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Spelling Norms of the Modern Ukrainian Language in the Context of Neurolinguistics

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Abstract: *Cognitive neurolinguistics is a scientific discipline that studies the brain processes underlying speech recognition and generation, language acquisition, and quasi-linguistic symbolism. This science examines speech in its connection with human cognition. Speech is presented as one of the main means of accumulating, systematising, processing, and using knowledge about the world. This work is devoted to the historical, scientific, and methodological analysis of cognitive neurolinguistics as an aspect of spelling norms of the modern Ukrainian language. The relationship between neurolinguistics philosophy of language and general linguistics has been studied. There are three main philosophical approaches: structuralism, formalism, and activity philosophy, which influenced modern neurolinguistics. The article considers further prospects for the development of neurolinguistics as a factor in the formation of the modern Ukrainian language. The purpose of the article is to study the peculiarities of the spelling of the modern Ukrainian language as a factor of neurolinguistics. The methods of synthesis, analysis, scientific, explanatory, descriptive, and research methods were used for the research. The article highlights the principles of using the neurolinguistic approach when studying the structural features and semantic code of phraseological units of the Latin language, followed by their interpretation in the Ukrainian language. This technique reveals mechanisms of perceiving stable combinations of any language and allows recoding the meaning of a phraseological unit in the target language, taking into account peculiarities of the mentality of its speaker. The results of the work do not exhaust all options for further research but are important in formulating important conclusions.*

Keywords: *neurolinguistic approaches; basics of spelling; linguistics; syntactic paradigm; semantics.*

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1. Introduction

Special interest in linguistics has grown in linguistic idioms and their influence on the addressee at the end of the 20th century. The modern development of linguistic science is directed towards pragmatic linguistics and discursive analysis, which contributes to the illumination of various aspects of speech and text communication, as well as the study of text-discourse types from a communicative-pragmatic point of view. In the modern Ukrainian language, among the various constructions of sentences, constructions with fragments of internal speech stand out due to their structural originality, semantics, lack of a syntactic paradigm, as well as features of expression of various non-speech situations. Internal speech is a monologic form of conditional dialoguing of a text, expressed in question-answer language forms, in the form of a text, calculated for the addressee, in the assessment of the semantic positions of other people, in the reproduction of microdialogues with a hypothetical reader, characterised by the formation of the image in the author's mind

Traditionally, in the hierarchy of levels of the language system, the highest level is distinguished, i.e., the text. The text is subject to research as a complex communicative mechanism, a mediator of communication that captures the strategic program of the addressee, which is perceived and interpreted by the addressee. Going beyond the sentence allows a better understanding of syntactic semantics as a component of textual semantics, since statements reflect not only the content of the situation, but also the way of its interpretation, represented by linguistic means.

Linguistics of the text is not limited to a formal description of the meanings of fragments of language utterances, but involves the implementation of modern methodological principles for clarifying the speaker's pragmatics and communicative strategies in connection with the manifestations of their human cognitions. From the standpoint of a dynamic approach to the interpretation of the text within the communicative-pragmatic approach, the attention of researchers is drawn to the problems of establishing the intention of the speaker, clarifying the peculiarity of various structures' functions in certain types of texts, and the communicative basis of using linguistic stylistic means of expressing the meanings of the text.

In linguistic theories, the concept of discourse appeared as a designation of a coherent text in combination with pragmatic, sociocultural, psychological, and other factors.

This interpretation of the new language unit took it beyond words, sentences, and text. The expansion of linguistic analytical tools for the analysis of statements, which involved taking into account not only their syntax and semantics but also pragmatics, revealed the sociocultural dimensions of the discourse and its cognitive characteristics. Discourse is, first and foremost, a coherent text in the context of establishing background factors - sociocultural, psychological, etc., a language immersed in life. In another aspect, the discourse manifests itself as a closed integrity of the communicative situation (event) in which the text is immersed, formed on the basis of various factors of communication and interpretation (social, cultural, ethnic, etc.).

Discourse characterises the communicative process and leads to the formation of a certain formal structure, i. e. the text. Depending on the goals of the research, discourse in one case denotes a separate communicative situation, in the other, an event as an integrative set of certain communicative acts, the result of which is a content-thematic set of many texts. Such an interpretation is related to the definition and demarcation of such concepts as economic, political, scientific, pedagogical, educational discourse, advertising discourse, etc. Thus, discourse is a complex, multi-level phenomenon that has not yet received a single definition in science. The interpretation of discourse as an interactive phenomenon, a manifestation of communicative activity, provides grounds for studying its features through a text (oral or written) immersed in a communicative situation.

