

## A STUDY ON EMOTIONAL INTELLIGENCE BASED ON HEMISPHERIC SPECIALIZATION

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### Abstract

*Present study assessed with hemisphere specialization, emotional intelligence was found to differ. The influence of hemisphere specialization on emotional intelligence is the central research issue in discussion. In the present investigation, higher emotional intelligence is found in individuals with ambidextrous hemisphere specialization than individuals with right or left hemisphere specialization. Descriptive survey method was used for the present study. This study also explored the impact of hemisphere specialization on emotional intelligence based on gender. The findings have been discussed in the light of available theoretical and empirical literature.*

### INTRODUCTION

Interest in hemispherical lateralization has been increasing among psychologists (Lindzey and Norman 1977), brain researchers (Wittrock 1977), and Psychiatrists (Wexler 1980). The right and left cerebral hemispheres of the brain are highly developed centers for processing sensory information. To the naked eye the two halves of the human brain look like mirror image of each other. But closer examination reveals asymmetries. The left hemisphere is almost always larger than the right hemisphere. Studies have shown that the two hemispheres are asymmetrical differing in anatomical, electrical, and chemical properties (Woods, 1986). For example autopsies reveals that one hemisphere, usually the left, is larger than the other about 95 % of the time (Geschwind & Levitsky, 1976). Although each hemisphere is specialized to handle different functions, they are not entirely separate systems. Rather, our brains function mostly as an integrated whole.

The two hemispheres consistently communicate with each other through a broad band of millions of connecting nerve fibers called the corpus callosum (Cook, 1986; Gazzaniga, 1987; Gazzaniga et al; 1989). Surprisingly the two halves control opposite sides of the body. The right hemisphere controls the left sides of the body and left one controls the right side of the body. Although functions are usually handled exclusively by one hemisphere the two hemispheres always work together. (Bradshaw, 1989, Efron, 1990). It has been found that humans specialize in the use of the right and left hemispheres of their brain. Important insights into the relation between the right and left hemispheres have been provided by studies on the effects of split brain surgery. It is clear from experiments that right and left hemispheres of the brain specialize in handling different sorts of information. Differences in functioning between the right and left hemispheres have been reported by the famous brain researchers like Gazzaniga, Sperry, and Bogan. In 95% of right handers and in about 62 % left handers, the left hemisphere handles most of the language functions, including speaking, writing, reading and understanding the spoken word (Hellige, 1990). Even American Sign Language (ASL) used by deaf persons is clearly a left hemispheric function (Corina et al, 1992). From birth, in children of both sexes, The left hemisphere appears to be more attuned to language (Hahn, 1987). The left hemisphere is also specialized for mathematical abilities, particularly calculation and it processes information in an analytical and sequential, or step-by-step, manner. Logic is primarily a left hemisphere specialty (Levy, 1985). The right hemisphere is generally considered to be the hemisphere which is more adapted for visual spatial functions. Artists, sculptors, architects, have strong visual spatial skills. The right hemisphere processes information holistically rather than part by part or piece-by-piece as the left hemisphere does. (Corballis, 1989). Auditory visual and touch stimuli is registered in both hemispheres, but the right hemisphere appears to be more specialized than the left for complex perceptual tasks. Consequently, the right hemisphere is better at pattern recognition, whether of familiar voices, melodies or visual patterns. The right hemisphere is also active in the recognition and expression of emotions (Borod 1992). It even responds to the emotional message conveyed by others through their tone of voice (Heilman et al 1975). Reading and interpreting non verbal behavior, such as gestures and facial expression, is primarily a right hemisphere task (Hauser, 1993). The right hemisphere is involved in our expression of emotion through our tone of voice and also our facial expressions. The left side of the face, controlled by the right hemisphere, usually conveys stronger emotion than the right side of the face. Emotion is the prime factor as far as the right hemisphere is concerned (Harrington, 1995).

Human beings are psychologically very complex. Human mind is able to reason, learn and form concepts or ideas as well as direct actions towards specific goals. In other words, human beings are not only motivated by reason and intelligence but also are subject to passions, desires and a range of other feelings which

can strongly motivate them. These feelings are called emotions. The latest research shows that human beings operate from two minds - rational mind and emotional mind. The harmony between the emotional and rational mind is what constitute emotional intelligence. Emotional intelligence (EI) is a recent development, in the area of intelligence as well as affective science, both of which have given birth to overlapping perspective on human nature. The concept of emotional intelligence implies that humans are both rational and emotional beings. They are predominantly neither rational beings nor emotional beings. Hence, adaptation and coping abilities in life are dependent on the integrative functioning of both rational and emotional capacities. Psychologists all over the World have come to the conclusion that only 20% of a person's success can be attributed to his intelligence, the other 80% can be credited to the person's emotional intelligence. People with greater emotional intelligence generally have better control over the target of their lives. The positive feelings of confidence, happiness, and enthusiasm are harnessed to help the individual achieve greater heights.

