

## **NEUROPSYCHOLINGUISTIC ANALYSIS OF THE CONCEPTS "ANGER AND HATE"**

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### **Abstract**

This article presents a scientific discussion of the controversial conceptual features, neurological, psychological, and linguistic factors of the concepts of anger and hatred. Theoretical ideas on this topic are presented within the framework of the requirements of the modern field of neuropsycholinguistics. In this article, the author addresses a pressing issue: translating neuropsycholinguistics from denominator to image — applying theory to practice across a broad range, scientifically explaining the influence of anger and hatred on the human psyche, health, and physical activity.

**Keywords:** Anger and hate, hate, brain, amygdala, hypothalamus, oxytocin, vasopressin, dopamine, adrenaline, noradrenaline, neuromodulator, prefrontal cortex, insula, anger, amygdala, limbic system, cingulate gyrus, cortisol.

### **Introduction**

Until recently, and still today, the science of neuropsycholinguistics has been studied separately within the framework of neurolinguistics and psycholinguistics. While neurolinguistics focused on the activity of brain regions associated with human speech, psycholinguistics focused on analyzing problems related to the human psyche. While neurolinguistics primarily studies the functioning of language in the brain, the neurophysiological foundations of speech processes, and the activity of language-related centers of the brain and nervous system, psycholinguistics analyzes the relationship between language and thought, the

psychological mechanisms of speech processes, and how people perceive, understand, comprehend, and remember language.

Neurolinguistics is the diagnosis and treatment of various speech disorders, studying primarily three aspects: 1) mental preparation, 2) brain activity, and 3) speech skills. The subject of research is brain activity and the neural mechanisms of language, brain areas, Broca's and Wernicke's areas, nerve impulses, neural networks, as well as how language processes are encoded and processed in the brain. Recently, neurolinguistics has succeeded in identifying the brain functions mobilized during the cognitive processing of a specific component of the "functional" architecture of language. While P. Brock, K. Wernicke, E. Lenneberg, and A.R. Luria were engaged in neurolinguistics, in psycholinguistics, scientists such as L.S. Vygotsky, A.A. Leontiev, N. Chomsky, and D. Slobin achieved fruitful scientific results [9].

Psycholinguistics sought answers to questions such as the relationship between human thought and language—perception, memory, emotions, temperament, imagination, word choice in the thinking process, and sentence construction. In searching for answers to questions such as "How is human speech activity formed?", "How does a person think?", and "How do they produce speech?" neurolinguistics and psycholinguistics intersected at one point. The ability to perceive thought and language, form discourse, develop speech, and reproduce it was a serious problem for both fields [10]. Over the years, both disciplines have managed to comprehensively study the scientific basis of neuropsycholinguistics—the denominator of science based on cognitive principles. Within these two disciplines, a new interdisciplinary discipline has emerged—neuropsycholinguistics. Currently, based on the social demands of society, this discipline seeks opportunities for the development of the linguistic personality in society by integrating such disciplines as personology, discourseology, communicology, speech culture, sociology, and political science. Our goal is to widely direct this discipline into public life to realize the inner potential of the linguistic personality, increase its usefulness coefficient, and consciously develop such positive qualities as self-awareness and the ability to actively lead in society. "Life is a state of matter characterized by processes such as metabolism, growth, and reproduction. Bodies in this state are called organisms. From a scientific perspective, life includes the ability of organisms to adapt to the environment and

reproduce. In a philosophical sense, especially for humans, life is a process of self-awareness, the formation of one's identity through spiritual and material-practical activity, as well as understanding the essence of life" [2]. If a person does not understand their body, they will not care for it. If they are uneducated, they will not be able to appreciate the results achieved. If they do not have their own opinions, they will not live their life. If they do not draw conclusions from the world around them, they will not understand the meaning of life. If they cannot understand, comprehend, and correctly perceive themselves, they are doomed. To understand this, it is necessary to study neuropsycholinguistics in a broad social context.