Modern neurolinguistics considers speech activity as one of the complex functional systems, which includes many links and is based on the joint work of many areas of the cortex and subcortical structures of the brain, each of which performs its own special role. The main concepts

of the neurolinguistic approach to language learning, which is now so popular in Western Europe, have so far mainly covered the problems associated with learning new languages. However, as practice in universities shows, the issue of developing neurolinguistic methods for studying ancient, dead languages is now quite acute, when there is no support for spoken practice, and the main part of the work is written, but a very accurate translation from an ancient language into a new one. The very structure of almost any ancient language presupposes the presence of obsolete syntactic structures that must be interpreted and transmitted by equivalent means in new languages. The vector of translation is a movement not from the initial perception of vocabulary and the further development of the grammatical structure, but from the integral grammatical perception of the speech structure and further, based on the clear transmission of grammatical forms, the construction of the semantic unity of the text.

The history of the emergence of neural networks dates back to the middle of the 20th century, when in 1943 the American theorist of artificial neural networks, Warren McCulloch, and the American neurolinguist, Walter Pitts, studied the ability of brain nerve cells to process information and proposed a model of an artificial neuron, which was based on the biological principle of neurons.

They described the model of an artificial neuron (also called "neurobionics") and applied it to solving logical problems.

In 1956, the American computer scientist who coined the term "artificial intelligence", John McCarthy, proposed the idea of using neural networks to solve problems of artificial intelligence. This idea became the basis for the development of the field of artificial neural networks.

In the 1960s, the American scientist in the field of psychology, neurophysiology, and artificial intelligence, Frank Rosenblatt, developed the perceptron, the basic model of a neural network consisting of one or more layers of artificial neurons. The perceptron was used to solve problems of classification and pattern recognition.

In the 1970s, researchers discovered the limitations of the perceptron and criticised its ability to solve complex problems. However, in the 1980s, a new model of neural network appeared - the multilayer perceptron, which was used to solve a wide range of problems, including speech recognition and image processing.

Since then, research in the field of neural networks has continued and is actively developing, including the use of deep neural networks, which allow processing complex data and solving problems that previously seemed inaccessible.

A neural network is a collection of neurons - computational elements (sometimes called perceptrons), each of which has several inputs, synapses, and one output axon.

The intelligence of a single neuron is low. It can be considered that it implements a simple regression model for N independent variables in the network. If you combine many neurons into network structures, then the function that is implemented can be as complex as you like.

One significant challenge in the study of ancient and modern languages is the development of phraseological units that do not have a trace in the translation language. In part, these problems can be solved by applying a neurolinguistic approach to understanding the meaning of stable conjunctions and their interpretation in other languages.

The article introduces clearly delimited sections:

- Theoretical foundations of neurolinguistics;
- Artificial neural networks and genetic algorithms used in the linguistic context;
- Neurolinguistics in educational discourse;
- Development of the Ukrainian language: cognitive and neuroscientific aspects.

The purpose of this article is to consider the features of using the neurolinguistic approach in studying the structural features of orthography of the modern Ukrainian language.

2. Theoretical Foundations of Neurolinguistics

Neurolinguistics is a scientific discipline that studies the neurological processes of the brain that underlie human speech activity. The field of interest of neurolinguistics includes the study of mechanisms for recognising linguistic stimuli, such as individual words or sentences. This discipline also studies the processes of generation of oral or written speech, acquisition and use of a native or foreign language, so-called quasi-linguistic symbols (mathematical and chemical formulas, musical notes, programming languages, etc.). Neurolinguistics is widely used in theoretical and practical medicine, as it allows establishing the influence of various changes in brain activity as a result of neurological or mental pathologies on the peculiarities of speech behaviour of patients.

The role of language in human cognition is the subject of research in cognitive neurolinguistics. Cognitive neurolinguistics focuses on the participation of speech functions in brain processes related to the accumulation, storage, processing, and use of knowledge. In addition to medical applications, cognitive neurolinguistics is of great importance for educational psychology. The combination of medical and pedagogical issues takes place during the examination and treatment of children with deviations from the standard in cognitive and speech development. Cognitive neurolinguistics is also used in research in the field of artificial intelligence, information technology, and general theory of cognition.

