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NEUROPYCHOLINGUISTICS - THEORY OF BODY STUDY

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Abstract
The article analyzes neuropsycholinguistic situations related to the human body and body movements within the framework of modern requirements. Attention to human health and the causes of speech disorders are explained.

Keywords: Dopamine, neurotransmitter, adrenaline, noradrenaline, serotonin, oxytocin, vasopressin, noradrenaline, melatonin, gamma-aminobutyric acid, prefrontal cortex, insula, amygdala, cingulate cortex, cortisol.

Introduction

Almost all of the chemical elements in Mendeleev's periodic table are present in the human body. Most of these elements enter through food and are also produced in the body itself. All body movements are controlled by the brain. In a healthy balance of the brain, the distribution of elements takes place. Each chemical element performs a specific function. These elements provide the body with energy. By synthesizing chemical elements, the brain manages emotions, laughter, passion, sleep, excitement and other states.

Each chemical element in the body is dominant in its area in terms of its function. Changes in the amount of elements cause the emergence of various positive or negative conditions. For example, speech disorders, underdevelopment, decreased physical or mental activity, and the emergence of various autism disorders are among them.

Main Part

The quantitative change of fashions in our body, that is, fashion change, is associated with the activity of the brainstem, especially the right and left hemispheres of the brain [1; 2]. Having your own thoughts and speech change the

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quality of consciousness and thinking, allows people to think about themselves and others. Language and emotions are manifested in the body. For example, the limbic system controls emotions. Emotions cause a body reaction through the vegetative system: the heartbeat quickens, the hands tremble. These states determine the emotional tone of speech. Concepts such as hatred, fear, joy are manifested through neurolinguistic and bodily reactions. The processes of speech development and comprehension are carried out by special centers in the brain: Broca's center - word formation, pronunciation control and Wernicke's center - speech comprehension, as well as the somatosensory and motor cortex - movements of the speech apparatus (tongue, lips, neck). So language is not just a mental process, but works in conjunction with the body.

Dopamine is an important neurotransmitter produced by the brain that plays a major role in a person's mood, behavior, and physical activity. The main functions of dopamine are that it is a "reward hormone" and paves the way for the motivation system to achieve goals. Dopamine is produced after pleasurable events and results (such as a party, watching, loving, hugging). Feelings of joy, motivation, attention, and satisfaction are associated with dopamine. It enhances the processes of action, learning, and goal setting. Dopamine is important for performing actions with precision. When dopamine is low, mood swings, apathy, and apathy are observed. Its deficiency causes Parkinson's disease (tremors, slow movements). Dopamine is necessary for concentration, quick thinking, and learning processes. Attention deficit disorder results from disturbances in dopamine balance. Hormone management, motivation, joy, feelings of reward, the initial "flirting" period of the love stage, and the strength of passion are all related to dopamine.

Serotonin regulates mood stability, feelings of happiness and satisfaction, and sleep-wake rhythm. Reduces nervousness**. Oxytocin** is a hormone of love, trust, affection, bonding, and maternal love. It is released during sexual intimacy. Improves health. Helps produce the “cuddle hormone” and strengthen social bonds.

Vasopressin enhances the feeling of loyalty and protection in men. Vasopressin is also released after sexual intercourse. It plays a role in a serious relationship,

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constancy, and a sense of responsibility. **Adrenaline** (Epinephrine) increases excitement, fear, and intense emotions, and increases heart rate. It triggers the "fight or flight" response during stress. **Noradrenaline (Norepinephrine)** helps increase attention, alertness, strong excitement, rapid reaction to danger, and activity in learning and memory. **Endorphins** are the hormones of laughter — they are released in large quantities during laughter. They reduce pain. They give a feeling of "relaxation" after exercise. **Melatonin** is a sleep hormone, secreted more at night. Too much light reduces melatonin**. Gamma-aminobutyric** acid calms the nervous system. Reduces anxiety, anxiety, and fear. Helps fall asleep. Cortisol is a stress hormone that provides short-term motivation and alertness but can cause negative effects such as insomnia, anxiety, and mood swings when levels are chronically elevated.

