



A RESEARCH RELATED TO BRAIN DOMINANCE AND INTELLIGENCE AMONG STUDENTS LIVING IN DIFFERENT SOCIOCULTUREL ENVIRONMENT

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ABSTRACT

This study attempts to explore the brain dominance related to I.Q. this study was conducted by incidental sampling methods in selection of student, the sample consist of 100 students both Nigerian and Indians students in Nims university jaipur including equal number of Nigerians and Indians student. Open Hemispheric Brain Dominance Scale and Raven's Progressive Matrices test were used to assess the brain dominance and intelligence respectively. The chi-square was used to show the result. The result indicated the no significant relationship between Brain dominance of Nigerian and Indian students. It means no cultural or nationality impact on Brain dominance but IQ of Nigerian and Indian students found that significant relationship at the level of 0.01. This result indicate that positive impact of rural & urban cultural and nationality on level of IQ because of education and other basic facilities are differ from rural and urban area.

Keywords: Intelligence, Brain Dominance, Culture.

INTRODUCTION:

Julie A. Daymut, (2008)&Eccles, (1973);The human brain is a complex organ responsible for intelligence, senses, movement and behavior. The halves of the brain: the "right brain" and the "left brain" perform different functions and communicate information with each other through a band of nerves that connect them. The right side of the brain controls most of the movement and functions of the left side of the body, and the left side of the brain controls most of the movements and functions of the right side of the body.

Therefore, to describe the brain dominant we should have to bring light on brain itself. The brain is an organ that serves as the center of the nervous system in all vertebrate and most invertebrate animals. The brain is located in the head, usually close to the sensory organs for senses such as vision. The brain is the most complex organ in a vertebrate's body. In a human, the cerebral cortex contains approximately 15–33 billion neurons, each connected by synapses to several thousand other neurons. These neurons communicate with one another by means of long protoplasmic fibers called axons, which carry trains of signal pulses called action potentials to distant parts of the brain or body targeting specific recipient cells.

Iversen, L.L., Iversen, S.D., (1979) says that, the human brain, composed of about 10 billion cells, is divided nearly equally between the left and the right hemispheres, which are interconnected by a neural bridge (corpus coliseum). Generally, most of the information processed by the left hemisphere is received from the right sensory field and, respectively, information processed by the right hemisphere is received from the left sensory field. It grows at a phenomenal rate of a quarter million cells per minute during prenatal development, and weighs about 50 ounces

at maturity. Per ounce the brain requires 10 times more oxygen than any other bodily organ, produces its own painkillers and even generates about 12 watts of electrical power. We more thoroughly understand the dynamics of electricity than the intricacies of the mind. The brain represents the most mysteriously complex living organ on earth

Brain Dominance: The human brain is the most complex mass of protoplasm. The brain has three basic parts. Each part of the brain developed during different times in the evolutionary history of human beings. The brain's functions are both mysterious and remarkable. All thoughts, beliefs, memories behaviors, and moods arise within the brain. The brain is the site of thinking and the control center for the rest of the body. The brain coordinates the abilities to move, touch, smell, taste, hear, and see. It enables the people to form words, understand and manipulate numbers, compose and appreciate music, recognize and understand geometric shapes, communicate with others, plan ahead, and even fantasize. The activity of the brain results from electrical impulses generated by nerve cells (neurons), which process and store information. The impulses pass along the nerve fibers within the brain. How much and what type of brain activity occurs and where in the brain it is initiated depend on a person's level of consciousness and on the specific activity that the person is doing.

Intelligence:David Wechsler (1993)the creator of the most widely used psychometric IQ test, the WAIS – defined intelligence as: *The global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environments.*⁶³

Howard Gardner (1983): "To my mind, a human intellectual competence must entail a set of skills of

problem solving enabling the individual to resolve genuine problems or difficulties that he or she encounters and, when appropriate, to create an effective product and must also entail the potential for finding or creating problems and thereby laying the groundwork for the acquisition of new knowledge."

While people have different cognitive strengths and weaknesses, psychologists have found that there is a common component called 'general intelligence' or 'G'. Individuals differ in their 'G Factor' & valid IQ tests give a good measure of those individual differences.

MATERIALS AND METHODS:

Objectives of the study:-To study of the relationship between I.Q level and Brain Dominance of the Nigerian and Indian students.

Sampling: I selected total 100 samples through the incidental sampling from (35 female and 15 male) saraswati Nursing College, kurali, Mohali Punjab and (35 female and 15 male) NIMS University Jaipur. Those selected samples were fallen in 18 to 21 age group and divided into two groups based on Nationality; one is Nigerian and second is Indian. Each group I have taken 50 samples.

Variables: Intelligence, Brain Dominance and culture.

