeconomic Status and Academic Achievement. *Psychological Bulletin*, 91, 461–481. <https://doi.org/10.1037/0033-2909.91.3.461>
- Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology*, 25(1), 68–81. <https://doi.org/10.1006/ceps.1999.1015>
- World Bank. (2025). Sri Lanka's economic recovery remains incomplete as key challenges remain. <https://www.worldbank.org/en/news/press-release/2025/10/07/sri-lanka-s-economic-recovery-remains-incomplete-as-key-challenges-remain>