

# ***THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES***

## **Brain Dominance and Test Anxiety of Secondary and Higher Secondary Students**

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### **Abstract:**

*Brain dominance is a psychological phenomenon which can explain how each hemisphere is contributing to the thinking and learning pattern of individuals. This study will enhance our knowledge about the complexities between right and left dominance of brain over test anxiety. Test anxiety is another important psychological factor which has negative influence on the academic performance of the students. With this background, the present study attempted to understand the brain dominance and test anxiety of secondary and higher secondary students. Of the 245 participants, 121 were male and 124 were female students, who were selected through simple random sampling and survey research design was adopted. Fried-Ben Test Anxiety Scale (FTAS) and Styles of Learning and Thinking (SOLAT) by P. Venkataraman (1989). The results showed that there will not be any significant difference in test anxiety of students based on their gender, academic grade, social class, order of birth, father's educational qualifications, mother's educational qualifications. And also, there will not be any significant difference in Test Anxiety of students based on hemispheric dominance.*

### **1. Introduction**

Rene Descartes the French philosopher says "cogitoergo sum" which is the essence of our existence. It means we think, therefore we exist. This existence is possible only because of the existence of the human brain. Brain is considered to be the seat of higher mental process and emotions. It encompasses everything. Learning is a mental process and so the anxiety is emotional experience of the brain. Brain is a unique phenomenon and its pattern of functioning influences all the positive affect, behavior, and cognition. The present research tries to unravel the complex role of the hemispheric dominance on test anxiety among students. Test anxiety is a physiological condition in which students experience extreme stress, nervousness and anxiety during and or before attending a test. Test anxiety can be defined as the set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences or failure in an evaluative situation (Zeidner, 1998). Even though Test anxiety is a universal phenomenon- present among all students in varying levels regardless of age, gender and class, some students easily overcome test anxiety and become high achievers. This does not happen as an accident or due to mere chance. Some internal factors help such individuals in handling the situation effectively. The brain plays a vital role in all our cognitive process. The power of the brain arises from the cooperation of a large number of neurons connected together into neural networks. Human intelligence is related to the fact that our brain has a large cerebrum. Knowledge about the organization of the nervous system enables us to interact with our own environment and to learn from those interactions. Although the various parts of the nervous system have specialized function, the system as a whole, is highly coordinated so that it works as a single unit.

According to the theory of left (or) right brain, each side of the brain controls different kinds of functions. In addition, a person who is left-brained is often said to be more logical, analytical and objective, whereas a person who is right brained is said to be more intuitive, thoughtful and subjective. The human brain is the masterpiece behind every new creation that exists in this world. It is that part of the human being which makes it to think, act and do all wonders. Brain is divided into two halves- left and right brain. Every human uses one side of the brain more often while the other side is used rarely. And this one side of the brain that is more often used comparatively is called as dominance of that particular part.

Both the hemispheres are involved in higher cognitive functioning. Each half is specialized with highly complicated functions, which includes the different modes of thinking. There are two modes of thinking. The left hemisphere is concerned with verbal and right hemisphere with non-verbal. A non-verbal form of thinking is usually neglected, which is most often used by students in academic areas and are thus discriminated from using the right brain (Betty Edward). Brain dominance is a psychological phenomenon which can explain how each hemisphere is contributing to the thinking and learning pattern of individuals. This

study will enhance our knowledge about the complexities between right and left dominance of brain over test anxiety. The present study attempted to understand the brain dominance and test anxiety of secondary and higher secondary students

## 2. Objectives of the Study

- To find out the difference in hemispheric dominance and Test Anxiety of students based on their demographic variables.
- To find out the difference in Test Anxiety of students based on their hemispheric dominance.

## 3. Hypotheses of the Study

Based on reviews and the above objectives the following hypotheses were formulated for the present study.

- There will not be any significant gender difference in Test Anxiety of students.
- There will not be any significant difference in Test Anxiety of students with regard to their academic grade.
- There will not be any significant difference in Test Anxiety of students based on their social class.
- There will be not any significant difference in Test Anxiety of students based on their area of living.
- There will not be any significant difference in test anxiety of students with regard to their order of birth.
- There will not be any significant difference in Test Anxiety of students based on father's educational qualification.
- There will not be any significant difference in test anxiety of students based on their mother's educational qualification.
- There will not be any significant difference in the Test Anxiety based on their hemispheric dominance.