### **Main Part**

Modern neuropsycholinguistics, as a distinct, independent science developing from neuropsychology, focuses on integrating the linguistic personality into a charismatic individual and eliminating character flaws with the goal of positively influencing the social life of humanity. As a modern science, neuropsycholinguistics today strives to mobilize the beneficial value of the linguistic personality in society and public affairs based on neurobiology, psychology, and linguistics. In conclusion, it should be noted that the science of neuropsycholinguistics is currently moving from the denominator to the image (to life) in implementing programs to train qualified personnel for various segments of society [9].

Currently, driven by social needs, this science seeks opportunities to develop linguistic personality in society through the integration of disciplines such as personology, discourse studies, communication, speech culture, sociology, and political science. Our goal is the conscious realization of the linguistic personality's inner potential, increasing its usefulness and leadership qualities, and cultivating positive qualities such as self-awareness and active self-expression.

Neuropsycholinguistics studies brain activity related to language and psychology: speech effects, discourse, diplomacy, words, and sentences play a significant role in perception and comprehension. Brain centers, speech production, word choice processes, memory, attention, connection of thinking with language, neurophysiological bases of speech disorders such as aphasia, dyslexia, alogia, brain structures, Broca's and Wernicke's centers, hippocampus, connection of frontal and temporal areas with language, "nervous processes", activation of

"nervous signals" during speech, speech perception, processing of heard or read words in the brain, speech development, role of words in neurophysiological bases in transformation of thoughts, brain mechanisms such as speech disorders (aphasia, dyslexia, alalia, agraphia), bilingualism, neurological, psychological and linguistic factors of harmonious development of linguistic personality [1].

It is well known in science that Western and Eastern scholars have conducted a number of studies on aspects of anger and hatred/kindness and love in fields such as biology, sociology, political science, human physiology, anatomy, and general psychology. Specifically, the neurobiological foundations of love and sexual attachment have been analyzed, particularly neuromodulators such as oxytocin, vasopressin, and dopamine, as well as processes in the limbic system. Opinions have been expressed regarding the neurochemical mechanisms associated with love: dopamine, oxytocin, vasopressin, and others. The relationship between language and emotion, the role of language in shaping emotional experiences, and the degree of activation of brain regions and neuromodulators during romantic love are considered.

The role of language in the formation and expression of emotional experiences was analyzed using a constructivist model. The role of emotion in word choice and speech processes was examined from the perspectives of linguistics and psycholinguistics. Issues such as the neuroimaging approach to studying the relationship between language and emotion and the metacognitive analyses used to determine the activation of language-related brain regions when emotionally charged words are presented were explored. The interaction of language and emotion, the formation of emotions through speech, and the influence of language on emotional experience were studied, as well as how emotions are expressed in different languages and the extent to which linguistic structures are formed and analyzed. The influence of romantic love and attachment on brain mechanisms was determined. It is also known that scientists are proposing a constructivist model, according to which language plays a role not only in the expression of emotions but also in their formation. However, the concepts of anger and hatred/kindness and love have not yet become a separate object of study in the controversial field of neuropsycholinguistics. However, the concepts of anger and hatred have been studied by many scientists from various disciplines.

The concept of anger and hatred is a complex, yet highly important and fascinating topic, combining neurology, psychology, and linguistics. These concepts are studied scientifically. For example, from a neurobiological perspective, anger is defined by the English symbolic word "anger," which was coined to psychologically influence the human mind and means "anger" or "danger." When angry, a person's "escape" (fight/flight—fear, anxiety, inaction) intensifies. The amygdala and other limbic systems of the brain become overactivated, the heart rate increases, and blood pressure rises. As blood pressure rises, subthreshold stimuli—those perceived below the level of consciousness or perception—decrease in cortical activity.

In socio-emotional terms, anger is often associated with a desire to restore a goal or correct an injustice. For example, Eran Galperin and several other researchers found [18] that low levels of hatred in anger are associated with a greater tendency toward compromise. The researcher criticized anger as a "dangerous/aggressive" emotion. He acknowledged that anger can only have a positive effect if it serves a goal of "justice and recognition."

