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An Interaction Effect Of Self-Concept, Motivation, And Attitude On Academic Achievement Of Secondary School Students

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ABSTRACT

The present study aimed to investigate the combined effects of selected independent variables self-concept (low and high), achievement motivation (low and high), and attitude (low and high) on the academic achievement of secondary school students. The sample consisted of 300 students randomly selected from nine secondary schools in the Chennai Educational District. The findings revealed a significant interaction effect of gender (male and female), location (rural and urban), and type of management (aided and government) on academic achievement. The study also found significant interaction effects of self-concept, achievement motivation, and attitude on students' academic achievement. However, no significant interaction effect was observed between achievement motivation and attitude on academic achievement. Overall, the results indicate that gender and type of school management significantly influence academic achievement, whereas locale does not show a significant independent effect. In contrast, psychological variables self-concept, achievement motivation, and attitude-exerted significant independent and interaction effects, highlight their dominant role in determining students' academic achievement.

Keywords: Self-Concept, Achievement Motivation, Attitude and Academic achievement

Introduction

Academic achievement has long been regarded as a key indicator of students' educational success and future prospects. While traditional educational research has emphasized cognitive abilities as primary determinants of achievement, contemporary studies increasingly highlight the importance of psychological factors in shaping students' learning outcomes. Among these factors, self-concept, achievement motivation, and attitude toward learning play a crucial role in influencing students' academic performance at the secondary school level.

Self-concept refers to students' perceptions and evaluations of their own abilities and competencies in academic contexts. A positive self-concept enables learners to approach academic tasks with confidence, persistence, and resilience, thereby enhancing achievement. Achievement motivation, on the other hand, reflects the internal drive that energizes and directs students' efforts toward academic goals. Students with

high achievement motivation tend to demonstrate greater engagement, perseverance, and willingness to overcome challenges. Similarly, attitude toward learning encompasses students' feelings, beliefs, and dispositions toward school subjects, teachers, and the learning environment, which significantly affect their academic behavior and performance.

Although numerous studies have examined the individual influence of self-concept, achievement motivation, and attitude on academic achievement, fewer investigations have focused on their combined and interactional effects. Understanding how these psychological variables interact is essential, as students do not experience them in isolation; rather, they function together to shape learning experiences and outcomes. Moreover, examining these interaction effects within the context of secondary school education is particularly important, as this stage represents a critical period of academic, emotional, and social development.

In this context, the present study seeks to examine the interaction effect of self-concept, achievement motivation, and attitude on the academic achievement of secondary school students. By exploring both independent and combined influences of these variables, the study aims to provide deeper insights into the psychological determinants of academic achievement and to offer meaningful implications for educators, curriculum planners, and policymakers in enhancing students' academic performance.

Objectives

The objectives of the study are as follows:

1. To study the interaction effect of gender (male and female), location (rural and urban), and type of management (aided and government) of secondary school students on academic achievement.
2. To study the interaction effect of self-concept (low and high) and achievement motivation (low and high) on the academic achievement scores of secondary school students.
3. To study the interaction effect of self-concept (low and high) and attitude (low and high) of students of secondary schools on academic achievement scores.
4. To study the interaction effect of achievement motivation (low and high) and attitude (low and high) of students of secondary schools on their academic achievement scores.

Hypotheses

In pursuance of the above-stated objectives, the following hypotheses were formulated:

1. There is no significant interaction effect of gender (male and female), location (rural and urban), and type of management (aided and government) of secondary school students on academic achievement.
2. There is no significant interaction effect of self-concept (low and high) and achievement motivation (low and high) on the academic achievement scores of secondary school students.
3. There is no significant interaction effect of self-concept (low and high) and attitude (low and high) of students of secondary schools on academic achievement scores.
4. There is no significant interaction effect of achievement motivation (low and high) and attitude (low and high) of students of secondary schools on their academic achievement scores.

Research Design

Method

The study adopts the descriptive survey method for the investigation.

Sample

Using purposive and random sampling techniques, 300 students from nine secondary schools in and around the Chennai Educational District form the sample of the study.