## 4. Methodology

### 4.1 .Sample of the Study

The sample of the study comprises 245 students from higher secondary schools in Salem district. Among them, 121 were male and 124 were female. The simple random technique was adopted to select the sample and data were collected through administration of tools.

### 4.2. Tools Used for the Study

- Fried-Ben Test Anxiety Scale (FTAS) by Fried-Ben at (1997).
- Styles of Learning and Thinking (SOLAT) by Venkataraman (1989).

### 4.3. Research Design

The present study adopted survey research design.

### 4.4. Statistical Tools

The collected data were analyzed using SPSS 17<sup>th</sup> version Mean, Standard Deviation, t-test, ANOVA, Pearson product movement correlation were used.

## 5. Results and Discussion

*“There will not be any significant gender difference in Test Anxiety of students”*

Gender	N	Mean	SD	't'-value	Sig
Male	121	60.17	8.86	1.96	NS
Female	124	62.85	12.30		

*Table 1: Mean, SD and t-value on TA score across gender*

*NS= Not significant*

Table 1 shows the difference in test anxiety among male and female students. No significant gender difference was seen in test anxiety of students. Thus the hypothesis stating “There will not be any significant gender difference in test anxiety of students” is retained based on evidence. The mean score of (Mean=62.85, SD=12.30) female students in test anxiety was found to be slightly higher than male students but not significant. Girls are usually more conscious of their performance, the expectations of their parents and fear of being criticized by the society, which makes them more anxious than male students. Seipp and Schwarzer (1996), Chapell et al (2005) and Eum and Rice (2010) who concluded that females tend to report higher levels of test anxiety than males, irrespective of cross-cultural setting and age. Present study did not reflect that.

*“There will not be any significant difference in Test Anxiety of students with regard to their academic grade”*

Academic grade	N	Mean	SD	t-value
Secondary	158	59.91	9.96	1.798 <sup>NS</sup>
Higher secondary	87	62.41	11.16	

Table 2: Mean, SD and t-value on TA scores across academic grade  
NS = Not significant

Academic grade is the level that students cross every year based on their performance and gradually reach one level higher, among which the secondary and higher secondary grades are of the most important as they form the basis of their career. From the ‘t’ value of the above table, it is observed that there is no significant difference in test anxiety of adolescents based on their academic grade. Thus, the hypothesis stating “There will be not be any significant difference in test anxiety of students based on their academic grade” is retained on this evidence. Students from both secondary and higher secondary grades come across the same challenge similar their senior or junior members and hence encounter test anxiety to their grade level. This may be the reason for insignificant differences in test anxiety of students based on two different academic grades. Though the significant difference is not seen in test anxiety of secondary and higher secondary students, a little difference does exist in the mean score of their test anxiety, with higher secondary grade students showing greater score than secondary grade students. This may be due to the pressure from parents to fulfil their expectations and a fear created by them in the name of the student’s career, which is based on the higher secondary performance. This is supported by the findings provided by Sovani et al (2000) who observed social derogation and tenseness to be the responsible factors of test anxiety among students of different grades. It is also supported by Bodas and Ollendick (2005) who showed from their study that the high school children experience more anxiety than middle school children in the context of National /State Board exam preparation in India.

*“There will not be any significant difference in Test Anxiety of students based on their social class”*

Social class	Test anxiety			
	N	Mean	SD	F-value
MBC	199	61.67	11.06	NS
BC	27	61.96	10.72	
SC/ST	19	59.36	7.98	

Table 3: Mean, SD and F-value of Test Anxiety Learning among students.  
NS=Not Significant

Social Class is a social stratification based on occupational, educational, political, economic and religious values, being imposed on a human, based on his birth in a particular class. There has been discrimination on these social grounds in our Indian society, which has influenced the lives of people to a greater extent. This factor is of great importance and hence considered in the study. From the above table, it is clear that there is no significant difference in test anxiety of students with regard to their social class. Hence, the hypothesis stating “There will not be any significant difference in test anxiety of students based on their social class” is retained based on the available evidence.

