Journal of Namibian Studies, 34 S2 (2023): 3312-3320 ISSN: 2197-5523 (online)

Examining The Effect Of Meta-Cognition & Self-Confidence On Academic Achievement Of School Students

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Abstract

The current study examined the effect of meta-cognition & self-confidence on academic achievement of sr. sec. school students. Meta-cognition & self-confidence were treated as independent variable whereas academic achievement treated as dependent variable. Method of current study was descriptive survey. 600 sec. school students were chosen by Multi-stage random sampling technique. To gather the data, Meta-cognition Scale by Singh & Bali (2017); Self-confidence scale by Gupta & Lakhani (2018) were used. For Academic Achievement, percentage obtained by the students in class 10th annual examination conducted by CBSE. A significant difference was seen in academic achievement of sr. sec. school students on the basis of meta-cognition. Self-confidence was also significantly effecting the academic achievement of sr. sec. school students. Findings of the study revealed that significant double interaction effect of meta-cognition & self-confidence was observed on academic achievement of sr. sec. school students.

Keywords: Academic Achievement, Meta-cognition, Self-confidence, Sr. Sec. School Students

INTRODUCTION

Humans are valuable natural resources and good assets that should be protected, nourished, and developed with vigor. The importance of education in bringing about positive changes in society and in people cannot be overstated. The purpose of education is to genuinely advance one's culture, civilization, and way of life. The core of "educational growth," which refers to growth in all areas, is academic accomplishment. It refers to the breadth of information that students have acquired across their

many course subjects. Academic success is typically defined as the demonstration of information acquired or abilities developed in a particular subject area. High academic success is expected in today's society at all learning levels. It requires high order of problem–solving & meta-cognition. Meta-cognition makes students aware of their weaknesses and strengths, thereby enabling academic performance. Students who have high meta-cognition can be expected to proceed academically in a planned and organized way.

John Flavell first used the word "meta-cognition" in 1976 to describe the awareness & contemplation of cognitive processes. It is the capacity to save data and retrieve it when required. In the learning process, it also involves self-representation, self-regulation & self-monitoring. It contains methods for resolving the issues. Meta-cognition includes one's own thought process, study techniques, memorization abilities, and learning observation. It is significant not just for students but for everyone in their lifetime. Meta-cognition is crucial for effective learning. The benefits of meta-cognition include being able to direct learning, evaluate performance, understand what led to successes or failures, and pick up new skills. Yemliha (2018) showed that kids with high levels of meta-cognition also had high levels of reflective thinking, which helps them solve problems and make decisions. The study also revealed that academic level rises with an increase in meta-cognition. As a result, high levels of thought process are necessary for high levels of academic accomplishment. In the academic sphere, meta-cognition aids in improved adjustment by providing appropriate suggestions & promoting learning. The confidence, a student has in their ability to do a task effectively is known as self-confidence. It takes self-assurance for a student to take chances & participate in educational activities. Students that are self-assured create goals for themselves and work hard to attain them without considering the result. As stated by Perkins (2018) Academic achievement and success are correlated with self-confidence. Benabou, et.al. (2002) defined “self-confidence is very effective in motivating humans and can lead to changing human’s behavior. The self-confidence should be considered as the quality of a student in which the student feels him/herself assured of successfully performing of different activities in the class and out of the class for the purpose of learning”.

OBJECTIVES

1. "To study the main effect of (a) meta-cognition and (b) self-confidence on academic achievement of sr. sec. school students.
2. To find out the double interaction effect of meta-cognition and self-confidence on academic achievement of sr. sec. school students".

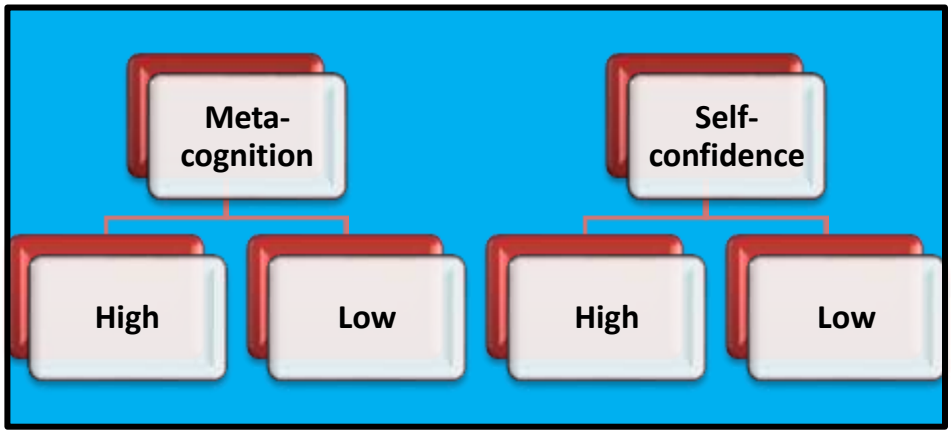
HYPOTHESES

H_{01} "There is no significant main effect of (a) meta-cognition and (b) self-confidence on academic achievement of sr. sec. school students.

