Academe *Journal of Education & Psychology* *ISSN No: 2249-040X*
Volume-15, Issue-2, Year-2025 (July-December) *Peer Reviewed & Refereed Journal (IF: 6.25)*
PP: 22-35 *Journal Website www.academejournal.in*

ROLE OF ACHIEVEMENT MOTIVATION AND ACADEMIC ACHIEVEMENT IN SHAPING METACOGNITION AMONG SENIOR SECONDARY SCHOOL STUDENTS

Rajvir Singh

Associate Professor, Department of Education, Kurukshetra University, Kurukshetra

Anil Kumar

Research Scholar, Department of Education, Kurukshetra University, Kurukshetra

ABSTRACT

This study explores the relationship between metacognition, achievement motivation, and academic achievement among senior secondary school students. Grounded in educational psychology, the research investigates how student's motivation to achieve and their academic performance relate to their ability to regulate and reflect on their learning processes. Using a quantitative approach, data were collected from a sample of 600 students through standardized instruments measuring metacognitive awareness, achievement motivation, and academic achievement scores. The results revealed a significant positive correlation between metacognition and achievement motivation, as well as between metacognition and academic achievement. Furthermore, students with higher levels of motivation and academic success demonstrated notably stronger metacognitive abilities. ANOVA results also indicated significant main and interaction effects of achievement motivation and academic achievement on metacognition. These findings underscore the importance of fostering both motivational and academic skills to enhance metacognitive development in adolescents. The study has implications for designing holistic educational interventions that support reflective thinking and self-regulated learning.

Keywords: metacognition, achievement motivation, academic achievement, self-regulated learning, secondary school education, holistic education.

1. INTRODUCTION

In today's highly competitive and fast-evolving educational environment, students are not only required to memorize information but also to apply critical thinking, solve problems independently, and adapt to new learning situations. These challenges demand more than just academic knowledge; they require the ability to understand, control, and direct one's own learning**,** a skill known as metacognition (Flavell, 1979 and Panadero, 2020). Metacognition refers to "thinking about thinking" and includes two main components: Metacognition can be understood in two parts: metacognitive knowledge**,** which refers to being aware of the strategies one uses for learning, and metacognitive regulation, which involves the ability to plan, keep track of, and assess one's own thinking processes (Schraw & Dennison, 1994; Efklides, 2008).

Research shows that students who possess strong metacognitive skills are better at setting goals, organizing study strategies, and evaluating their performance (Coutinho, 2007; Zimmerman, 2002). These abilities are linked with improved academic outcomes because metacognitive learners can reflect on their errors and adjust strategies accordingly (Veenman et al., 2006). Recent findings support this idea, showing that metacognitive awareness significantly predicts academic achievement in both school and university contexts (Teng, 2020; Yang, 2023 and Cerezo et al., 2020). As academic tasks become more demanding,

especially at the senior secondary level**,** metacognitive skills become crucial for academic success and lifelong learning.

However, metacognition does not develop in isolation. It is influenced by psychological factors like achievement motivation**,** a student's internal drive to achieve academic goals and excel in tasks (McClelland, 1985). Students with high achievement motivation are more likely to take initiative, remain persistent, and reflect on their progress, which are all essential behaviors in metacognitive regulation (Pintrich, 2000 and Usher & Schunk, 2022). In the Indian context, Studies have found that motivated students are more metacognitively active, showing higher levels of self-awareness and strategic learning (Mega et al., 2014 and Kaur & Saini, 2022).

Despite its importance, metacognition remains underdeveloped among many Indian students**,** particularly at the senior secondary level. This may be due to an education system that emphasizes rote memorization, test-taking, and rigid curriculum structures (Kumar & Ahuja, 2021). There is also a lack of recent Indian empirical studies exploring how metacognitive awareness is shaped by achievement motivation and academic performance in this age group. While global research on metacognition is expanding, findings cannot always be directly applied to the Indian socio-cultural and educational context.

