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COGNITIVE STYLE AND SELF-CONFIDENCE AMONG SECONDARY SCHOOL STUDENTS: A THEORETICAL & METHODOLOGICAL ANALYSIS

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ABSTRACT

The present study was undertaken to examine the self-confidence of secondary school students in relation to cognitive style. Self-Confidence was treated as a dependent variable whereas cognitive style (Integrated, Intuitive, Split, Systematic and Undifferentiated) along with demographic variable i.e. gender (Male & Female) were treated as independent variables. A descriptive survey method was employed for the present study. A sample of 400 students studying in 10th class was taken using a multi-stage random sampling technique. Cognitive Style Inventory (CSI) developed by Jha (2011)[13] and Self-confidence inventory (PSCI) developed by Pandey (2007)[19] were used to collect the data and Two Way ANOVA with the 5×2 factorial design was used to analyze the data. Levene's Test of Homogeneity of Variance was also applied to test the assumption of homogeneity of variance for ANOVA. The main effect of cognitive style and gender on the self-confidence of secondary school students was found to be significant. On the other side, the double interaction effect of cognitive style and gender on the self-confidence of secondary school students was also found to be significant. The findings of the present study have an implication for the teachers that they should plan their teaching accordingly by adopting effective teaching methods, proper teaching strategies and by guiding students for promoting their academic excellence and self-confidence. For this, seminar and guest lecturers may be organized for the students who are lagging behind the poor selection of cognitive style

KEYWORDS: *Self-Confidence, Gender and Cognitive Style*

INTRODUCTION

Human behavior or activities have generally been considered along three broad dimensions i.e. cognition, affection or conation. Cognition is a mediating process that is the center of the resurgence of interest. Cognition encompasses all the mental activities in which a person engages, including perception, categorization, understanding, inferences drawing, logical reasoning, problem-solving, imagination and memory. These activities facilitate knowledge development among children and are also crucial for survival. In order to adapt to the changing environmental conditions, animals use the techniques such as camouflage, speed and so on. In contrast, human beings relay on their capacity for thinking, which they use not only to adapt to their environments in which they live (Khatoon, 2012) [14]. For providing quality education, the instructor must know the needs of learners; every child comes with some innate qualities. These qualities differentiate him from others. Every student uses different approaches for receiving and processing information which is often termed as style. Styles like abilities are not formed by birth. They are partly developed due to

the environmental condition. In order to make teaching more effective, there should be a match between the characteristics of the learner and the content, method, and media of instruction. Several individual characteristics influence learning and performance in an academic setting.A crucial factor in this regard is the cognitive style of the learners. Cognitive style is a hypothetical construct that has been developed to explain the process of mediation between stimuli and responses. The term cognitive style refers to the characteristics ways in which individuals conceptually organize the environment. Harvey's (1961) [9] view that, "cognitive style refers to the way individual filters and process stimuli so that environment takes on psychological meaning." Messick (1976) [16] also defined as a cognitive style in terms of "organizing and processing information." Cognitive styles have more recently been defined as "individual differences in processing that are integrally linked to a person's cognitive style; they are a person's preferred way of processing; they are partly fixed, relatively stable and possibly innate preferences" (Peterson, Rayner, & Armstrong, 2009a,) [21]. Studies investigating the cognitive style concept concluded that students' cognitive styles are likely to be stable characteristics (Riding & Pearson, 1994[24] & Riding & Sadler-Smith, 1997) [25], which implicates that it can be generalized across different contexts and that it is not likely to change based on a specific learning context. A number of assumptions relating to cognitive style may be identified: (1) It is concerned with the form rather than the content of information processing (2) It is a pervasive dimension that can be assessed using psychometric techniques (3) It is stable over time (4) it is bipolar (5) It may be value differentiated (i.e. styles describe "different" rather than "better" thinking processes) (Sadler-Smith and Badger, 1998) [26]. Cognitive styles are affected by many factors i.e. previous information, socio-economic status, thinking, attitude and intelligence etc. One of the most significant advances in education has come from a considerable amount of research done in the area of cognitive style which recognizes that the students in classrooms have variety of differences in their cognitive style. To teach and learn more effectively, instructors and learners need to better understand and appreciate these individual differences and how they affect the learning process. Understanding individual cognitive style preferences has significant implications for learners: It helps them be aware of themselves, their abilities, how they learn, how they think and why they differ from peers. It also assists them in planning their learning and developing strategies that cope with different learning situations in order to make learning more meaningful and effective. This awareness has positive psychological effects for learners. They can gain self-esteem, motivation and feel more confident about themselves (Sarasin, 2006) [27].

