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CENTRAL AND PERIPHERAL PROBLEMS OF NEUROLINGUISTICS

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Abstract:

The article aims to introduce the basic rules and functions of neurolinguistics, the history of this field, specific neurolinguistic research, methodology and scientific paradigms, language and communication, thinking, neurophysiological processes.

Keywords: Neurolinguistics, neurology, psychology, neuropsychology, speech agnosia, apraxia, dysarthria, alexia, agraphy, psychotherapy, speech activity, cognitology, communication, consciousness, hemispheres, aphasia

The famous Russian psychologist, A.N. Leontev, one of the founders of the theory of activity, emphasizes that the theory of activity is based on the principle of unity of mind and activity. , is a goal-oriented process. Subjectivity is related to activity. Need is a state of being outside the individual, but feeling the need for what the individual needs to live a normal life, for the development of the individual. Motive is a form of manifestation of need, the reason that motivates a person to action, that is, why the activity is carried out. This or that motive motivates a person to a certain goal. The goal is the expected result of the activity. The activity will have the following levels:

Any activity takes the form of a specific sequence of actions. Conscious activity, in which action is directed to achieve a goal, is the basic structural unit of activity. It is done in different ways depending on the circumstances. The methods of performing an action are called operations. Operations are automated, usually incomprehensible actions. An activity can lose its motivation and become an action, and an action can become an operation with a change of purpose. Under certain conditions, the goal of action becomes more important than the goal of the whole activity, and as a result, the goal becomes a motive. From the point of view of activity theory, activity is a condition and a factor in the formation of human consciousness.

L.S. Vygotsky is one of the most famous Russian psychologists and philosophers. Many of the ideas put forward by the scientist in his scientific views are directly related to the mental development of children. L.S. Vygotsky's law on the formation of higher mental functions is of great importance in the implementation of the upbringing and education of children. At the heart of the psychological interests of psychologists is the issue of socio-cultural development of the child. L.S. Vygotsky's research is highly psychic[13] functions, i.e., voluntary memory and attention, thinking, volitional actions, cannot be explained directly by the activity of the brain, to understand the essence of these functions, we must look for their roots in the social environment outside our consciousness. It was L.S. Vygotsky's scientific views that served as an important foundation in determining the importance of the social environment. According to him, the environment is a source of development of higher mental functions.[14] The role of the environment in development changes with age. Therefore, the environment should be accepted as relative, not absolute. There are no innate forms of behavior in man. Mental development of a person takes place through the mastery of historically formed types and methods of activity. Morphophysiological features of the brain and communication serve as conditions for child development. L.S. Vygotsky's contribution is that he introduced the principle of historicity into the science of child psychology and neurolinguistics.

The first ideas about correction belong to Edward Segen. Throughout his therapeutic and pedagogical activities with mentally retarded children, he promotes and makes extensive use of manual labor as a means of physical and spiritual education. As a medical professional, E. Segen was well aware of the importance of labor in the physical exercise of the members of the movement. He emphasizes that with a simple form of physical labor, a child's health is strengthened and his spiritual feelings are awakened.

In the same spirit, another scientist, J. Demor, left his thoughts. Rejecting verbalism in the teaching of the mentally weak, he believes that logical thinking can be better developed through manual labor. The views of E. Segen and J. Demor are correct. This idea is based on the ideas of sensualism that prevailed at that time. The idea of sensualism emphasizes that we can perceive the world only through our senses, and that a person's spiritual life depends on his perceptions of the world perceived by his senses.

Jean Vaney created the first system of exercises to correct defects in the sensory organs. These exercises have been performed by children since the first year of education. They are based on getting to know the objects around us and sorting them by shape, size and color. Through this, the performance of their analyzers has improved.

[13] Vygotsky L.S. Thinking and speaking. - Moscow: Nauka, 1982, p. 20.

[14] Vygotsky L.S. Thinking and speaking. - M .: Nauka, 1982, p. 21.

The exercise system developed by J.Vaney was improved by M.Montesori and used to correct the shortcomings of mentally retarded children. This system was called the "theory of sensomotor culture and psychic orthopedics".

In the M. Montesori system, the manual labor proposed by E. Segen and J. Demor as a means of development was examined at a low level. It deepens sensualism in oligophrenic pedagogy, denies the leading role of education in child development, and promotes an idealistic understanding of the self-development of psychic forces.

Over time, a system of formal exercises based on unfamiliar materials failed to meet the needs of teaching in an auxiliary school. This prompted O. Decroline to perfect the sensory culture system. In the new version, the author divides the child's developmental work into three stages: observation, association, and expression. The formation of observation is largely consistent with the work of M. Montesori, which focuses on the development of sensory cognition. The formation of the association of thinking is achieved through the teaching of general subjects. The formation of activity is achieved through speech, singing, drawing, manual labor, movement.