Thus, this study aims to fill this research gap by examining the relationship between metacognition, achievement motivation, and academic achievement among senior secondary school students in India**.**

Present study has significant practical implications. If a strong connection between motivation, metacognition, and academic performance is established, educators can create programs that nurture both motivational and cognitive self-regulation in classrooms. In doing so, schools can move beyond exam-oriented teaching and foster independent, reflective, and lifelong learners**.**

2. LITERATURE REVIEW

2.1 Understanding Metacognition and its Educational Importance

Metacognition, often described as the ability to "think about one's own thinking," is considered an essential element for successful learning and academic achievement. It includes two major dimensions: metacognitive knowledge**,** which is an individual's awareness of their cognitive activities, and metacognitive regulation**,** which refers to the capacity to plan, monitor, and evaluate learning strategies (Flavell, 1979; Schraw & Dennison, 1994). Students who develop these skills are better able to understand how they learn and are more likely to take charge of their learning in a purposeful and effective way.

A broad body of international research confirms the positive role of metacognition in student learning outcomes. For example, Veenman et al. (2006) demonstrated that metacognitive skills are stronger predictors of academic performance than even intelligence. Panadero (2020) emphasized metacognition as central to self-regulated learning frameworks, while Tomas et al. (2020) found that university students with high metacognitive awareness showed better academic performance. More recently, Yang (2023) highlighted how metacognitive awareness predicted success in STEM subjects among high school students.

In many developing education systems, such as India's teaching practices often prioritize rote memorization over reflective and strategic thinking (Kumar & Ahuja, 2021). This limits opportunities for students to develop metacognitive skills in formal settings. As global education increasingly shifts toward critical thinking, collaborative learning, and self-directed

inquiry, integrating metacognitive training into school curricula becomes not only relevant but necessary.

2.2 Metacognition and Achievement Motivation

Achievement motivation can be described as the internal drive that encourages individuals to reach their goals and perform successfully. McClelland (1985) noted that students with stronger achievement motivation are more likely to establish clear goals, apply effective learning strategies, and remain persistent when facing difficulties. These behaviors are closely connected to metacognitive regulation (Pintrich, 2000). Supporting this view, studies by Mega et al. (2014) and Cerezo et al. (2020) highlighted that motivation serves as a bridge between metacognitive skills and academic performance.

Kaur and Saini (2022) reported a strong positive relationship between achievement motivation and metacognitive awareness in adolescents. Usher and Schunk (2022) also emphasized that student's beliefs in their abilities (self-efficacy) and motivation enhances their metacognitive engagement.

2.3 Metacognition and Academic Achievement

A strong link has been consistently observed between metacognition and academic achievement. Learners who possess well-developed metacognitive abilities are more capable of organizing and regulating their learning processes, which in turn enhances their academic performance. Teng (2020) and Teng & Zhang (2021) showed that metacognitive training improved student's academic writing and thinking abilities. Yang (2023) found that metacognitive awareness contributed significantly to performance in math and science.

Kumar and Ahuja (2021) advocated for integrating metacognitive instruction to help students become independent learners. Students with higher academic achievement tend to score significantly better on measures of metacognition, reinforcing global and national findings (Mahasneh & Alwan, 2018 and Deng et al., 2021).

2.4 Interaction effect of Achievement Motivation and Academic Achievement on Metacognition

A number of scholars have highlighted the close and dynamic connection between metacognition, motivation, and academic achievement. Research by Tomas et al. (2020) and Cerezo et al. (2020) suggests that progress in one of these domains often facilitates growth in the others. This perspective is consistent with Bandura's (1997) social cognitive theory and the self-regulated learning model proposed by Schunk and Zimmerman (2012), both of which emphasize that motivation and prior success experiences play an important role in shaping metacognitive behaviors.

Several studies have highlighted the strong connection between achievement motivation, academic performance, and metacognitive skills. Yesilyurt (2020) found that achievement-focused motivation and metacognitive awareness significantly predicted student's study behaviors, together explaining a large portion of the variation in their learning approaches. Similarly, Aurah (2013) showed that students exposed to metacognitive prompts demonstrated better academic outcomes, suggesting that both motivational and cognitive factors contribute to effective learning. In another study, Cetin (2017) reported that self-regulated learning and metacognitive strategies were strong predictors of academic success among students.

