

A Study on the Thinking Styles with respect to Gender among the VIII Standard Students of Mysore

^aPramod Kumar. A, ^bN.L.Srimathi

^aResearch Scholar, Department of studies in Psychology, University of Mysore, India

^bProfessor (Retired), Department of Studies in Psychology, University of Mysore, India

Abstract

In the present study, the researcher finds the differences in the Thinking Styles of students with respect to gender. The study conducted was a descriptive one. The Thinking Styles of the sample selected were measured using SOLAT test by Venkataraman 1999. Survey method was used to collect the data. Sample of 250 students were selected from the various English medium schools of Mysuru using random sampling technique. The findings of the study showed a right hemispheric dominance followed by left hemispheric dominance and whole hemispheric dominance among the students of VIII standard. The Repeated Measure ANOVA indicates a significant mean difference for all the components of Thinking viz Logical/Fractional, Convergent/Divergent, Creativity, Problem Solving, Imagination and Thinking in Total for the Overall students and a Gender-wise comparison between the boys and girls in Right, Left and Whole hemispheres showed significant mean difference for the components of Creativity, Problem Solving and Thinking in Total.

KEYWORDS: Thinking Style, Repeated Measure ANOVA

INTRODUCTION

“The whole of life is lived in the head first” - is one of the invaluable, unknown wisdom quotes of yester years. It is very important how we use our mind to produce thoughts. Our perception, understanding and analyzing things pave way for Thinking. Each and Every Individual thinks differently, our life depends on how we learn and how we think.

The Educationists, Philosophers and Psychologists have accepted that ‘Learning’ and ‘Thinking’ are the key processes in the field of education. It is necessary to make the child learn and the whole education to be self-learning oriented. Teacher teaches in the classroom with the aim to provide maximum learning experiences to students, but in the same class and same atmosphere, two students do not learn in the same way because many factors affect the process of learning. Learning is related to thinking and individual differences intervene, specific styles are used in learning and thinking processes.

It is important to generate knowledge about learning and thinking styles and consider all the students as individuals with their unique traits to cater the needs of students for promotion of learning and thinking. The effective adaptation to the situation, the use of students’ knowledge relative to the whole complex of factors that characterizes a particular context is possible by designing the main dimensions of the educational process, teaching, learning and self-evaluation based on quality standard issues related to

learning and thinking styles (Atkin, 2006). The harmonious relationship between learning, thinking styles and teaching promotes class efficiency. Educational psychologists need to develop insights into the specific thinking and learning.

CONCEPT OF THINKING STYLE

The concept of Thinking Style was introduced by Sternberg in his theory of Mental Self Government. Thinking style is frequently studied in educational concepts since thinking is the same component which shapes the learning environment. The way the individual thinks, leads to thoughts, is one of the main aspects of human being as stated by Cloninger (2008), Thinking style is at the forefront of research. Thinking style profile is used in all skill areas in communication and the needs to understand how other people think and learn are critical to success. Thinking refers to the use of cognitive skills such as posing and answering questions, searching memory, processing information or evaluating potential solutions to the problem. Thinking styles refer to an individual's preferred way of mentally processing information (Sternberg, 1997)

Some of the views about thinking styles are given by various psychologists as follows: **Hermann(1996)** defined that "Thinking style preferences reflect the ways in which individuals approach challenges and problems". **Sternberg (1997)** "Thinking style is the way people govern their own lives in everyday living, just as the government does for the society". **Sternberg (2009)** opines that "Thinking style is a person's preferred way of thinking and using abilities. "According to **Zhang (2014)** "Thinking style is defined as individual preferences for a specific thinking process".

THEORIES OF THINKING STYLE

STERNBERG'S THEORY OF MENTAL SELF- GOVERNMENT

The basic idea of the theory of mental self-government is that the forms of government we have in the world are not coincidental. The theory holds that styles can be understood in terms of constructs from human notion of government. According to this theory, people can be understood in terms of the functions, forms, scopes and leanings of government. The theory of thinking styles applies not only to education, but also to other domains of personal and professional life.

The paragraphs below explain these characteristics of Thinking Styles in the Sternberg's theory of Mental Self Government. Sternberg's theory of mental self-government 1998 is a theory on Thinking Styles that seem to have written definitions of all the three predictions of Cognitive Style, Learning Style and Thinking Style. Sternberg use the metaphor Mental Self Government to portray the way human mind works. Just as there are many ways of governing our society there are many ways of governing or managing our daily activities. These different ways of governing or managing our activities are what Sternberg (1997) called Thinking Styles. This theory postulates 13 Thinking Styles that fall along five dimensions these are function forms.