Tools

The following tools were used to collect the essential data:

- *Suryavanshi's Children's Self-Concept Scale (SCS):* A standardized instrument for measuring self-concept.
- *Deo–Mohan Achievement Motivation Scale (AMS):* Developed by Pratibha Deo and A. Mohan to assess achievement motivation.
- *Sodhi's Attitude Scale:* A standardized instrument for measuring students' attitudes.
- *Academic Achievement Test in Social Science:* Constructed by the investigator, it consists of 50 items with validity coefficients ranging from 0.86 to 0.98. The reliability of the test was 0.889 using the test-retest method and 0.846 using the split-half method.

Procedure

Data pertaining to academic achievement, self-concept, achievement motivation, and attitude among secondary school students were collected by administering the respective tools to a sample of 300 students.

Results

Interaction analysis was adopted to study the combined effects of different independent variables on the dependent variable. This technique made it possible to examine whether the influence of one variable on academic achievement varied according to the levels of another variable. Through factorial two-way and three-way ANOVA, the study explored how variables such as self-concept and achievement motivation jointly influenced achievement, and whether their effects were uniform or dependent on specific student characteristics. The results of the analysis are presented in the following tables.

Hypothesis-1: There is no significant interaction effect of gender (male and female), location (rural and urban), and type of management (aided and government) of secondary school students on academic achievement

Table 1: Results of three way ANOVA between gender (male and female), location (rural and urban) and managements (aided and government) of students of secondary schools on academic achievement

Source of Variation	DF	Sum of Squares	Mean Sum of Squares	F-value	p-value	Significance
Gender (Main Effect)	1	892.92	892.92	6.4796	0.0114	YES
Location (Main Effect)	1	117.19	117.19	0.8504	0.3572	NS
Management (Main Effect)	1	2616.02	2616.02	18.9834	0.0001	YES
Gender × Location (2-way Interaction Effect)	1	0.01	0.01	0.0001	0.9976	NS
Gender × Management (2-way Interaction Effect)	1	398.47	398.47	2.8915	0.0901	NS
Location × Management (2-way Interaction Effect)	1	336.31	336.31	2.4405	0.1193	NS
Gender × Location × Management (3-way Interaction Effect)	1	156.31	156.31	1.1343	0.2878	NS
Total	**299**	**44756.32**	—	—	—	—

The results presented in the above table indicate the following:

- The main effect of gender (male and female) on the academic achievement scores of secondary school students was found to be significant ($F = 6.4796$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This indicates that male and female students differ significantly in their academic achievement scores.

- The main effect of location (rural and urban) on the academic achievement scores of secondary school students was found to be not significant ($F = 0.8504$, $p > 0.05$) at the 5% level of significance. Hence, the null hypothesis is not rejected. This suggests that students from rural and urban secondary schools have similar academic achievement scores.

- The main effect of management (aided and government) on the academic achievement scores of secondary school students was found to be significant ($F = 18.9834$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This indicates that students from aided and government secondary schools differ significantly in their academic achievement scores.

- The interaction effect of gender (male and female) and location (rural and urban) on the academic achievement scores of secondary school students was found to be not significant ($F = 0.0001$, $p > 0.05$) at the 5% level of significance. Hence, the null hypothesis is not rejected. This implies that male and female students from rural and urban secondary schools have similar academic achievement scores.

- The interaction effect of gender (male and female) and management (aided and government) on the academic achievement scores of secondary school students was found to be not significant ($F = 2.8915$, $p > 0.05$) at the 5% level of significance. Hence, the null hypothesis is not rejected. This suggests that male and female students from aided and government secondary schools have similar academic achievement scores.

- The interaction effect of location (rural and urban) and management (aided and government) on the academic achievement scores of secondary school students was found to be not significant ($F = 2.4405$, $p >$