Various studies have been conducted on cognitive style with different variables. Pitta-Pantazi and Christou (2009) [22] indicated that spatial-imagery cognitive style is related to mathematical fluency, flexibility, and originality. Kozhevnikov *et al.* (2002) [15] found that visual-spatial imagery is beneficial for mathematics and that spatial imagery is an important factor of high mathematical achievement. Navarro *et al.* (1999) [18] found that field independence style was related to achievement in arithmetic. Narayan (1995) [17]; Hall (1993) [8]; Testone (1992) [30]; Bragg (1996) [5] & Aseeri (2000) [2] found that mathematics achievement is affected by cognitive style. Ahmadzade and Shojae (2013) [1] analyzed that cognitive style is a significant predictor of academic achievement. Dowlatabadi and Mehraganfar (2014)[6] revealed that field-dependent learners tended to use social strategies more than field-independent learners used cognitive and metacognitive strategies more frequently than field-dependent counterparts. Jantan (2014) [11] showed the positive correlation between students' cognitive styles and their mathematics achievement. Singh (2015)[28] found no significant relationship between academic achievement in mathematics and hemispheric dominance but boys and girls students differ significantly from their level of brain dominance. Rao (2014) [23] analyzed the significant differences in mean scores of mathematics achievement between the field-dependent and field-independent students. Jena (2013) [12] examined the

cognitive style of secondary school students in terms of gender and stream. Singh (2017) [29] examined a significant relationship among learning style, cognitive style and academic achievement of secondary school students. Beri and Kumar (2016) [4] inspected the cognitive style of secondary school students on the basis of adversity quotient. Cognitive Style has a significant effect on mathematics achievement (Idika (2017) [10] & Bassey, Umoren and Udida (2013) [3]. Parashar & Aggarwal (2013) [20] found that cognitive style had a significant predictor of self-confidence.

Review of literature shows that during the last two decades, a few researches have been conducted on cognitive style learning in different settings. It also reveals that researches in the field of self-confidence are also developing fast touching many new areas. Although, a few researches among them focuses on cognitive style and self-confidence of secondary school students, yet these researches do not study the interaction effects of cognitive style and gender on self-confidence. Thus, the present research work is an attempt to investigate the main and interaction effects of cognitive style and gender on the self-confidence of secondary school students.

VARIABLES INVOLVED

Dependent Variable

- Self-Confidence

Independent Variables

- Cognitive Style (Integrated style, Intuitive style, Split style, Systematic style and Undifferentiated style)
- Gender (Male & Female)

OBJECTIVES OF THE STUDY

- To study the effect of (a) cognitive style and (b) gender on the self-confidence of school students.
- To find out the interaction effect of cognitive style and gender on the self-confidence of school students.

HYPOTHESES OF THE STUDY

H_{01}: There exists no significant effect of (a) cognitive style and (b) gender on the self-confidence of school students.

H_{02}: There exists no significant interaction effect of cognitive style and gender on the self-confidence of school students.

DESIGN AND METHODOLOGY

In the present study, a descriptive survey method was used. Multistage random sampling technique was used to select the sample of 400 secondary school students of Haryana state. The sample was further classified on the basis of their cognitive style and gender. As per the norms are given in manual the students who scored above 81 on systematic style and below on 61 on intuitive style were treated as systematic cognitive style. Conversely, the students who scored below 61 on systematic style and above 81 on intuitive style were categorized as intuitive cognitive style. Further, the students who scored above 81 on both the style; i.e. systematic and intuitive were considered as integrated cognitive style. In opposition to integrated cognitive style; the students who scored below 61 on systematic and intuitive were taken as undifferentiated

cognitive style and lastly, the students who scored on medium-high were categorized as split-cognitive style. The strength of Integrated style was (67), Intuitive style was (62), Split style was (87), Systematic style was (62), Undifferentiated style was (122) and also on the basis of Gender i.e. Male was (199) & Female was (201).

TOOLS USED

Self-confidence inventory has been constructed and standardized by Pandey (2007) [19]. The inventory contains 60 statements under major nine areas which pertain to study the self-confidence of the students. There is no time limit. Nine areas of the inventory are (a) Social and Emotional Matureness (b) Intellectual Adequateness (c) satisfaction (d) Optimismness (e) Independentness (f) Self-Assuredness (g) Self-Feelingness (h) Evaluation about himself (I) Decisiveness. Reliability of inventory was examined through two different methods, namely Split-half method and Test-retest method. Reliability coefficients of the inventory were found to be 0.89 and 0.88. The inventory, besides having high face validity, has sufficiently high validity with other similar inventories and allied measures by other authors.

The Cognitive Style Inventory developed by Parveen kumar Jha (2011) [13] was used to measure the cognitive style of school students. It is a Likert type five-point scale. CSI contains 40 statements which pertain to study the five types of cognitive style (Integrated Style, Intuitive Style, Split Style, Systematic Style and Undifferentiated Style) of the students. The reliability coefficients for the inventory were determined by two methods, namely Split-half method and Test-retest method. Reliability coefficients of the inventory were found to be 0.65 and 0.39. The correlation coefficients 0.262 reveal that CSI possesses the reasonable level of concurrent validity.

