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THE IMPORTANCE OF SECOND LANGUAGE LEARNING: BIOLOGICAL PERSPECTIVE

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Nowadays we can say for sure that more than half of the world's population are bilinguals and many of them are multilinguals. Advances in the field of neurolinguistics revealed the impact of bilingualism on cognitive skills and brain health. Scientists have long touted the benefits of second language learning, but its necessity is regularly challenged. Critics like to point out that learning foreign languages is a threat to national cultures, waste of time and needless acquisition in the century of high technologies. So, should we invest in language education? The answer is a clear «Yes». We have to learn foreign languages not only due to a pragmatic approach, but to live a long and healthy life.

Language is traditionally associated with the left hemisphere. The process of acquisition locates in the perisylvian cortex. Towards the front of it – the Broca's area – is responsible for syntax and grammar, and in the back – Wernicke's area – for the sounds of words and their understanding. Different areas of the left and also the right hemispheres are activated during the language production. A greater volume of grey matter in the inferior parietal cortex is present in multilingual individuals [5]. Scientists argue that multilingualism has a significant effect on the structure, and essentially, the cytoarchitecture of the brain. The brain becomes more able to adapt to the new environment and its plasticity increases.

By its complexity of the organization, language can be compared only with the brain itself. Second language acquisition proceeds through the complex system of algorithms the brain needs to identify: extracting, transcription and decoding of new information. Learning a new language changes the brain network both structurally and functionally, according to researchers [7]. Like physical exercise, the more we use specific areas of the brain, the more it grows and gets stronger. Particularly, the experience of learning and using the second language has been shown to affect the grey matter in the cerebellum, which controls autonomic bodily functions and offers sensory perception. Individual features of cognitive functions and predisposition to mental illnesses are due to differences in the volume of the grey matter.

Today, we are facing the increasing of prevalence of mental illnesses [8]. It is believed that causes are: heredity, environmental pollution and lifestyle. Now scientists argue that such disorders are greatly impacted by an intelligence level and a degree of the intellectual load [1]. Moreover, mortality rate among people who experienced constant intellectual loads is several times lower than among people who do not really use their intellectual resources. When we learn new vocabulary, our brain network becomes more connected. If we switch from one language to another, the brain is forced to do a very hard work, and hard for it means good. With meeting the challenge of using algorithms of a non-native language in communication or even thinking, neural connections and, apparently, new neurons can form. These emerging neural networks maintain and improve not only cognitive processes, but have an effect on many autonomic processes in an organism.

If we ask ourselves the question «Why do we need a language? », the answer will probably be «to communicate». But one of the influential and eminent scientists – Noam Chomsky – argues: «Language did not evolve for communication» [3]. In other words, assuming that the language evolved for the need to communicate the daily needs of a social group of humans, we would expect a simpler and more efficient form of communication code. At least, many people successfully use a sign language, Morse code or mathematical symbols in order to exchange information. The main reason why we need a language is to think (from this point of view we can seamlessly argue about the concept of teaching a language through a reinforcement of conditioned reflex).

Second language can greatly extend our mental world. It gives a fuller, more colorful and interesting view on relationships between things. Languages describe events in a variety of ways; therefore, it gives us an opportunity to think differently. Every object gets more associations for memorization and later recall. Memory comes more robust, capacious and associative.

Humans have two decision-making systems – rational and intuitive. Usually we make decisions using the second system – they are based on emotions or physiological state. Such patterns are called cognitive biases, and they force us to make wrong decisions. Numerous studies demonstrated that decisions which a human makes thinking in a foreign language are correct [2; 4].

According to the principle of linguistic relativity, the structure of a language affects its speakers' world view or cognition. When somebody knows more than one language, he or she has several views of the world. Undoubtedly, this is a more interesting, richer and fuller life.

Some geneticists «discovered» a gene on grammar rules and continue to search for a gene on thinking, memory, etc [6]. But there cannot be one particular gene, which could offer such a complex function as language, which can even become something like a work-out for our brain. «To know many languages is to have a lot of keys to one lock», Voltaire said. This «lock» is not only the possibility to talk to foreigners when we travel, but our health. The brain controls all the processes and, furthermore, it creates our reality – we have no ways anymore to know about the world we live in but through the sensory system. Sometimes the brain can lie to us (by making hallucinations, for example) or due to some disorders cause serious illnesses. The best way to avoid it is to acquire new languages, and, perhaps, then we will make our lives healthier and longer.

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