

## **The Preferred Learning Styles of Learners to use their Hemispheric Dominance (left & right brain dominance) for Learning a Second Language; A Case Study of Iranian EFL Students in Yazd**

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### **Abstract**

The problem of language acquisition has been given plenty of interest in current years. Essential factors to look at in teaching overseas languages are the idea of hemispheric dominance. The brain assigns certain features and systems to unique hemispheres of it. The parts of the left brain are described through series and order in contrast with the details of the right brain, which has the characteristic functions of being holistic. To learn a second language, learners may usually use one of their brain hemispheres more than the other one, and in this path, they have different learning styles that they mostly prefer to use. Left brain dominance is commonly associated with educational achievement and intelligence, while right brain dominance is associated with creativity. In this study, two kinds of questionnaires were used. One consisted of 5 questions that determined the students' brain dominance and their traits, and the other consisted of 10 questions that decided the learners' preferred learning styles. 40 EFL students (female) from two high schools in Yazd participated in this study. The data were evaluated by the use of SPSS package version 16. The results revealed a significant relationship between learners' hemispheric dominance and preferred learning styles.

**Keywords;** Learning Styles, Hemispheres, Brain, Second Language

### **1. Introduction**

There are numerous traces of studies within side the area of language mastering/teaching and the mechanism of the brain. The problem of language acquisition has been given plenty of interest in current years. Some investigators have argued for the biological nature of language, even though a few researchers have claimed that language acquisition is a final result of

cultural transmission and socialization. An essential factor to look at in teaching overseas languages is the idea of hemispheric dominance. "Control over the body's capabilities and sensation is evenly split among the two hemispheres (Mazaheri et al., 2019).

Steinberg (1993) mentioned that the brain assigns certain features and systems to unique hemispheres of it. The parts of the left brain are described through series and order in contrast with the features of the right brain, which has the characteristic functions of being holistic. Tendero (2000) mentions that left brain dominance is commonly associated with educational achievement and intelligence, while right brain dominance is associated with creativity(Weisi & Khaksar, 2015).

Lateralized brain areas have direct capabilities, including language and visuospatial processing. In most right-handed people, being attentive to stimuli involving language elicits brain activity lateralized to the left hemisphere, while being careful to stimuli involving visuospatial processing produces brain activity lateralized to the right hemisphere. Atypical lateralization in brain shape and characteristic is related to neuropsychiatric issues, including autism spectrum issues and schizophrenia, even though there's significant variation within generally growing people in the power to which precise capabilities, including language, are lateralized to the canonical side in particular for left-handed and ambidextrous people(Nielsen et al., 2013).

### **1.1. Learning Styles**

A learning style isn't always an ability but instead a favored manner of using one's abilities. Individuals have unique learning styles; they vary in their 'natural, habitual, and favored manner(s) of absorbing, processing, and maintaining new data and skills.' Learning styles are commonly bipolar entities (for instance, reflective versus impulsive, random versus sequential), representing two extremes of a vast continuum; however, a learner who falls on the continuum is value neutral because every extreme has its potential benefits and disadvantages. Moreover, although people may have some strong style preferences and tendencies, learning styles aren't constant modes of behavior, and styles may be extended and modified based on distinct conditions and tasks. However, the extent to which people can expand or shift their styles to fit a specific situation varies (Pashler et al., 2008).

### **1.2.Hemispheres**

Hemispheres in halves are located within the side of the cerebral cortex, and there's a tissue with the call of the corpus callosum that connects them. Hemispheres are composed of 4 components of frontal, parietal, temporal, and occipital lobes. Different capabilities of the brain are associated with distinct lobes. For example, cognitive abilities are processed within the frontal lobe, bodily motion processing within the parietal lobe, and hearing within the temporal lobe and occipital lobe are answerable for imaginative and prescient processes. Language systems and features are also involved in several regions of the hemispheres. A phenomenon wherein one of the hemispheres has become the dominant one is referred to as hemispheric dominance (Weisi & Khaksar, 2015).