Statistical Techniques Used

The data were analyzed using descriptive as well as inferential statistics. The Two-Way Analysis of Variance (ANOVA) with the 5×2 factorial design was computed using SPSS version 20 to study the main effects and interaction effects of cognitive style and gender on the self-confidence of secondary school students. Levene's Test of Homogeneity of Variance was used to test the assumption of homogeneity of variance before applying Two-Way ANOVA. Wherever F-value was found significant, then t-test was applied for further investigation.

DATA ANALYSIS AND DISCUSSIONS

The main objective of the present study was to find out the main and interaction effects of cognitive style and gender on the self-confidence of school students. The independent variables i.e. cognitive style and gender were coded as A and B respectively and were varied into two ways as: Integrated Style (A_1), Intuitive Style (A_2), Split Style (A_3), Systematic Style (A_4) and Undifferentiated Style (A_5) and Male (B_1) & Female (B_2). Means and SDs of different sub-samples have been presented in the Table-1 and Fig.1. The summary of ANOVA (5×2) has also been presented in Table - 2, which is analyzed in terms of main effects and interaction effects.

Table 1: Mean's and SDs of Sub-Samples of 5x2 Design for Cognitive Style and Gender of Students with Respect to Self-Confidence

Cognitive Style (A)	Gender (B)	N	Mean	SD
Integrated Style (A_1)	Male (B_1)	32	18.96	16.73
	Female (B_2)	35	32.60	16.39
Intuitive Style (A_2)	Male (B_1)	29	30.13	16.12
	Female (B_2)	33	34.30	18.41
Split Style (A_3)	Male (B_1)	43	32.51	14.01
	Female (B_2)	44	35.77	16.66
Systematic Style (A_4)	Male (B_1)	31	21.93	16.57
	Female (B_2)	31	25.35	19.55
Undifferentiated Style (A_5)	Male (B_1)	64	29.13	14.14
	Female (B_2)	58	30.25	15.79

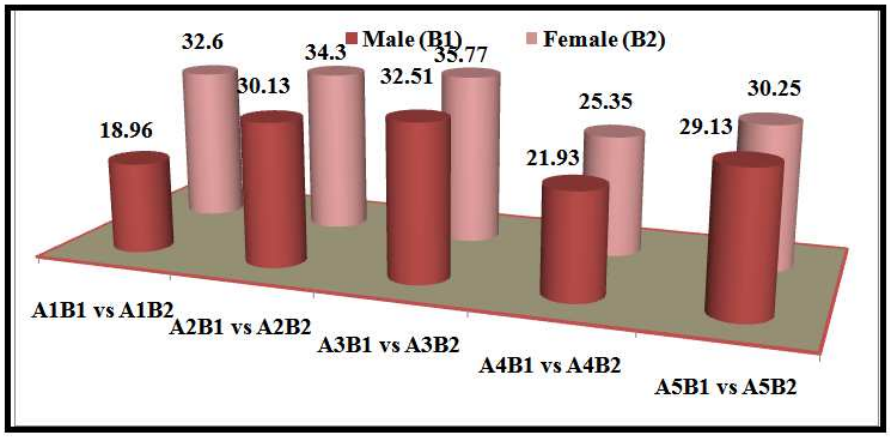

Figure 1: Mean Scores of Sub Samples of 5x2 Design for Self-Confidence of Secondary School Students with respect to Cognitive Style and Gender

Table 2: Summary of Two Way ANOVA (5x 2 Factorial Designs) For Self-Confidence of Secondary School Students with respect to Cognitive Style and Gender

Sources of Variance	df	Sum of Squares (SS)	Mean Sum of Squares (MSS)	F-Ratios
Main Effects				
A (Cognitive Style)	4	5434.682	1358.671	5.16**
B (Gender)	1	1863.930	1863.930	7.07**
Double Interaction Effects				
A×B Interaction	4	2687.570	671.892	2.55*
Between Cells	9	9276.171	263.320	.....
With in cells	390	102694.607	.....	…….
Total	**399**	…….		

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

Main Effects of Cognitive Style and Gender on Self-Confidence of Secondary School Students

Cognitive Style (A)

It is cogent from the Table 2 that F-ratio (5.16) for the main effect of cognitive style on the self-confidence of school students is significant at 0.01 level which indicates that cognitive style has a significant effect on the self-confidence of secondary school students. Therefore, the null hypothesis H_{01} (a), "There exist no significant effect of cognitive style on the self-confidence of secondary school students" **is not retained.** The present result is in tune with the results of Parashar & Aggarwal (2013) [20] who found that cognitive style had a significant effect on the self-confidence.