H_{02} There is no significant interaction effect of meta-cognition and self-confidence on academic achievement among sr. sec. school students".

METHODOLOGY

"The **Descriptive Survey Method** was used for the current analysis. The 2×2 factorial randomized group design was used to analyze the data. All the independent variables i.e. Meta-cognition (High & Low) and Self-confidence (High & Low) were varied at the two levels as given below".



POPULATION & SAMPLE

For the current investigation, all the Sr. Sec. School Students, studying in 11th class in various schools of Haryana State constituted the target population. "Multi-stage random sampling technique was used to select a sample of 600 sr. sec. school students from Rohtak and Bhiwani Districts".

TOOLS USED

- **Academic Achievement:** Academic Achievement was assessed on the basis of percentage gained by the students in class 10th annual examination conducted by CBSE.
- **Meta-cognition Scale by** Singh and Bali (2017).
- **Self-confidence Scale** by Gupta and Lakhani (2018).

STATISTICAL TECHNIQUES

ANOVA were employed to examine the main & interaction effect. The t-test was used to do more research if the F-value was determined to be significant.

DATA ANALYSIS & INTERPRETATION

"In order to analyse the data, the 2-Way ANOVA with 2×2 factorial design was calculated. It was decided that the hypotheses will be rejected or retained at 0.01 and 0.05 level of significance. In order to confirm the objectives & to check the null hypotheses, the current investigation has been analyzed shown below."

Table-1"Summary of 2 Way ANOVA (2×2 Factorial Design) for Academic Achievement of Sr. Sec. School Students with respect to their Meta-cognition & Self-confidence"

Dependent Variable: Academic Achievement				
Source of Variance	**Type III Sum of Squares**	**df**	**Mean Squares**	**F-ratios**
Corrected Model	39439.948	7	5634.278	23.015
Intercept	1900069.691	1	1900069.691	7761.353
	Main Effect			
Meta-cognition(A)	6538.321	1	6538.321	26.708**
Self-confidence (B)	1695.483	1	1695.483	6.926*
	Interaction Effect			
Interaction of Meta-cognition× Self-confidence (AxB)	3501.305	1	3501.305	14.302**
Error	103310.517	422	317.820	
Total	2585560.000	430	7580.950	
Corrected Total	142750.465	429		

Meta-cognition (A)

"It is clear from the Table-1 that F-ratio 26.708 for main effect of meta-cognition on academic achievement of sr. sec. school students is found significant at 0.01 level. Therefore, the null

hypothesis $H_{01(a)}$ stands rejected. So, it can be concluded that meta-cognition has a significant effect on academic achievement of students. In order to investigate further the 't'-value was computed and has been given in Table-2".

Table-2 "Descriptive statistics related to the Academic achievement of Sr. Sec. school Students on the basis of Meta-cognition"

Dependent Variable	Groups	N	Mean	SD	't' value	Level of Significance
Academic achievement	High Meta-cognition	209	78.08	17.12	3.04	Significant at 0.01
	Low Meta-cognition	221	72.81	18.92		

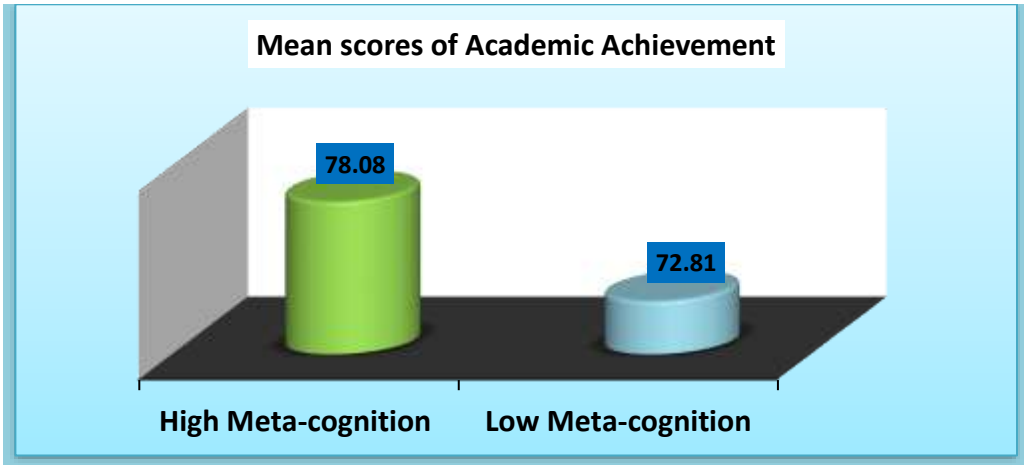


Fig. 1: "Mean Academic achievement Scores of Students on the basis of Meta-cognition"

Table-2 and fig. 1 showed that the t-value (3.04) indicates a significant difference in academic achievement of students with regards to meta-cognition at 0.01 level. Average scores conclude that students having high meta-cognition (78.08±17.12) possess higher achievement comparatively to students having low meta-cognition (72.81±18.92). So, it could be quite clear that students having higher meta-cognition got higher academic achievement than those students who have lower meta-cognition.

