

## Impact of Demographic Variables on Cognitive Styles of High School Students

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### ABSTRACT

A study was conducted on 240 high school going children to find out the impact of selected demographic variables on Cognitive styles. The sample consisted of 240 high school boys and girls. Cognitive Styles inventory by Praveen Kumar Jha was used to assess the cognitive styles of the subjects. To test the hypotheses the data was interpreted using 't' test. Results revealed that there is significant influence gender, locality, age of the subjects, type of management and medium of instruction are shown significant effect on their cognitive styles. Girls, subjects resided in urban areas, subjects above 14+ age group, studying in private schools and English medium students are better in their cognitive styles than their counter parts.

**Keywords:** *Cognitive Styles, Gender, Locality, Age and Type of Management*

Education is the foundation of knowledge and it is the process by which and through which the experience of the race, i.e., values, skills, techniques, understanding and attitudes are communicated to the associates of the community. Life includes an endless and unceasing alteration of practices. Education should help the human being to adjust to this changing globe. The aim of education is different from race to race and generation to generation; but the significant point of emphasis has been on the psychological and physical growth of the individual. The individual is subjected to certain practices that are proposed to alter his behavior for proper adjustment to a changing environment. We are living in an age of science; our activities are regulated and ruled by science and technology. Every individual prefers his own ways for organizing all that s/he sees, remembers and think about. Consistent individual differences in the ways of organizing and processing information and experience are termed as cognitive style. In other words, it is not the intellectual task or situation alone that determines the form of perception of thought, but also the stable properties of the personality. It is an inbuilt plan or program to select specific type of data for processing or to perform specific mental operations on the basis of gathered information (Leff et al 1978).

The word cognitive owes its origin to the Latin word 'cognocere' which means 'to apprehend'. Cognition is a generic term used to entitle all developments involved in

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knowing. It is the process by which the sensory input is transformed, reduced, elaborated, stored, recovered and used. The main stages in the process of cognition are sensing, attending, perceiving, comprehending, understanding and remembering. Kagan et al (1970) envisaged cognitive style as stable individual preferences in mode of perceptual organization and conceptualization by external environment; whereas Shuell (1981) pointed that cognitive style refers to the preferred ways that different individuals have for processing and organizing and for responding to environmental stimuli. It is a process through which the individual receives information from the environment, transforms and uses that information to respond to the environment in his own characteristic way (Goldstein et al 1978). They are related to mental behaviours, habitually applied by an individual to problem solving and generally to the way that information is obtained, sorted and utilized. Cognitive styles are the consistent individual differences in which a person comprehend, analyze and interpret the world. It is a term used in cognitive psychology to describe the way individuals think, perceive, organize, solve problems, make decisions and remember information or their preferred approach to use such information to solve problems. It has nothing to do with intelligence but it influences a person's learning a lot. For example, certain individuals respond very quickly in most situations, others are more reflective and slower to respond, even though both types of people may be equally knowledgeable about the task at hand. Cognitive styles are called styles rather than abilities because they represent how people process information and solve problems, not how well they do so. The construct of cognitive style was originally developed by (Allport, 1937) referring to an individual's habitual or typical mode of perceiving, remembering, thinking, and problem solving. Since his (Allport, 1937) time many researchers used the term cognitive styles to denote individual differences in the modes of cognitive functioning in children and adults. It was only in 1950 that the idea came up for serious discussions which stated that students differ in terms of behaviour in their mode of cognition.