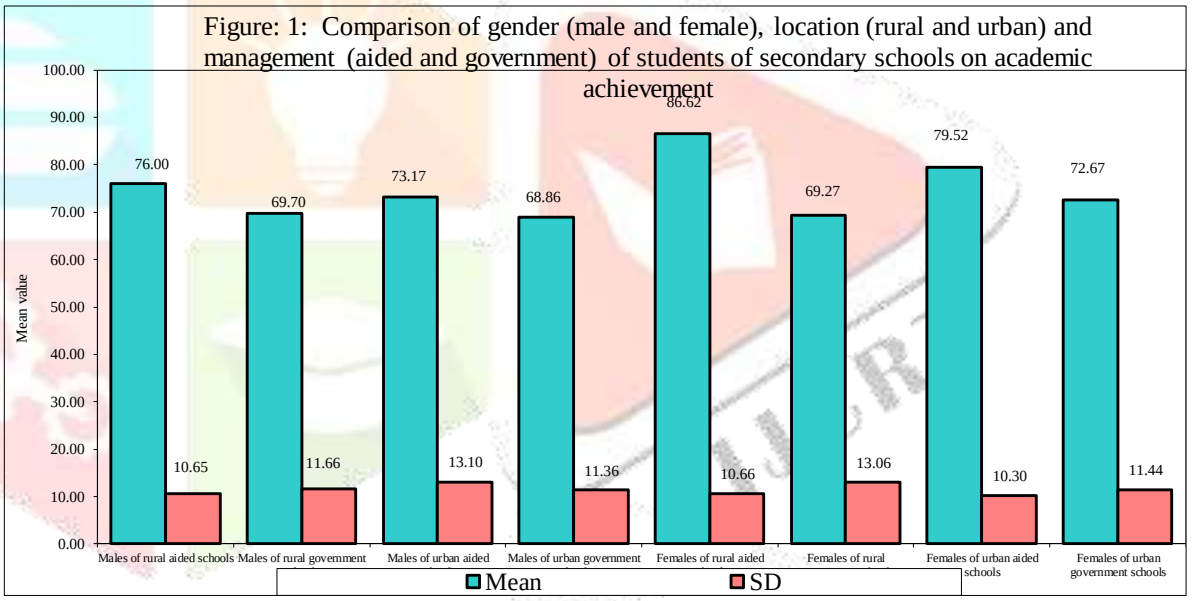
0.05) at the 5% level of significance. Hence, the null hypothesis is not rejected. This indicates that students from aided and government schools in rural and urban areas have similar academic achievement scores.

- The three-way interaction effect of gender (male and female), location (rural and urban), and management (aided and government) on the academic achievement scores of secondary school students was found to be not significant (F = 1.1343, p > 0.05) at the 5% level of significance. Hence, the null hypothesis is not rejected. This suggests that students from aided and government schools in rural and urban areas, irrespective of gender, have similar academic achievement scores.

- If the F-value is found to be significant, pairwise comparisons of the interaction effects of gender, location, and management on academic achievement scores are determined using Tukey's multiple post-hoc procedures, and the results are presented.

The mean and standard deviation (SD) values of academic achievement are presented in the following figure.

Figure: 1: Comparison of gender (male and female), location (rural and urban) and management (aided and government) of students of secondary schools on academic achievement scores



Hypothesis-2: There is no significant interaction effect of self-concept (low and high) and achievement motivation (low and high) on the academic achievement scores of secondary school students.

Table 3: Results of two way ANOVA between self-concept (low and high) and achievement motivation (low and high) of students of secondary schools on academic achievement

Source of Variation	DF	Sum of Squares	Mean Sum of Squares	F-value	p-value	Significance
Self-concept (SC) (Main Effect)	1	9891.34	9891.34	249.7279	0.01	YES
Achievement Motivation (AM) (Main Effect)	1	844.64	844.64	21.3247	0.01	YES
SC × AM (2-way Interaction Effect)	1	804.16	804.16	20.3027	0.01	YES
Total	**299**	**23264.26**	—	—	—	—

From the results presented in the above table, it is evident that—

- The main effect of self-concept (low and high) on the academic achievement scores of secondary school students is found to be significant ($F = 249.7279$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This indicates that students with low and high levels of self-concept differ significantly in their academic achievement scores.

