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Research Paper

Cognitive Styles Among College Students in Relation to Some Demographic Variables

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ABSTRACT

The aim of this research is to study the cognitive styles among college students in relation to some demographic variables. For this purpose, a sample of 414 students was selected from different colleges of Punjab using random sampling technique. Cognitive Styles Inventory (CSI) by Jha (2001) was used for collection of data. Mean and t-test were used to analyse the data. The findings of the study revealed no significant difference in the cognitive styles dimensions viz. systematic style and intuitive style between male and female students, rural and urban students and students studying in government and private colleges. It also showed that arts and science students do not differ significantly on systematic cognitive style but there was significant difference in intuitive cognitive style of arts and science students, arts students showing higher level of intuitive cognitive style than that of science students.

Keywords: *Cognitive Styles, Demographic Variables*

The cognitive styles describe how the individual acquires knowledge and how an individual processes information. The cognitive styles are related to mental behaviours, habitually applied by an individual to problem solving, and generally to way the information is obtained, sorted and utilized. Cognitive style is considered as static, relatively inbuilt, and fairly fixed characteristic of an individual. It is manner by which individuals perceive information in the environment and the patterns of thought that they use to develop a knowledge base about the world around them. Cognitive style is an indicator of their problem seeking and problem solving ability.

Woolfolk (1998) suggests that cognitive style is about how a person receives and organizes information from the surrounding world. Cognitive style is the underlying construct for information processing regardless of the situation in which it is applied (Furnham, 1995). Cognitive styles refers to the individuals' consistent and characteristic ways of thinking, perceiving, problem solving, remembering, storing, organizing, processing and transferring information. By using cognitive style an individual can manipulate and organize his environment in certain ways. Cognitive style refers to the way an individual responds to his stimulus.

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Dimensions of Cognitive Style

- **Systematic Style:** The systematic style is associated with logical, rational behaviour that uses a well-defined step-by-step approach to thinking, learning, and overall plan for problem-solving.
- **Intuitive Style:** A person with intuitive style uses an unpredictable ordering of analytical steps when solving a problem, relies on experience patterns, and explores and abandons alternatives quickly.
- **Integrated Style:** Integrated style people are often referred to as problem seekers because they consistently attempt to identify potential problems as well as opportunities in order to find better ways of doing things. A person with an integrated style is able to change styles quickly and easily.
- **Undifferentiated Style:** A person with undifferentiated style appears not to distinguish or differentiate between the two style extremes; i.e.; systematic and intuitive and, therefore, appears not to display a style. In fact, in a problem-solving learning situation, he or she may exhibit receptivity to instructions or guidelines from outside sources. Undifferentiated individuals tend to be withdrawn, passive, and reflective and often look to others for problem-solving strategies.
- **Split Style:** An individual rating in the middle range on both the systematic and the intuitive scale is considered to have a split style involving fairly equal degrees of systematic and intuitive specialization. However, people with a split style do not possess an integrated behavioural response; instead, they exhibit each separate dimension in completely different settings; using only one style at a time based on the nature of their tasks or their work groups. In other words, they consciously respond to problem-solving and learning situations by selecting appropriate style.

REVIEW OF RELATED LITERATURE

Reddy (2013) conducted a study on cognitive styles of primary school teachers. A sample of 150 primary school teachers (75 males and 75 females) was selected by using simple random sampling technique. The findings of the study revealed that there was no significant difference in the cognitive styles of primary school teachers due to variation in gender. There was significant difference in the cognitive styles of primary school teachers due to variation in their age and locality.

Kumar and Kumar (2014) examined the cognitive styles of high school English teachers. Survey method was employed for the study. The sample consisted of 60 English teachers working in high schools in Kuppam and Gudupalli district of Andhra Pradesh. Results of the study showed that the high school English teachers possess three types of cognitive styles, namely, integrated cognitive style, undifferentiated cognitive style, and split cognitive style. It also found that there exists significant difference in cognitive styles of teachers based on their age and religion, but there was no significant difference in cognitive styles of teachers based on their gender and place of living.

Simuth and Schuller (2014) investigated the cognitive style preference differences among university students from various fields of study. The total sample of 366 university students consisted of 137 psychology students (116 women and 21 men), 115 machine engineering students (46 women and 69 men), 115 management students (62 women and 53 men). The results of study revealed that there was significant difference between engineering students and psychology students in the preference of cognitive style. Engineering students and

management students were also found to differ significantly in the preference of cognitive style.