Language processing in the brain, such as speaking, understanding, writing, and reading, is associated with neural networks. The study and interpretation of these is the responsibility of the science of neuropsycholinguistics. This science helps to model language, that is, to identify which regions control the phonological, lexical, syntactic, and semantic aspects of language, such as Broca's and Wernicke's areas [3].

Wernicke's and Broca's areas, named after two scientists, are the most important centers in the brain that control speech processes and are very important for human speech. Broca area is located in the frontal (forehead) part of the left hemisphere of the Broca's area in Brodmann areas 44–45. Its main function is to produce speech, construct sentences, control verbal expression and grammar. When these areas are damaged, "Broca's aphasia" occurs - the patient understands what he wants to say, but speaks with great difficulty or cannot speak at all, words are broken, speech is short and full of grammatical errors. For example, instead of "I want to drink water", the patient barely pronounces "Water ... drink ...".

Wernicke's area is also located in the temporal (temporal) part of the left hemisphere in Brodmann area 22. Its main function is to understand speech, determine meaning, and manage vocabulary. When this center is damaged, Wernicke's aphasia occurs, that is, the patient speaks fluently, but there are meaningless sentences, many filler words, and others do not understand his

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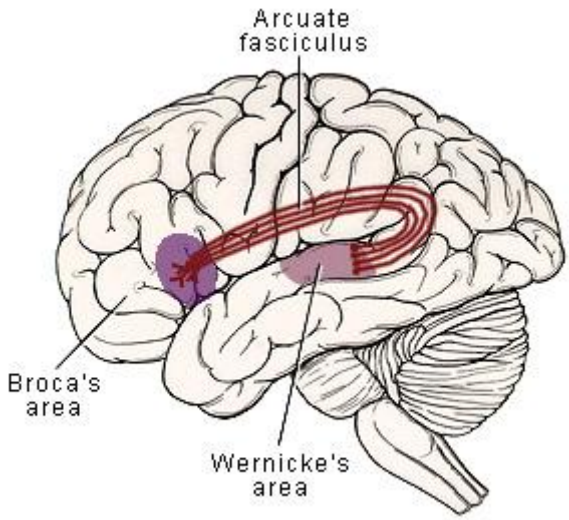
speech. For example, if he is asked, "Have you eaten?", he will answer off-topic, like a garang, "Yes, I'm fine, everything is fine..." These two Wernicke and Broca centers are connected to each other by the "arcuate fasciculus". Wernicke's center receives and understands information, while Broca expresses this understanding through speech. Broca's center is responsible for constructing speech and forming grammatical expressions.

The arcuate fasciculus is a bundle of white matter in the brain that connects Wernicke's area (temporal lobe) to Broca's area (frontal lobe) and plays an important role in language processing. It is essential for understanding, producing, and reproducing speech, and its functions are also thought to be relevant to language-related tasks such as reading and word learning. Damage to the arcuate fasciculus can lead to a type of aphasia called conduction aphasia, in which a person has difficulty repeating phrases.



Wernicke's center serves to understand speech, to make sense of it. If this connection is damaged, conductive aphasia occurs, that is, the patient understands and can say the word, but cannot repeat it. The patient's speech is fluent, but meaningless. As a result of damage to these centers, speaking becomes difficult, but understanding is in order [1; 3]. Until now, neuropsycholinguistics has relied only on clinical practice in the diagnosis, rehabilitation and treatment of language disorders such as aphasia, dyslexia, stuttering, apraxia. However, there are also prospects for introducing this science from the denominator to the picture, that is,

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from theory to broad social life - mass activity. In the field of inclusive education, there are a whole world of problems beyond the individualization of teaching methods and the early identification of difficulties in language learning. This science can be used not only to identify language processes using methods such as neural network models, but also in the development of artificial intelligence and brain-computer interfaces. There is also an opportunity to learn about the restoration of language functions in the brain after injury or stroke, rehabilitation strategies, multilingualism and context, language control and language switching mechanisms in polyglots. Along with these, practical assistance is provided on the basis of this science in neurological conditions related to the emotional and social context of language, the integration of the linguistic personality into a charismatic person, increasing the leadership ability of a person, and involvement in socio-political issues. In a broad sense, it includes control of the whole organism, information processing and complex behavior, conscious management of society, perception, thinking, and life issues.