In summary, the reviewed literature and present findings strongly support the idea that achievement motivation and academic success are closely linked with metacognitive

development. This relationship has been consistently demonstrated across various global and Indian studies, indicating that holistic educational strategies that address both internal motivation and academic competence are essential for fostering effective learning habits.

2.5 RATIONALE OF THE STUDY

Although existing studies indicate a clear connection between metacognition, achievement motivation, and academic performance, most Indian studies have looked at only one factor at a time or included very few students. There is limited research that examines the combined influence of achievement motivation and academic achievement on metacognitive awareness, especially among senior secondary students preparing for high-stakes assessments. Given the increasing academic pressure and need for self-directed learning at this level, it is essential to explore how these factors interact.

The present study addresses this gap by investigating the relationship among metacognition, achievement motivation, and academic achievement, thereby contributing to both theoretical understanding and practical implications for educators and policy makers.

2.6 OBJECTIVES OF THE STUDY

1. To study the relationship between metacognition and achievement motivation among senior secondary school students.
2. To study the relationship between metacognition and academic achievement motivation among senior secondary school students.
3. To study and compare the metacognition of senior secondary school students having low or high level of achievement motivation.
4. To study and compare the metacognition of senior secondary school students having low or high level of academic achievement.
5. To study the interaction effect of achievement motivation and academic achievement on metacognition.

2.7 HYPOTHESES

1. There is no significant relationship between metacognition and achievement motivation among senior secondary school students.
2. There is no significant relationship between metacognition and academic achievement among senior secondary school students.
3. There is no significant difference in metacognition between senior secondary school students with low and high level of achievement motivation.
4. There is no significant difference in metacognition between senior secondary school students with low and high level of academic achievement.
5. There is no significant interaction effect between achievement motivation (low vs. high) and academic achievement (low vs. high) in predicting metacognition among senior secondary school students.

3. METHODOLOGY

3.1 Research Method

This study adopted a descriptive survey research design to examine the difference and relationship between metacognition, achievement motivation, and academic achievement among senior secondary school students.

3.2 Sample

The study was conducted on a sample of 600 senior secondary school students, who were chosen from different schools of Haryana through the random sampling method. From each of the six Administrative Divisions of Haryana, two districts were selected randomly and by selecting two schools randomly from each of the selected districts, 25 students were selected randomly from each school to draw a true representative sample. The students were from different academic streams across.

3.3 Tools

1. Metacognition was measured using the Metacognition Inventory by Punitha and Govil (2003)

2. Achievement Motivation was assessed using the Achievement Motivation Scale (n-Ache) by Deo and Mohan (2011)

3. Academic Achievement was determined based on student's X_{th} class final examination marks obtained from school records.

3.4 Data Analysis

Data collected for the study were examined with the help of statistical techniques such as the *t*-test, Pearson's correlation, and two-way ANOVA to identify both differences and associations among the variables. All analyses were carried out using SPSS (Version 26).

3.5 Delimitations

This study was delimited to senior secondary school students studying in schools of Haryana. Only students from Classes XI_{th} were included. The variables examined were metacognition, achievement motivation, and academic achievement. The data was collected from 600 students only.

4. ANALYSIS AND INTERPRETATION OF DATA

Hypothesis (H0) 1: *There exists no significant relationship between metacognition and achievement motivation among senior secondary school students.*

Table 4.1: Pearson's Product-Moment Correlation between Metacognition and Achievement Motivation among Senior Secondary School Students (N = 600)

Dependent Variable	Independent Variable	N	Pearson r	p-value
Metacognition	Achievement Motivation	600	.514**	< .01
****. Correlation is significant at the 0.01 level (2-tailed).**				
Df=598				

Showing Relationship between metacognition and achievement motivation

By Scatter Diagram

Figure 4.1

A moderate positive correlation (r = .514, p < .01) with df 598 was found between metacognition and achievement motivation. This indicates that students with higher achievement motivation tend to have better metacognition. Thus, the null hypothesis was rejected.