*“There will be not be any significant difference in Test Anxiety of students based on their area of living”*

Area of living	N	Mean	SD	‘t’-value
Rural	217	61.77	10.78	0.97 <sup>NS</sup>
Urban	28	59.64	10.93	

Table 4: Mean, SD and t-value on Test Anxiety scores across area of living  
NS= Not significant

Rural and urban areas are the two extreme poles. Rural areas are those that are isolated from the city or town and are not provided with all the facilities that are available in cities or towns, whereas, urban areas are well-facilitated in almost all aspects. The above table shows difference in the mean score of the students from rural and urban area with the former group showing slightly a higher score (61.77) in test anxiety than the latter one (59.64). But, since there is no significant difference among the two groups, the hypothesis stating “There will be not be any significant difference in test anxiety of students based on their area of living” is retained. Students who dwell from rural area lack regular study habits and give secondary priority to their studies. They are preoccupied with last minute preparation and are mostly being compared with their other classmates, which ultimately enhance their test anxiety and this may be the reason that rural students have more test anxious.

“There will not be any significant difference in Test Anxiety of students with regard to their order of birth”

Birth order		1 <sup>st</sup> born	2 <sup>nd</sup> born	3 <sup>rd</sup> born	4 <sup>th</sup> born
Test anxiety	Mean	62.11	60.25	62.73	62.80
	SD	10.82	11.59	9.68	9.12
	‘F’ Value	NS			

Table 5: Mean, SD and F value of Test Anxiety scores based on order of birth  
NS = Not Significant

Table-5 shows no much difference in test anxiety and self-regulated learning of students, based on their order of birth. Thus the hypothesis, stating that “There will not be any significant difference in test anxiety of students with regard to their order of birth” is retained. Also, it was observed that the fourth born students were higher in test anxiety than others. According to Alfred Adler, one of the worst behaviours a parent bestows on their youngest child is pampering which can lead to dependence, and selfishness as well as irresponsibility, due to which they do not focus on their studies properly and experience test anxiety.

“There will not be any significant difference in test anxiety of students based on father’s educational qualification”

Educational qualification		Illiterate	Secondary	Higher secondary	Degree	Research
Test Anxiety	Mean	62.44	60.46	59.33	61.50	70.00
	SD	11.29	10.08	10.20	12.02	12.28
	‘F’ Value	NS				

Table 6: Mean, SD and F value of Test Anxiety scores of students based on father’s educational qualification  
NS= Not Significant

Test anxiety was also seen to be higher among the students of highly qualified fathers. Fathers with higher qualification are usually more concerned about their children’s education and since they are highly qualified, they expect one-step higher for their children. This may be the reason that students from such educational backgrounds are also conscious about their performance, and hence experience test anxiety in order to perform well and achieve the desired goals. Since the hypothesis stating “There will not be any significant difference in test anxiety of students based on father’s educational qualification” is partially retained.

“There will not be any significant difference in Test Anxiety of students based on Mother’s educational qualification”

Educational qualification of mother	Test anxiety scores			
	N	Mean	SD	‘F’ value
Illiterate	114	116.40	10.43	NS
Secondary	78	104.90	15.65	
Higher secondary	48	100.37	17.84	
Degree	5	103.08	16.68	

Table 7: Mean, SD and F value of Test Anxiety based on Mother’s educational qualification  
NS= Not significant

Mothers’ Educational qualification will not differentiate Test Anxiety scores of their children. The above hypothesis “There will not be any significant difference in Test Anxiety of students based on Mother’s educational qualification” is partially retained based on the available evidence. All mothers, irrespective of their educational status, are almost equally concerned and involved in their children’s education. This could be the reason behind not much difference in the test anxiety scores of students based on their mother’s educational qualification.

*“There will not be any significant difference in Test Anxiety of students based on hemispheric dominance”*

Brain dominance	Test anxiety		sig
	Mean	Mean	
Right hemisphere	61.97	10.77	NS
Left hemisphere	60.18	10.73	
Whole hemisphere	63.25	15.41	

Table 8: Mean, SD and F value of Test Anxiety scores based on hemispheric dominance  
NS= Not Significant

From the table it is observed that the test anxiety of students do not differ significantly on the basis of their hemispheric dominance. Hence the hypothesis “There will not be any significant difference in Test Anxiety of students based on hemispheric dominance” is accepted.

## 6. References

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