Ellah and Achor (2015) examined the cognitive styles and attitude towards science of senior secondary school science students of high cognitive ability level. The study employed correlational survey research design. The population of the study consisted 1875 students studying biology, chemistry and physics in all the public senior secondary schools in Education Zone C of Benue State for 2014/2015 academic session. The sample comprised 553 high cognitive ability students from thirty-five (35) intact classes. The results revealed that the high cognitive ability level students both field dependent and independent have positive attitude towards science. The result also indicated that 71% of the variation in the students' attitude towards science was as a result of the variation in their cognitive styles. The results also found that there was significant difference between the cognitive styles of male and female science students of high cognitive ability levels.

Mohan and Babu (2015) conducted a study on cognitive styles of student teachers in relation to their gender and location. The study was conducted on 600 student teachers from Mahabub nagar district of Telangana selected by stratified random sampling technique. The result revealed that girl student teachers were better than boy student teachers in systematic style and intuitive style. It was found that student teachers with urban locality were better than student teachers with rural locality in systematic style and intuitive style.

Katoch and Thakur (2016) studied the cognitive styles of secondary school teachers. The sample of study consisted of 200 (100 males and 100 females) secondary school teachers from the government schools of Kullu district taken through simple random sampling technique. Results indicated that there was a significant difference between male and female secondary school teachers regarding systematic and intuitive cognitive style. Whereas there was no significant difference between male and female secondary school teachers regarding integrated, undifferentiated and split cognitive styles.

Statement of the Problem

Cognitive Styles among College Students in Relation to some Demographic Variables.

Objectives of the Study

1. To study the cognitive styles dimensions viz. systematic style and intuitive style among college students.
2. To study the cognitive styles dimensions viz. systematic style and intuitive style of college students across their gender, residential background, stream of study and type of college.

Hypotheses of the Study

- There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between male and female college going students.
- There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between college students residing in rural and urban areas.

- There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between college students studying in science and arts streams.
- There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between the students studying in government and private colleges.

Delimitations of the Study

1. The study was delimited to students pursuing final year of their graduation course in different colleges of Punjab.
2. Only 414 students from Government and Private degree colleges affiliated to Punjabi university, Patiala were taken for the study.

METHOD OF THE STUDY

Descriptive survey method was used to study cognitive styles among college students.

Population and Sample of the Study: The population of the study comprised of the final year students studying in Degree colleges affiliated to Punjabi university, Patiala. The sample of the study consisted of 414 students comprising 167 males and 247 females, 244 students from arts stream and 170 from science stream, 202 from private colleges and 212 from government colleges and 243 students belonged to rural area and 171 to urban area.

Tools used

Cognitive Styles Inventory (CSI) by Jha (2001) was used to collect the data.

Statistical Techniques Used

- Descriptive statistics namely mean, median, mode and Standard Deviation (S.D) were used to describe the variables.
- t-test was employed to compare cognitive styles of students on the basis of gender, residential background, stream of study and type of college.

Analysis and Interpretation

Data collected was analyzed to describe the cognitive styles dimensions viz. systematic style and intuitive style among college students. To compare the scores of cognitive styles dimensions of college students in term of gender, residential background, stream of study, type of colleges, t- test was applied and the result of the same are presented below.

I. Cognitive Styles Among Students: Descriptive Analysis

To study the cognitive styles among college students, descriptive statistics namely mean, median, mode and S.D of systematic style and intuitive style was calculated and is presented in the form of frequency distribution in Table 1 and 2.

Description of Systematic Cognitive Style Scores of College Students

Descriptive statistics of systematic cognitive style scores were worked out and is presented in the form of frequency distribution in Table 1.

Table 1: Frequency Distribution of Systematic Cognitive Style Scores of College Students (N=414)

Class Interval	Frequency	percentage	Cumulative Percentage
91-104	33	7.97	100
77-90	180	43.48	92.0
63-76	**143**	**34.54**	**48.55**
49-62	35	8.45	14.01
35-48	15	3.63	5.56
21-34	8	1.93	1.93
Total	414	100.0	
Mean: 74.29 Median: 77 Mode: 79 Std. Deviation: 13.26 Range: 77			

Table 1 shows that mean value of systematic cognitive style scores of college students came out to be 74.29 and SD value is 13.26. It shows that there are 14% of the students whose score lie below the mean interval, 51.45% of the students possess scores above the mean interval and 34.54% of the students have systematic cognitive style scores which lie in the mean interval. In other words, it can be inferred that 51% of the total sample of college students have above average level of systematic cognitive style, 14% of the students possess below average level of systematic cognitive style and 35% of the total sample of college students possess average level of systematic cognitive style. In general, it can be inferred that most of the college students possess above average level of systematic cognitive style.