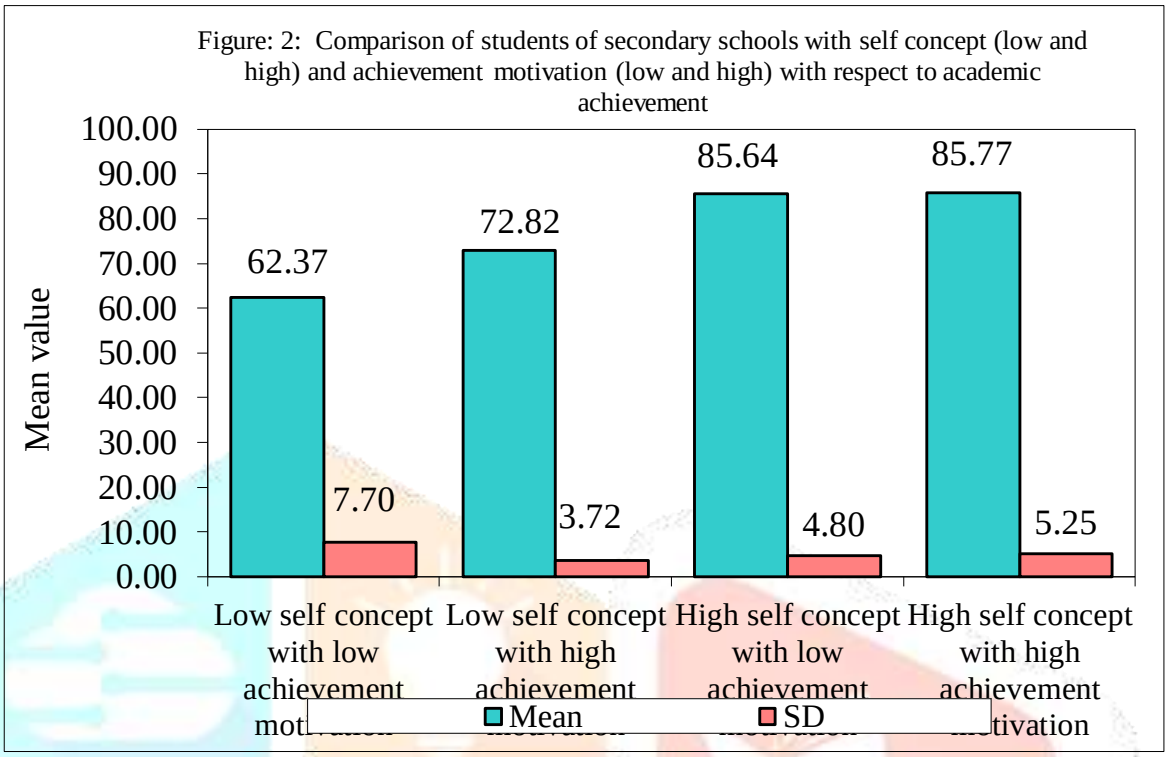
- The main effect of achievement motivation (low and high) on the academic achievement scores of secondary school students is also found to be significant ($F = 21.3247$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This implies that students with low and high levels of achievement motivation differ significantly in their academic achievement scores.

- The interaction effect of self-concept (low and high) and achievement motivation (low and high) on the academic achievement scores of secondary school students is found to be significant ($F = 20.3027$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This indicates that the combined influence of self-concept and achievement motivation significantly affects the academic achievement scores of students.

- Since the *F* value for the interaction effect is significant, Tukey's multiple post-hoc test was applied to determine the pairwise comparisons of the interaction effects of self-concept (low and high) and achievement motivation (low and high) on academic achievement scores.

The mean scores corresponding to these groups are presented in the following figure.

Figure: 2: Comparisons of students of secondary schools with self-concept (low and high) and achievement motivation (low and high) with respect to academic achievement



Hypothesis-3: There is no significant interaction effect of self-concept (low and high) and attitude (low and high) of students of secondary schools on academic achievement scores.

Table 5: Results of two way ANOVA between self-concept (low and high) and attitude (low and high) of students of secondary schools on academic achievement

Source of Variation	DF	Sum of Squares	Mean Sum of Squares	F-value	p-value	Significance
Self-concept (SC) (Main Effect)	1	4912.70	4912.70	146.8517	<0.05	YES
Attitude (A) (Main Effect)	1	1984.60	1984.60	59.3241	<0.05	YES
SC × AM (2-way Interaction Effect)	1	516.69	516.69	15.4452	<0.05	YES
Total	**299**	**17316.23**	—	—	—	—

The results of the above table reveal that

- The main effect of self-concept (low and high) on the academic achievement scores of secondary school students is found to be significant ($F = 146.8517$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This indicates that students with low and high self-concept differ significantly in their academic achievement scores.