From a neuropsycholinguistics perspective, each emotion activates specific "neural pathways" in the brain that leave a "cognitive trace" through speech—that is, a person's language, tone of voice, and word choice reflect their internal emotional state. The cerebral cortex is involved in the regulation of thinking, perception, memory, and behavior. It is the organ that solves complex problems, facilitates communication, and recognizes objects. The cerebral cortex is a thin layer covering the two hemispheres of the brain. In this regard, brain and body responses associated with anger have been studied, including amygdala activity and changes in blood pressure. In the field of neuropsycholinguistics, particular importance is attached to the neuropsychological nature of anger and hatred. However, far less research has been devoted specifically to the "hate neutralization theory"—the theory of brain activity associated with hatred. It is known that, from a neuropsychological perspective, anger and hatred are states associated with the emotional centers of the brain, and their occurrence and expression are controlled by the nervous system.

Anger is a powerful emotional state that has a profound impact on the nervous system. When a person is angry, the nervous system is activated. In particular, the amygdala (the cerebral cortex) quickly senses danger or threat, triggering the fight-

or-flight response. At this point, the sympathetic division of the autonomic nervous system is activated. Anger often has a detrimental effect on health, temporarily impairing vascular function and causing involuntary dilation of blood vessels. It can trigger strokes and heart attacks.

Semantically, anger is a relatively short-lived, abrupt impulse to action. It negatively impacts interpersonal relationships in emotional situations. Anger serves as a means of suppression, stubbornness, violence, cruelty, and oppression. The words "anger" and "hatred" are semantically close, but their content, emotional focus, and psychological underpinnings are different. Anger is a state that arises quickly and is very short-lived. Hatred is a prolonged, persistent, long-term attitude. The hater experiences hostility toward the hated person or group. The emergence of this state is rooted in deep and persistent internal relationships. Hatred usually goes beyond anger and "dislike."

Hatred is also a negative human state in cognitive, emotional, and social terms. It manifests itself through strong feelings such as dislike, disgust, aversion, and hostility. Hatred is typically evoked in relation to a person, situation, idea, or event and has deep psychological and neuropsychological roots [19]. Some studies view hatred as an adaptive form of behavior inherent to an individual or group—a false path [20], while others argue that hatred is formed through the social environment, personal experience, and intergroup relations in the form of a "negative attitude" and a feeling of "enemy-wall." It has been shown that in intergroup conflicts, anger and hatred have different aspects, and when hatred is low, anger can also have a constructive, positive effect [21].

Anger and hatred have been studied in English, French, and other languages. For example, Galperin et al. demonstrated that anger is a compromise in the context of "low hatred." Anger can be controlled or channeled in a positive context. Hatred, on the other hand, is more closely associated with social, intergroup, or moral issues and is more difficult to control and channel than anger.

Expert in psychology and emotion theory Paul Ekman has extensively studied anger, examining universal emotional manifestations and the six basic emotions [3]. Anger has also been studied through facial expressions. Carol Tavris, author of *Anger: The Misunderstood Emotion*, conducted a profound analysis of the psychological and social mechanisms of anger. In her book, social psychologist Tavris debunks common myths about anger, including that expressing anger is a

sign of strong disapproval and is always beneficial, while suppressing it is always bad [4]. Robert Plutchik, author of *The Wheel of Emotions*, explains in his book that anger is a primary emotion, while hatred is a mixed emotion [5]. Paul Rozin and others have studied the psychological mechanisms of hatred and divided it into types such as moral hatred, cultural hatred, and hygienic hatred [6].

In the field of sociology and political science, Martha Nussbaum, author of *Anger and Forgiveness*, has explored the role of hatred and anger in society [7]. Erving Goffman studied social emotions, stigma, and specific manifestations of anger in interpersonal relationships. Jonathan Haidt analyzed the origins of hatred and intergroup conflicts from the perspective of moral psychology [8].

Joseph LeDoux, a neurologist and neuropsychologist, studied amygdale activity, the neurobiological basis of fear and anger [9]. Jaak Panksepp, the founder of "affect neuroscience," discovered the brain structures of the rage system [10]. Simon Baron-Cohen analyzed the neuropsychological links between hatred, aggression, and empathy [11].