The maximum apparent signal that our brains feature asymmetrically is the near-frequent choice for the right hand, which goes back at the least as far as the historic report takes us and has long been an adequate supply of symbolism, with the elegant right related to good values and the sinister left with poor ones. This has frequently caused stigmatization of left-handed individuals, occasionally forcing them to exchange hand use, sometimes with grievous consequences. Superstitions approximately left and right was compounded through the discovery, within the 1860s, that speech was based predominantly within the left hemisphere of the brain. Since language is uniquely human, this strengthened the concept that brain asymmetry is more commonly a distinct mark of being human. Because the left hemisphere controls the dominant right hand, it got here to extensively appear as the dominant or primary hemisphere and the right as non-dominant or minor. Nevertheless, proof that the right hemisphere was the more specialized for notion and emotion also caused speculation, a number of it far-fetched, approximately the complementary roles of the two facets of the brain in preserving psycho-logical equilibrium (Corballis, 2014).

Many instructors have problems with a few kids, including keeping them still and focused, completing assignments, keeping organized, and grasping concepts the way they're taught. In 2006, Morris defined the reasons particularly associated with the dominant side of the brain. He additionally added that left-brained kids have analytical thinking. They make lists and schedules. They usually want to realize the regulations and follow them. They take in facts via analysis, observation, and thinking. They have a little problem expressing themselves in phrases. They are unique in selecting via their very own personal stories and backgrounds. Right-brained kids know precisely what they mean but struggle to find the words to express it. They are visual learners who can see a three-dimensional picture in their minds. They like things to be concrete, so they prefer to see, feel or touch the real object. There also are whole-brained kids who use a number of the above strategies for learning. The right-brained ones might also have left-brained tendencies or vice versa(Thaha & Mohammed, 2020).

Research has shown that right-brain learners are more intuitive and spontaneous people. When it comes to the right side of the brain, it thinks in pics, not words. ' Visual-spatial skills of location and direction (maps), reorganizing colors and shapes and imagining and arranging them into art (sculpture, painting, architecture, music, rhythm, and dance) are capabilities of the right brain.' The right-brained tend to look at the large image beforehand rather than all the details and facts. A left-brained is driven by logic and prefers following steps or a particular system to perform a task. Elements and attributes are usually essential to the left brain. It decodes and procedures data. 'It works step-by-step; sees things in parts; puts things in order; recalls people's names; comes up with logical solutions to problems. 'Middle-brained learners use each side of the brain, making them bendier in mastering new things. The research was conducted to validate these notions (Thaha & Mohammed, 2020).

### **1.3.Brain**

The brain is the maximum complex part of the body. According to Steinberg (1993), the brain is located below the skull and is composed of 10 billion neurons and billions of fibers that join the neurons. The brain includes four predominant components: the medulla oblongata, the pons Varolli, the cerebellum, and the cerebral cortex from the front to the back (Weisi & Khaksar, 2015).

### **1.4.Second Language**

Language is a way of communication. It is a way of conveying our thoughts, ideas, feelings, and emotions to other people. Jack C. Richards and Richard Schmidt outline the language: as "the system of human verbal exchange which includes the structured arrangement of sounds (or their written representation) into large units, e.g., morphemes, words, sentences, utterances. In common usage, it can additionally consult with non-human structures of communication, including the "language" of bees and the "language" of dolphins.

To outline language isn't an easy task. Different linguists attempted to define language variously. However, if we analyze the definitions closely, we can discover that each is incomplete in some respect or the other. These definitions will increase a huge number of questions.

Some of the most typically accepted definitions of language given by the specialists in the area of linguistics are given below:

Edward Sapir says: "Language is a simple human and non-instinctive method of communicating thoughts, emotions and desires via voluntarily produced symbols."

This definition is somewhat incomplete because 'thoughts, feelings, and desires aren't the only things communicated using language. The term language covers various implications, including body language, sign language, and animal language.

According to Hall, language is "the institution whereby human beings communicate and interact with each other using habitually used oral-auditory arbitrary symbols."