Hypothesis (H0) 2: *There exists no significant relationship between metacognition and academic achievement among senior secondary school students.*

Table 4.2: **Pearson's Product-Moment Correlation between Metacognition and Academic Achievement among Senior Secondary School Students (N = 600)**

Dependent Variable	Independent Variable	N	Pearson r	p-value
Metacognition	Academic Achievement	600	**.445****	< .01
****. Correlation is significant at the 0.01 level (2-tailed).** **Df=598**				

Showing Relationship between metacognition and academic achievement

By Scatter Diagram

Figure 4.2

The findings showed a meaningful positive relationship, with a correlation coefficient of 0.445 and a *p* value below 0.01. This means that students with higher academic performance also tend to demonstrate stronger metacognitive skills. As a result, the null hypothesis stating no association between metacognition and academic achievement was rejected.

Hypothesis (H0) 3: *There exists no significant difference in metacognition between senior secondary school students with low and high level of achievement motivation.*

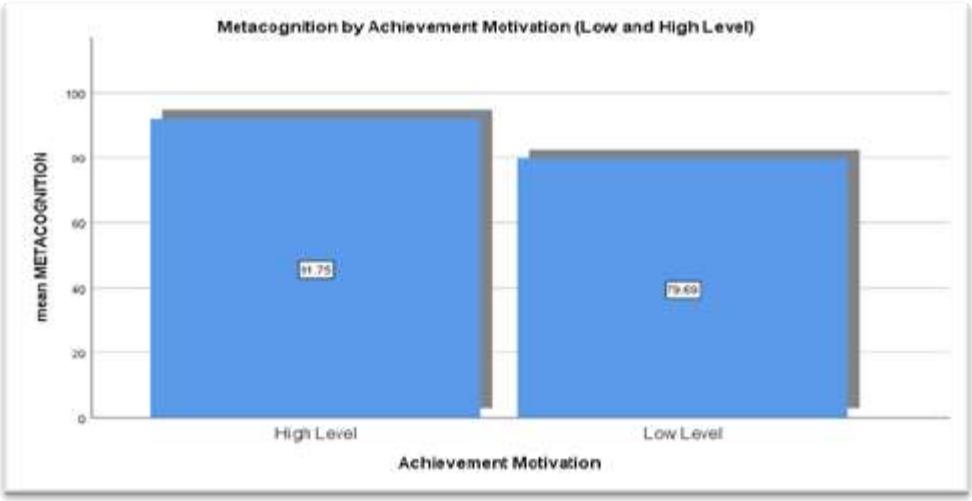
Table 4.3: Independent Samples t-test Showing Difference in Metacognition between senior secondary school Students with Low and High level of Achievement Motivation

Variable	Achievement Motivation Group	N	Mean	SD	SEM	t-value	Df	Level of Significance
Metacognition	High level	203	91.75	8.944	.628	13.38	397	Significant at 0.01 level
	Low level	196	79.69	9.046	.646			

Table value at .01 level = 2.58 & Table value at .05 level= 1.96

Bar Graph Showing Difference of the Mean Score of Metacognition between Students With High and Low Levels of Achievement Motivation

Figure 4.3



The analysis showed a statistically significant difference, with a *t* value of 13.38 and a *p* value below 0.01. Students with higher achievement motivation obtained a mean metacognition score of 91.75 (SD = 8.94), whereas those with lower achievement motivation had a mean score of 79.69 (SD = 9.05). These findings suggest that students who are more motivated to achieve demonstrate considerably stronger metacognition. Consequently, the null hypothesis was rejected.

Hypothesis (H0) 4: *There exists no significant difference in metacognition between senior secondary school students with low and high level of academic achievement.*