A unique system of corrective action was created by Russian oligophrenopedagogue Alexei Graborov. It combines the views of J. Vaney and O. Decroli and includes a system of exercises aimed at developing memory, cultivating thinking, and shaping cultural behavior. A.Graborov The development of sensory culture is achieved through socially important activities: games, manual labor, subject lessons, nature excursions.

The views expressed on the nature of mental retardation and corrective action are very close to LS Vygotsky's views on social education. The scientist identifies two types of deficits in assessing the development of the psyche of a mentally retarded child: primary symptoms of mental retardation and secondary symptoms arising on the basis of primary symptoms.[15]

In mentally retarded children, the underdevelopment of higher forms of cognitive activity is characterized by superficiality of thinking, slow development of speech and qualitative specificity, deregulation of verbal control of behavior, incomplete emotional-volitional sphere.

L.S. Vygotsky emphasizes that the organic defect becomes a socially abnormal behavior of the child and that this behavior is manifested in its interaction with the environment and social means, gives a social character to the child's defect and for the first time in history puts the task of social compensation before the auxiliary school.[16]

IP Pavlov emphasizes an important feature of compensation. In his opinion, the plasticity of the nervous system makes it highly self-correcting, regenerating and perfecting. A study of the works of IP Pavlov shows that, as some western authors have pointed out, compensation can be achieved through systematic rehabilitation training, rather than as a result of instructional automatic methods.

The first method to study the brain is the direct observation method. This was the main method in the emergence of science and in its classical period. His goal was to try to establish a link between physical disorders in the brain and the observed changes in human behavior, the clinical data that allowed Brock and Wernicke to make their first discoveries. During World War II, Luria collected and summarized a large number of observational materials on the diagnosis and correction of speech disorders in servicemen with head injuries. Sometimes it is known that brain injury, in other clinical cases, is a disorder of human behavior, but it is not possible to determine exactly how the brain was damaged until the person died. The lack of clinical follow-up is related to the methods of generalizing the data obtained. Because the same behavior changes as a result of the injury, no two patients with the same brain injury will be the same. The brain damage that becomes the object of neurolinguistic analysis is of a random nature.

Beginning around 1850, neuropsychological research went beyond clinical observation and began to focus on opening the skull. With the help of penetration, the researcher was able to activate or immobilize any part of the brain and observe all changes in behavior and speech. It is possible to stimulate brain tissue through the use of chemicals, electricity, heat, cold.[17]

Surgical methods have been actively and successfully used by American neurosurgeon (Nobel Laureate) Roger Sperry and his colleagues. The "brain separation" operation used as a tool for epilepsy is especially popular.

Penetration interventions include the Vada test (named after its creator, Jun Vada). For the first time in 1949, Jun Wada used the technique of temporary inactivation of one of the cerebral hemispheres to assess the contribution of the cerebral hemisphere to speech activity. If one of the hemispheres is under anesthesia, the involvement of the other hemisphere in speech processes such as naming, repeating, understanding, reading, and so on, can be assessed in affective speech. Currently, the Vada test is used to study the lateralization of language speech functions,

Electroconvulsive therapy (ECT). Typically, this method is used in the treatment of various mental illnesses (e.g., epilepsy). The therapeutic procedure is that an electric shock is applied to the cerebral hemispheres as a shock, leaving one of the hemispheres temporarily inoperable. The researcher is able to compare a person's communicative abilities in three situations: 1) when both hemispheres are functioning normally, 2) when only the left hemisphere is "working," and 3) when only the right hemisphere is working.

The method of electrical stimulation of the brain (ERM) is also used to study the functional asymmetry of the brain. This is a very rough procedure that is irritating with the flow of any part of the cerebral cortex. Its advantage is

[15] L.S.Vygotsky Collected Works - M .: 1983. - B.5.
[16] Vygotsky L.S. Thinking and speaking. - M .: Nauka, 1982. C.27.

[17] Akhutina T.V. Neuro-linguistic analysis of dynamic aphasia -M.: MSU. 1975.-143s.

the ability to accurately know the location of stimulation, the ability to repeat the desired effect. However, this method only evokes elementary emotional and motor reactions, and complex behaviors cannot be repeated.

The penetration technique has its advantages and disadvantages. Among the advantages is the selected feature of the effect on the brain. Among its shortcomings is that by entering the thinnest brain tissue with a scalpel or electrode, the researcher can disrupt only one stage of many complex cognitive processes.