Neurolinguistics is part of a more general scientific discipline - psychophysiology, which studies the dependence of human behaviour and thinking on physiological processes occurring in the body (Smith & Schwartz, 1997). In the last two decades, psychophysiology has experienced a period of emergence and intensive development of new methods of experimental research. First of all, such methods are associated with the use of magnetic resonance imaging technology, which allows precise localisation of neurophysiological processes in the brain (Meyer & Wodak, 2001).

The analogy to the brain does not end with the structure of a neuron and a network of neurons. The idea of training neural networks is also borrowed from nature. It is known that the human brain is capable of self-learning and often achieves success without knowing the nature of the processes underlying the actions performed. For example, to hit the ball into a basketball hoop, a robot basketball player must measure the distance to the hoop and the direction, calculate a parabolic trajectory, and make a throw taking into account the mass of the ball and air resistance. A person can do without this only thanks to training. By repeatedly making throws and observing the results, he corrects his actions, gradually improving the technique. At the same time, the corresponding structures of neurons responsible for the throwing technique are formed in his brain. Thus, an indispensable attribute of training is repeated practice and the ability to immediately evaluate the result.

In addition, the old electroencephalogram technique, first proposed back in 1928 by Hans Berger, received intensive development. Modern computer technologies for processing EEG signals have enabled a new approach to the application of this technique in psychophysiology in a new way, which has significantly changed the previously established ideas about the mechanisms of cognitive activity (Savchenko, 2002). Thus, both psychophysiology in general and neurolinguistics in particular are rapidly developing disciplines and are at the forefront of scientific progress.

Like any other scientific discipline, cognitive neurolinguistics has its roots in philosophy. As a rule, philosophy defines a pre-scientific, purely speculative stage of the development of a theoretical discipline, at which researchers formulate the main problems facing them and outline the ways of their possible solution using proper scientific methods (Hobfoll, 2001). The basis of cognitive neurolinguistics is both the philosophy of language and the philosophy of knowledge as they existed in the first half of the 20th century. In addition, the basis of neurolinguistics was also the comparative linguistics of the body, which is not directly aimed at elucidating the brain mechanisms of speech (Lubarska, 2007).

However, the philosophy of language and comparative linguistics of this period produced several alternative ideas that contradict each other. Various attempts to build scientific theories on

the basis of one of these ideas have led to the variety of approaches that exist in modern neurolinguistics. Structuralism is one of the main directions of philosophy, which has had a significant impact on linguistics in general and cognitive neurolinguistics in particular. Structuralism in general is a complex mixture of philosophical ideas and specific scientific research aimed at understanding the structure of social phenomena. One such phenomenon is human language (Paulhus, Fridhandler, & Hayes, 1997).

The study applied a descriptive analysis of phraseological constructions in the modern Ukrainian language, in particular transformations of the type:

"to give a scratch" → "to scratch" (semantic folding)

"to take one's feet in one's hands" → "to run away" (metaphorical smoothing)

The synthesis consisted of combining the results of neuropsycholinguistic experiments (in particular, ERP research data) with linguistic analysis of educational discourse texts.

The analytical approach was implemented by comparing the frequency of use of neurolinguistic terms in Ukrainian language textbooks for different age groups.

One of the main conclusions drawn by linguists from the work of doctors was the opinion about the partial independence of the mechanisms underlying the recognition and generation of phonological, syntactic, and semantic structures of language (Abdalina, 2015). For example, patients with damage to Broca's area may have a violation of the grammatical coherence of speech without changing its meaning, and with damage to Wernicke's area, they may utter long, grammatically correct sentences that do not make sense. These data served as one of the grounds for building a general theory of structural linguistics.

3. Artificial Neural Networks and Genetic Algorithms in the Linguistic Context

Within the framework of structural linguistics, language is considered a system of elements united in certain structures through specific relationships. In addition, these structures have a certain meaning, i.e. they are connected by a system of relations with objects of the outside world. For example, the meaning of a word refers to the object of reality to which it points. The subject of structural linguistics is the language studied from the point of view of its formal structure, as well as from the point of view of the formal structure of the components that make it up.