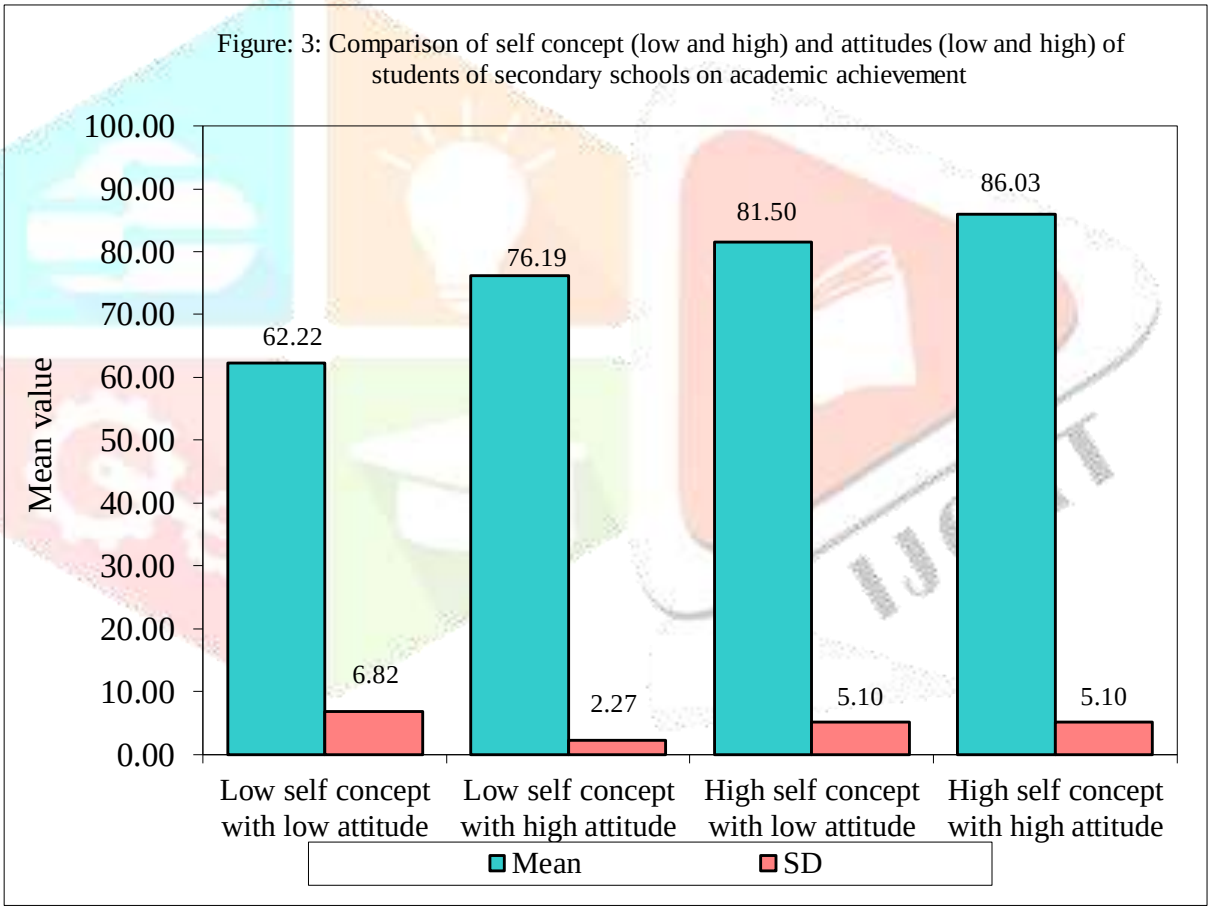
- The main effect of attitude (low and high) on the academic achievement scores of secondary school students is found to be significant ($F = 59.3241$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis

is rejected. This implies that students with low and high attitude levels differ significantly in their academic achievement scores.