Over the past few decade research studies concluded that cognitive style is influenced by gender, age, class, subject stream, birth order, classroom climate, creativity, learning, intelligence, well-being etc., {( Chatterjee and Paul, 1980; Mrosla, 1984; Adeyemi,1989; Pandey, 1992; Copeland,1993; Stabler,1994; Bosacki, 1997; Kusuma ,1998; Engemann, 2000; Dani, 2004; Aremu, 2005; Aruna and Usha, 2006; Manivannan, 2006; Jose et al 2009; Kaur and Oberoi, 2010; Agnihotri and Yadav, 2011; Prakash Chandra Jena, 2014; Jeet Singh Rana, 2016; Bhimappa Rangannavar and Nagappa Shahapur, 2018; Liyadipita, 2021; Okpe et al 2022 )}. The school is the chief continuing and supplementing institution in which children build up good cognitive styles, new ideas and sound mental health. The school is second to the home in its influence on the cognitive development of the child. Teachers play a vital role in shaping the all-round development of the students. Teacher is the only trained professional person who has regular contact with the pupils; the teacher is indeed in a position to affect pupils' cognitive styles either positively or negatively. The experiences at school and school curriculum contribute to the child's feeling of personal worth, social competence in winning acceptance from associates, physical satisfaction necessary to the well-being of the body, freedom to play and to accomplish tasks purposefully and to develop interests, activities and social values. The school substitutes home situations and often meets emotional needs that are neglected in the home. The child enters into secondary society i.e. preschool onwards, the child needs to mingle of people of all ages and especially of his/her own age; this is called as gang age; the child's interests have been changing from his immediate family circle to the challenges of the more novel interests of his school friends. It is in team actions, the early adolescent may find his greatest chances of self-expression and all round development in edification and in socialization.

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Through interpersonal contacts with his age group, the child learns the art of sharing similar interests, styles, application of logics, habits, practices and fascinations etc., Therefore the present study is focused to examine whether there is any influence of the selected demographic variables on cognitive styles of the high school children.

### *Objective*

To examine the influence of gender, locality, age, type of management, stream and nature of stay on Cognitive Styles among high school students.

### *Hypotheses*

- Boys and girls would differ significantly on their Cognitive Styles.
- Rural and Urban subjects would differ significantly on their Cognitive Styles.
- Age of the subjects would differ significantly on their Cognitive Styles.
- Type of management of the subjects would differ significantly on their Cognitive Styles.
- Medium of instruction of the subjects would differ significantly on their Cognitive Styles.
- Nature of stay of the subjects would differ significantly on their Cognitive Styles.

### **POPULATION**

The population of the present study would comprise of 1840 high school students. The schools are selected randomly in Nellore districts of Andhra Pradesh. Purposive random sampling technique was used to collect the data. Subjects were divided into two groups i.e., boys and girls, rural and urban and hailing from government and private schools. Of the 1240 subjects; 598 were boys and 642 were girls. The Cognitive Styles, Creativity inventory were administered to subjects and finally 240 students were selected for the present study {based on the scores obtained by the subjects, the subjects are divided into high and low groups i.e., the subjects who obtained (high scores on systematic and intuitive cognitive styles called as integrated cognitive style) and the subjects who obtained (low scores on systematic and intuitive cognitive styles called as undifferentiated cognitive styles)} are taken into consideration for final study. The sores obtained by the subjects are compared using ‘t’ test.

## RESULTS AND DISCUSSION

*Boys and Girls would differ significantly on their Cognitive Styles.*

**Table-I: Means, Standard Deviation and ‘t’ values of Integrated, Undifferentiated and total Cognitive Styles Scores of Boys and Girls.**

	Category	N	Gender	Mean	SD	t-value	Level of Significance	
Cognitive Styles	Integrated	56	Boys	73.08	18.29	7.11	0.01	
		64	Girls	61.76	15.44			
	Undifferentiated	67	Boys	66.67	16.66	5.47	0.01	
		53	Girls	59.68	14.95			
	Cognitive Styles (Integrated & Undifferentiated)		123	Boys	94.96	23.69	8.76	0.01
			117	Girls	83.35	20.86		

Table I shows the results of high school students on Integrated, undifferentiated and total cognitive styles scores in relation to their gender. The obtained ‘t’ value of  $7.11 < 0.01$  explains that there is significant difference between boys and girls with regard to their

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integrated cognitive style. Boys are better on their cognitive styles ( $M=73.08$ ) than girls ( $M=61.76$ ). The present study reports that there is gender difference in the integrated cognitive style of boys and girls. The difference between the means was significant ( $t=5.47 < 0.01$ ); reveals that there is significant difference between undifferentiated cognitive style of boys ( $M=66.67$ ) and girls ( $M=59.68$ ). The significant difference between boys and girls ( $t=8.76 < 0.01$ ) on their overall cognitive styles scores. The obtained means also showing the significant difference between boys ( $M=94.96$ ) and girls ( $M=83.35$ ) on their overall cognitive styles scores. Hence the framed hypothesis that boys and girls would differ significantly on their cognitive styles is accepted as warranted by the results. The present research finding support the research conclusion of Copeland,1993; Forn Amador-Campos and Roig-Lopez,1993; Srivastava,1995; Sureshan,1997; Zhang and Sternberg, 2002; Siddiqui Salahuddin,2013; Beri and Kumar, 2016; Prerna Sharma, 2017 and Okpe et al 2022 reported that there is significant influence of gender on cognitive styles of high school students.