Electroencephalography (EEG) is one of the first neuroimagnetic methods. It is based on the electroencephalograph's ability to detect very weak electric currents generated by neurons. Small metal electrodes are attached to the crown and sides of the patient's head and these currents are recorded on tape.

Computed tomography (CT). This uses narrow X-rays that travel across the patient's head and are captured by a sensor. This light moves slowly in a circular arc and the sensor moves with it. Because the density of brain tissue varies, it blocks X-rays to varying degrees. As a result, the computer creates a complex image based on scanning the brain from different angles.

Nuclear magnetic resonance (NMR). This is a gentle method because X-rays are not used. It is known that the nuclei of atoms have a specific oscillation frequency. Different structures of the brain have different chemical compositions, the nuclei of these atoms vibrate in different ways. An ultra-high-frequency alternating magnetic field created by the electromagnets surrounding the patient's head causes these atoms to vibrate. The result is recorded by the scanner's magnetic sensors. The computer then gathers this information to create a detailed image of the brain, which can show tumors, tissue damage, blood clots, and ruptured blood vessels.

The main advantage of neuro-visual methods is that they can be used to visually monitor the physiological activity of different parts of the brain as they perform different types of activities.

Despite the many methods and approaches, the results obtained by scholars from different schools and disciplines vary drastically and are often contradictory. This is primarily explained by the extraordinary complexity of the research topic - the human brain.

Damage to the nerve fibers that connect the Brock and Wernicke fields has also been found to lead to sensitive aphasia.

All of these discoveries provided the basis for the clinical study of human speech activity in its integral connection with brain activity.18

1. The speech process is based on a number of areas of the cerebral hemisphere that work together, each of which is of particular importance for the organization of speech activity. This leads to the conclusion that it is necessary to look for new zones that are responsible for other communicative functions.

2. Both speech zones are adjacent to common activity zones: Brock's center is adjacent to the motor and Wernicke's center is adjacent to the hearing area. This observation led to the hypothesis that speech control zones interact with brain behavior control zones.

3. The Brock and Wernicke zones are located in the left hemisphere of the brain. Disorders of the right hemisphere do not lead to speech disorders. It was this conclusion that led to the declaration of the left hemisphere as "dominant".

Brock and Wernicke's discoveries further inspired aphasiologists to look for a link between the structure of language and the structure of the brain. The famous German psychiatrist Karl Kleist tried to create a brain map, where he highlighted the narrow circles corresponding to the phonetic, lexical, morphological, syntactic systems of language. A similar position was taken by the English neurologist Henry Head, who believed that local damage to the brain should lead to nominative, syntactic, semantic aphasia. Such views have led to the emergence of a trend in neurolinguistics called localization.

When a person is fluent in his mother tongue, his speech is expressed at the level of a single text. It governs the construction of speech as a whole, at the level of meaning transfer. When composing text, words seem to appear spontaneously.

Neurolinguistics currently has a lot of observations, experimental data, most of which are still awaiting interpretation and generalization. At present, there are many problems in Uzbek neurolinguistics that can be solved by understanding the essence of the brain of communicative competence. There is a great need for scientific research conducted jointly by psycholinguists, neurologists and psychologists in solving central and peripheral problems of neurolinguistics.

REFERENCES

1. Alpanova Sh. Reflection of mood in the Uzbek language. –T .: "Akademnashr" .2019. - B.8.
2. Reformatsky A.A. Introduction to linguistics. - M .: 1967. - P.7.
3. I.A. Baudouin de Courtenay. Selected Works on General Linguistics. - M .: Publishing house of the Academy of Sciences of the USSR, 1963
4. L.V. Shcherba. On the threefold aspect of linguistic phenomena and an experiment in linguistics. // Language system and speech activity. -L., 1974. -S. 24-39
5. Luria A.R. Language and Consciousness. - M .: Nauka, 1979 .-- P.28.
6. Paul G. Principles of the history of language. - M .: Nauka, 1960 .-- P.36.
7. Leontiev A.N. Problems of the development of the psyche. M., 1972, p. 13.
8. Vygotsky L.S. Thinking and speaking. - Moscow: Nauka, 1982, p. 20.

9. Vygotsky L.S. Thinking and speaking. - M .: Nauka, 1982, p. 21.
10. L.S.Vygotsky Collected Works - M .: 1983. - B.5.
11. Vygotsky L.S. Thinking and speaking. - M .: Nauka, 1982. C.27.
12. Akhutina T.V. Neuro-linguistic analysis of dynamic aphasia -M.: MSU. 1975.-143s.