In order to investigate further, the‘t’-value was computed and has been given in the Table 3

Table 3: ‘T’-Values for the Mean Scores of Self-Confidence of Secondary School Students with Respect to Cognitive Style

Cognitive Style		N		Mean		SD		T-Values
Integrated (A_1)	**Intuitive (A_2)**	67	62	26.08	32.35	17.80	17.36	2.02*
Integrated (A_1)	**Split (A_3)**	67	87	26.08	34.16	17.80	15.41	3.01**
Table 3: Contd.,								
Integrated (A_1)	**Systematic (A_4)**	67	62	26.08	23.64	17.80	18.06	0.77 (NS)
Integrated (A_1)	**Undifferentiated (A_5)**	67	122	26.08	30.25	17.80	14.92	1.71 (NS)
Intuitive (A_2)	**Split (A_3)**	62	87	32.35	34.16	17.36	15.41	0.66 (NS)
Intuitive (A_2)	**Systematic (A_4)**	62	62	32.35	23.64	17.36	18.06	2.73**
Intuitive (A_2)	**Undifferentiated (A_5)**	62	122	32.35	30.25	17.36	14.92	0.85 (NS)
Split (A_3)	**Systematic (A_4)**	87	62	34.16	23.64	15.41	18.06	3.82**
Split (A_3)	**Undifferentiated (A_5)**	87	122	34.16	30.25	15.41	14.92	0.52 (NS)
Systematic (A_4)	**Undifferentiated (A_5)**	62	122	23.64	30.25	18.06	14.92	2.64**

Significant at 0.01 level; * Significant at 0.05 level; NS - Not significant

Note: Lower Mean Score Indicates Higher Self-Confidence Here as Directed in the Manual.

Table 3 reflects that t-value (2.02) for students having integrated style and for students belonging to intuitive style is significant at 0.05 levels. Further, the mean scores for students with integrated style (26.08) were found to be higher self-confidence than the students with intuitive style. It can also be inferred from Table - 3 that students with integrated style also have higher self-confidence than the students having split style. The t-value (0.77) vides Table - 3 indicates that there is no significant difference in self-confidence between students having integrated style and systematic style. From the comparison of mean scores, it can be deduced that students having integrated style reported lower self-confidence than students belonging to systematic style.

An inspection of the Table - 3 further reveals that the mean scores of self-confidence of students having integrated style and students belonging undifferentiated style do not differ significantly but the students having integrated style possess significantly higher self-confidence than the students belonging undifferentiated style. In a similar manner, t-value of (0.66) from Table 3 for students having intuitive style and for students having split style is not reported to be significant at 0.01 level. However, the t-value (2.73) from Table - 3 between the students having intuitive style and for students belonging systematic style is significant at 0.01 levels. From the analysis of mean scores, it can be concluded that students having systematic style were found to possess significantly higher self-confidence than the students belonging intuitive style. As shown in Table 3 it can be easily observed that the mean scores of self-confidence of students having intuitive style and for students having undifferentiated style do not differ significantly. The students having undifferentiated style have slightly higher self-confidence than their counterparts.

An examination of the Table 3 reveals that students having split style and students having systematic style differ significantly with respect to self-confidence. But the students having split style possess significantly lower self-confidence than the students belonging systematic style. The t-value (0.52) (from Table 3) for students belonging split style and students having undifferentiated style are found no significant at 0.01 level. Further, it is shown in the same table that t-value of (2.64) for students having systematic style and for students having undifferentiated style are found to be significant at 0.01 level and the latter group is better than the former one with respect to their self-confidence. The mean scores for the main effect of cognitive style on self-confidence have also been illustrated in Figure 2

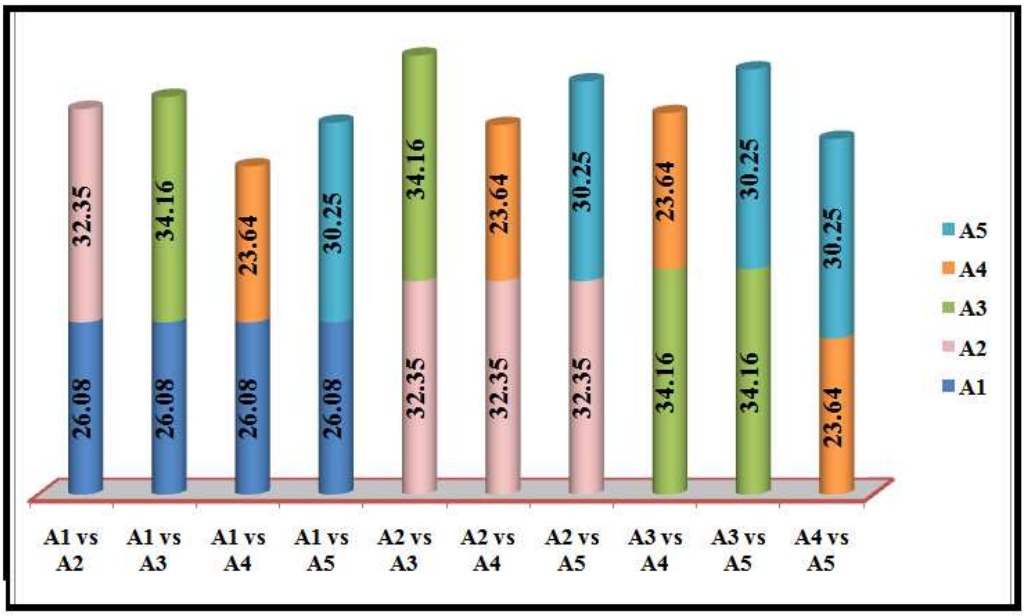

Figure 2: Mean Scores for Main Effects of Cognitive Style on Self-Confidence of Secondary School Students

