

Cognitive Styles among Adolescent Students of Higher Secondary Schools in South Kashmir

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Abstract: *The aim of the present study was to find the difference in cognitive styles among the higher secondary school students of south kashmir. The study was conducted on a sample of 1000 students and among them only 810 students were considered for final analysis (395 Males/ 415 Females). Personal Styles Inventory developed by Taggart & Taggart (1991) was used to collect the data; t-test was used to test the hypothesis. Results showed that male students have higher score in logical style whereas females have higher scores in intuitive style. Hence our hypotheses were accepted that there was a significant difference in cognitive styles of male and female students of higher secondary school.*

Keywords: Cognitive Styles, hr. Sec. Students

I. INTRODUCTION

1.1 Cognitive Styles

Cognitive style is a concept used in cognitive psychology to describe the way individuals think, perceive and remember information. Cognitive style differs from cognitive ability (or level), the latter being measured by aptitude tests or intelligence tests. There is a controversy over the exact meaning of the term "Cognitive Style" and whether it is a single or multiple dimension of human personality. However it remains a key concept in the field of Education and Management. "If a pupil has a cognitive style that is similar to that of his/her teacher, the chances are improved that the pupil will have more positive learning experience" (Kirton,2003).

Generally it can be said that Cognitive style or "thinking style" is a term used to describe the way individuals think, perceive and remember information, or their preferred approach of using such information to solve problems. The construct of cognitive styles was originally proposed by Allport (1937), referring to an individual's habitual or typical way of perceiving, remembering, thinking, and problem solving. Cognitive style is a person's preferred way of gathering, processing and evaluating information (Hayes and Allinson, 1996). Tennant (1988) defined cognitive styles as "an individual's characteristic and consistent approach to organize and process information". Ausburn and Ausburn (1978) argued that cognitive styles were characterized by three important properties. The first one is the generality and stability across tasks and over time. Therefore, cognitive styles are resistant to training and change. The second property is the relative independence of cognitive styles from traditional measures of general ability. The third property is cognitive styles' relationships with some specific abilities, characteristics, and learning tasks. Cognitive style has been broadly investigated by psychologists.

Different researchers emphasize different aspects of cognitive styles. Cognitive style reflects the individual's preferential use of one or other hemisphere of the brain much in the way that left-or right-handedness does. While processing information, the left and right hemispheres have different cognitive functions. Hemispheric dominance is often referred to as a cognitive style of how one processes information based on differential capabilities of the left and right (cerebral) hemispheres of the brain (Coleman and Zenhausern, 1979), Torrance (1982) defined hemisphericity as the tendency for a person to rely more on one than the other cerebral hemisphere in processing information. R.Ornstein's hemispherical lateralization concept (Carey, 1991) commonly called left-brain/right-brain theory, posits that the left hemisphere of the brain controls logical and analytical operations while the right hemisphere controls holistic, intuitive and pictorial activities. The best evidence of lateralization for one such specific ability is language. Both of the major areas involved in language skills, the broca's area (Region of brain that regulates breathing patterns while speaking) and Wernicke's area (Region of brain involved in comprehension of speech), are in the left hemisphere. Perceptual information from the eyes, ears, and rest of the body is sent to the opposite hemisphere and

motor information sent out to the body also comes from the opposite hemisphere. The left and right hemisphere cognitive functions are given in the table below

Table 1.1: The Left and Right Hemisphere Cognitive Functions

S.NO	Cognitive Functions	Left hemisphere	Right hemisphere
01	Information processing	Tendency to be "reflective" and cautious in thinking task	Tendency to be "impulsive" in thinking tasks; "plays hunches."
02	Learning strengths	Performs best on analytical language tasks	Performs best on tasks calling for intuitive "feel" for language
03	Human Relations	Tendency to experience and relate not as a completely differentiated self but rather as—to a degree— fused with group and with environment	Greater tendency to defer to social group for identity and role definition
04	Emotions	Negative emotions (fearful, mournful feelings)	Positive emotions
05	Neurotransmitters	Higher levels of nor epinephrine	Higher levels of dopamine

Cognitive style is thus claimed to be a single dimension on a scale from extreme left-brain to extreme right-brain types, depending on which associated behavior dominates in the individual, and by how much. Taggart's (1988) Whole-brain human information processing theory' classifies the brain as having six divisions, three per hemisphere, which in a sense is a refined model of the hemispherical lateralization. This framework presents individuals with a more detailed assessment of their rational/intuitive preferences.