Used tests- I used two following tests-

- 1. Open Hemispheric Brain Dominance Scale -** This test construct by Eric Jorgenson, 29 April 2015. The OHBDS is a measure of the hypothesized left-brain versus right-brain preference. In this scale total number of items are 20. **Instructions:-**For each question 1-20, in the blank provided rate the item on a scale from 1 to 5 on how much you agree with the statement. For example, if you agree completely with question one put down a five in the empty space, if you entirely disagree with it put down 1, if you are neutral or unsure put down a
- 2. IQ TEST:-**This IQ test loosely modeled after Raven's Progressive Matrices. This test has 25 questions. The last page has scoring instructions. The questions take the form of a 3x3 matrix from which one tile is missing. For each question there are eight possible answers A-H. You must choose the tile that completes that matrix best. In the scoring all correct answers are given by question numbers and in the second table we can convert our raw score to standard score for the interpretation of IQ.

STATISTICAL ANALYSIS: chi square-test used for data analysis.

Results:-

H₀¹- There is no significance relationship between level of IQ and Brain Dominance of students.

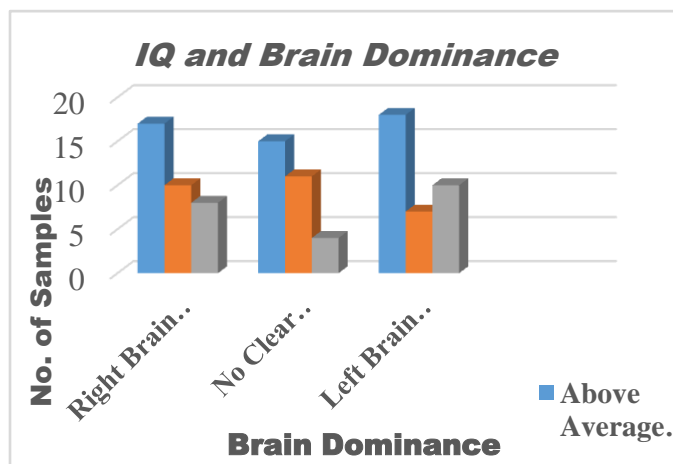
TABLE NO. 01

TABLE OF I.Q. BY BRAIN DOMINANCE

IQ	Brain Dominance			Total
	Right Dominance	No Clear Preference	Left Dominance	
Above Average	17 (17.5)	15 (15)	18 (17.5)	50
Average	10 (9.8)	11 (8.4)	7 (9.8)	28
Below Average	8 (7.7)	4 (6.6)	10 (7.7)	22
Total	35	30	35	100

STATISTICS TABLE OF I.Q. BY BRAIN DOMINANCE

Statistics	Df	Chi square Value	Probability
Chi square	4	3.359	P < .05



In these results, the chi-square value is 3.359. Because the chi-value is less than the significance level of 0.05, you fail to reject the null hypothesis. Therefore, you cannot conclude that the observed proportions are significantly different from the specified proportions.

H₀²- There is no significance relation between level of IQ and Brain Dominance of Nigerian students.

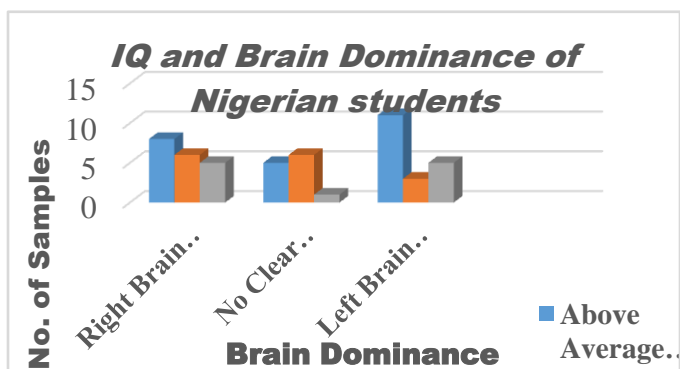
TABLE NO. 02

TABLE OF I.Q. BY BRAIN DOMINANCE OF NIGERIA STUDENTS

IQ of Nigerian Students	Brain Dominance			Total
	Right Dominance	No Clear Preference	Left Dominance	
Above Average	8 (9.2)	5 (5.76)	11 (9.12)	24
Average	6 (5.7)	6 (3.6)	3 (5.7)	15
Below Average	5 (4.18)	1 (2.64)	5 (4.18)	11
Total	19	12	19	50

Statistics table of I.Q. by Brain Dominance of Nigerian students

Statistics	df	Chi square Value	Probability
Chi square	4	4.8447	$P > .05$



In these results, the chi-square value is 4.844. Because the chi-value is less than the significance level of 0.05, you fail to reject the null hypothesis. Therefore, you cannot conclude that the observed proportions are significantly different from the specified proportions.

