

The 7th International Young Naturalists' Tournament

Problem № 16
«Short-term memory»



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Condition

What is the capacity and duration of human short-term memory? Suggest an experimental study to evaluate short-term memory and factors that may have important influence.

Our condition

Consider the main factors affecting a person's short-term memory and conduct studies that prove the possibility of increasing short-term memory.

Aim of the study

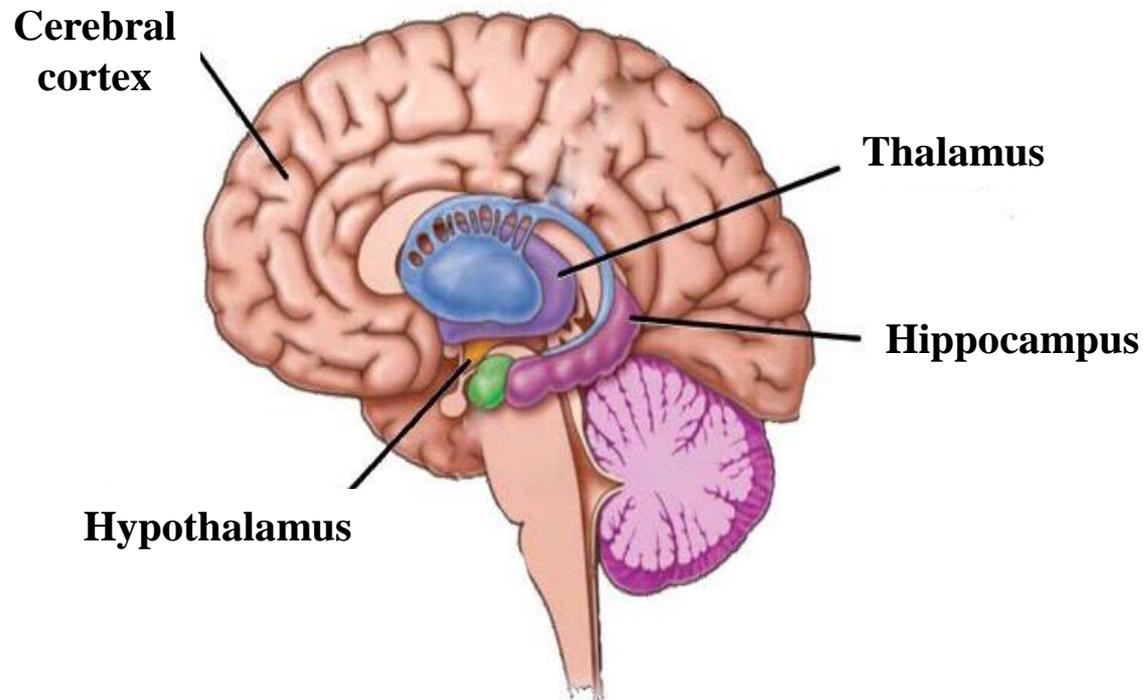
Measuring the volume of short-term memory and increasing its capacity by proposing the most effective techniques.

