

## **LEFT SIDE RIGHT**

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Dedicated to Isaac Asimov

### **1. THE FACTS**

There are left-handed persons. They write with their left hand, and there are other actions that they do differently from most other people. It is easy to see whether a person is left-handed by noticing the hand used when writing. Left-handed people are minority. Right-handed people are the majority – more than 90%. In places where people do not write, right-handiness is determined by the hand that holds the hammer or throws the spear. There also right-handed people are the majority.

A special coordination test, uses an instrument with two rotating handles, for following a curved line on a plane. One handle is on the right side, and it activates the horizontal motion (by a mechanical worm transmission), and the other handle is under the instrument, and activates the vertical motion.

In this instrument, a left-handed person will get bad results. It does not mean that left-handed persons lack coordination. Rather, it means that this instrument is not appropriate to test the coordination of a left handed person. Indeed, there is also a similar instrument, for left-handed persons, in which one handle is on the left, and the other handle is under the instrument. The results of the tests represent the coordination of a left-handed person. If a right-handed person is tested with the instrument for left-handed persons, he will fail, as a left-handed person who is tested with an instrument for right-handed persons.

A left-handed person knows that he is left-handed. If he will be asked to be tested with an instrument for right handed persons, he will immediately see that a right-handed person will succeed, but a left-handed person will fail. He may then complain and ask to be tested with an instrument for left-handed persons. Apparently there is a remedy for left-handed persons.

The connections between the nerves and the limbs of the body are such that in each person the half of the brain in one side, is connected to the opposite half of the body. This rule has no exceptions. The left half of the brain activates the right hand, and the right half of the brain activates the left hand.

Today it is known that the two halves of the brain are different. In a right-handed person, the left half of the brain is responsible of the motor actions and language. The right half of the brain is responsible for abstract perception.

This is the accepted concept today. It is easy to see with which hand a person writes, and then know which half of the brain is responsible.

Today it is known that there are physiological differences between the half of the brain that is responsible for motor actions and language, and the other half that is responsible for the abstract perception. So, it is more accurate to say that a person whose half of the brain that is responsible for motor actions and language is in his left half of the brain, is a right-handed person. A person whose half of the brain that is responsible for motor actions and language is in his right half of the brain, is a left-handed person.

Before a person is born, the side of the brain that is responsible for motor action and language, and the side responsible for abstract perception, are already fixed in his brain. Apparently right-handedness and left-handedness are determined before birth.

Yet the use of the hands during the first two years (approximately) also has an influence. What influence does the use of the hands have in the first two years? It is important to consider another line of reasoning. It was indeed found that mothers tend to hold their babies with one side leaning on the mother's body, while the other side is free. So, one of his hands is limited in motion, while the other hand is free to move, touch and hold things, etc.

A baby who was held so that his right hand was pressed to the mother's body, and his left hand was free, has a greater chance to grow up as a left-handed person than a baby who was held so that his left hand was pressed to the mother's body, and his right hand was free. There are more such causes.

It was found that in about half of the left handed persons investigated, and 99% of the right handed persons, the writing hand is activated by the half of the brain that is responsible for motor action and language. It was noted

that in the remaining half of the left-handed persons, and 1% of the right handed persons, the writing hand is activated by the half of the brain that is responsible for abstract perception, imagination, and three-dimensional perception. See Restak (1979), Levy and Reid (1976), and references therein.

The reader is referred to the book *The brain - the last frontier* by Restak (1979). Chapter 10 gives a fascinating description of how Dr. Jerre Levy of the University of Chicago found that indeed there are right-handed persons whose brain is "left side right," because they hold the pen in a special way, similar to the way that those about half of the left-handed persons whose brain is "left side right" hold the pen. See Figure 27 in Restak (1979), and the same figure in Levy and Reid (1976). In these persons, the half of the brain that governs language is not the half brain that governs the writing hand.

The researchers explain further, that left-handedness is determined by many factors. It is possible that a right handed person will jump with his left leg. There are more important factors, especially the "directing eye." If you learned to shoot, you may remember the command "close the non-directing eye."

It is possible that a person whose motor half of the brain is on the right side, his left hand was pressed to the body of his (right-handed) mother when he was an infant, and he grew up to be a right-handed person, who jumps with his left leg. The investigations are not that exact, because it is easy to check each person after starting the test, but, it is naturally difficult to check experiences that happened many years ago. Try to find and prove if a person that writes with his right hand and jumps with his left leg, remembers how his mother held him when he was a baby.

A dissymmetry exists in the position of the heart and lungs in the body. The normal person has a heart that tends to the left side of the chest. This person also has a right lung with three lobes, and a left lung with two lobes. There are cases where the heart tends to the right side of the chest. This person also has a right lung with two lobes, and a left lung with three lobes. This opposite case is very rare, one in a few ten millions. We do not know about any association between the right heart and left-handedness, right-handedness or the "left side right" situation in about half of the left-handed people, nor in 1% of the right-handed people.

These are the facts, yet not all the researches agree on these facts. Later I will discuss the meanings.

## 2. MEANINGS

Apparently the personality of an individual is determined by the half of the brain that governs the writing hand.