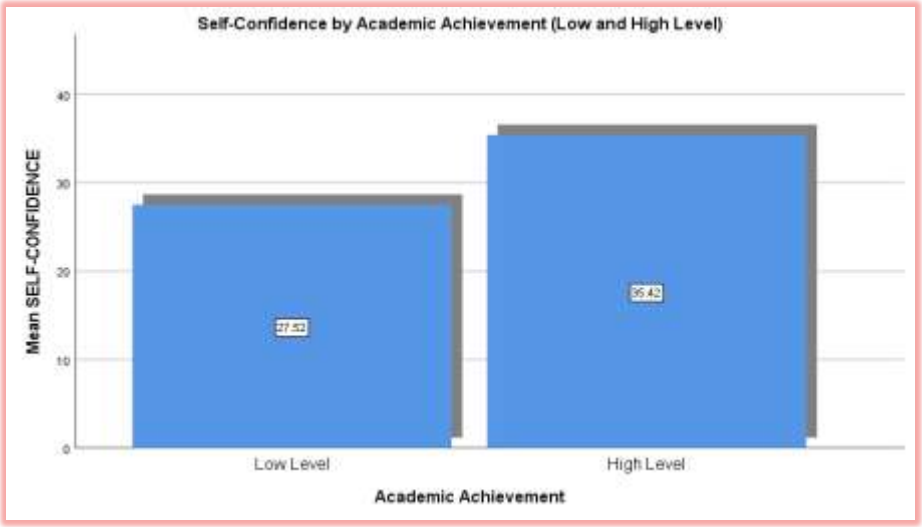
Table 4.4: Independent Samples t-test Showing Difference in Metacognition between Students with Low and High level of Academic Achievement

Variable	Academic Achievement Group	N	Mean	SD	SEM	t-value	df	Level of Significance
Metacognition	Low level	193	27.52	6.937	.499	9.530	381	Significant at 0.01 level
	High level	190	35.42	9.107	.661			

Table value at .01 level = 2.58 & Table value at .05 level= 1.96

Bar Graph Showing Difference of the Mean Score of Metacognition between Students With High and Low Levels of Academic Achievement

Figure 4.4



A statistically significant difference was found in metacognition between students with high and low levels of academic achievement, as indicated by the t-value of 9.530 at 381 degrees of freedom. Students with high academic achievement (mean = 35.42, standard deviation = 9.11) demonstrated significantly better metacognitive skills than those with low academic achievement (mean = 27.52, standard deviation = 6.94). This difference was statistically significant at the 0.01 level, indicating that academic achievement plays a substantial role in shaping student's metacognitive abilities. Hence, the null hypothesis was rejected.

Hypothesis (H0) 5: *There exists no significant interaction effect between achievement motivation (low vs. high) and academic achievement (low vs. high) in predicting metacognition among senior secondary school students.*

Table 4.5: Descriptive Statistics of Achievement Motivation and Academic Achievement scores by metacognition

Achievement Motivation	Academic Achievement	N	Mean	SD
High	High	89	94.43	7.97
High	Low	98	80.23	9.16

High Total	—	187	86.99	11.15
Low	High	101	87.61	9.43
Low	Low	95	80.22	10.37
Low Total	—	196	84.03	10.54
Overall Total	High	190	90.81	9.39
	Low	193	80.23	9.75
	Grand Total	383	85.48	10.93

Table 4.5 shows that two-way ANOVA was conducted to examine how achievement motivation and academic achievement affect metacognition**,** and to see if there's an interaction between them. There were significant main effects achievement motivation influenced metacognition, $F(1, 379) = 12.89$, $p < .001$, and academic achievement also had a strong effect, $F(1, 379) = 128.89$, $p < .001$. This means that higher achievement motivation or higher academic achievement is associated with better metacognition. There was also a significant interaction, $F(1, 379) = 12.79$, $p < .001$, indicating that the impact of achievement motivation on metacognition differs depending on the level of academic achievement for instance, achievement motivation may boost metacognition more strongly in students with higher academic achievement.