Thinking Styles in the Sternberg's mental self-government theory are classified into the following dimensions:

I. Functions:

1. **Legislative:** prefers to work on tasks that require creative strategies; one prefers to choose one's own activities.
2. **Executive:** prefers to work on tasks with clear instructions and structures; and implement tasks with established guidelines.
3. **Judicial:** prefers to work on tasks that allow for one's evaluation; and to evaluate and judge the performance of other people.

II. Forms:

1. **Hierarchical:** prefers to distribute attention for several tasks that are prioritized according to one's valuing of the tasks.
2. **Monarchic:** prefers to work on tasks that allow complete focus on one thing at a time.
3. **Oligarchic:** prefers to work on multiple tasks in the service of multiple objectives, without setting priorities.
4. **Anarchic:** prefers to work tasks that would allow flexibility as to what, where, when and how one works.

III. Levels:

1. **Local:** prefers to work on tasks that require working with concrete details.
2. **Global:** prefers to pay more attention to the overall picture of an issue and to abstract ideas.

IV. Scope:

1. **Internal:** prefers to work on tasks that allow one to work as an independent unit.
2. **External:** prefers to work on tasks that allow for collaborative ventures with other people.

V. Leaning:

1. **Liberal:** prefers to work on tasks that allow one to adhere to the existing rules and procedures in performing tasks.
2. **Conservative:** prefers to work on tasks that allow one to adhere to the existing rules and procedures in performing tasks.

CONCEPT OF HEMISPHERICITY

Brain Hemisphericity is the tendency of an individual to process information through the left hemisphere or the right hemisphere or in combination (Springer & Deutsch, 1993). The left hemisphere appears to be specialized for language, whereas the right hemisphere is specialized for visual-spatial and appositional thought. Whole-brain dominants are those who process information through both hemispheres. Those individuals have flexible use of both hemispheres (McCarthy, 1996).

REVIEW OF LITERATURE

Sharma and Sharma (2011) highlighted the relationship of thinking styles with academic achievement of students. The data were collected from 333 students at random studying in Government and private schools of Himachal Pradesh. The data was analyzed by using t-test. A significant relationship between judicial thinking style and academic achievement was observed. Moreover, females were found to be inclined towards the use of executive and judicial thinking styles than their male counterpart. **Holmes et al (2013)** explored relationships of children's thinking styles, play preferences and school performance. For the study, 74 middle school children of mostly Filipino and Hawaiian heritage were taken as sample. Using the group embedded figure test, written responses to three questionnaires, the authors found significant relationship between children's thinking styles and academic performance. **Albaili (2007)** examined the differences in thinking styles among low, average and high achieving college students. A total of 228 undergraduate students at United Arab Emirates University participated in the present investigation. Thinking styles inventory was used to assess students thinking styles. Results indicated that low achieving students scored significantly lower on executive, hierarchical, anarchic, local, conservative and internal styles and significantly higher on legislative, oligarchic and liberal styles. It was found that the use of hierarchical thinking styles significantly contributes to better achievement in social sciences and humanities and that use of judicial styles uniquely contributed to better achievement in the natural sciences. The use of the monarchic thinking style significantly predicted student's achievement in design and technology.

OBJECTIVES

The Objectives framed for the present study are as follows.

1. To find the Styles of Thinking of class VIII students.
2. To find the hemispheric dominance in Thinking among the students of VIII standard.
3. To study the difference in the Styles of Thinking with respect to gender.

HYPOTHESIS

1. There is no significant difference in the Styles of Thinking with respect to Gender.

DESIGN OF THE STUDY

The present study is Descriptive Survey in nature. It is undertaken to find out the effect of styles of Thinking of the students of class VIII of Mysuru city. The data was collected using the survey method by administering selected tools and was analyzed using appropriate statistical techniques and SPSS software version – 12.0. The sample consists of 250 students of VIII standard, selected across the various English medium schools of Mysore City randomly.

RESEARCH TOOLS

D. Venakataraman’s Style of Learning and Thinking (1994) was used to collect the data. This tool is a modified version of the (SOLAT) tool originally developed by Torrance (1988) to suit the Indian context.

Analysis and Interpretation

Hemispheric Dominance for Thinking among the VIII Students

Table 1 : Details of the frequency and percentage of the hemisphericity preference for Thinking between boys and girls.