How do you prepare for the future?

Rational '*planning*' by developing proposals or Intuitive '*vision*' by generating scenarios

How do you solve problems?

Rational '*analyses*' as a specialist or Intuitive '*insight*' as a generalist

How do you approach work?

Rational '*control*' procedure oriented or Intuitive '*sharing*' people centered.

Evidence from brain research suggests that one gene determines the dominant hemisphere of the developing brain, while another relates to "handedness" (Entwistle, 1988). However, some individuals might use both the left and right hemispheric modes in processing information (Torrance, Taggart & Taggart, 1984).

II. EDUCATIONAL IMPLICATIONS OF COGNITIVE STYLES

The theory of left-right dominance and cognitive styles has profound implications for education. Most educators take the traditional view of students as being a homogenous learning group, with similar interest in aptitudes for the subject. To a great extent the relationship between the cognitive style of the student and the predominant teaching styles in the classrooms has been ignored by educational research. Information about the style of processing information describes how well a person is able to adapt to the cognitive demands of a particular subject.

However, greater learning and understanding may be accomplished if the learning group is thought of as being heterogeneous, that is, highly dissimilar in interest and aptitudes. These variations have implications throughout the process of education.

- Selection of appropriate courses suited to the learning style of student.
- Methods of delivery of material: using techniques which appeal to a range of senses. Some students may prefer to see the big picture first and then break it down; other may prefer to study the details first working up in a logical manner to more involved material.
- Choosing activities that appeal to and strengthen different styles.

- Assessment methods that reward different styles but which also stimulate different modes of thinking.

An enhanced understanding of cognitive styles may enable both teacher and student understands why they and others do better in certain situations. Awareness of students' cognitive styles may help the curriculum planners in tailoring a course. If a pupil has a similar cognitive style to his/her teacher, he/she will have a more positive learning experience. Witkin et al., (1977) proposed that cognitive style is a potential individual variable for the suitability of educational choice.

III. REVIEW OF LITERATURE

The earlier studies on cognitive styles suggested that it affects students' learning significantly since the cognitive styles indicate how learners process and organize information. Later on, researchers have found that cognitive style differences influence perception, problem solving, decision making, communication, interpersonal functioning and creativity in important ways (Hayes and Allinson, 1994; Sadler-Smith, 1998; Kirton, 2003). Cognitive styles have been studied from various points of view and different researchers have developed their own assessment instruments (Hodgkinson & Sadler-Smith, 2003; Coffield et al., 2004). A brief survey of the recent researches is presented in this chapter.

The relationship between cognitive style and the use of communication strategy has been explored by Littlemore (2001). Holistic students were found to use more communication strategies that were based on comparison and analytic students were found to use more strategies that involved focusing on individual features of the target item. The findings also suggested that individual differences in patterns of communication strategy usage can be attributed to cognitive style. It is noted that different styles of cognitive style influence communication in different ways.

Richard Riding, Eugene Smith (2002) conducted a study on cognitive style and learning strategies. In designing learning materials often there is an assumption that all trainees will learn in a similar manner. This approach ignores the important issue of individual differences in cognitive style. This study explored the relationship between learning performance, learning strategies and cognitive style and suggested ways in which one may accommodate individual differences in cognitive style. The importance of knowing the cognitive style of the learner is noted from this study.

A study on information seeking and mediated research was conducted by Amanda Spink et al., (2002). This study explored the link between global/analytic cognitive styles and aspects of researchers' problem-solving and related information-seeking behaviour. Field-independent researchers were more analytic and active than their field-dependent counterpart. Holists engaged more in exploratory and serendipitous behaviour, and were more idiosyncratic in their communication than serialists. The field independent persons were found to be analytic whereas field dependent were found to be intuitive. It is understood that cognitive styles influences problem solving and information seeking behaviour.

Research by RasoolKordNoghabi (2003) analysed the relationship between students' cognitive style and their parents' child-rearing practices. The results indicated that there is a significant relationship between students' cognitive style and their parents' child rearing practices. There was a positive correlation between the cognitive style and authoritative child-rearing method.