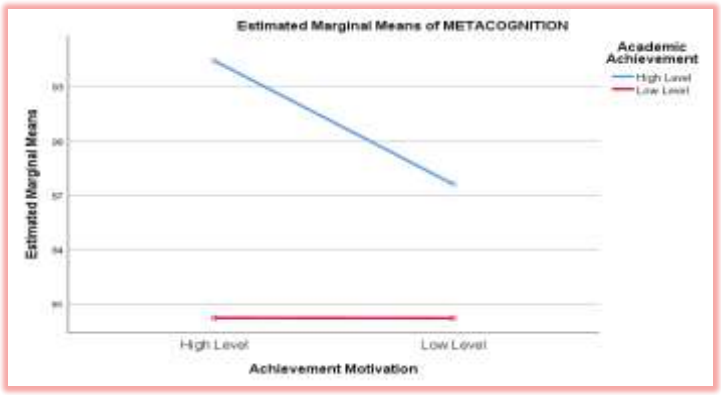
Table 4.6: Two-Way ANOVA Summary for the Interaction Effects of Achievement Motivation and Academic Achievement on Metacognition

Dependent Variable: Metacognition					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F Value**	**P Value**
Main Effect					
Achievement Motivation (A)	1113.46	1	1113.46	12.89	**.000**
Academic Achievement (B)	11128.38	1	11128.38	128.89	**.000**
Interaction Effect					
A× B Interaction	1104.26	1	1104.26	12.79	**.000**
Error	32721.67	379	86.337		
Total	2843831.00	383			

P-value less than .05: The difference between groups is statistically significant.

Interaction Plot (Line Graph) Showing Interaction effect of Achievement Motivation and Academic Achievement on Metacognition (Estimated Marginal Means)

Figure 4.5



The two-way ANOVA results in Table 4.5 show that achievement motivation had a significant effect on students' metacognition, $F(1, 379) = 12.89$, $p < .001$, indicating that students with higher achievement motivation demonstrated stronger metacognitive skills. Academic achievement also had a strong and highly significant effect, $F(1, 379) = 128.89$, $p < .001$, showing that students with higher academic achievement scored better in metacognition. In addition, the interaction between achievement motivation and academic achievement was significant, $F(1, 379) = 12.79$, $p < .001$, meaning that the influence of motivation on metacognition depended on the level of academic achievement. Overall, both motivation and achievement independently contributed to metacognitive skills, and their combination further strengthened this effect. This result suggests that the influence of achievement motivation on metacognition differs depending on the level of academic achievement. Therefore, the null hypothesis was rejected.

5. MAIN FINDINGS

1. A Pearson correlation analysis revealed a moderate positive relationship between metacognition and achievement motivation, indicating that students with higher achievement motivation tend to demonstrate better metacognitive abilities.
2. A significant positive correlation was found between metacognition and academic achievement, indicating that students who perform better academically tend to have stronger metacognition.
3. An independent samples t-test indicated a significant difference in metacognition between students with high and low achievement motivation. Students with higher achievement motivation demonstrated stronger metacognition.
4. An independent samples t-test revealed a significant difference in metacognition between students with high and low academic achievement. Students with higher academic achievement demonstrated significantly better metacognition.
5. Achievement motivation and academic achievement both significantly influence student's metacognition. The interaction between these factors further enhances metacognition indicating that the impact of achievement motivation on metacognition varies depending on academic achievement levels.

5. DISCUSSION

The present study explored the intricate relationships among metacognition, achievement motivation, and academic achievement in senior secondary school students. The findings consistently demonstrated that both achievement motivation and academic achievement are significant contributors to student's metacognitive development, supporting existing literature and offering new insights into the Indian educational context.

Firstly, in present study a moderate positive correlation ($r = .514$, $p < .01$; $df = 598$) was found between metacognition and achievement motivation. This finding aligns with the work of Pintrich & De Groot (1990), who established that motivated learners are more likely to adopt metacognitive strategies such as goal setting, planning, and self-monitoring. Similarly, Zimmerman (2002) and Schunk & DiBenedetto (2020) emphasized that achievement motivation drives learners to reflect on and regulate their learning processes more effectively. The current study reinforces these findings by showing that as student's drive to achieve increases, so does their ability to think about and manage their learning.

Secondly, the study found a significant positive correlation ($r = .445$, $p < .01$) between metacognition and academic achievement. This result echoes the conclusions of Veenman & Spaans (2005), who found that students with higher academic performance often display greater metacognitive awareness. More recent studies, such as those by Deng et al. (2021) and Mahasneh & Alwan (2018), support the view that academic success and metacognitive ability are mutually reinforcing. Students who reflect on their learning tend to achieve more, and higher achievement may further enhance their confidence in using metacognitive strategies.