Thinking

Gender	Right		Left		Whole		X ² X ² (Total)=40.45 P=.001* X ² (Gender)=5.696 p = .058 df=2
	N	%	N	%	N	%	
Boys	62	44.3	50	35.7	28	20.0	
Girls	56	50.9	44	40.0	10	9.1	
Total	118	47.2	94	37.6	38	15.2	

B = 140

G =110

Table no : 1, shows that ,On the whole we find that hemispheric dominance was found to be high for right hemisphere to an extent of 47.2%, followed by 37.76% of left hemispheric dominance and 15.2% of them had both hemispheric dominance. Chi-square test revealed a significant frequency difference between right, left and whole hemispheric dominances for thinking (X²=40.45; p=.001), having right hemispheric dominance significantly high for thinking among selected sample. When associations were verified between gender and hemispheric dominance for thinking, chi-square test revealed a non-significant association (X²=5.696; p=.058), indicating a similarity in the dominance pattern among male and female students.

Difference in Styles of Thinking Component wise between Boys and Girls Table 2:

Mean scores of Boys and Girls on various components of Thinking by Right, Left and Whole hemispheres and results of Repeated Measure ANOVA

Thinking

Variable		Right		Left		Whole		Test statistics	
		Mean	Sd	Mean	Sd	Mean	Sd	F (overall)	F (gender)
1.Logical/ Fractional	Boys	2.26	1.446	1.99	1.319	.72	1.292	F=88.913 P=.001*	F=1.626 P=.198
	Girls	2.55	1.138	1.89	1.251	.55	.863		
	Total	2.38	1.325	1.94	1.288	.64	1.125		

2.Convergent/ Divergent	Boys	2.35	1.393	1.83	1.319	.72	1.341	F=93.925 P=.001*	F=2.402 P=.092
	Girls	2.35	1.393	2.12	1.360	.41	.733		
	Total	2.39	1.343	1.96	1.342	.58	1.124		
3.Creativity	Boys	2.11	1.494	1.96	1.343	.87	1.418	F=71.389 P=.001*	F=3.359 P=.036*
	Girls	2.34	1.236	2.17	1.347	.44	.873		
	Total	2.21	1.388	2.06	1.346	.68	1.226		
4.Problem Solving	Boys	2.16	1.369	1.92	1.309	.81	1.355	F=93.176 P=.001*	F=4.916 P=.008*
	Girls	2.45	1.268	2.17	1.266	.35	.696		
	Total	2.28	1.331	2.03	1.277	.61	1.136		
5.Imagination	Boys	1.96	1.305	2.11	1.290	.86	1.400	F=68.566 P=.001*	F=2.148 P=.118
	Girls	2.23	1.283	2.19	1.281	.56	.914		
	Total	2.08	1.299	2.14	1.284	.73	1.217		
6.Thinking in total	Boys	10.84	4.883	9.81	4.453	3.99	5.699	F=161.026 P=.001*	F=4.772 P=.009*
	Girls	11.99	3.789	10.55	4.203	2.30	3.175		
	Total	11.35	4.463	10.13	4.351	3.25	4.822		

B = 140

G =110

*P<.05

Table 2:

1. Logical – Fractional

Significant mean difference was obtained for the component Logical-Fractional in Thinking of the students in right, left and whole hemisphere, as indicated by the results of Repeated Measure ANOVA. ($F = 88.913$, $P=.001^*$). The mean scores for Logical-Fractional in Thinking of the students with right, left and whole hemisphere were 2.38, 1.94 & .64 respectively. The scores obtained for the whole hemisphere category was lesser than right and left hemispheres. The comparison between the boys and girls indicated a non-significant difference in their Logical-Fractional component of Thinking scores in right, left & whole hemisphere. ($F=1.62$, $P=.198$)

2. Convergent Divergent

On the whole irrespective of the gender, a significant mean difference was observed in Convergent- Divergent component of the students in right, left and whole hemispheres as revealed by Repeated Measure ANOVA ($F=93.925$, $P=0.001^*$). The Mean thinking scores of students with right, left and whole hemispheres were 2.39, 1.96 and .58 respectively. We find that scores observed under whole category was lesser than right and left hemisphere. Further, Gender-wise comparison revealed a similarity between Male and Female students in their Thinking scores in right, left and whole hemispheres ($F=2.402$, $P=.092$)

3. Creativity

The results of Repeated Measure ANOVA ($F=71.389$, $P=.001^*$) for Creativity component of Thinking shows a significant mean difference in Thinking of the students in right, left and whole hemisphere. The mean scores of the students with

right, left and whole hemisphere were 2.21, 2.06 and .68 respectively. In creativity component of Thinking also the scores under whole hemisphere showed lesser scores in comparison to right and left hemispheres. Gender wise comparison exhibits a significant mean difference between the boys and girls in their creative component of right, left and whole hemispheres. ($F=3.359$, $P=.036^*$)