Hall's definition is narrow because it regards language as a human institution. We know that animals do communicate. Animals have their very own language. In the words of Noam Chomsky, language is "a set of (finite or infinite) sentences, each finite in length and constructed out of a finite set of elements."

Chomsky focuses on the structural capabilities of the language. He showed how language might be investigated by studying it into its constituent elements. Each linguist focuses on specific language factors and ignores a few others. However, what they've stated about language is true, though not comprehensive.

As an item of linguistic study, "language" has primary meanings:

An abstract concept and a particular linguistic system, e.g., "French." The Swiss linguist Ferdinand de Saussure, who described the modern discipline of linguistics, first explicitly formulated the difference using the French word *langage* for language as a concept, *langue*(competence by Chomsky) as a particular example of a language system, and *parole* (Chomsky's performance) for the concrete usage of speech in a specific language(YULE, 1982).

## **2. Statement of the problem**

This study aims to determine the effects of right and left brain dominance on students' educational success and mastering English. Students may use their left or right hemisphere more than the other one, and they may also prefer different learning styles. Therefore, having an idea about the brain dominance of scholars is essential. If the instructor is aware of their students well, they will be able to use the strategies, techniques, and substances adequately(Oflaz, 2011).

Language classrooms include students with unique learning patterns, which are associated with the dominance of the right or left brain. This has a remarkable effect throughout the learning process (Thaha & Mohammed, 2020).

This study looks at the potential abilities of the left and right brain to recognize those learning styles that students prefer to follow.

## **3. Research Question**

The following studies question is characterized by a focal point consistent with the above information;

Which part of the brain is the most preferred for language learners?

## **4. Research Hypothesis**

Brain dominance has a strong effect on learning a second language.

## **5. Research Methodology**

### **5.1.Participants**

40 EFL students (female) were recruited for this research from two high schools in Yazd that were chosen based on random sampling. A unique attempt was made to find students on the same educational level. To fulfill this research, 40 participants were given two questionnaires to identify students who primarily use their left or right-brain hemispheres to acquire a second language and their preferred learning styles(Kord, n.d.).

### **5.2.Instrument**

In this study, two questionnaires were chosen as an instrument for data collection. The questioners are prepared to analyze if the students are left-brained or right-brained learners and also to measure how much they use either of their hemispheres and their preferred style.

## **6. Procedure**

### **6.1.Data collection**

In the present study, all records have been gathered over the spring semester's last three weeks of the academic year. After preparing the wanted copies of questionnaires, the researcher visited college students within the classroom and dispensed questionnaires to volunteer

contributors. Students had been reminded that there were no proper or incorrect answers withinside the questionnaires given to them and that their responses might not affect their exam results, so they were requested to reply to the items of the questionnaires frankly. Persian college students had been dispensed Persian model of the instruments to prevent misinterpretations of the inventory items(Özyel, 2016).

Participants were explained that strategy inventory was to apprehend what strategies they use to study a new language, and brain dominance inventory was to discover which side of their brain they have been much more likely to use. The contributors had been assured of the confidentiality of all their information(Özyel, 2016).

The records were gathered approximately in a class hour. Participants have been able to finish the questionnaires in about 50 minutes (Özyel, 2016).

### **6.2.Data analysis**

The data gathered and analyzed shows that most of the students have right brain dominance.

The findings are as follows:

- Most of the learners are very creative by nature.
- Majority of the students are typically emotional.
- Most of the students want to be unique from others.
- Most of the students can manage situations easily
- Most of the students enjoy the arts (music, art, extracurricular activities)
- Most of the students are divergent thinkers.
- From the data gathered, it's also apparent that:
- Very few students are rational in their approach.
- Very few students choose reasoning and analytical tasks.
- Very few students typically prefer simply theoretical courses
- Few students are methodical and organized

(Thaha & Mohammed, 2020)

## **7. Results**

The study's data were collected through a questionnaire comprising 15 questions divided into two segments: Personal traits and learning styles. The questionnaire was administered to 40 students from two high schools.