- The interaction effect of self-concept (low and high) and attitude (low and high) on the academic achievement scores of secondary school students is found to be significant ($F = 15.4452$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This means that students with different combinations of self-concept and attitude levels differ significantly in their academic achievement scores.

Since the F-value is significant, Tukey's multiple post hoc procedure was applied to determine the pairwise comparisons of the interaction effect of self-concept (low and high) and attitude (low and high) on the academic achievement scores of secondary school students, and the results are presented in the following table. The mean scores are also presented in the following figure.

Figure: 3: Comparisons of self-concept (low and high) and attitudes (low and high) of students of secondary schools on academic achievement



Hypothesis-4: There is no significant interaction effect of achievement motivation (low and high) and attitude (low and high) of students of secondary schools on their academic achievement scores.

Table 7: Results of two- way ANOVA between achievement motivation (low and high) and attitude (low and high) of students of secondary schools on academic achievement

Source of Variation	DF	Sum of Squares	Mean Sum of Squares	F-value	p-value	Significance
Achievement Motivation (AM) (Main Effect)	1	4384.22	4384.22	126.7940	<0.05	YES
Attitude (A) (Main Effect)	1	11790.49	11790.49	340.9875	<0.05	YES
AM × A (2-way Interaction Effect)	1	345.08	345.08	9.9800	<0.05	YES
Total	**299**	**26754.72**	—	—	—	—

The results of the above table reveal that—

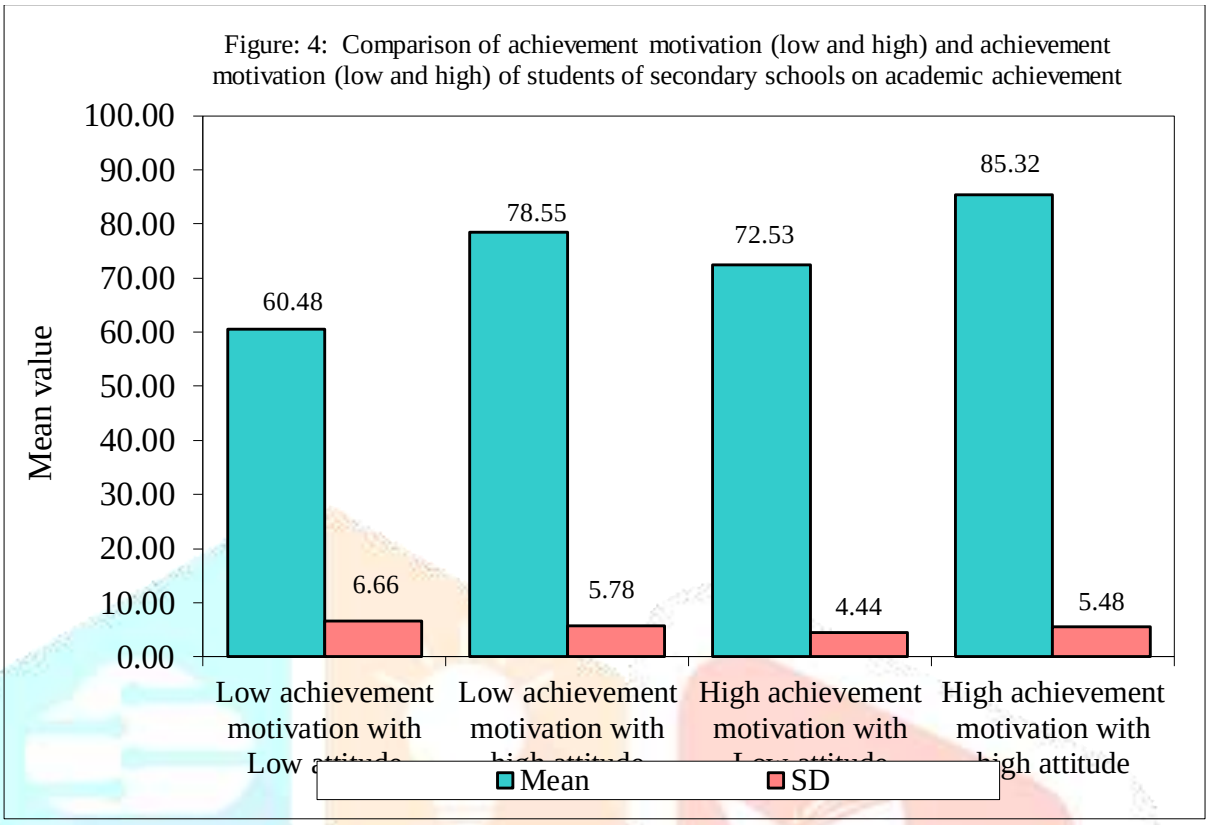
- The main effect of achievement motivation (low and high) on the academic achievement scores of secondary school students is found to be significant ($F = 126.7940$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This indicates that students with low and high levels of achievement motivation differ significantly in their academic achievement scores.