Human sensory perception is the process of receiving, processing, and perceiving information from the environment through the sensory organs. From a communicational point of view, this science is useful in all aspects of encoding and decoding information - digesting thoughts and responding appropriately diplomatically to them. Sensory perception is called “sensation and perception” in psychology. This process in humans plays an important role in interpreting reality - the participation of such senses as vision, hearing, smell, taste, and their synthesis in the brain. The function of the sensor is that it perceives external influences through receptors (eyes, ears, nose, skin, tongue) and sends information to the brain in the form of signals through nerve fibers. Sensory centers analyze it and form perceived ideas about the outside world.

Imagination is the process of recreating the image of objects and events that have affected our sensory organs, as well as the creative process of imagination. This process is the embodiment of objects in the mind and the revivification of past or present events, abstract objects in the mind. Imagination, unlike sensation and perception, also includes situations that do not exist at the moment. As a result, motor control provides activity in planning voluntary movements and controlling

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muscles. In short, perception with the help of imagination plays an important role in brain activity.

As is known, human senses are mainly divided into visual, auditory, olfactory, gustatory, tactile, kinesthetic, and vestibular. The sense organs are the eyes, ears, inner ear, tongue, skin, nasal muscles, odor molecules, and joints. With their help, we can recognize color, shape, distance, picture, sound, intonation; distinguish sweet, sour, and bitter odors; feel pain, heat, and cold; create feelings and emotions; and activate memory and imagination. Listening to music, tasting food, understanding body position, getting motivated, stimulating body control, and the reward systems. Language and communication, speech, comprehension, reading and writing, play an important role in linguistic and cognitive functions such as executive functions such as thinking, recognizing, decision-making, planning, problem-solving, and attention. The task of storing, recalling, and learning new information through experience is directly related to memory and learning. The brain performs such endless functions. Even the coordination of reflexes such as breathing, heartbeat, and swallowing are controlled by the cerebral cortex. Such basic structures and functional performance indicate that the brain is automated.

The author of the subconscious/unconscious theory, Sigmund Freud, as the founder of psychoanalysis, emphasizes that the human psyche consists of three levels. These are: 1. Consciousness - thoughts and sensations that are currently conscious; 2. Preconscious - information that can be brought to consciousness at will; 3. Unconscious - the layer where unconscious desires, fears, and internal conflicts are stored. Freud considered the subconscious to be the main force that controls human behavior and mental experiences [5]. Later, Carl Gustav Jung also created his own theory of the subconscious and introduced the concept of the "collective unconscious" into science.

Broca's center controls the planning, expression, and grammatically correct construction of speech. The psychic properties and functions of this center are felt in speech expression - turning thoughts into words, grammatical and syntactic control - constructing and ordering sentences, motor speech - controlling pronunciation and articulation, forming inner speech, and playing the role of an active speaker in a communication situation. In psychic disorders of the Broca

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center, understanding is good, speech is short and grammatically distorted, expression is weak, inability to express thoughts, mental depression, and nervousness are manifested. There is a thought in the mind and consciousness, but it does not come out into speech. Speech fluency is low, the content is strong. If we pay attention to the psychic properties and functions of the Wernicke center, this center is responsible for the perception and understanding of speech, and plays an important role in the psychic understanding of the meaningfulness of the heard and read speech, in the systematization and assimilation of vocabulary into the mind, in the preservation of the meaning of the word, in semantic processing - ensuring the connection of words and thoughts, and in understanding the content in communication. In mental disorders, speech is fluent, but meaningless, comprehension is sharply impaired - cannot control the conversation. Unaware of his own mistakes and allows mental illogicality (anosognosia). Words are "confused" - logorrhea, although fluency is high, the content is empty.

Conclusion

Thus, neuropsycholinguistics is a science that studies how language, thinking and brain activity are interconnected. Language - brain - body - social environment work together. Without body movement and sensory experience, the full formation of language is impossible. A person who feels things and events through his body expresses them faster through language. The human body plays a very important role in social life. We are increasingly able to study our body from a neuropsycholinguistic perspective in order to manage its health. If the body is healthy, we will have a healthy lifestyle.

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