In addition to correlation analyses, the independent samples t-test revealed a significant difference in metacognition between students with high and low achievement motivation ($t = 13.38$, $p < .01$). Students with high achievement motivation had a higher mean metacognition score ($M = 91.75$, $SD = 8.94$) compared to their low motivation peers ($M = 79.69$, $SD = 9.05$). This supports earlier findings by Efklides (2011) and Dignath & Buttner (2008), suggesting that achievement-oriented students are more reflective and strategic in their learning behavior. It indicates that the quality of motivation directly shapes metacognitive development.

Similarly, the t-test also revealed a statistically significant difference in metacognition between high and low academic achievers ($t = 2.76$, $p < .01$), with high achievers demonstrating superior metacognitive skills. This aligns with previous findings by Thiede et al. (2003) and recent Indian-based studies like Kumar & Ahuja (2021), which showed that academically successful students engage more frequently in self-evaluative and regulatory cognitive behaviors. These results further validate the theory that metacognition is both a product and predictor of academic success.

Most notably, the ANOVA results revealed that both achievement motivation and academic achievement significantly influence student's metacognition. Achievement motivation had a significant effect ($F = 12.89$, $p < .001$), as did academic achievement ($F = 128.89$, $p < .001$). The interaction effect was also statistically significant ($F = 12.79$, $p < .001$), indicating that the combination of high motivation and strong academic performance amplifies metacognitive abilities. These findings align with socio-cognitive theories (Bandura, 1997 and Schunk & Zimmerman, 2012) which argue that personal motivation and contextual success experiences interact to strengthen self-regulation and metacognitive development.

Other Studies like Yesilyurt (2020), Aurah (2013), and Cetin (2017) all show that achievement motivation and academic success are closely linked to metacognitive skills. These studies suggest that when students are motivated and perform well academically, they are more likely to use effective thinking and learning strategies.

In sum, the results strongly suggest that students who are both motivated to achieve and who perform well academically tend to have better-developed metacognitive skills. These outcomes align with global and Indian research and emphasize the need for educational strategies that cultivate both motivational and cognitive capacities to promote lifelong learning and academic excellence.

6. EDUCATIONAL IMPLICATIONS

- Teachers should integrate metacognitive strategies like self-questioning, reflection, and goal-setting into everyday instruction.
- School curricula should emphasize the development of both motivational and cognitive skills.
- Educational counselors can use these findings to support underperforming students through motivation-building and metacognitive training.
- Parents and educators should encourage students to take responsibility for their learning and practice self-monitoring techniques.
- Schools should organize workshops on achievement motivation and metacognitive strategies for students, teachers, and parents to create a supportive learning environment.
- Use of digital tools and learning apps that promote goal-setting, progress tracking, and self-reflection can help students develop metacognitive habits in engaging ways.

7. CONCLUSION

The study concludes that achievement motivation and academic achievement significantly influence metacognition among senior secondary school students. Additionally, their interaction has a compounded effect. Therefore, promoting motivational strategies alongside academic support can significantly enhance student's metacognitive development and learning outcomes. These findings provide a valuable framework for educational interventions aimed at improving both academic performance and cognitive self-regulation.

REFERENCES

1. Aurah, C. M. (2013). The effects of metacognitive prompts on student's science self-efficacy and achievement in Kenya. American Journal of Educational Research, 1(8), 340–349. https://doi.org/10.12691/education-1-8-11
2. Bandura, A. (1997). Self-efficacy: The exercise of control. W.H. Freeman.
3. Cerezo, R., Nunez, J. C., Rosario, P., Valle, A., Rodriguez, S., & Suarez, N. (2020). The mediating role of self-regulated learning and academic motivation in the relationship between metacognition and academic achievement. Educational Psychology, 40(4), 526–544. https://doi.org/10.1080/01443410.2019.1677523
4. Cetin, B. (2017). The effect of self-regulated learning strategies and metacognitive skills on academic achievement. International Journal of Learning and Teaching, 9(1), 60–65. https://files.eric.ed.gov/fulltext/EJ1133860.

