



ATTENTION AS A COGNITIVE FUNCTION. CLASSIFICATION OF MEMORY TYPES IN KNOWLEDGE ACQUISITION

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Abstract. *This article examines attention as a cognitive function and analyzes its role in information processing and knowledge acquisition within the framework of cognitive psychology. Particular attention is devoted to the selective nature of attention, its neurophysiological foundations, and its significance in enhancing learning efficiency. The study highlights Donald Broadbent's contribution to the development of attention theories, especially his Filter Theory of Attention and dichotic listening experiments, which provided scientific explanations for selective information processing under conditions of sensory overload. The article also discusses the relationship between attention, perception, memory, and thinking, emphasizing the importance of selective attention in educational and cognitive activities.*

Keywords: *attention, cognitive psychology, selective attention, Filter Theory of Attention, Donald Broadbent, dichotic listening, information processing, cognitive function, perception, memory, thinking, cognitive load, sensory filtering, educational psychology, neurophysiological mechanisms.*

Since the mid-20th century, the characteristics, functions, and neurophysiological foundations of attention have been actively studied within cognitive psychology through experimental research. At the same time, theoretical approaches concerning the shifting, selectivity, distribution, and directionality of attention have been developed and scientifically substantiated.

The selective nature of attention refers to the ability to focus on the most important and necessary information within the continuous flow of environmental stimuli while filtering out irrelevant or insignificant stimuli. In this regard, selective attention plays a crucial role in the educational process, as it increases the effectiveness of knowledge acquisition and enables individuals to process information more accurately and efficiently.

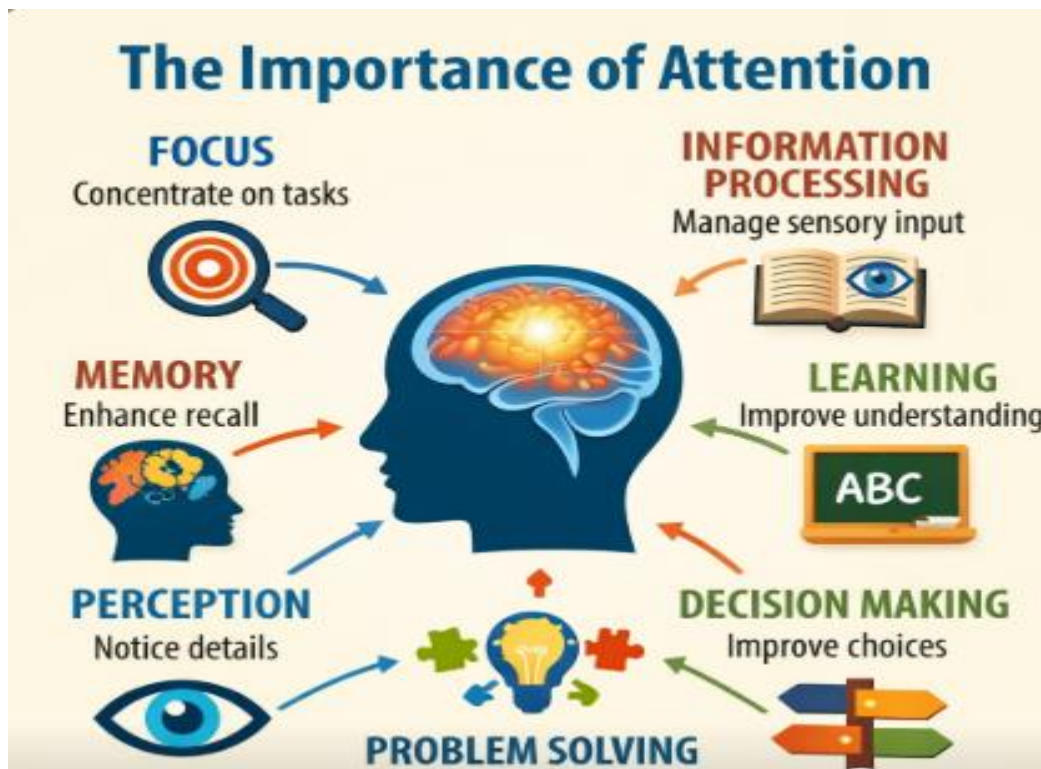


Figure 1. The Importance of Attention

According to Broadbent (1958), only certain pieces of incoming information or stimuli are utilized in subsequent mental processes such as perception, memory, and thinking, while others disappear before reaching the stages of awareness or perception. At any given moment, all incoming stimuli are initially received through the sensory system. Among these stimuli, one is selected and passes through a filtering process based on its physical characteristics, such as the loudness or softness of surrounding sounds, tonal differences, and similar features, after which it is prepared for further processing.