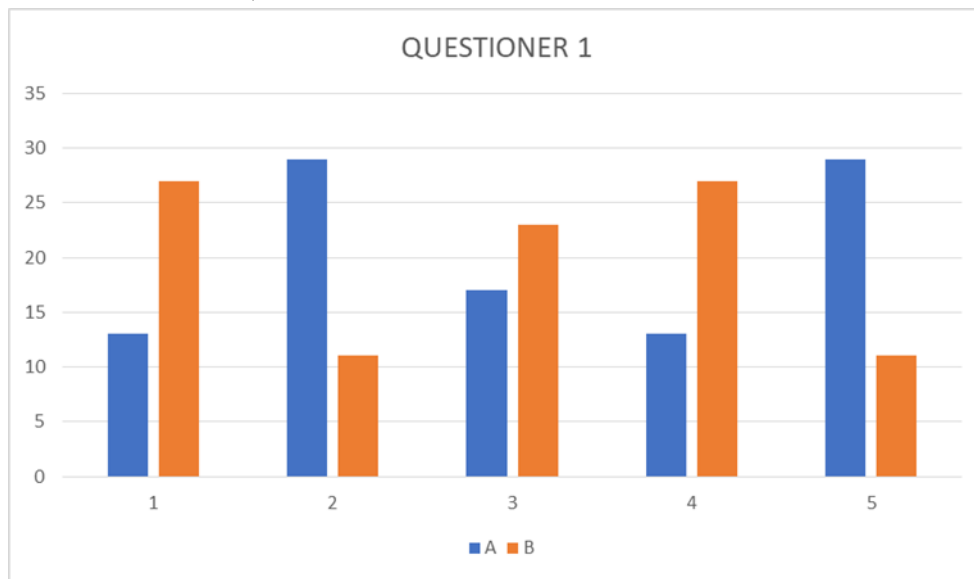
### **Right/Left Brain Dominance Tests**

		<b>A</b>	<b>B</b>
1	A. At home, my room has organized drawers and closets. I even try to manage other things around thehouse. B. I ignore and overlook things that are not related tome.	32.5%	67.5%
2	A. I enjoy a movie only when I watch it right from thebeginning. B. I can watch a movie from any point. I can quickly guess thestory.	70%	30%

3	A. I decide what to wear a day in advance. B. I pick up a dress without much planning.	42.5%	57.5%
4	A. I keep track of my expenditure. B. I like to spend money as long as it makes me feel happy.	32.5%	67.5%
5	A. While buying a thing, I give importance to its purpose more than its appearance. B. I buy things that look beautiful and colorful.	72.5%	27.5%

**Questioner 1 (Personal traits)**

(Thaha & Mohammed, 2020)



*Reliability questionnaire 1;*

**Reliability Statistics**

Cronbach's Alpha	N of Items
.881	5

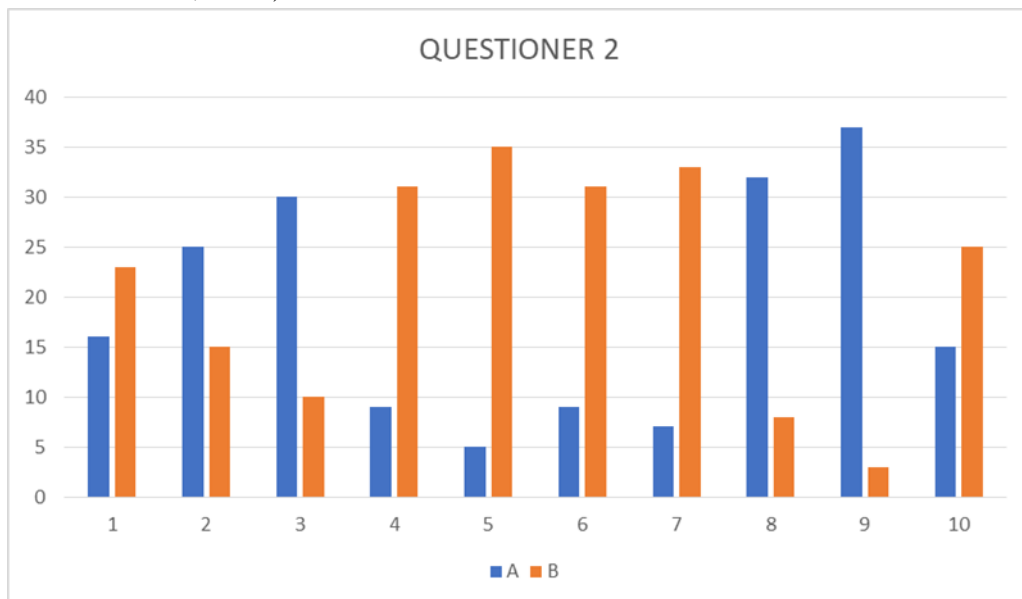
Check the Cronbach's Alpha value shown in the Reliability Statistics table. In this example, the value is .881, suggesting excellent internal consistency reliability for the scale with this sample. Values above .7 are acceptable; however, values above .8 are preferable.