Self-confidence (B)

"It is also evident from the Table-1 that F-ratio 6.926 for main effect of self-confidence on academic achievement of sr. sec. school students is found significant at 0.01 level. Therefore, the null hypothesis $H_{01(b)}$ stands rejected. So, it can be concluded that

self-confidence has a significant effect on academic achievement of students. In order to investigate further the 't'-value was computed and has been given in Table-3".

Table-3 "Descriptive statistics related to the Academic achievement of Sr. Sec. School Students on the basis of Self-confidence"

Dependent Variable	Groups	N	Mean	SD	't' value	Level of Significance
Academic achievement	High Self-confidence	210	77.18	18.03	2.61*	Significant at 0.01
	Low Self-confidence	220	72.60	18.44		

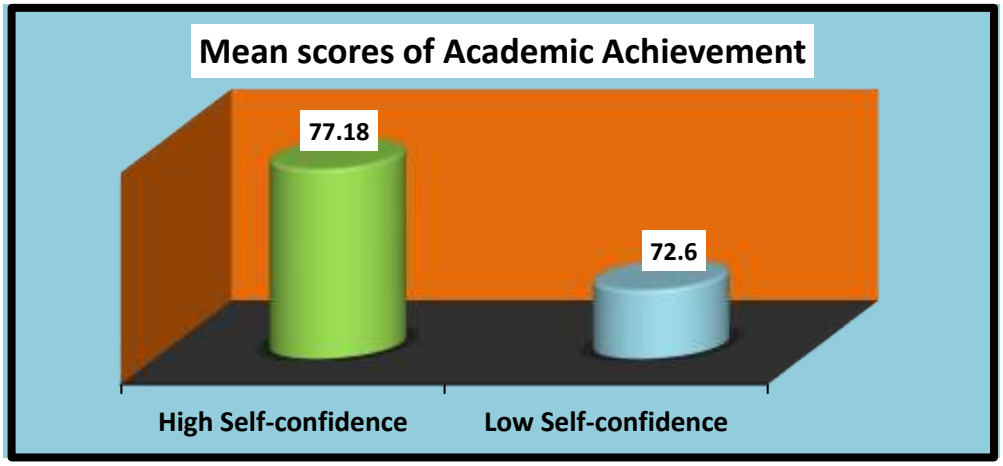


Fig. 2: "Mean Academic achievement Scores of Students on the basis of Self-confidence"

Table-2 and fig. 2 indicated that the t-value (2.61) indicates a significant difference in academic achievement of students with respect to self-confidence at 0.01 level. Average scores depicted that students with more self-confidence (77.18±18.03) got greater academic success compared to those who lack confidence (72.60±18.44). So, it can be concluded that students with higher self-confidence got academic achievement than those students who have lower self-confidence.

Meta-cognition & Self-confidence (AxB)

"As evident from Table-1 that F-ratio (14.302) for the interaction of meta-cognition and self-confidence is found significant at 0.01 level leading to the inference that both variables have a significant

effect on academic achievement of sr. sec. school students. Therefore, H_{02} stands rejected. The t- test was further employed to find out the significance of difference in mean scores of academic achievement for different groups. The results for the same have been presented in the Table-4. The mean scores for academic achievement of different groups for meta-cognition and self-confidence have also been illustrated graphically in Fig.3".

Table – 4 "'t'-values for Mean Scores of Academic achievement of Sr. Sec. School Students for Different Groups of Meta-cognition & Self-confidence (A×B)"

Groups	N		Mean		S.D.		't'-values
A_1B_1 vs A_2B_1	91	119	85.52	69.03	17.93	14.56	7.16**
A_1B_2 vs A_2B_2	118	102	72.33	77.21	14.05	22.26	1.91 (NS)
A_1B_1 vs A_2B_2	91	102	85.52	77.21	17.93	22.26	2.87*
A_1B_2 vs A_2B_1	118	119	72.33	69.03	14.05	14.56	1.78(NS)
A_1B_1 vs A_1B_2	91	118	85.52	72.33	17.93	14.05	5.78**
A_2B_1 vs A_2B_2	119	102	69.03	77.21	14.56	22.26	3.18**