Gender (B)

As it is palpable from Table 2 that F-ratio of (7.07) for the main effect of gender on the self-confidence of school students is significant at 0.01 levels leading to the inference that gender has a significant main effect on the self-confidence of secondary school students. Therefore, the null hypothesis H_{01} (b), "There exists no significant effect of gender on the self-confidence of secondary school students" **is not retained.** Male students have high self-confidence than female students. This finding is in contrast with the finding of Verma and Kumari (2016) [31] who revealed no significant difference in self-confidence between male and female students.

Double Interaction Effects of Cognitive Style and Gender on Self- Confidence of Secondary School Students

Cognitive Style (A) x Gender (B)

The F-ratio vide Table 2 for the double interaction effect between cognitive style and gender is (2.55) which is significant at 0.05 level leading to the inference that cognitive style and gender interact with each other in relation to the self-confidence of secondary school students. In this case, the null hypothesis $H_{02,}$ "There exists no significant interaction effect of cognitive style and gender on the self-confidence of secondary school students" is **not retained.** It is inferred that there is a significant interaction effect of cognitive style and gender on the self-confidence of secondary school students. It is further subjected to t-test computation to find out the significance difference between the mean scores of self-confidence of different groups for cognitive style and gender. The results for the same have been given in Table 4

Table 4: 'T'-Values for Mean Scores of Self-Confidence of Secondary School Students for Different Groups of Cognitive Style (A) x Gender (B)

Sr. No.	Groups	N		Mean		SD		'T'- Values
1.	A_1B_1vs.A_1B_2	32	35	33.40	24.08	20.28	14.12	2.19*
2.	A_1B_1vs.A_2B_1	32	29	33.40	25.89	20.28	17.26	1.54 (NS)
3.	A_1B_1 vs. A_2B_2	32	33	33.40	30.48	20.28	21.08	0.56 (NS)
4.	A_1B_1 vs. A_3B_1	32	43	33.40	25.55	20.28	11.38	2.12*
5.	A_1B_1 vs. A_3B_2	32	44	33.40	25.18	20.28	16.39	1.95 (NS)
6.	A_1B_1 vs. A_4B_1	32	31	33.40	24.61	20.28	12.06	2.08*
7.	A_1B_1 vs. A_4B_2	32	31	33.40	32.12	20.28	16.47	0.27 (NS)
8.	A_1B_1 vs. A_5B_1	32	64	33.40	29.34	20.28	16.80	1.04 (NS)
9.	A_1B_1 vs. A_5B_2	32	58	33.40	40.86	20.28	13.70	2.07*
10.	A_1B_2 vs. A_2B_1	35	29	24.08	25.89	14.12	17.26	0.46 (NS)
11.	A_1B_2 vs. A_2B_2	35	33	24.08	30.48	14.12	21.08	1.47 (NS)
12.	A_1B_2 vs. A_3B_1	35	43	24.08	25.55	14.12	11.38	0.51 (NS)
13.	A_1B_2 vs. A_3B_2	35	44	24.08	25.18	14.12	16.39	0.31 (NS)
14.	A_1B_2 vs. A_4B_1	35	31	24.08	24.61	14.12	12.06	0.16 (NS)
15.	A_1B_2 vs. A_4B_2	35	31	24.08	32.12	14.12	16.47	2.13*
16.	A_1B_2 vs. A_5B_1	35	64	24.08	29.34	14.12	16.80	1.57 (NS)
17.	A_1B_2 vs. A_5B_2	35	58	24.08	40.86	14.12	13.70	5.65**
18.	A_2B_1 vs. A_2B_2	29	33	25.89	30.48	17.26	21.08	0.93 (NS)
19.	A_2B_1 vs. A_3B_1	29	43	25.89	25.55	17.26	11.38	1.00 (NS)
20.	A_2B_1 vs. A_3B_2	29	44	25.89	25.18	17.26	16.39	0.17 (NS)
21.	A_2B_1 vs. A_4B_1	29	31	25.89	24.61	17.26	12.06	0.33 (NS)
22.	A_2B_1 vs. A_4B_2	29	31	25.89	32.12	17.26	16.47	1.43 (NS)
23.	A_2B_1 vs. A_5B_1	29	64	25.89	29.34	17.26	16.80	0.90 (NS)
24.	A_2B_1 vs. A_5B_2	29	58	25.89	40.86	17.26	13.70	4.39**
25.	A_2B_2 vs. A_3B_1	33	43	30.48	25.55	21.08	11.38	1.30 (NS)
26.	A_2B_2 vs. A_3B_2	33	44	30.48	25.18	21.08	16.39	1.24 (NS)
27.	A_2B_2 vs. A_4B_1	33	31	30.48	24.61	21.08	12.06	1.35 (NS)
28.	A_2B_2 vs. A_4B_2	33	31	30.48	32.12	21.08	16.47	0.34 (NS)
29.	A_2B_2 vs. A_5B_1	33	64	30.48	29.34	21.08	16.80	0.29 (NS)
30.	A_2B_2 vs. A_5B_2	33	58	30.48	40.86	21.08	13.70	2.84**
31.	A_3B_1 vs. A_3B_2	43	44	25.55	25.18	11.38	16.39	0.12 (NS)
32.	A_3B_1 vs. A_4B_1	43	31	25.55	24.61	11.38	12.06	0.34 (NS)
33.	A_3B_1 vs. A_4B_2	43	31	25.55	32.12	11.38	16.47	2.03*
34.	A_3B_1 vs. A_5B_1	43	64	25.55	29.34	11.38	16.80	1.29 (NS)
35.	A_3B_1 vs. A_5B_2	43	58	25.55	40.86	11.38	13.70	5.95**
36.	A_3B_2 vs. A_4B_1	44	31	25.18	24.61	16.39	12.06	0.16 (NS)
37.	A_3B_2 vs. A_4B_2	44	31	25.18	32.12	16.39	16.47	1.80 (NS)
38.	A_3B_2 vs. A_5B_1	44	64	25.18	29.34	16.39	16.80	1.27 (NS)
39.	A_3B_2 vs. A_5B_2	44	58	25.18	40.86	16.39	13.70	5.25**
40.	A_4B_1 vs. A_4B_2	31	31	24.61	32.12	12.06	16.47	2.04*
41.	A_4B_1 vs. A_5B_1	31	64	24.61	29.34	12.06	16.80	1.40 (NS)
42.	A_4B_1 vs. A_5B_2	31	58	24.61	40.86	12.06	13.70	5.54**
43.	A_4B_2 vs. A_5B_1	31	64	32.12	29.34	16.47	16.80	0.76 (NS)
44.	A_4B_2 vs. A_5B_2	31	58	32.12	40.86	16.47	13.70	2.66**
45.	A_5B_1 vs. A_5B_2	64	58	29.34	40.86	16.80	13.70	4.12**