The present study was intended to find out whether emotional intelligence is concentrated in left, ambidextrous or right hemisphere. Each hemisphere has its own specializations and functions. There are various parameters such as verbal, logical, analytical thinking, emotional maturity, language, etc...that determine emotional intelligence. Language is a prime factor among them, and is seated in the left hemisphere. 95 % of all adults use the left side of the brain for speaking, writing and understanding language. From birth, in children of both sexes, the left hemisphere appears to be more attuned to language. There arise the doubts that whether the left hemisphere has any influence on emotional intelligence when the emotion is seated in the right hemisphere. Here the question is whether emotional intelligence is concerned with any one of the hemispheres or found scattered in both hemispheres. It is hypothesized that there exist no significant difference in the emotional intelligence among individuals with left hemispheric specialization, right hemispheric specialization and ambidextrous hemispheric specialization. Another hypothesis formulated for the study was that the level of emotional intelligence of individuals with Left hemispheric specialization, Right hemispheric specialization and ambidextrous hemispheric specialization will not differ with respect to gender.

The study on emotional intelligence based on hemispheric specialization is significant for various reasons. Many studies have been conducted in the field of hemispheric specialization, but this is the first study focusing on the relationship between hemispheric specialization and emotional intelligence.

The modern concept of emotional intelligence is in itself a youthful one. Work has yet to be done to discover exactly what emotional intelligence encompasses and how it could be most effectively applied. The present study is more concerned with the neuropsychological aspects of emotional intelligence. Today great importance is given to the concept of emotional intelligence all over the world, because of its influence in determining the success of an individual. So if researchers are able to find out the hemispheric specialization in emotional intelligence they would be able to plan training programmes giving emphasis to the enhancement of the concerned hemisphere. Various training programmes can be designed in a useful manner to foster the emotional intelligence of people working especially in the areas concerning Business, Management experts etc.... The information would help to identify the elements of emotional intelligence and its relation with individual hemispheres. When stimulated appropriately, it would help to improve one's psychological well being.

## **MATERIALS AND METHODS**

The descriptive survey method was used for the present study. The investigator used random sampling for the purpose of the sample selection. The sample was drawn from a population of adult individuals living within the geographical area of Athirampuzha Grama Panchayath Kottayam District, Kerala State in India. The sample consisted of 120 subjects 60 males and 60 females. The subjects were of the age group 20 years to 60. Individuals with mental retardation, physical disability, psychiatric disorders and other neurological disorders were excluded for convenience of the study.

Emotional Intelligence Inventory (2003) constructed and standardized by Thomas and Sushama and Left /Middle/Right Brain Preference test by Loren Crane (1989) adopted for this study. Emotional Intelligence Inventory (Thomas and Sushama, 2003). This is a 50 item self-rating scale, which gives a measure of overall Emotional Intelligence. The tool has high internal consistency (Chronbach alpha =0.88;N=432) and factorial validity of the tool has also been estimated using a sociometric rating method ( $r = 0.58; N = 192$ ). Left /Middle/Right Brain Preference test was estimated using the method of internal consistency reliability analysis. Reliability Coefficient obtained for the scale using a sample of 120 adults is 0.85. The researcher explained the instructions about filling up of questionnaires and doubts were clarified. The questionnaires that were completely filled were selected for the study. The personal data sheets were used for collecting the details of the respondents like name, age, sex, and religion.

Table 1. Means and Standard Deviations of Emotional Intelligence Scores of the Total Sample with Respect to the Type of Hemispheric Specialization

| Hemispheres                             | N   | Mean   | SD    |
|---|-----|--------|-------|
| Left hemispheric specialization         | 54  | 163.24 | 16.46 |
| Ambidextrous hemispheric specialization | 31  | 171.39 | 22.49 |
| Right hemispheric specialization        | 35  | 158.46 | 19.32 |
| Total                                   | 120 | 163.95 | 19.45 |

Table 1 indicates the Arithmetic mean and Standard deviations scores of Emotional intelligence of the individuals with respect to their hemispheric specialization. The highest mean value 171.39 is obtained by the individuals with Ambidextrous specialization, followed by the mean value 163.24 which is obtained by the individuals with left hemispheric specialization. The lowest mean value obtained by the individuals of right hemispheric specialization 158.46.