It also revealed the significant relationship between cognitive style and high academic achievement. It was observed that cognitive style, child rearing practices and academic achievement have a significant relationship.

A study on resilience to depressive symptoms and effects of enhancing cognitive style and positive life events in students was conducted by Gerald Haeffel, Ivan Vargas (2011). The research showed that enhancing cognitive style interacts with positive life events to reduce depression. It also provided some of the evidence for the protective role of enhancing cognitive style and positive life events among vulnerable individuals. It was observed that enhancing cognitive style will reduce depression.

Cognitive styles and instructional design in learning was studied by Patrick, Jacinta (2010). It was found that students learn best when instructional material match their cognitive style. The results also highlighted the distinction between the spatial and object visual styles. The study also provided evidence that learning outcomes improve when instructional material is matched to the students' cognitive styles.

3.1 Objective

To find the difference in cognitive styles among Adolescent students of higher secondary school on the bases of Gender, i.e, Male/Female.

3.2 Hypothesis

“There is a significant difference in the cognitive styles of Male and Female students of higher secondary schools”

3.3 Sample

For the present study the sample comprises 12th standard Adolescent students in South Kashmir. Out of 129 higher secondary schools of South Kashmir only 10 higher secondary Schools were randomly selected and out of them 3 higher secondary schools each from District Kulgam and Anantnag were selected and 2 higher secondary schools each from District Shopian and Pulwama were selected. Moreover out of these 10 higher secondary schools 100 students from each Higher Secondary school were randomly selected. Therefore a total of 1000 students were randomly selected as a sample for the study. For final analysis only 810 students were considered. These Students from various Hr. Secondary schools were selected by using stratified random sampling.

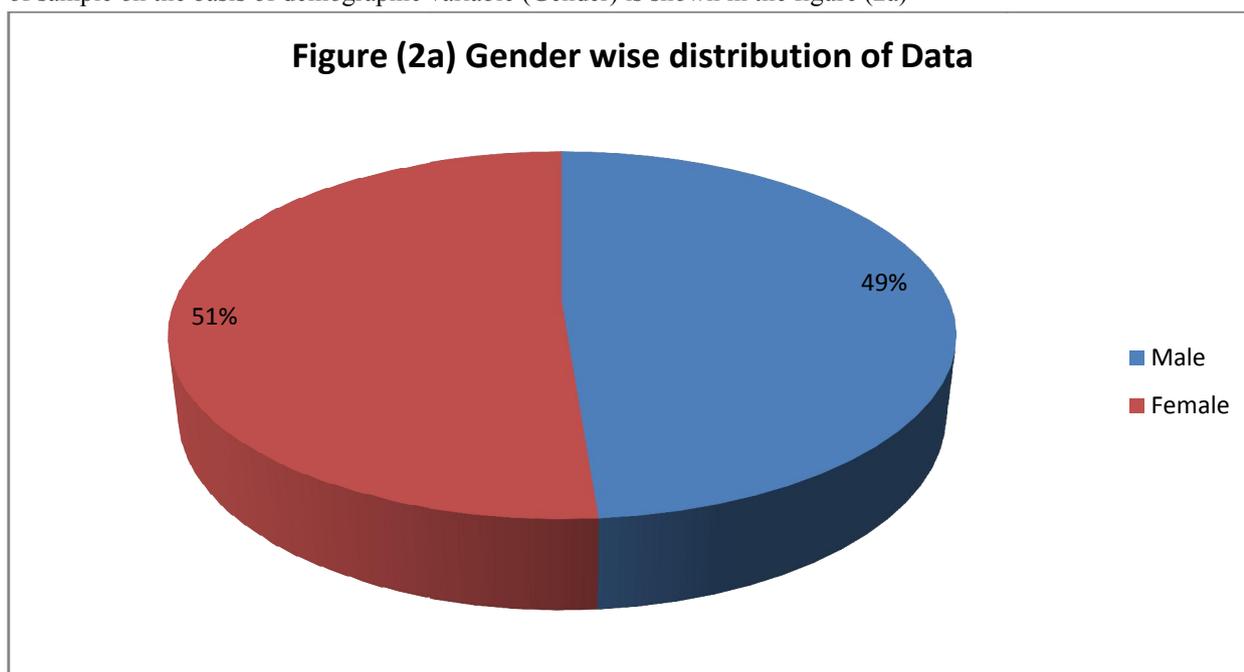
IV. METHOD OF DATA COLLECTION

The investigator visited all the Higher Secondary schools personally and established rapport with the participants. Participants were asked to read the cover sheet for instructions before responding to the questionnaires. The data were collected under the personal supervision of the investigator. Despite careful supervision, it was found that some inventories were only partially marked. From the 1000 data collected, only 810 data were considered for final analysis. The data were classified on the basis of demographic variables. Table 3 shows the number of sample and their percentage with reference to the descriptive variables.