Description of Intuitive Cognitive Style Scores of College Students

Descriptive statistics of intuitive cognitive style scores was worked out and is presented in the form of frequency distribution in Table 2.

Table 2: Frequency Distribution of Intuitive Cognitive Style Scores of College Students (N=414)

Class Interval	Frequency	percentage	Cumulative Percentage
91-104	31	7.49	100
77-90	150	36.23	92.51
63-76	**181**	**43.72**	**56.28**
49-62	37	8.94	12.56
35-48	9	2.17	3.62
21-34	6	1.45	1.45
Total	414	100.0	
Mean: 73.88 Median: 75 Mode: 79 Std. Deviation: 12.48 Range: 77			

Table 2 shows that mean value of intuitive cognitive style scores of college students came out to be 73.88 and SD value is 12.48. It shows that there are 12.56% of the students whose score lie below the mean interval, 43.72% of the students possess scores above the mean interval and 43.72% of the students have intuitive cognitive style scores which lie in the mean interval. In other words, it can be inferred that 44% of the total sample of college students have above average level of intuitive cognitive style, 12% of the students possess below average level of intuitive cognitive style and 44% of the total sample of college students possess average level of intuitive cognitive style. In general, it can be inferred that most of the college students possess above average and average level of intuitive cognitive style.

II Cognitive Styles Among College Students: Comparative Analysis

Cognitive styles of students were compared on the basis of their gender, residential background, stream of study and type of college and the same is presented in the following sections:

Cognitive Styles Among College Students Across Gender

The table 3 shows the mean score on systematic and Intuitive cognitive styles of male (N=167) and female (N=247) students along with their SD as well as t-value indicating significance of difference between their means.

Table 3: Cognitive styles Scores of Male and Female Students (N=414)

	Gender	N	Mean	SD	t-value
Systematic cognitive style	Male	167	73.39	14.76	1.088 NS
	Female	247	74.89	12.14	
Intuitive cognitive style	Male	167	73.43	13.86	0.061 NS
	Female	247	73.51	11.46	

NS *Not significant*

It is shown in table 3 that mean score value of male students for systematic cognitive style is 73.39 with SD 14.76 and that of female students, its mean score value is 74.89 with SD 12.14. The t-value signifying the difference between the means is 1.088 which is not significant at 0.05 level of significance meaning thereby, that male and female students do not differ significantly on systematic cognitive style**.** It is shown that there is no significant difference between male and female students on systematic cognitive style.

It is also shown in table 3 that mean score value of male students for intuitive cognitive style is 73.43 with SD 13.86 and that of female students, its mean score value is 73.51 with SD 11.46. The t-value signifying the difference between the means is 0.061 which is not significant at 0.05 level of significance meaning thereby, that male and female students do not differ significantly on intuitive cognitive style**.** It is shown that there is no significant difference between male and female students on intuitive cognitive style.

Thus Hypothesis 1 stating 'There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between male and female college going students' is accepted.

Cognitive Styles Among College Students Across Residential Background

The table 4 shows the mean score on systematic and intuitive cognitive styles of rural (N=243) and urban (N=171) area students along with their SD as well as t-value indicating significance of difference between of their means.

Table 4 shows that mean score value of rural area students on systematic cognitive style is 73.77 with SD 12.43 and that of urban area students, its mean score value is 75.03 with SD 14.36. The t-value signifying the difference between means is 0.921 which is not significant even at 0.05 level of significance meaning thereby, that rural and urban area students do not differ significantly on their systematic cognitive style. So it can be said that there is no significant difference between rural and urban area students on systematic cognitive style.

*Table 4: **Cognitive styles Scores of Rural and Urban Students (N=414)***

	Residential Background	N	Mean	SD	t-value
Systematic cognitive style	Rural	243	73.77	12.43	0.921 NS
	Urban	171	75.03	14.36	
Intuitive cognitive style	Rural	243	74.02	11.86	0.346 NS
	Urban	171	73.68	13.33	

***NS** Not significant*

Table 4 also shows that mean score value of rural area students on intuitive cognitive style is 74.02 with SD 11.86 and that of urban area students, its mean score value is 73.68 with SD 13.33. The t-value signifying the difference between means is 0.346 which is not significant even at 0.05 level of significance meaning thereby, that rural and urban area students do not differ significantly on their intuitive cognitive style. So, it can be said that there is no significant difference between rural and urban area students on intuitive cognitive style.