Table 2. Summary of ANOVA of Emotional Intelligence Scores of the Total Sample with Respect to Type of Hemispheres

| Source of Variation | Sum of Squares | df  | Mean Square | F- ratio |
|---------------------|----------------|-----|-------------|----------|
| Between groups      | 2797.79        | 2   | 1398.90     |          |
| Within groups       | 42221.91       | 117 | 360.87      | 3.88*    |
| Total               | 45019.70       | 119 |             |          |

\*Significant at 0.05 level

From table 2, it is seen that the obtained F-ratio is 3.88. The value is significant at 0.05 level. Hence the null hypothesis, that there would be no significant difference in the level of emotional intelligence among individuals with right hemispheric specialization, left hemispheric specialization and ambidextrous specialization is rejected. A person's emotional intelligence is determined by various factors. Biological, environmental and social factors are important among them. This study is more concerned with biological evidences of emotional intelligence, it is found that emotional intelligence varies with respect to hemispheric specialization, i.e.; each hemisphere is specialized for some particular functions, therefore the emotional intelligence may vary with respect to hemispheric specialization.

Since a statistically significant F-ratio was observed; test of least significant difference was used for post-hoc comparison.

Table 3. Test of Least Significant Difference (LSD) for Pair Wise Comparison of Emotional Intelligence Scores of Total Sample with Respect to Type of Hemispheres

| Pairs        | Mean value | Mean difference |
|--------------|------------|-----------------|
| Left         | 163.24     |                 |
| Ambidextrous | 171.39     | -8.15           |
| Left         | 163.24     |                 |
| Right        | 158.46     | 4.78            |
| Ambidextrous | 171.39     |                 |
| right        | 158.46     | 12.93**         |

\*\* Significant at 0.01 level

From table 3 it is seen that, there is no significant difference between the individuals with left hemispheric specialization and individuals with ambidextrous.

Specialization with respect to emotional intelligence i.e.; emotional intelligence of the individuals does not differ in accordance with left and ambidextrous specialization. There is no significant difference between the individuals with left hemispheric specialization and individual with right hemispheric specialization with respect to emotional intelligence .i.e.; emotional intelligence of the individuals does not differ in accordance with left and right hemispheric specialization.

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There is significant difference between individuals with ambidextrous specialization and individuals with right hemispheric specialization with respect to the emotional intelligence. It is significant at 0.01 level .From the mean values it can be seen that individuals with ambidextrous specialization have scored high in emotional intelligence than those with right hemispheric specialization. This means that individuals with ambidextrous specialization have high emotional intelligence. There are various parameters such as verbal, logical, and analytical thinking, emotional maturity, language etc...that determine emotional intelligence. Language is the prime factor among them and is seated in the left hemisphere, but emotion is seated in the right hemisphere. Right and left hemispheres work together for the functioning of emotional intelligence. This may be the reason why individuals with ambidextrous hemisphere score high in emotional intelligence. The hypothesis that there would be significant difference in emotional intelligence among individuals with right hemispheric specialization, left hemispheric specialization and ambidextrous specialization is partially accepted.

Table 4. Means, Standard Deviations and 't' Values of Emotional Intelligence Scores of the Persons Based on Hemispheric Specialization with Respect to Gender.

| Hemispheric specialization | Gender | N  | Mean   | SD    | 't'          |
|----------------------------|--------|----|--------|-------|--------------|
| Right                      | Male   | 12 | 163.25 | 25.72 | <b>0.91</b>  |
|                            | Female | 23 | 155.96 | 15.06 |              |
| Left                       | Male   | 30 | 161.07 | 15.46 | <b>-1.09</b> |
|                            | Female | 24 | 165.96 | 17.59 |              |
| Ambidextrous               | Male   | 18 | 172.33 | 18.82 | <b>0.27</b>  |
|                            | Female | 13 | 170.08 | 27.55 |              |

Significant at 0.05 level

From the above table it is clear that the obtained 't' values are 0.91,-1.09 and 0.27 based on their hemispheric specializations with respect to gender were not statistically significant at 0.05 level.

Therefore it can be clearly that gender is not a significant factor influencing emotional intelligence based on hemispheric specialization. Springer and Deutsh's (1998) commentary on the sex differences in certain human abilities like verbal and spatial skills, point out that males tend to be more lateralized for verbal and spatial functions whereas females show greater bilateral representation for both types of functions. Extending the relationship of lateralization and ability, they postulate that men only the left hemispheres is involved in language, learning, visuo-spatial functions intact in the right ,whereas in the women, language is established in both the hemispheres ,crowding visuo-spatial ability. This is believed to explain the superiority of females in language functions. (Halpern,1992) and males in visuo -spatial functions (Schaie,1994) However ,it may also be possible to explain the gender differences observed in terms of differences in education and socialization.

Competing evidence exists surrounding whether or not males and females differ significantly in general level of emotional intelligence. Daniel Golman (1998) asserts that that no gender difference in emotional intelligence exist, admitting that while men and women may have different profiles of strengths and weaknesses in different areas of emotional intelligence. Their over all level of emotional intelligence are equivalent. Social factors like home, environment, personal background and peer group are important for the development of

emotional intelligence. In the modern civilized world, these factors are equally applicable to male and female individuals. Equal opportunities, availability and utilization of resources are more or less similar for both the sexes. This is one of the reasons for both males and females to show no difference in emotional intelligence.

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