Table 2: Distribution of Sample on the Basis of Demographic Variables

S. NO	Demographic variable	Frequency	Percentage
1	Gender	Male	48.76
		Female	51.23

It is inferred from the above table (2) that the sample consists of 48.76% Males and 51.23% Females. The distribution of sample on the basis of demographic variable (Gender) is shown in the figure (2a)





4.1 Tool

A. Personal Styles Inventory

Personal Styles Inventory was developed by Taggart & Taggart (1991). This inventory explores people’s dominant style of functioning, whether logical or intuitive. The scale also provides valid information about six dimensions of cognitive styles, which are; planning, analysis, control, vision, insight and sharing. The scale consists of 30 statements with six response categories Viz: 1= never, 2= once in a while, 3= sometimes, 4= quite often, 5= frequently but not always, 6= always. The test-retest reliability of this tool is found to be 0.83. The split-half reliability is 0.86. These values reveal that the test is highly reliable.

B. Administration

Subjects were instructed as follows; “This inventory consists of a series of statements, which follow six response categories. Read each item carefully and decide how it describes you in the given six point scale and indicate your choice by circling the corresponding number. There is no right or wrong answers. There is no time limit. Please give your immediate response to each item”.

C. Scoring

The scoring pattern of the Personal Styles Inventory is given below:

Responses	Score
Never	01
Once in a while	02
Sometimes	03
Quite often	04
Frequently but not always	05
Always	06

V. RESULT

For finding out the difference in cognitive styles among the adolescent students of higher secondary school on the bases of Gender Personal Styles Inventory developed by Taggart & Taggart (1991) was used. With the help Mean, S.D and t-test, scores were analysed and it was found that male and female students significantly differ in their cognitive styles.

Table 3: Comparison of the Cognitive Styles of Adolescent Students on the Bases of Gender

COGNITIVE STYLE DIMENSIONS	Male (N ₁ =395)		Female (N ₂ =415)		t-Value	Remarks at level 0.05
	M ₁	SD ₁	M ₂	SD ₂		
Planning	19.95	5.10	17.91	5.14	6*	S
Analysis	21.25	5.10	19.05	5.30	6.47*	S
Control	21.02	4.50	18.09	5.10	8.87*	S
Logical Total	62.22	14.70	55.05	15.55	6.82*	S
Vision	15.05	5.50	18.55	6.25	8.75*	S
Insight	15.02	6.06	18.70	6.60	8.55*	S
Sharing	14.65	6.02	17.12	6.01	6.02*	S
Intuitive Total	44.72	17.58	54.37	18.86	7.59*	S

*_S: Significant and NS: Not Significant

While comparing the mean scores of Male (Mean = 19.95) and Female (Mean = 17.91) on the Cognitive Style dimension of Planning. The Male Adolescent students are ahead to Female adolescents.

While comparing the mean scores of Male (Mean = 21.25) and Female (Mean = 19.05) on the Cognitive Style dimension of Analysis. The Male Adolescent students are ahead to Female adolescents.

While comparing the mean scores of Male (Mean = 21.02) and Female (Mean = 18.09) on the Cognitive Style dimension of Control. The Male Adolescent students are ahead to Female adolescents.

While comparing the mean scores of Male (Mean = 62.22) and Female (Mean = 55.05) on the Cognitive Style dimension of *Logical Total*. The Male Adolescent students are ahead to Female adolescents.