George Lakoff and Mark Johnson, the founders of conceptual metaphor theory in linguistics and cognitive linguistics, systematically studied metaphors of anger ("Anger is an emotion," "Anger is an explosion") [12]. Zoltán Kövecses studied emotional concepts, in particular the concept of anger, comparing their characteristics in different peoples [13]. Anna Veybitskaya conducted a cross-cultural semantic analysis of emotional vocabulary, units of understanding, and hatred/anger [14].

In social psychology, researchers specializing in prejudice can be found in Gordon Allport's book, *The Nature of Prejudice* [15]. He deeply analyzed the relationship between hatred, discrimination, and stereotypes. Erwin Staub explored the role of hatred in genocide and violence [16].

Anger is typically expressed in concrete discourse, in sentences such as: "I was humiliated," "I was broken," "I am unworthy of this," while hatred is often expressed in judgments, conclusions, outcomes, and decisions, such as: "This person is evil," "This person is unchangeable," "This person is not human," "This person is very evil and dangerous." The result that provokes hatred is perceived as the "hated object"—"unchangeable."

Differential neuropsycholinguistic characteristics of anger and hatred:

Main indicator	Anger	Hatred
<i>Emotional center</i>	Amygdala, hypothalamus	Insula, amygdala, cingulate gyrus
<i>Continuity</i>	Short, explosive	Long, deep inside
<i>Linguistic form</i>	Harsh, fast, high-pitched	Cold, sarcastic, negative, metaphorical
<i>Neurolinguistic target</i>	Energy release, defense	Keeping a distance, rejecting
<i>Physical sign</i>	The heart rate increases and breathing becomes difficult.	Cold sweat, muscle tension, apathy

Anger is primarily the result of activity in the amygdala and hypothalamus. During anger, the hormones adrenaline and nor epinephrine are released, triggering a negative reaction. At the same time, the prefrontal cortex (the center for logical decision-making) temporarily loses activity, causing a person to speak or act impulsively, without thinking. Hatred primarily activates the insula (the center for disgust and emotional analysis), the amygdala, and the cingulate gyrus. This emotion creates a "persistent hostile memory": it repeatedly reactivates the negative image in the brain. This results in a long-term state of stress, which "alters neural connections."

**Linguistic aspect.** Since anger and hatred are emotionally charged and short-lived, explosive emotions expressed through language, they are reflected by emotional states in word choice, intonation, sentence structure, and semantic coloring. "Anger" includes the following meanings and characteristics: 1. Emotional reaction: internal arousal, rage, fatigue; 2. Psychological cause: anger often arises as a response to insult, a sense of threat, or an unfair situation; 3. Temporary state: quickly arises and quickly fades. 4. Level of intensity: high (associated with a strong surge of emotion, rage, fury). It is worth noting that people have no right to be offended by each other.

**Semantic aspect.** The word "anger" denotes a strong negative emotional state, an internal surge of discontent, bitterness, or injustice. Synonyms for "anger" include rage, bitterness, anger, effort, and rage, while its antonyms are patience, peace, and calm. Anger, bitterness, anger, and effort age a person. Patience, peace, and calm cure any illness. For example, "The strongest man is the one who can control his

anger. The most patient man is the one who can hide his poverty. The richest man is the one who is content with what he has" (Jalal ad-Din Rumi).

Anger is often expressed in speech with sharp, short, and repetitive words. For example, "Enough! Enough! Why again?" In this case, the voice volume increases, and the intonation becomes harsher. When a person is angry, it becomes difficult for them to control themselves. They even curse and use insults. More affective language (emotionally charged insults) is used: "Disgusting," "Stupid."

Semantically, the word "hatred" expresses a deep, long-lasting feeling of discontent, hostility, or disgust toward someone or something. Emotionally, it is a stable, cold, and enduring feeling. "Hatred" semantically encompasses the following meanings: 1. Emotional stability—this state is not temporary, but is associated with an emotion that has become an internal state; 2. Morally, it often manifests as an inner hatred of evil, betrayal, and dishonesty; 3. Subjectively, it is associated with a person's inner values; 4. In intensity, it is moderate or deep, but not explosive compared to anger. Synonyms for this word include disgust, dislike, hostility, and enmity, and its antonyms are love, affection, and goodwill. For example, the Great Sahibkiran viewed with hatred the terrible vices that hindered the country's development and undermined the peace and harmony of the people ("A Lesson for Descendants"). The semantic differences between anger and hatred are summarized in the table below:

Basis	Anger	Hatred
Emotion Type	Explosive, sudden	Persistent, deep
Duration	Short-term	Long-term
Direction	Active, prompts external action	Passive, leads to inner coldness
Cause	Injustice, resentment	Evil, disgust, moral conflict
Result	Movement, quarrel, shouting	Aloofness, coldness, hostility
Lexical Combinations	Swallowing the horse of anger, trembling with anger	Looking with disdain, harboring hatred in the heart

1. During anger, stress hormones such as adrenaline and cortisol are produced and released in large quantities. These results in increased heart rate, elevated blood pressure, tense muscles, and accelerated breathing. This can be useful in the short term for self-defense, but if repeated frequently, it can be very harmful and dangerous to health.

2. Anger causes tension in the central nervous system. Frequent repetition of anger leads to fatigue of nerve cells, sleep disturbances, decreased attention, and an increased incidence of illnesses such as neuroses and depression.

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Hatred is a strong negative emotion, manifested by deep dislike, rejection, or hostility toward a person, thing, or situation. From a psychological and biological perspective, hatred is a defense mechanism, an emotional reaction that distances our mind from what we perceive as dangerous or unpleasant.

1. The psychological essence of hatred: a) a negative experience (e.g., betrayal, injustice, pain) is usually necessary for hatred to arise. This feeling is expressed in the nervous system as a mixed form of anger, fear, and disgust; b) hatred arises as a defensive feeling – a person hates to protect themselves, maintain distance, or escape from something that has caused harm.

2. There are biological foundations for hatred. During hatred, the insula and amygdala, located in the center of the brain and controlling signals of "disgust" and "danger," are activated. As a result, the heart rate increases, blood pressure rises, and severe tension develops in the body. The positive side of hatred is the protection of personal boundaries. Sometimes it strengthens a moral stance (for example, hatred of evil or injustice). It motivates a person to defend themselves. Long-term hatred leads to mental fatigue, irritability, stress, and depression. It narrows a person's worldview and reduces empathy. If hatred persists, it develops into anger or violence. The distinction between hatred and resentment is analyzed particularly in a moral context [3; 5].

3. When expressing hatred, words with persistent negative connotations are chosen in speech. For example: "I hate him," "He's disgusting to me," "He's a being to me." These experiences or speech patterns are expressed in a cold, detached, and

disgusting tone; the feeling is internal, but deep. Sometimes it is expressed through metaphors: "He froze my heart," "He's a snake, he sprays venom."

4. Ways to reduce hatred: 1. Each person should be able to conduct an emotional analysis of themselves, that is, each person asks themselves: "What exactly do I hate? What offended me?" 2. Each person should try the practice of forgiveness. Forgiveness is not the elimination of hatred, but the liberation of oneself from the feeling of hatred. 3. Each person should try to understand the other – to force themselves to awaken empathy; that is, they should try to soften and purify their heart by understanding the hatred. 4. When he is hated, he must get used to the rules of meditation and deep breathing. This method calms the human nervous system. 5. He must get used to establishing healthy communication that is, living with openness to expressing himself, not keeping his feelings bottled up. He must distract himself from negative thoughts.

## **Conclusion**

1. Neuropsycholinguistics is the science that studies the relationship between the brain, psyche, and human language system. It analyzes how emotions and feelings are expressed in the brain, how they are encoded and expressed through language, and how emotional experiences take lexical and grammatical form.

2. Anger and hatred are complex emotional neuropsycholinguistic processes that arise when emotional energy is transferred from the human brain to the language system and their interrelationships. Anger and hatred are expressed in the body through the nervous system, are formed in consciousness and communication through language, and over the long term change a person's worldview and speech style.

3. Although anger and hatred are lexically closely related concepts, scientific research shows that they are common but distinct psychoneurobiological states. Anger is a more immediate, reactive emotion; hatred is a long-term, cognitive-emotional attitude. Therefore, the main objective of the study is to examine this hierarchical category and develop a conscious attitude toward these characteristics from a linguodidactic perspective.

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