4. Problem – Solving

On the whole, a significant mean difference was observed in Problem – Solving component of the students in right, left and whole hemisphere as revealed by Repeated Measure ANOVA ($F=93.176$; $P=.001^*$). The mean scores for Thinking of students with right, left and whole hemisphere were 2.28, 2.03 and .68 respectively. We find that the scores observed under whole category were lesser than right and left hemispheres. Further, Gender-wise comparison revealed a significant mean difference between the boys and girls in their Problem Solving component of Thinking scores in right, left and whole hemispheres. ($F=4.916$; $P=.008^*$)

5. Imagination

The results of Repeated Measure ANOVA ($F=68.566$; $P=.001^*$) shows A significant mean difference in Imagination component of Thinking of the students in right, left and whole hemisphere. The Mean scores of the students with right, left and whole hemisphere were 2.08, 2.14 and .73 .Whole Category was lower in comparison to the right and left hemispheres. In addition, the Gender- wise comparison of the Mean Scores exhibits a significant mean difference between the boys and girls in their Imagination component of Thinking scores in right, left and whole hemisphere. ($F=2.148$; $P=.118$)

Thinking in Total:

Significant mean difference was obtained for Thinking in Total of the students in right, left and whole hemisphere as indicated by the results of Repeated Measure ANOVA ($F=161.026$; $F=.001^*$). The Mean scores for Thinking in Total of the students with right, left and whole hemisphere were 11.35, 10.13, and 3.25 respectively. The scores obtained for the Whole hemisphere category was lesser than right and left hemisphere. The comparison between the boys and girls indicated a significant mean difference ($F = 4.772$, $P= .009^*$) where the girls had higher scores than boys.

RESULTS AND DISCUSSION

- Right Hemispheric dominance is evident from the above findings among the students. The right hemisphere was preferred by both the boys and the girls in the present study.
- Hemispheric Dominance was found to be high for Right hemisphere to an extent of 47.2% followed by Left Hemisphere dominance to an extent of 37.6% and whole hemisphere to an extent of 15.2%
- The repeated measure ANOVA shows a Significant Mean Difference between Right, Left and Whole hemisphere for all the components of Thinking viz

Logical/Fractional, Convergent/Divergent, Creativity, Problem Solving, Imagination and Thinking in total for the Overall Students.

- The Gender wise comparison for hemispheric dominance for Thinking was found to be significant between the Boys and Girls in Right, Left and Whole hemisphere for three components viz Creativity, Problem Solving and Thinking in Total.

Based on the research studies, they have found that two individuals with same levels of intelligence may think, reflect and focus on abilities in different ways. In the present study the sample selected have right hemispheric dominance. Individuals who are right brained are more intuitive, thoughtful creative and subjective. According to **Venakataraman (1994)**, Interpretation of complex visual patterns, analysis of voice intonation, face processing, awareness of body position, spatial orientation and the perception of fine and gross motor activities dreaming, imagery, creativity and music come under the realm of right hemisphere.

Studies by **Raina(1984)** based on the right hemisphere showed that it is capable of processing language if the discriminations are uncomplicated (e.g., a positive from a negative statement). The analyses of voice intonation, an integral component of language, are the iconic presentation of information (e.g., graphic displays, diagrams, flow charts, etc.) greatly facilitates both the comprehension and the retention of information. Iconic memory is primarily a function of the right hemisphere.

The following research studies have obtained similar results as the present study:

Humera. S (2015) found that majority of the students have right hemispheric dominance in Thinking and Learning, but Gender wise analysis revealed a significant difference in the Right, Left and Whole hemisphere with respect to Thinking Style of boys and girls and this result in partially consistent with the results of the present study.

Das R.K found that there was a significant difference between the boys and girls in their Thinking Styles with respect to the whole hemisphere.

Kalpna and Mridula (2007) have also found that in their sample of study 71.2% children preferred right hemisphere. Further all the components of Thinking viz Logical/Fractional, Convergent/Divergent, Creativity, Problem Solving, Imagination and Thinking in Total were also found to be significant in their studies which are in congruence with the present study. Overall right hemisphere dominates among children for Learning and Thinking. They also found that the boys are more right hemisphere oriented and girls are more left hemisphere oriented which is not in congruence with the present study.

CONCLUSION

The findings of the present study establish that the students show right hemispheric dominance for Thinking.

From the inferential statistical analysis it was found that there is a significant difference in the boys and girls for three components of Thinking, viz Creativity, Problem Solving

and Thinking in Total. Three of the other components of thinking viz Logical/Fractional, Convergent/Divergent and Imagination were found to be non-significant.

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