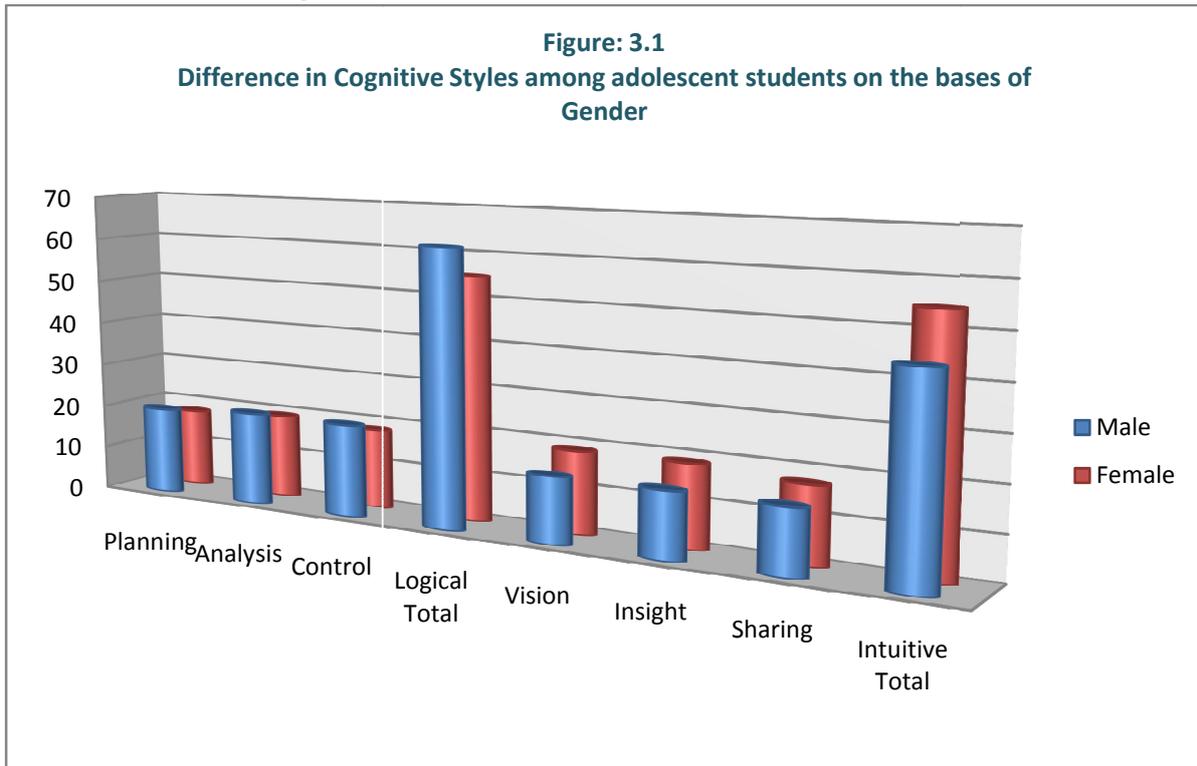
While comparing the mean scores of Male (Mean = 15.05) and Female (Mean = 18.55) on the Cognitive Style dimension of *Vision*. The Female Adolescent students are ahead to Male adolescents.

While comparing the mean scores of Male (Mean = 15.02) and Female (Mean = 18.70) on the Cognitive Style dimension of *Insight*. The Female Adolescent students are ahead to Male adolescents.

While comparing the mean scores of Male (Mean = 14.65) and Female (Mean = 17.12) on the Cognitive Style dimension of *Sharing*. The Female Adolescent students are ahead to Male adolescents.

While comparing the mean scores of Male (Mean = 44.72) and Female (Mean = 54.37) on the Cognitive Style dimension of *Intuitive Total*. The Female Adolescent students are ahead to Male adolescents.

The same has been shown in Figure 3.1



VI. DISCUSSION AND CONCLUSION

The present study highlights the cognitive styles of boys and girl students of hr. sec. school. It is noticed from the table that male students have higher score in logical style whereas females have higher scores in intuitive style. It is observed from the research findings that, females are intuitive and creative, and they judge based on feelings and adapt a global approach in processing information. Males tend to be more rational, logical, and convergent in coming up with ideas, make judgments based on reason and focus on specific detail when processing information. Hence, it is concluded that male students have dominant logical style whereas females have intuitive style.

From Table 3.1, it is found that “t” values are significant for all the cognitive style dimensions. Hence, the hypothesis is accepted. It is concluded that male and female students significantly differ in their cognitive styles.

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