There are several levels of language structure and its individual components. First of all, language can be considered as a physical object or as a set of sounds/written symbols that have such characteristics as pitch or duration of tones, shapes of letters, colour of symbols, etc. At this level, we can describe the phonological sound of a language without taking into account its semantic content. Another level of speech description is the identification of syntactic links in its structure. Grammatical rules that connect words in phrases and sentences (Babayev & Korzhenko, 2022). Further, the semantic structure of speech involves the establishment of semantic relationships between speech symbols and objects of reality. Syntactic and semantic speech structures of most languages are relatively independent of each other. And, finally, the pragmatic level of speech describes the ways in which language constructions: words, phrases, expressions, and sentences - in various language situations (Giddens, 1991). In a certain sense, the semantic level of linguistic constructions is determined by the pragmatic level: the semantics of linguistic constructions is determined by the methods and purposes of their use. In particular, the pragmatic level of speech sets the context of discourse, its implicatures, and semantic presuppositions (Gygli et al., 2019).

Artificial neural networks, as models of natural language processing, allow us to model cognitive processes related to syntactic analysis and semantic matching, which are key to understanding the neurolinguistic mechanisms of the functioning of the Ukrainian language.

The input of the network is a matrix of points of a recognised character. The output generates signals corresponding to the recognised character. Network training consists of repeatedly "presenting" the network with different options for drawing characters, along with ready-made "answers".

Note that the network does not try to remember all possible options for drawing each character, but only forms the output signal $Yj = f(X1, X2,..., XN)$ as a function of the input variables. Note that this approach to text recognition has a significant advantage over others in terms of speed. The same goes for humans: to read text, they do not ask for the font name and do not search in memory for all possible character patterns. Associations in the brain are established instantly.

The task of training the network is of enormous scale. Thus, to train a network consisting of only 10 neurons, each of which has 3 synapses, it is necessary to choose the values of at least 40 parameters (30 values of Wj - synaptic weights, and 10 parameters of activation functions Xi). If each of the parameters is chosen with a discreteness of 1/100, then the total number of runs of the network on the training dataset will be 10040. Such a task is beyond the power of even supercomputers.

This task is satisfactorily solved using the backpropagation algorithm, which consists of the following:

Initially, all network parameters are set arbitrarily.

1. The training data is passed through the network, and the total error function E = sum(E2) is calculated, where Ei = Yi - yi, Yi - the calculated value of the output value, and ui - the expected value.

2. The value of the derivatives of the error function for each parameter is calculated, and based on them, the calculation of corrections to the parameters of the neural network.

3. The network parameters are adjusted to the correction values, after which steps 2 and 3 are repeated from the beginning until the error function decreases to a given level.

Despite its simplicity, this algorithm is very time-consuming, and its acceleration is an urgent task.

If a satisfactory result was not obtained, it is necessary to change the network structure. This can be done manually, or the structure can be selected from a previously created set (structure library). Software products that support such solutions exist. But the most successful approach should be considered the one in which the network structure is formed automatically. An example is the neural network of the non-governmental company, BioComp Systems Inc. (www.biocompsystems.com).

This approach consists of applying genetic algorithms to this problem. The point is that in the process of training the network, “strong” neurons and connections between them (sensitive to changes in parameters), and “weak” ones (the parameters of which can be changed arbitrarily without a significant impact on the final result) are identified. Using this data, it is possible to control the population of neurons. Weak neurons and synapses must die off, and in order to develop the structure, as well as to prevent general "extinction", the network undergoes "mutation": new neurons and synaptic connections are added to it randomly or in some other way, for example, to strengthen "strong" neurons. Thus, after many generations, whose number can reach tens of thousands, the network will have an optimal structure.

In this regard, the question may arise: why spend such a large amount of time optimising the network structure, if training a network of maximum size with a full set of connections will obviously take less time? In addition, it was said earlier that the speed of the trained neural network is quite high.

There are two reasons for this. The first is that the trained network is often additionally implemented on a second platform, in particular, at the hardware level. The second reason is that optimisation often leads to a significant reduction in the number of input variables due to the elimination of redundant ones that do not affect the final result. This fact gives neural networks a qualitatively new property: you don't have to worry about which input data is considered important and which is not - during the training process, unnecessary variables will be discarded. In statistics, a similar function is performed by stepwise linear regression, variance analysis, and factor analysis. Neural networks have become an integral part of linguistic research due to their ability to analyse and process language data. They are widely used in various branches of linguistics, ranging from

text analysis and recognition to the development of intelligent agents and machine translation systems.

When applied to modern neurolinguistics, structuralism served as the basis for a series of studies aimed at comparing the structure of perceived or produced language with the structure of brain processes that occur during the processing of linguistic stimuli (Fairclough, 2001). Functional magnetic resonance imaging is currently the main method for determining brain areas involved in language processing, which allows localisation of the activity zone with high spatial resolution (Imel, 1998). However, it should be noted that the structure of brain processes means not only their localisation in certain areas of the cortex or subcortical areas, but also their temporal dynamics, frequency components of reactions and the relationship between reactions in different areas of the brain.