Significant at 0.01 level; * Significant at 0.05 level; NS – Not significant

A_1: Integrated style A_2: Intuitive style A_3: Split style

A_4: Systematic style A_5: Undifferentiated style;

B_1: Male B_2: Female

Note: Lower mean score indicates higher self-confidence here as directed in the Manual.

Table 4 illustrates that t-value (2.19) for male students belonging to integrated style (A_1B_1) and for female students belonging to integrated style (A_1B_2) is significant at 0.05 levels. It may therefore, be inferred from the mean scores that female students having integrated style (A_1B_2) style have significantly higher (24.08) self-confidence than the male students having integrated style. It can also be concluded that male students having integrated style (A_1B_1) and for male students having intuitive style (A_2B_1) do not differ significantly with respect to their self-confidence scores. From a comparison of mean scores, it can be deduced that male students having intuitive style (A_2B_1) have significantly higher self-confidence (25.89) than male students having integrated style (A_1B_1). Similarly, female students having intuitive style (A_2B_2) have significantly higher self-confidence (30.48) than the male students having integrated style (A_1B_1). However, t-value (2.12) vide table 4 for male students having integrated style (A_1B_1) is significant at 0.05 levels. An analysis of the mean scores makes it clear that male students having split style (A_3B_1) (20.28) possess higher self-confidence than that of male students having integrated style (A_1B_1). It can also be inferred that male students having integrated style (A_1B_1) and female students having split style (A_3B_2) do not differ significantly with respect to self-confidence.