***Rural and Urban subjects would differ significantly on their Cognitive Styles.***

**Table-II: Means, Standard Deviation and ‘t’ values of Integrated, Undifferentiated and total Cognitive Styles Scores of Rural and Urban students.**

	Category	N	Locality	Mean	SD	t-value	Level of Significance	
Cognitive Styles	Integrated	62	Rural	62.46	15.61	4.86	0.01	
		58	Urban	75.38	18.87			
	Undifferentiated	63	Rural	50.84	12.72	4.02	0.01	
		57	Urban	45.01	11.26			
	Cognitive Styles (Integrated & Undifferentiated)		125	Rural	83.65	18.42	4.96	0.01
			115	Urban	90.35	22.58		

The results on integrated cognitive style of the subjects in relation to locality of residence are shown in table II. The obtained ‘t’ value ( $t=4.86 < 0.01$ ) indicated that subjects resided in rural and urban localities has shown significant effect on their cognitive style. There is accountable difference between the mean scores obtained by the rural and urban students with regard to their integrated cognitive style and the subjects hailing from urban areas obtained higher mean score ( $M=75.38$ ) than the subjects from rural areas ( $M=62.46$ ). The results on undifferentiated cognitive style in relation to locality of the residence of the subjects; it is noted that there is noticeable mean difference between rural ( $M=50.84$ ) and urban ( $M=45.01$ ) subjects. The calculated ‘t’ value ( $4.02 < 0.01$ ) shows that there is significant difference between rural and urban students with regard to their undifferentiated cognitive style, rural students obtained higher mean score than urban students. The results on overall cognitive style of rural and urban students reveals that there is significant effect of locality on cognitive style ( $t=4.96 < 0.01$ ); it is proved that urban students are better on their cognitive style ( $M=90.35$ ) than rural students ( $M=83.65$ ). Hence the hypothesis stated that rural and urban students would differ significantly on their cognitive styles is accepted as warranted by the results. Few previous studies Theraken, 1996; Verma, 2002 and Rangaiah and Singh, 2009 also reported that there is locality difference in cognitive style among rural and urban students.

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*Age of the subjects would differ significantly on their Cognitive Styles.*

**Table-III: Means, Standard Deviation and ‘t’ values of Integrated, Undifferentiated and total Cognitive Style Scores of the subjects based on their Age.**

	Category	N	Age	Mean	SD	t-value	Level of Significance	
Cognitive Styles	Integrated	57	Below14	64.86	16.24	5.21	0.01	
		63	Above 14	73.35	18.34			
	Undifferentiated	60	Below14	51.45	11.46	3.91	0.01	
		60	Above 14	43.91	10.67			
	Cognitive Styles (Integrated & Undifferentiated)		117	Below14	85.57	21.41	6.52	0.01
			123	Above 14	91.60	22.09		

Table III represent the significant difference between the students of below 14 and above 14 years age group. The calculated mean value clearly suggesting that the subject of below 14 age group obtained low mean score (M=64.86) than the subjects of above 14 years age group (M=73.35), the ‘t’ value (t=5.21<0.01) shows that the subjects whose age is above 14 years are better in their integrated cognitive style than the subjects whose age is below 14 years. In case of undifferentiated cognitive style; the results are dissimilar i.e., the below 14 years of age group subjects obtained higher mean sore (M=51.45) than above 14 years age group (M=51.45) and the calculated ‘t’ value 3.91 also showing the significant difference between the two groups. The results on overall cognitive style of the subjects below 14 years and above 14 years are compared using ‘t’ test (t=6.52<0.01). The statistical value indicating the difference between the groups; subjects above 14 years age group obtained better mean score (M= 91.60) than the subjects of below 14 years age. The results are in line with Worthley,1987; Das, 1989; Jose et al 2009; Sukrita Mukherjee and Ishita Chatterjee, 2016 who also found that age of the subjects shows significant impact on cognitive styles. So, the age of the subjects would differ significantly on their cognitive styles is accepted as warranted by the results.