Thus, the Hypothesis 2 stating 'There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between college students residing in rural and urban areas' is accepted.

Cognitive Styles Among College Students Across Stream of Study

The table 5 shows the mean score on systematic and intuitive cognitive styles of arts (N=244) and science (N=170) streams college students along with their SD as well as t-value indicating significance of difference between their means.

Table 5: Cognitive styles Scores of Arts and Science Students (N=414)

	Stream	N	Mean	SD	t-value
Systematic cognitive style	Arts	244	75.26	13.06	1.784
	Science	170	72.89	13.46	
Intuitive cognitive style	Arts	244	75.30	12.59	2.812**
	Science	170	71.85	12.06	

***p<0.01 Significant at 0.01 level.*

The table 5 shows that mean score value of students studying in arts stream on systematic cognitive style is 75.26 with SD 13.06 and that of science students, mean score value is 72.89 with SD 13.46. The t-value signifying the difference between means is 1.784 which is not significant even at 0.05 level of significance meaning thereby, that arts and science students do not differ significantly on systematic cognitive style. So it can be said that there is no significant difference between arts and science stream students on systematic cognitive style.

It also shows that mean score value of students studying in arts stream on intuitive cognitive style is 75.30 with SD 12.59 and that of science students, mean score value is 71.85 with SD 12.06. The t-value signifying the difference between means is 2.812 which is significant at 0.01 level of significance meaning thereby, that arts and science students differ significantly on intuitive cognitive style. So, it is revealed that students studying in arts stream showing higher mean value possess higher intuitive cognitive style as compared to students studying in science stream.

Thus, the hypothesis 3 stating 'There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between college students studying in science and arts streams' is partially accepted.

Cognitive Styles Among College Students Across Type of College

The table 6 shows the mean score on cognitive styles of government college students (N=212) and private college students (N=202) along with their SD as well as t-value indicating significance of difference between their means.

Table 6: ***Cognitive Styles among College Students Across College Management (N=414)***

	Type of college	N	Mean	SD	t-value
Systematic cognitive style	Govt.	212	73.68	12.89	0.727 NS
	Private	202	74.92	13.64	
Intuitive cognitive style	Govt.	212	73.46	11.75	0.698 NS
	Private	202	74.32	13.21	

NS Not significant

It is shown in table 6 that mean score value of government college students on systematic cognitive style is 73.68 with SD 12.89 and that of private college students, mean score value is 74.92 with SD 13.64. The t-value signifying the difference between means is 0.727 which is not significant even at 0.05 level of significance meaning thereby, that government and private college students do not differ significantly on their level of systematic cognitive style. It can be inferred that there is no significant difference between government and private college students on systematic cognitive style.

It is also shown in table that mean score value of government college students on intuitive cognitive style is 73.46 with SD 11.75 and that of private college students, mean score value is 74.32 with SD 13.21. The t-value signifying the difference between means is 0.698 which is not significant even at 0.05 level of significance meaning thereby, that government and private college students do not differ significantly on their level of intuitive cognitive style. It can be inferred that there is no significant difference between government and private college students on intuitive cognitive style.

Thus Hypothesis 4 stating 'There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between the students studying in government and private colleges' is accepted.

Findings of the study

1. 51% of the total sample of college students have above average level of systematic cognitive style, 14% of the students possess below average level of systematic cognitive style and 35% of the total sample of college students possess average level of systematic cognitive style.
2. 44% of the total sample of college students have above average level of intuitive cognitive style, 12% of the students possess below average level of intuitive cognitive style and 44% of the total sample of college students possess average level of intuitive cognitive style.
3. There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between male and female college going students.

4. There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between college going students residing in rural and urban areas.
5. There is no significant difference in the mean scores of cognitive styles dimension viz. systematic style of college students studying in arts and science streams. But there is significant difference in the mean scores of cognitive styles dimension viz. intuitive style of college students studying in arts and science streams, arts students showing higher level of intuitive cognitive style than that of science students.
6. There is no significant difference in the mean scores of cognitive styles dimensions viz. systematic style and intuitive style between the students studying in government and private colleges

Educational Implications: Cognitive styles are the information processing habits of an individual. It describes a person's typical mode of thinking, perceiving, remembering and problem solving. Cognitive styles may affect the personality development of the students and the way they learn and apply information. It creates a joyful environment for students and develop the learning capabilities of the students.

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Conflict of Interest

The author(s) declared no conflict of interest.

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