5. Deng, F., Zhou, Y., & Chen, X. (2021). The relationship between academic achievement and metacognition: A meta-analysis. Frontiers in Psychology, 12, 687441. https://doi.org/10.3389/fpsyg.2021.687441
6. Dignath, C., & Büttner, G. (2008). Components of fostering self-regulated learning among students. Metacognition and Learning, 3(3), 231–264.
7. Efklides, A. (2011). Interactions of metacognition with motivation and affect in self-regulated learning. Educational Psychologist, 46(1), 6–25.
8. Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. American Psychologist, 34(10), 906–911.
9. Kaur, M., & Saini, M. (2022). Impact of achievement motivation on metacognitive awareness among adolescents. Indian Journal of Psychology and Education, 12(1), 34–42.
10. Kumar, S., & Ahuja, A. (2021). The challenges of Indian higher secondary education: A psychological perspective. Indian Journal of Educational Research, 10(2), 45–58.
11. Mahasneh, A. M., & Alwan, A. F. (2018). The relationship between academic achievement and metacognitive skills among university students. International Journal of Educational Psychology, 7(3), 286–308.
12. McClelland, D. C. (1985). Human motivation. Cambridge University Press.
13. Mega, C., Ronconi, L., & De Beni, R. (2014). What makes a good student? How emotions, self-regulated learning, and motivation contribute to academic achievement. Journal of Educational Psychology, 106(1), 121–131. https://doi.org/10.1037/a0033546
14. Panadero, E. (2020). A review of self-regulated learning: Six models and four directions for research. Frontiers in Psychology, 11, 1586. https://doi.org/10.3389/fpsyg.2020.01586
15. Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), Handbook of self-regulation (pp. 451–502). Academic Press.
16. Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. Journal of Educational Psychology, 82(1), 33–40.
17. Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475.
18. Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social-emotional learning: Theory, research, and practice. In A. L. Reschly, A. P. Phelps, & S. L. Christenson (Eds.), Student engagement (pp. 121–142). Springer.
19. Schunk, D. H., & Zimmerman, B. J. (2012). Self-regulated learning: Theories, measures, and outcomes. Springer.
20. Teng, L. S. (2020). Relations between English writing performance and metacognitive awareness. Reading and Writing, 33, 681–707. https://doi.org/10.1007/s11145-019-09979-7

21. Teng, L. S., & Zhang, L. J. (2021). Empowering learners in the second/foreign language classroom: Can SRL-based writing instruction make a difference? Journal of Second Language Writing, 52, 100802. https://doi.org/10.1016/j.jslw.2021.100802
22. Thiede, K. W., Anderson, M. C., & Therriault, D. (2003). Accuracy of metacognitive monitoring affects learning of texts. Journal of Educational Psychology, 95(1), 66–73.
23. Tomas, L., Doyle, S., & Skamp, K. (2020). Self-regulated learning and academic achievement in higher education. International Journal of Educational Research Open, 1, 100012. https://doi.org/10.1016/j.ijedro.2020.100012
24. Usher, E. L., & Schunk, D. H. (2022). Motivation and self-regulated learning: Theory, research, and applications (2nd ed.). Routledge.
25. Veenman, M. V. J. (2017). Learning to self-monitor and self-regulate. In H. Fives & M. Gill (Eds.), International handbook of research on teachers' beliefs (pp. 243–259). Routledge.
26. Veenman, M. V. J., & Spaans, M. A. (2005). Relation between intellectual and metacognitive skills: Age and task differences. Learning and Individual Differences, 15(2), 159–176.
27. Veenman, M. V. J., Van Hout-Wolters, B., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. Metacognition and Learning, 1(1), 3–14.
28. Yang, Y. (2023). The predictive power of metacognitive awareness on high school student's academic achievement. Journal of Educational Psychology Studies, 15(2), 84–96.
29. Yesilyurt, E. (2020). Metacognitive awareness and achievement-focused motivation as the predictor of the study process. African Educational Research Journal, 8(3), 635–642. https://doi.org/10.30918/AERJ.83.20.114
30. Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. Theory into Practice, 41(2), 64–70.