*Type of Management of the Subjects would differ significantly on their Cognitive Styles.*

**Table-IV: Means, Standard Deviation and ‘t’ values of Integrated, Undifferentiated and total Cognitive Styles Scores of Government and Private School Students.**

	Category	N	Type of Management	Mean	SD	t-value	Level of Significance	
Cognitive Styles	Integrated	53	Govt.	64.58	16.15	4.86	0.01	
		67	Private	72.26	18.62			
	Undifferentiated	60	Govt.	62.24	16.11	4.57	0.01	
		60	Private	55.15	13.66			
	Cognitive Styles (Integrated & Undifferentiated)		113	Govt.	83.05	20.72	7.41	0.01
			127	Private	64.58	22.54		

The results in the table IV shows the significant difference between the students studying in government and private schools (t=5.99<0.01) on their integrated cognitive style. Students studying in private schools have obtained higher mean (M=72.26) than the students studying in government schools (M=64.58). The results on undifferentiated cognitive style in relation to type of management are compared. When compare the mean values, the two groups differ significantly (t=4.57<0.01) and the obtained results reveals that there is statistical difference between government (M=62.24) and private school (M=55.15) students on their

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undifferentiated cognitive style. The calculated 't' value of 7.41 is significant at 0.01 level; it reveals that there is significant difference between the students studying in government and private schools on their cognitive style. It is proved that the students studying in private schools are better on their cognitive style (M=94.12) than the students studying in government schools (M=83.05). Hence the hypothesis that government and private high school students would differ significantly on their cognitive style is accepted as warranted by the results.

### ***Medium of Instruction of the subjects would differ significantly on their Cognitive Styles.***

Depending upon the medium of instruction the subjects; the subjects are divided into two group viz., telugu and english medium and their scores on cognitive styles are compared using 't' test and the results are presented in table V.

**Table-V: Means, Standard Deviation and 't' values of Integrated, Undifferentiated and total Cognitive Style Scores of the subjects based on their Medium of Instruction.**

	Category	N	Medium of Instruction	Mean	SD	t-value	Level of Significance	
Cognitive Styles	Integrated	67	English	75.46	18.86	6.61	0.01	
		53	Telugu	63.79	15.96			
	Undifferentiated	61	English	46.32	11.58	3.98	0.01	
		59	Telugu	51.45	12.76			
	Cognitive Styles (Integrated & Undifferentiated)		128	English	90.60	22.65	8.21	0.01
			112	Telugu	79.56	18.01		

Table V shows the results obtained by the Telugu and English medium students on integrated ( $t=6.61 < 0.01$ ), undifferentiated ( $t=3.98 < 0.01$ ) and overall cognitive styles ( $t=8.21 < 0.01$ ). It is clear that there is significant impact of medium of instruction on cognitive styles of the subjects. The means obtained by the English medium subjects on integrated style (M=63.73) and overall cognitive styles (M=90.60) are better than the Telugu medium students (M=63.79 & 79.56). In case of undifferentiated cognitive style the students studying Telugu medium got high mean (M=51.45) than the students studying English medium (M=46.32). Hence the suggested hypothesis stated that the medium of instruction of the subjects would differ significantly on their cognitive styles is accepted.

## **CONCLUSIONS**

- There is significant impact gender on cognitive styles. Boys are better than girls in their cognitive styles.
- Subjects resided in urban areas are better in their cognitive styles than the subjects resided in rural areas.
- Subjects above 14+ age group are better in their cognitive styles than the subjects of below of 14 years age.
- Subjects studying in private schools are better in their cognitive styles than the subjects resided in rural areas.
- English medium students are better in their cognitive styles than the telugu medium students.

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### **Conflict of Interest**

The author(s) declared no conflict of interest.

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