**Questioner 2 (Preferred Learning Style of the learner)**

		A	B
1.	A. I like to improve my vocabulary by reading newspapers, magazines, and books. B. I like to improve my vocabulary by reading the subtitles while Watching movies.	22.5%	77.5%

2.	A. I prefer to list out the important points and highlight them. B. I prefer to read and understand the gist.	62.5%	37.5%
3.	A. While reading a comprehension passage, I take clues from the keywords. B. While reading the passage, I try to form an image of what is being said.	75%	25%
4.	A. I prefer to have a mind map before I begin to write. B. I prefer to write as the ideas keep coming to my mind.	25%	75%
5.	A. I prefer to read informative books on health, discoveries in geography, inspiring personalities, etc. B. I prefer reading fiction and books about traveling, cuisines, and cultures.	12.5%	87.5%
6.	A. I prefer to learn individually to avoid disturbance. B. I prefer working in a group as interaction makes learning more accessible and enjoyable.	22.5%	77.5%
7.	A. I prefer writing assignments after referring to a good number of books. B. I prefer to make models and give presentations.	17.5%	82.5%
8.	A. I prefer to memorize the essential points to reproduce. B. I prefer to understand the examples to reproduce.	80%	20%
9.	A. I prefer to learn in a quiet place. B. Sometimes I listen to music before or while studying.	92.5%	7.5%
10.	A. I prefer to learn complex concepts by gathering more information. B. I prefer to learn complex concepts by watching videos.	37.5%	62.5%

(Thaha & Mohammed, 2020)





*Reliability questionnaire 2;***Reliability Statistics**

Cronbach's Alpha	N of Items
.776	10

Check the Cronbach's Alpha value shown in the Reliability Statistics table. In this example, the value is .776, suggesting excellent internal consistency reliability for the scale with this sample. Values above .7 are acceptable; however, values above .8 are preferable.

**8. Discussion**

Many researchers stated that left-dominant learners could promote higher-order thinking and problem-solving skills in college students. This study was designed to analyze the results of two instructional strategies for developing vocabulary, including word parts and context clues on autonomous left-dominant and right-dominant students' performance studying English in the English language institute at the intermediate level(Savadkouhi, 2013).

The findings discovered that the experimental group made progress over time; that is, the students from this group attained an increase in rankings from pretest to post-test. Further, there has been a great distinction among left-dominant and right-dominant learners in post-test in the experimental group. The results of this study raise more questions and point out the need for the implementation of hemispheric dominance in vocabulary achievement. Right-brained students who were good at responding and demonstrating instructions and visuals performed well in the Vocabulary part. Being open to open-ended questions, they were also good at writing. Left-brained students, who were good at problem-solving by logic and who could see the differences, did well in the Use of English and Reading parts. Whole-brained students' exam results seemed balanced because they could use both sides of their brains almost equally. All the results of this study indicate that brain dominance affects the students' achievement within the English classroom. Considering many of these, teachers can find efficient strategies for their classrooms. Therefore, teachers also can discover what type of activities the students want to enhance the part of their brain other than the dominant one(Savadkouhi, 2013).