" Significant at 0.01 level * Significant at 0.05 level NS= Not Significant"**

A_1 = High Meta-cognition A_2= Low Meta-cognition B_1 = High Self-confidence B_2 = Low Self-confidence

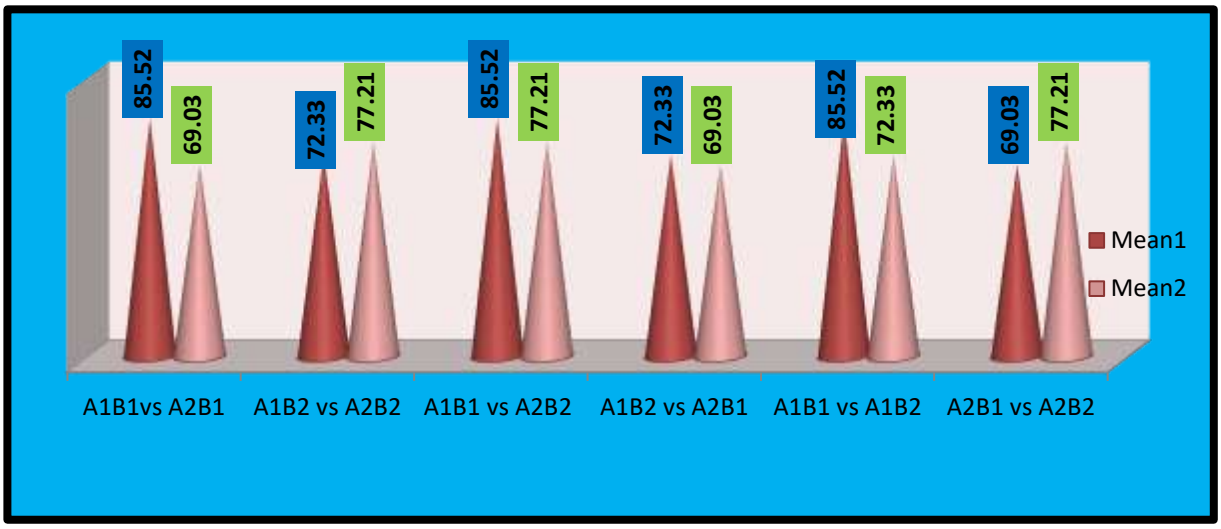


Fig. 3: "Mean Scores for Interaction Effect of Meta-cognition & Self-confidence on Academic Achievement of Students"

In table-4 the t-value (7.16) for pupils with high meta-cognition with high self-confidence (A_1B_1) and students having low meta-cognition with high self-confidence (A_2B_1) is significant at 0.01 level. Average scores concludes that students having high meta-

cognition with high self-confidence (85.52) have higher academic achievement than students having low meta-cognition with high self-confidence (69.03). The t-values (1.91 & 1.78) for the groups (A_1B_2 vs A_2B_2 & A_1B_2 vs A_2B_1) are not found significant at 0.05 level. Table-4 for students having high meta-cognition with high self-confidence (A_1B_1) and students having low meta-cognition with low self-confidence (A_2B_2) is significant at 0.01 level. While comparing average scores, it was seen that students having high meta-cognition with high self-confidence (85.52) possess higher achievement than students having low meta-cognition with low self-confidence (77.21). The t-value (5.78) for students having high meta-cognition with high self-confidence (A_1B_1) and students having high meta-cognition with low self-confidence (A_1B_2) is significant at 0.01 level. Average Scores make it clear that students having high meta-cognition with high self-confidence (85.52) have higher meta-cognition than students having high meta-cognition with low self-confidence (72.33). Lastly, the t-vale (3.18) for students having low meta-cognition with high self-confidence (A_2B_1) and students having low meta-cognition with low self-confidence (A_2B_2) is significant at 0.01 level. While comparing average scores, it can be observed that students having low meta-cognition with high self-confidence (69.03) got less academic achievement than students having low meta-cognition with low self-confidence (77.21).

CONCLUSION

It was found that pupils having high meta-cognition possessed higher achievement than students having low meta-cognition. Similar study conducted by Vinitha (2016) who found a highly significant difference in the total meta-cognitive awareness, regulation of cognition, planning, debugging strategies and reflective learners. Gaining knowledge about meta-cognition and having control over it will ease the process of thinking and storing of learned bundle of knowledge in a systematic and convenient fashion. The study also finds that pupils with higher levels of confidence in themselves achieved more academically than kids with lower levels of confidence. Thus, Guidance counsellors should plan orientation sessions for students that focus on building self-confidence among them. In this way students' academic performance will greatly improve & their self-confidence will grow as a result.

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