If the half of the brain that is opposite the writing hand and governs it, is also the half of the brain that is responsible to the motor actions and language, the person will be the "normal type" person, (whether he is right handed or left-handed). If the half of the brain that is opposite the writing hand and governs it, is also the half of the brain that is responsible to the abstract perception, imagination, and three-dimensional perception, the person will be the "unusual type" person, (whether he is right handed or left-handed).

There is an opinion that the personality is in the half of the brain that "rules." The half of the brain located opposite the writing hand determines the actions. If this is the motor half of the brain, it sends a command to the opposite hand to act. If the "non-motor" half of the brain rules, it orders the motor half of the brain, that in turn sends back an order to the non-motor half brain, to command the opposite hand to act. The meaning is a longer response time.

This was physiology. What about the psychology? Very different. If the ruling half of the brain is responsible for language, it will be easier for the ruling half of the brain to express itself by language. If the ruling half of the brain is not responsible for language, it will have to get help from the other half that is responsible for language. Another difficulty: The ideas may be more sophisticated, and may be even better, because this is the half of the brain that governs abstract perception, and imagination, yet to translate them to language, the simpler language of the second half brain is needed. And a third difficulty: most of the listeners are people whose ruling half of the brain does not govern abstract perception and imagination. They are people who think in other concepts. Persons whose ruling half of the brain do not govern language, will have difficulties to explain themselves to others, and to express their ideas and opinions either in speaking or in writing.

What about thinking? Persons whose ruling half of the brain is responsible for the abstract perception and imagination can find solutions to a certain

problem, entirely different from the solutions that persons whose ruling half of the brain is responsible for motor action and language. Both kinds of thinking may solve problems, however, in very difficult problems only the "abstract" persons will find a solution, sometimes unable to explain it to the "motor" person.

In cases of serious epilepsy, an operation may prevent attacks by separating the two halves of the brain. In a "motor" person, whose two halves of the brain are disconnected, his imagination, abstract perception and three-dimensional perceptions may be damaged. In an "abstract" person, whose two halves of the brain are disconnected, his language and motor ability will be severely damaged. I guess that epilepsy is less common in "abstract" persons, and they do not need this operation.

Some people think that the "abstract" half of the brain has an important task regarding memory. If so, then an "abstract" person may have a good memory.

We started the paper with coordination tests. In psychometric tests the "abstract" person will succeed more than the usual person.

Yet nowadays psychologists have their patients undergo personality tests, that check characteristics like passiveness, aggressiveness, decisiveness, etc. These tests were made for the majority, whose "motor" half of the brain rules. These tests were made by psychologists whose "motor" half of the brain rules, and checks the deviation from the optimum for "motor" personality.

We have seen that it is impossible to find the coordination of a left-handed person with an instrument built for right handed persons. Similarly, it is impossible to check the personality of a man with "abstract" traits, using a psychological test designed for one with a "motor" personality.

Here the situation is not like that with left-handed persons. There are no tests for people with an "abstract" personality. It is difficult to recognize such a personality - most of these persons do not know that they have such a personality. Even if a person knows, when he answers the questions in a test, he will be ruled out as having too low or too high a self image. Psychologists do not agree on all the psychological theories. Many psychologists do not know about the physiological difference between the "motor" half of the brain and the "abstract" half of the brain, nor on what Jerre Levy discovered. Psychologists know that there are many alternate psychological theories that

even contradict each other. See a survey of theories in Coren (1992). For most of the psychologists who know about Jerre Levy's findings, this is only an additional theory, one among many, and not necessarily correct. To admit that there is a unique type of person because of what was discovered is out of the question. Tests designed for this type of person are science fiction for most psychologists.

For important positions and jobs, it is common to use psychological tests. Yet, it this way that society rejects people with the talents of abstract perception and imagination that may very well be needed. Thus society rejects the benefit of their innovative and exceptional minds. So, these people have no other alternative but to be independent, while their persuasive and expressive and presentation skills are not sufficient.

We highly recommend to read the story of Asimov (1959) *Profession*, in his book *Nine tomorrows*. This is a science fiction book. Asimov predicted that the education and the tests for fitness for professions do not fit a small minority of persons who must find their way alone, with the help of psychologists. Today, indeed the tests are not suitable for a small minority of persons who must find their way alone, but with additional difficulties and disturbances by psychologists, who stick on them the label "disqualified."

Asimov died in 1992, (the year I wrote this paper), without seeing even one of his hundreds of science fiction stories and predictions come true. Asimov's prediction, that the tests are not suitable for a minority of the people, who must then find their way alone is coming true, even stronger than Asimov predicted.

I think that many will oppose the second part of this paper. Those who look for research subjects, might want to prove or invalidate, with experiments, measurements and explanations the ideas that were presented in this paper.

## REFERENCES

1. Asimov, Isaac, *Nine tomorrows: Tales of the near future*,  
- Doubleday, Garden City (1959)  
- Dobson, London (1963)  
See the story: *Profession*.
2. Coren, Stanley, *The left-hander syndrom*,  
- Murray, London (1992)  
- Free Press, MacMillan, New York (1992)
3. Levy, Jerre, and Reid, Marylou, *Variations in writing posture and cerebral organization*, *Science*, v. 194(4262), pp. 337-339 (15.10.1976)
4. Restak, Richard M., *The brain - the last frontier*, Chapter 10,  
- Warner, New York (1979)  
- Doubleday, Garden City, New York (1979).  
See Figure 27.