Awareness of own brain dominance enables the teacher not to teach only via their power. By finding out the brain dominance of the students and giving activities according to them, the teacher may also enhance their teaching performance, increase the fulfillment rate and advise the students on learning strategies and recalling. All this information can serve teachers to make sure that they appeal to all learners with different brain dominances and offer their learners experiences with all three modalities. They should discover a way to mix all 3 to enhance their learners, create the right atmosphere to make learning easier and extra fun, and help students boost their information with significant activities. To conclude, it isn't the teachers' duty to teach all vocabulary to the learners(Savadkouhi, 2013).

Learners should depend upon themselves by adopting techniques that fit their capabilities in mastering vocabulary. Vocabulary learning isn't always easy. But with practice and time, learners should discover that they're making progress. Learners ought to study items that appear in lots of contexts. Learning in rich contexts is valuable for vocabulary learning. Vocabulary words should be those that the learner will find beneficial in lots of contexts. When vocabulary items are derived from content learning materials, the learner can be better equipped to deal with the specific reading matter in content areas. Learners will sense that vocabulary learning is powerful when it entails active engagement in learning tasks(Savadkouhi, 2013).

In conclusion, it may be stated that investigating hemispheric dominance and learning styles from curriculum elements, teaching processes, and instructors will contribute considerably to Iranian Education (Savadkouhi, 2013).

### **Recommendations for further studies**

1. Students can be made to behavior brief surveys and examine data.
2. Students might be requested to put together fashions and charts.
3. Teachers should offer hyperlinks to beneficial movies and include at least one video throughout the lecture.
4. Teachers may want to comprise songs to complement vocabulary and enhance visual skills.
5. Teachers should explain principles thru position performances and props.
6. Teachers should take the scholars on discipline visits to offer them firsthand experience.
7. Assigning Library hours and inspiring widespread reading.
8. Teachers should inspire the use of digital devices within the lecture rooms.
9. Different Methodologies can be followed to train loads of subjects to decrease monotony.
10. Teachers should inspire the idea of flipped lecture rooms to make the beginners accountable and active.
11. Teachers should report their lectures and add them.
12. Teachers ought to inspire the scholars to behaviour experiments, thereby making the getting to know manner sensible oriented.
13. Teachers should assign duties to college students on a rotation basis.
14. Teachers should draw figures while explaining the principles.
15. Teachers ought to offer case research for schoolroom discussions.
16. Teachers should inspire scholars to give in-elegance debates or keep online forums.
17. Teachers should inspire the scholars to put in force extra instructional technology (Thaha & Mohammed, 2020)

### **9. Conclusion**

The left and right brain dominance are stereotypes, and any person may have strengths and weaknesses from both sets. There may also be variations withinside the way the brain processes diverse categories of cognitive skills. e.g., both left-brained and right-brained

humans may be good at spelling; however, how they do it could be distinctive. Left brains memorize the sequence of every letter in a word; right brains memorize the picture of the entire term. As an instructor or tutor, to cater to a wide range of students, whether left, right, or middle-brained, it'd benefit them to observe their learning style and which side of the brain is dominant in them. The dominant side could ultimately have an effect on the teaching techniques used. In a society and education system that typically favors and embraces left-brain learning, it is more advantageous for instructors to have stability and not simply adhere to at least one kind of learning, the left-brain, as they have been proven to do most of the time. This could cause many college students to drift off or daydream, particularly right-brained college students, and lose the discussed critical data. Teachers can use this knowledge to develop lesson plans to deal with both types of college students. Understanding left-brain and right-brain dominance will prepare them to take on different teaching techniques and use these new strategies to the advantage of their college students. By accepting the particular attributes of every side of the brain and its learning styles and incorporating teaching methods that encompass both, all college students will have a fair chance at learning and a better understanding (Thaha & Mohammed, 2020).

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