- The main effect of attitude (low and high) on the academic achievement scores of secondary school students is found to be significant ($F = 340.9875$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This means that students with low and high attitude levels differ significantly in their academic achievement scores.

- The interaction effect of achievement motivation (low and high) and attitude (low and high) on the academic achievement scores of secondary school students is found to be significant ($F = 9.9800$, $p < 0.05$) at the 5% level of significance. Hence, the null hypothesis is rejected. This implies that students with different combinations of achievement motivation and attitude levels differ significantly in their academic achievement scores.

Since the F-value is significant, Tukey's multiple post hoc procedure was applied to determine the pairwise comparisons of the interaction effect of achievement motivation (low and high) and attitude (low and high) on the academic achievement scores of secondary school students, and the results are presented in the following table. The mean scores are also presented in the following figure.

Figure: 4: Comparison of achievement motivation (low and high) and achievement motivation (low and high) of students of secondary schools on academic achievement



Discussion and Conclusion

In this study, the researcher aimed to analyze the three-way interaction effect of gender, location, and type of management on the academic achievement of secondary school students is not significant. This indicates that academic achievement does not vary meaningfully when these demographic variables are considered together, suggesting a uniform pattern of achievement across gender, rural–urban locale, and school management. The absence of significant interaction effects among these variables implies that demographic factors alone may have a limited combined influence on students' academic performance. In contrast, the interaction effects among psychological variables were found to be significant. The significant interaction between self-concept and achievement motivation indicates that students' academic achievement is strongly influenced by the combined presence of positive self-perceptions and high motivation levels. Similarly, the significant interaction effect of self-concept and attitude highlights that students with higher self-concept coupled with favorable attitudes toward learning tend to achieve better academically. Further, the significant interaction between achievement motivation and attitude suggests that motivated students with positive learning attitudes demonstrate superior academic achievement compared to their counterparts.

Overall, the results emphasize that while demographic variables show minimal combined influence on academic achievement, psychological variables self-concept, achievement motivation, and attitude play a decisive and interactive role. The study concludes that fostering positive self-concept, enhancing achievement motivation, and developing favorable attitudes toward learning are essential for improving academic achievement among secondary school students. These findings have important implications for teachers, counselors, and educational planners in designing interventions that focus on students' psychological development alongside academic instruction.

Educational Implications

The findings of the present study highlight the crucial role of psychological variables in determining the academic achievement of secondary school students. Since self-concept, achievement motivation, and attitude were found to exert significant independent and interaction effects on academic achievement, educational practices should focus on strengthening these variables within the school environment.

Teachers should adopt learner-centered instructional strategies that promote positive self-concept by providing constructive feedback, recognizing individual strengths, and encouraging students to set realistic academic goals. Classroom practices that foster achievement motivation such as goal-oriented learning, reinforcement of effort, and opportunities for success can enhance students' engagement and persistence in learning tasks. Similarly, cultivating positive attitudes toward learning through interactive teaching methods, supportive teacher–student relationships, and a conducive classroom climate can further improve academic performance.

School administrators and counselors should design intervention programs, guidance services, and co-curricular activities aimed at enhancing students' self-belief, motivation, and attitudes toward education. Curriculum planners and policymakers should also integrate psychological development components into secondary school curricula and teacher training programs. Overall, the study suggests that improving students' academic achievement requires not only cognitive instruction but also systematic attention to the psychological factors that interactively influence learning outcomes.

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