A glimpse at table 4 further indicates that t-value (2.08) for male students having integrated style (A_1B_1) and for male students having systematic style (A_4B_1) is significant at 0.05 levels. Further, in the context of mean scores, it can be said that male students belonging systematic style (A_4B_1) possess significantly higher self-confidence (20.28) than the male students have integrated style (A_1B_1). The Table 4 further reveals that 't'-values for the groups namely A_1B_1 vs. A_4B_2, A_1B_1 vs. A_5B_1, A_1B_2 vs. A_2B_1, A_1B_2 vs. A_2B_2, A_1B_2 vs. A_3B_1, A_1B_2 vs. A_3B_2, A_1B_2 vs. A_4B_1 were found to be non-significant while on comparison of mean scores, A_1B_2 possessed high self-confidence than their counterparts. A close perusal of the Table – 4 reveals that t-value (2.07) for male students having integrated style (A_1B_1) and for female students having undifferentiated style (A_5B_2) differ significantly (33.40) high self-confidence than the former counterparts. Likewise, a significant difference was found in self-confidence between female students having a systematic style (A_4B_2) and female students having integrated style (A_1B_2).An examination of the t-value (1.57) vides table 4 shows that the mean scores of self-confidence of female students having integrated style (A_1B_2) and for male students having undifferentiated style (A_5B_1) do not differ significantly. However, Table 4. indicates that mean scores of self-confidence of female students having integrated style (A_1B_2) and for female students having undifferentiated style (A_5B_2) differ significantly and latter have significantly higher self-confidence than the former one. The table 4 Further reveals that t-values for the groups namely A_2B_1 vs. A_2B_2, A_2B_1 vs. A_3B_1, A_2B_2 vs. A_3B_2, A_2B_1 vs. A_4B_1, A_2B_1 vs. A_4B_2, A_2B_1 vs. A_5B_1, A_2B_2 vs. A_3B_1, A_2B_2 vs. A_3B_2, A_2B_2 vs. A_4B_1, A_2B_2 vs. A_4B_2 and A_2B_2 vs. A_5B_1 were found to be non-significant while on comparison of mean scores A_4B_1 possessed high self-confidence than their counterparts.

It is also palpable from the table 4 that t-values 2.84 for female students having intuitive style (A_2B_2) and for female students having undifferentiated style (A_5B_2) is significant at 0.01 level leading to the inference that students of these groups differ significantly with respect to their self-confidence. From the mean scores, it can be concluded that female students having undifferentiated style (A_5B_2) have lower self-confidence than the female students having intuitive style (A_2B_2). It can be easily interpreted from the t-value (0.12) given in Table – 4 that male students having split style (A_3B_1) and for female students having split style (A_3B_2) do not differ significantly with respect to their self-confidence. Likewise, the t-value (0.34) for male students having split style (A_3B_1) and for male students having systematic style (A_4B_1) is not significant which indicates that the groups do not differ significantly.

As it is cogent from the Table 4 that t-value (2.03) for male students having split style (A_3B_1) and for female students having systematic style (A_4B_2) is highly significant at 0.05 levels. It can also be concluded that male students with split style (A_3B_1) have significantly higher self-confidence (25.55) than female students with systematic style (A_4B_2). The t-values 1.29, 0.16, 1.80 and 1.27 vide Table 4 for groups A_3B_1 vs. A_5B_1, A_3B_2 vs. A_4B_1, A_3B_2 vs. A_4B_2 and A_3B_2 vs. A_5B_1 respectively were found to be non-significant at 0.01 levels leading to the inference that these groups do not differ significantly. However, when the results were seen in the context of the mean scores A_4B_1 reported higher self-confidence as compared to their respective counterparts.

However, the t-value of (5.95) from Table – 4 for male students having split style (A_3B_1) and for female students having undifferentiated style (A_5B_2) is significant at 0.01 levels. From the comparison of mean scores, it can be inferred that male students having split style (A_3B_1) have significantly higher self-confidence than female students having undifferentiated style (A_5B_2). In the similar manner, it can also be interpreted from the Table-4 that t-value for (5.25) female students having split style (A_3B_2) and for female students having undifferentiated style (A_5B_2) differ significantly at 0.01 level. It can also be deduced that female students having split style (A_3B_2) significantly higher self-confidence than students having undifferentiated style (A_5B_2). Likewise, the t-value (2.04) for male students having systematic style (A_4B_1) and for female students having systematic style (A_4B_2) is found significant at 0.05 levels only. It also revealed that male students having systematic style (A_4B_1) are better than their counterparts with respect to their self-confidence. In contrast, to this, t-value 1.40 vide table 4 for male secondary school students having systematic style (A_4B_1) and for male secondary school students having undifferentiated style (A_5B_1) do not differ significantly at 0.01 level.

As evident from the Table-4, t-value of (5.54) for male students having systematic style (A_4B_1) and for female students having undifferentiated style (A_5B_2) is significant at 0.01 levels. Whereas when the results were compared in the context of mean scores, the self-confidence for male students having systematic style (A_4B_1) was found to be higher than those with female students having undifferentiated style (A_5B_2). However, the t-value 0.76 vide Table 4 for female students having systematic style (A_4B_2) and for male students having undifferentiated style (A_5B_1) is not significant at 0.01 level which indicates that the two groups do not differ significantly. In the context of mean scores, it was found that male students having undifferentiated style (A_5B_1) possess high self-confidence than female students having systematic style (A_4B_2).