This filtering process represents the positive function of attention, as it reduces the overall flow of information, facilitates the operation of other mental processes such as perception, memory, and thinking, and prevents the overload associated with analyzing and synthesizing excessive amounts of information.

Initially, the portion of received information that is not integrated with attention does not pass through the filter and gradually loses its activation unless there is a need for its later use. The filter itself does not determine the meaning of information; rather, it only selects certain stimuli, after which semantic processing takes place. Therefore, the pre-filter stage, characterized by the absence of focused attention, may lead to a failure to understand or consciously perceive the meaning of information.

Broadbent's model demonstrates that the process of attention ensures the efficiency of perception through the selective filtering of information. According to the model, information passes through the sensory register, is filtered based on physical



characteristics, and only the selected stimuli proceed to subsequent processes of perception and memory.

Donald Broadbent's contribution to the study of attention, particularly through his dichotic listening experiments, occupies a fundamental place in the history of cognitive psychology. His research provided one of the earliest scientific explanations of how individuals selectively process information in conditions of excessive sensory input.

Broadbent introduced the concept known as the "Filter Theory of Attention" or the "Early Selection Theory," which explains that information is filtered at an early stage of cognitive processing based on its physical characteristics before semantic analysis occurs. According to this theory, the human cognitive system possesses limited processing capacity and therefore cannot simultaneously analyze all incoming stimuli in detail. As a result, attention functions as a selective filter that allows only certain information to pass through for further processing.

Dichotic Listening Experiment: Main Characteristics

1. **Task (Split-Span Technique).** Participants were simultaneously presented with different sequences of numbers in each ear through headphones. For example, the right ear received the sequence "4-9-6," while the left ear received "8-5-2."

2. **Additional Task.** Participants were instructed to recall and repeat the numbers they had heard in any order they preferred.

3. **Results (Evidence of Filtering).** Most participants made fewer mistakes when recalling the information ear-by-ear (for example, "4-9-6" followed by "8-5-2") rather than pair-by-pair ("4-8," "9-5," "6-2").

4. Conclusion.

Based on these findings, Broadbent concluded that the perceptual system filters incoming information at a very early stage according to physical features, such as the direction from which a sound originates or the ear through which it is received. This suggests that the human brain initially selects one channel of information for complete processing while temporarily ignoring the others. Only after processing the selected channel does attention switch to another source of information.

Broadbent's model demonstrated that shifting attention from one channel to another requires additional cognitive resources. Consequently, his theory laid the foundation for later studies on selective attention, information processing, and cognitive load, significantly influencing the development of modern cognitive psychology and neuroscience.

References

1. Broadbent D. E. Perception and Communication. – London: Pergamon Press, 1958.



2. Cherry E. C. Some Experiments on the Recognition of Speech, with One and with Two Ears // Journal of the Acoustical Society of America. – 1953. – Vol. 25. – P. 975–979.
3. Posner M. I. Attention in Cognitive Neuroscience: An Overview // Attention and Performance. – 1980. – Vol. 8. – P. 1–26.
4. Kahneman D. Attention and Effort. – New Jersey: Prentice-Hall, 1973.
5. Treisman A. Selective Attention in Man // British Medical Bulletin. – 1964. – Vol. 20. – P. 12–16.
6. Baddeley A. Working Memory, Thought, and Action. – Oxford: Oxford University Press, 2007.
7. Eysenck M., Keane M. Cognitive Psychology: A Student's Handbook. – London: Psychology Press, 2015.
8. Anderson J. Cognitive Psychology and Its Implications. – New York: Worth Publishers, 2010.
9. Solso R. Cognitive Psychology. – Boston: Pearson Education, 2008.
10. Sternberg R. Cognitive Psychology. – Belmont: Wadsworth Publishing, 2012.