Discussion:

Kolappan (2011) in his study analyses the academic attainment and home environment for higher secondary students in Namakkal district of Tamilnadu. Using statistical measures like Mean, Median, Standard Deviation and t-test study indicate that there is a significant difference between home environment and score of boys and girls from urban and rural school students.

Saini (2012) undertake a study concerning academic attainment of scheduled caste students in relation to study habits and home environment. Study reveals that there is no significant association between study habits and academic attainment of scheduled caste students and there is significant association between home environments with its different dimensions. Kumar (2013) completed a study to find out the effect of home environment, school environment and study habits on academic attainment of students. Study reveals that there was no significant relationship between study habits and academic achievement. Home environment had significant effect on academic attainment but school environment does not play a significant role in academic attainment.

Gurdeepkaur & Brij Lal(2013) studied the association of style of learning and thinking (SOLAT) in the right cerebral dominance with attainment in mathematics, creativity and right or left handedness among school children. Study indicates that high achievers school children be different from low achiever school children on style 3 of learning and thinking in their right cerebral dominance. It may be due to the reason that achievement in mathematics depends upon right cerebral dominance of school children in processing different modes of information and mathematical operations.

Humera (2015) in his study of hemispheric dominance and mathematics achievement of 10th students of Aurangabad city. Study reveals that greater part of the students have right hemispheric dominance style of learning and thinking. No significant difference was found between mathematics achievement of students with respect to different hemispheric dominant style of learning and thinking. No significant difference was found between mathematics achievement of girls and boys.

One recent study that documents that the retention of traditional cultural traits does not hurt students' chances for academic success is by Angela Willeto (1999). She reviewed past research and presents findings drawn from a random sample of 451 Navajo high school students from 11 different Navajo Nation schools. She examined the effects of students' orientation towards traditional Navajo culture as measured by participation in Navajo ritual activities and cultural conventions as well as Navajo language use. She found that students who participated in Navajo traditional activities and spoke the Navajo language did as well academically in school as those who were more assimilated and participated less, and she found no support "for the argument that traditionalism had a negative effect on academic success of Navajo young people" (p. 13). Her findings confirmed previous studies with similar results, including Rindone (2010) and Platero et al. (1999) [see also Brandt (2010) for a summary of the Platero study].

Table 1 it shows that chi-square value is 3.359 which is less than the p. value of 0.05 level of significance. I fail to reject the null hypothesis. Result shows that there is no significance relationship between IQ and brain dominance of the students. But this result table and graph indicate that mostly above average IQ student is right brain or left brain dominance. Right brained student more focus on language skills, logical and critical thinking, number and reasoning, whereas left brain students more focus on mathematics, science, structured goals and rational thinking, this helps than the develop more general intelligence than no clear preference. In the categories of no clear preference very few students scored below average IQ, other than the two categories. Reason behind is that both brain region working equally, and communicate interchangeably students of right and left brain dominance are responsible for the specific function. The result of the finding of the tested hypothesis in table 1 no clear preference indication of influence of level of IQ on either of the two brain region domains , because both left and right handed students can perform certain task equally in each region of the brain responsible for the task. No clear evidence to indicated right brain dominance students scored more than the left brain dominance or vice versa.

Table2 it shows that chi-square value is 4.8447 which is less than the p. value of 0.05 level of significance. I fail to reject the null hypothesis. Result shows that there is no relationship between IQ and brain dominance among Nigerian students. but result and graph table indicate in

the categories of no clear preference very few students scored below average IQ, other than the left and right brain dominance categories, our opinion is that in the no clear preference categories both brain are working equal and better than right and left brain dominance because of both brain are inter connect to carpus callosum and both are responsible for all thinks. Lateralization is the responsible or the findings. Simply it's to say that brain dominance of both left and right braining handed of Nigerian students does not affect their IQ level. There is no clear evidence in the tested hypothesis that left handed scored highly or low IQ compared to right handed or vice versa. Conclusively the finding shows no difference in lateralization of brain connection to IQ level among Nigerian student. Both two group scored some IQ of 19 which means both can perform equally cognitive function such as participation In activities to do with problems solving decision making , attention ,mathematics and thinking process, this is because during rest multiple central brain region are functioning linking to one another forming resting state network. This high level of functionally connectivity with resting state network suggest the existence of direct neuroanatomical connection between these functionally linked brain region to facilitate the ongoing inter regional neural communicate on problem solving decision making, selection attention, thinking ,Pretoria cognition and mathematics in which high or level IQ remain in significance factors.

Conclusion:

Brain Hemisphericity is a cerebral dominance of the individual responsible for activating different types of intelligence of the brain. The research findings conclude that the brain and intelligence does the environmental culture functions, but some of the intelligence function is specialized in difference student among the environmental culture for the activation in a particular brain hemisphere. The brain dominance and intelligence among students living in difference culture environment that can affect education system of the students.

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