The t-value of (2.66) presented in table 4 for female students having systematic style (A_4B_2) and for female students having undifferentiated style (A_5B_2) is significant at 0.01 levels leading to inference that the two groups differ significantly. It is clear from the mean scores that female students belonging to systematic style (A_4B_2) have significantly higher self-confidence as compared to female students having undifferentiated style (A_5B_2). In the similar manner, the table further explores that the t-value (4.12) for male students having undifferentiated style (A_5B_1) and for female students having undifferentiated style (A_5B_2) is found to be significant at 0.01 level leading to the conclusion that students of these groups differ significantly with respect to their self-confidence. On comparison of mean scores, it can also be inferred that male students having undifferentiated style (A_5B_1) have higher self-confidence than the female students having undifferentiated style (A_5B_2).

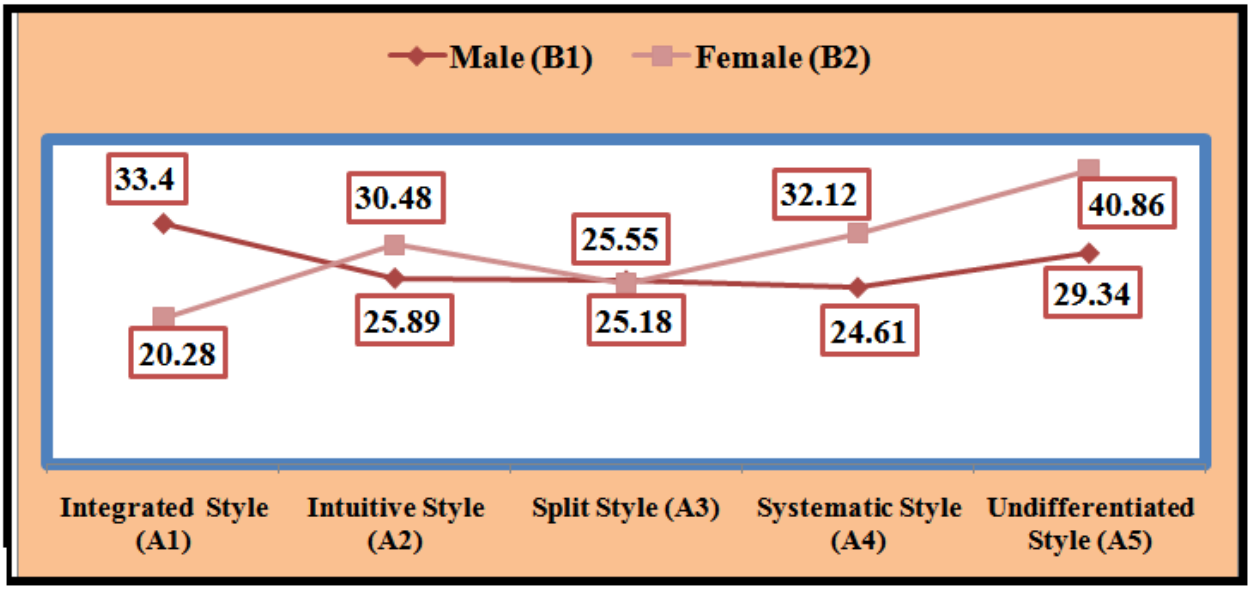

Figure 3: Interaction Effect of Cognitive Style (A) x Gender (B) on Self Confidence of secondary school students

The interaction effect of cognitive style (A) and gender (B) on the self-confidence of school students have also been presented in the form of the line graph in Fig.3. In this figure, 5x2 Design interaction effect is found significant. This can be shown graphically when A1, A2, A3, A4 and A5 are marked on the X axis at any distance; and on Y ordinate a scale is taken for the mean values. As there are ten cells, the mean of each cell is used to plot the points. The mean M_{11}=33.40, M_{21}=25.89, M_{31}=25.55, M_{41}=24.61 and M_{51}=29.34 are marked to plot line B_1. Similarly, the means M_{12}=24.08, M_{22}= 30.48, M_{32}=25.18, M_{42}=32.12 and M_{52}=40.86 are marked for plotting the line B_2. An interaction effect is generally represented by the set of non-parallel lines. From the graph, it is clear that the lines are non-parallel. Thus, the line graph represents a significant interaction effect of the two variables (Cognitive style and gender) on the self-confidence of secondary school students.

EDUCATIONAL IMPLICATIONS

The present study concluded that students with systematic cognitive style possessed significantly better self-confidence than the students who have intuitive cognitive style. The fact is that students with a systematic cognitive style are more aware towards their learning. These students associated with logical and rational behavior and uses well-defined step-by-step approach to thinking, learning and overall plan for problem-solving.

They are also aware of the strategies when, why and how a particular strategy is to be adopted. But this ability lacks in students with intuitive cognitive style. Teaching learning strategies can be said to develop students' cognitive style. A teacher can play a pivotal role in helping children to develop systematic cognitive style among students. Teachers should identify strong style patterns in their classes and utilize relevant approaches to accommodate individual cognitive style preferences. Curriculum designers and classroom teachers should understand cognitive style preferences in order to utilize relevant approaches to enhance meaningful learning.

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