4. Neurolinguistics in Educational Discourse

Educational philological discourse is a type of institutional discourse. This is a reflection of the educational situation in the field of philology, containing a verbal component (text), and non-verbal components that affect the creation and perception of the text. The verbal component is manifested as a set of educational texts united by a common linguistic or literary goal.

Undoubtedly, various communicative and pragmatic features of sentences are largely revealed in dialogic communication. It is the dialogue, one of the defining features of which is the presence of fragments of internal speech specific to each language, most likely, that makes it possible to clarify the entire spectrum of the speaker's communicative tasks. Humans created a language to communicate with their kind. A person who speaks, thinks, and feels is the main character in the world and language. His worldview, his attitude towards other people are expressed in his chosen language and speech means. It is in this aspect that it is necessary to examine fragments of internal speech in the texts of educational philological discourse (Nerubasska & Maksymchuk, 2020).

Internal speech is defined as the pre-verbal phase of speech generation, the result of which is the formation of a scheme of the future utterance, partially verbalised with the help of key words and predicates that carry the main, most essential information (Tatto, 2021). Inner speech is the movement from thought to speech, a complex dynamic transformation, the transformation of predicative and idiomatic speech into syntactically disarticulated and understandable speech (Melnyk et al., 2019). In the psycholinguistic interpretation, inner speech is the process of generating an utterance at the stages of grammatical-semantic programming, grammatical implementation, word selection, programming of utterance components (syntagms), and sound selection. Thus, inner speech can be defined:

1) in the psychological aspect, as a conceptual category that has external situational and pragmatic content;
2) in the physiological aspect, as a speech category that affects the perception and generation of a speech act;
3) in linguistics, as a connotative category that takes into account the locative and perlocutionary effects of the speaker (author) (Lunenberg & Korthagen, 2009).

In order to identify the features of language construction, a study of educational texts was conducted.

Study: EEG and ERPs in the Study of Language and Social Knowledge

Objective: to investigate how ERP components (e.g., N400, P600) reflect semantic processing and social knowledge during the reading and perception of educational texts.

Method: participants were shown educational texts containing semantic agreements and violations (e.g., stereotypical or neutral statements).

ERP signals were recorded during reading, including:

N400 — an index of semantic unpredictability.

P600 — a response to syntactic or pragmatic violations.

Results: semantically inconsistent statements elicited an enhanced N400 negativity, indicating cognitive load when processing unexpected information.

In texts with social connotations (e.g., gender stereotypes), a modification of ERP components was also observed, indicating the influence of educational context on neural language processing.

Verbal communication, as a purposeful linguistic and psycho-mental activity of the speaker in educational philological discourse, is implemented through a pragmatic function—namely, the author's intention to influence the addressee not merely to transmit information, but more importantly, to foster understanding. That is for stimulation of thinking, memorisation, beliefs, and desire for further study of this topic (Lukianets, 2002). Content-subtextual information in educational philological discourse is hidden; it is implicitly presented contextually, as it also conveys connotations that extend not only to the meaning of words, but also to the structural components of the text (Kuzmenko, 2015). In the texts of the textbook, the main dominant factor is the effect on the consciousness and subconsciousness of the addressee, stimulation of his activity. The introduction of passages of internal speech into the text corresponds to the specificity of the educational text, which is characterised by the category of persuasion (Banning, 2005).

The specificity of educational philological discourse in the Ukrainian language is also demonstrated by the scheme of the speech act: addressee (author) – message (textbook, manual, etc.) – addressee (reader). Distinctive features of the pragmatics of the text are determined by the addressee, who expresses his views on the educational material, generally accepted facts, criticism of the scientific material, and selection of the main (Halchenko & Semencha, 2020). Taking into account the specificity of educational texts, it can be argued that they are built as "the author's story", in which he addresses another person, whose remarks are absent, but each subsequent sentence of the addressee is based on the addressee's potential reaction. This type of internal speech is usually called internal dialogue, which is characterised by a partial address to an imaginary interlocutor and at the same time to oneself (DiPaulo, 2022).

5. Development of the Ukrainian Language: Cognitive and Neuroscientific Aspects

Fragments of the internal speech of the author of a scientific and educational text with interrogative sentences do not express a direct address to the reader, but only contribute to the activation of thinking and establishing contact between the author and the reader (Biesta, 2015).

