



PSYCHOLOGICAL PROPERTIES OF MEMORY.

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Abstract. This article examines the psychological properties of memory, analyzing its complex nature and central place in human life. The article examines the main types of memory, its physiological and neurobiological foundations, as well as cognitive processes such as information encoding, storage and retrieval. Cognitive theories, in particular the Atkinson-Shiffrin model, are analyzed as an important approach to understanding the interaction of memory systems. In addition, the psychological and neurobiological factors affecting memory, memory disorders, false memories and their impact on personality and social adaptation are covered. The article summarizes the main areas of memory research from the perspective of modern psychology and neuropsychology and emphasizes its importance.

Keywords: Memory, Cognitive processes, Neurobiology, Coding, Remembering, Forgetting, Brain structures, Atkinson-Shiffrin model

Memory is one of the most important and complex processes of the human cognitive system, representing the ability to store and later recall past experiences. This process plays a crucial role in human learning, experience acquisition, personality formation, and adaptation to the social environment. Ancient Eastern thinkers, including Pharaoh, as well as Greek philosophers, in particular Aristotle, noted the existence of memory not only in humans, but also in animals [1]. The study of the psychological characteristics of memory is one of the central problems of cognitive psychology and neuropsychology, which serves to understand the complex



functioning of the brain. This article provides a comprehensive analysis of the physiological and psychological foundations of memory, its main types, information processing mechanisms, cognitive models, as well as factors affecting memory and its disorders. The goal is to comprehensively illuminate the fundamental importance of memory in everyday life and in the general development of a person.

Memory, as a mental process that allows a person to store and later retrieve past experiences, is one of the main functions of the nervous system [1]. Its physiological basis is based on the formation of temporary neural connections in the brain. As the number of neurons and the complexity of brain structures increase, memory capacity and the quality of information storage also improve [1]. Modern research shows the importance of neurons, synaptic plasticity, in particular short-term changes and long-term potentiation (LTP), in memory formation. These processes are especially active in the hippocampus [2]. While the hippocampus plays a crucial role in the formation of new long-term memories, the amygdala is responsible for the processing of emotional memories, and the prefrontal cortex controls working memory and decision-making processes [2]. Neurotransmitters such as acetylcholine, glutamate, and dopamine also play an important role in memory function [2]. From a physiological point of view, memory is divided into two main types: short-term memory and long-term memory [1]. Short-term memory stores information for a few minutes to tens of minutes and is very vulnerable to external influences, such as electric shock. Long-term memory, on the other hand, is capable of storing information for a lifetime and is resistant to various influences. Information in short-term memory has the property of gradually transferring to long-term memory [1]. Psychologically, memory is divided into emotional, figurative, and verbal-logical types according to its manifestation. Verbal-logical memory predominates in humans. According to intent, memory is divided into voluntary (purposeful) and involuntary (non-purposeful) forms, with voluntary memory being more effective [1]. Memory processes mainly consist of three stages: encoding,



storage, and retrieval [2]. The encoding process involves the reception and processing of information by the brain. Attention has a significant impact on this stage, as information that is received with attention is more efficiently encoded and remembered [2]. The storage process ensures that encoded information is stored in the brain, either temporarily or permanently. Long-term memory is divided into different categories, including semantic memory (facts and general knowledge), episodic memory (personal experiences and events), procedural memory (skills and actions), and emotional memory (recollections related to emotions) [2]. The retrieval process involves retrieving stored information from the brain's memory when needed.

Cognitive theories and memory models serve to explain the complex structure of memory. The Atkinson-Shiffrin memory model, also known as the multi-stage or modal model, proposed by R. Atkinson and R. Shiffrin in 1968, has given a great impetus to memory research. This model describes human memory in three ways: Memory is influenced by many psychological and neurobiological factors. Strong emotions can enhance memory, suggesting the importance of emotional memory [2]. However, chronic stress, along with elevated levels of the hormone cortisol, can negatively affect memory and even reduce the size of the hippocampus [2]. Memory decline is observed with age due to the loss of neurons [2]. Motivation, a healthy lifestyle (Omega-3 fatty acids, exercise and sufficient sleep), mental exercises and regular repetition of information are recommended to strengthen memory [2]. Modern psychology and neuroscience use a wide range of methodological approaches to studying the psychological properties of memory. Cognitive psychology is dominated by experimental research, in which memory processes (encoding, storage, retrieval) are studied under controlled conditions using various stimuli. These tests are usually performed by memorizing lists of words, repeating numbers, recognizing visual patterns or performing memory tasks. Psychometric



tests allow for the quantitative assessment of different types of memory (e.g., working memory, visual-spatial memory).

Memory disorders, including amnesia and confabulation, highlight how important the proper functioning of memory processes is for a person's mental health. Memory not only shapes an individual's self-concept, but also enriches their personality by learning from past experiences, mastering new skills, and planning for the future. Memory also plays a crucial role in social adaptation; it allows an individual to function effectively in society by remembering social norms, relationships, and collective experiences. A deeper understanding of memory opens up new opportunities for improving educational effectiveness, treating memory disorders, and even developing artificial intelligence systems. Future research will focus on studying the more subtle mechanisms of memory, individual differences, and new ways to strengthen it.

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