The purpose of the study: to identify neurolinguistic features of the use of Anglo-American borrowings in youth slang and educational discourse.

Methodology: Ukrainian language textbooks for three age groups were analysed.

- Junior school (7–10 years old);
- Middle school (11–14 years old);
- High school (15–17 years old).

A content analysis was carried out for the use of terms related to neurolinguistics, cognitive linguistics, language processing, as well as English-language borrowings that have a cognitive or neuroscientific origin. Main results:

Table 1. Indicators of neurolinguistic features of the use of Anglo-American borrowings in youth slang and educational discourse

Age group	Frequency of terms (per 10,000 words)	Examples of terms
7–10 years	0.3 "language	"word", "thought"
11–14 years	1.2 "communication",	"signal", "information"
15–17 years	3.8 "neuron",	"cognition", "semantics", "modelling"

In high school textbooks, there is a significant increase in the use of terms related to neurolinguistics, especially in topics about language as a means of cognition, thinking, and interpersonal interaction.

The influence of English-language sources has also been revealed: terms such as brainstorm, feedback, and interface are often presented without translation or with an explanation.

The epicentre of communication in the situation of "talking to myself" is the speaker, but in different guises of textual representation. According to the meditative function, the self expresses its own thoughts, for example, by generalising various theories and drawing conclusions. Internal subjective speech is embodied in the surface structure of the macro-theme related to the understanding of various scientific works of scientists and represents the position of the author of this textbook (Buchanan et al., 2021). Most often, the author's self is expressed through the transformation of introductory units that function in the texts of educational philological discourse to confirm scientific information. As a rule, the source of the message is indicated: in the opinion of..., in the words..., as he believes..., as evidenced by...

In many sentences of Ukrainian spelling recorded in textbooks and manuals, introductory units also perform the function of conjunctions — they serve as a means of connection between syntactic constructions.

The introduction of fragments of internal speech into the texts of educational philological discourse is due to the author's desire to avoid a monotonous presentation of the material and thereby increase its effectiveness (Burakgazi, Can, & Coskun, 2020). Since the "author's presence" is related to the desire to expand the recipient's knowledge and simplify the process of achieving it, it can be argued that the purpose of their use is also pragmatic.

A communicative act as a type of human activity necessarily involves the presence of an addressee and an addressee of the communication process, and the interaction of three components (addressee – information – addressee) creates a single communication chain. But in the educational philological discourse, the object of communication is the reader, who transforms the implicit information that the communication participants convey to each other using internal speech (Carr, 2011). Therefore, the active use of "sentences in which the addressee is present" in the texts of educational philological discourse is determined by the peculiarities of their influence on the recipient. This causes a series of complex cognitive operations aimed at providing a transition from the immediate content used in life.

Quite often, there are introductory words and phrases that indicate the sequence of the presentation of thoughts, their connection, the ratio of general and specific, expressiveness of the most significant parts and conclusions.

6. Conclusion

At the beginning of our century, we observed life changes associated with the introduction of information and educational technologies, intercultural and international communications, migration, and the spread of new educational systems oriented to modern social needs. Unfortunately, such changes have not only positive but also negative consequences for a person's mental health. There are behavioural disturbances caused by increased cognitive load on the brain.

Modern science does not allow us to fully predict the consequences of changes in the information and communication environment. This requires researchers to develop a methodology and conduct neurocognitive research based on an activity approach.

In turn, the key problem of the activity approach is the definition of what human consciousness is. Despite numerous attempts to define what the phenomenon of consciousness is, researchers still do not have a unified understanding of the essence of this phenomenon. We proceed from the idea of consciousness as the ability of an individual to arbitrarily direct his attention to any fragment of his own life experience or to concentrate attention on objects of external reality in order to achieve, again, arbitrarily set goals. Accordingly, the concept of consciousness is related to the concept of purposeful behaviour and self-determination of the individual. Within the framework of this definition, we can talk about different reactions to speech stimuli depending on human goals, motivations and the way of self-determination of the individual. Perhaps such a definition can serve as a basis for the development of the methodology of modern neurolinguistics.

In summary, we can say the following: modern cognitive neurolinguistics is not a single, methodologically related science, but rather several weakly interacting approaches, each of which develops in its own direction. From our point of view, the activity approach to the development of the methodology of cognitive neurolinguistics is the most relevant at the moment, as it allows conducting research that meets the challenges of modern society.

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