Objectives

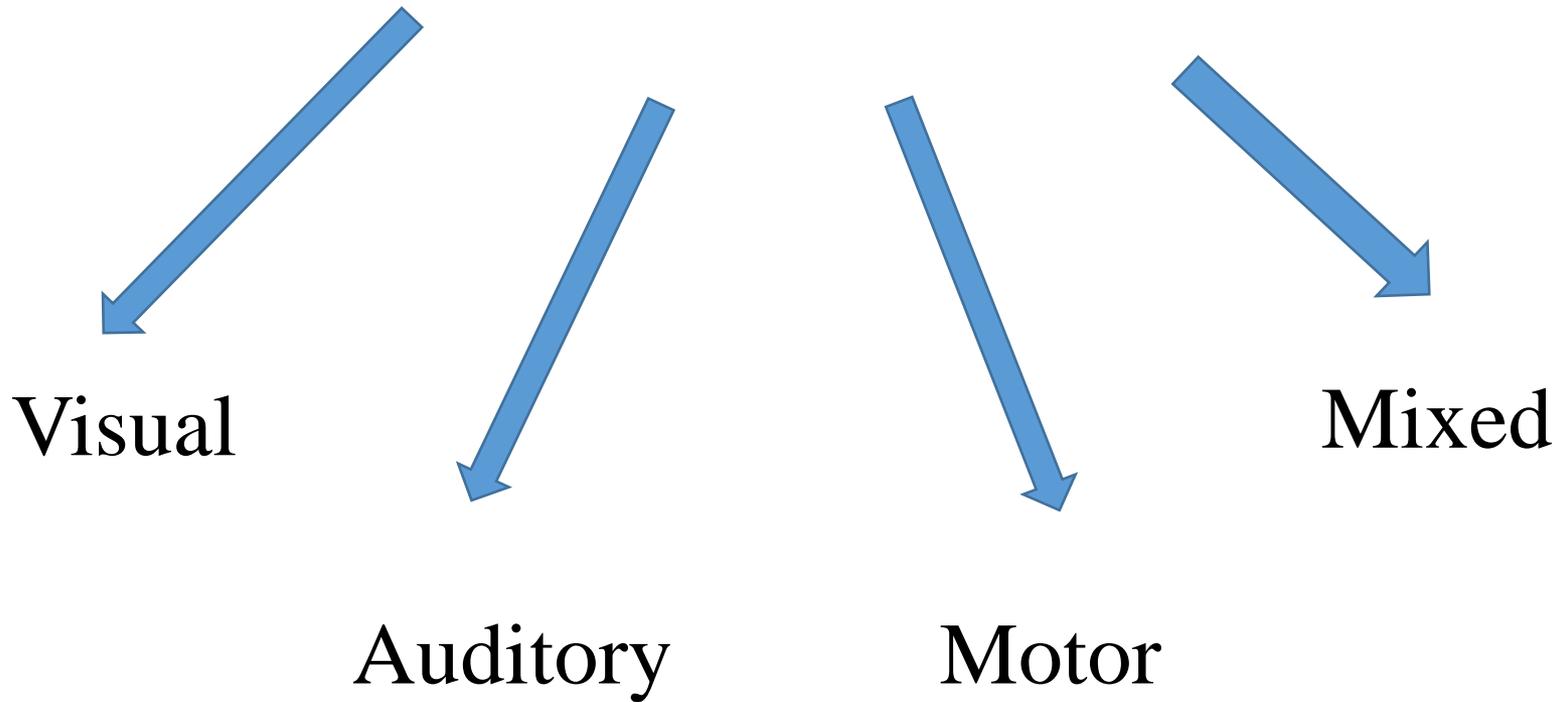
- To study the process of memorization and the phenomenon of short-term memory;
- Make a list of texts for the study of short-term memory of various social and age groups;
- To study the short-term memory of various social groups;
- Identify the dependence of the volume of short-term memory from belonging to a social group;
- To offer the subjects a number of techniques to increase the amount of short-term memory;
- Issue a set of rules for maintaining and increasing the amount of short-term memory on a printed basis.

Theory

Memory is a general designation for a complex of cognitive abilities and higher mental functions for the accumulation, preservation and reproduction of knowledge and skills.

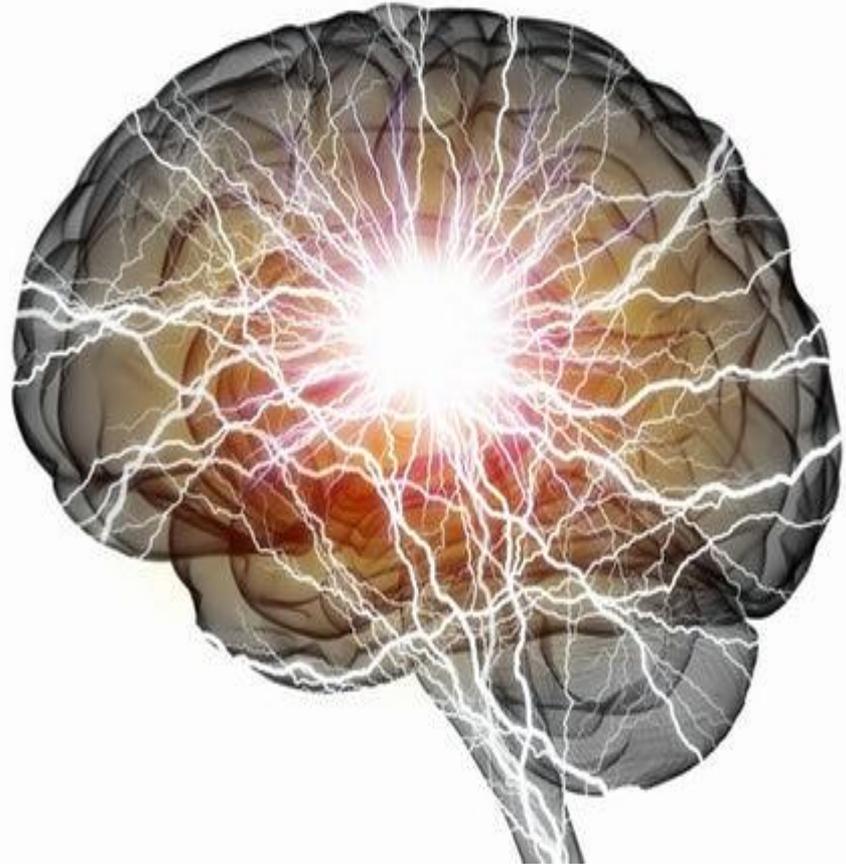


Types of memory



Theory

Short-term memory is a type of human memory, thanks to which you can hold a small amount of information for a short time.

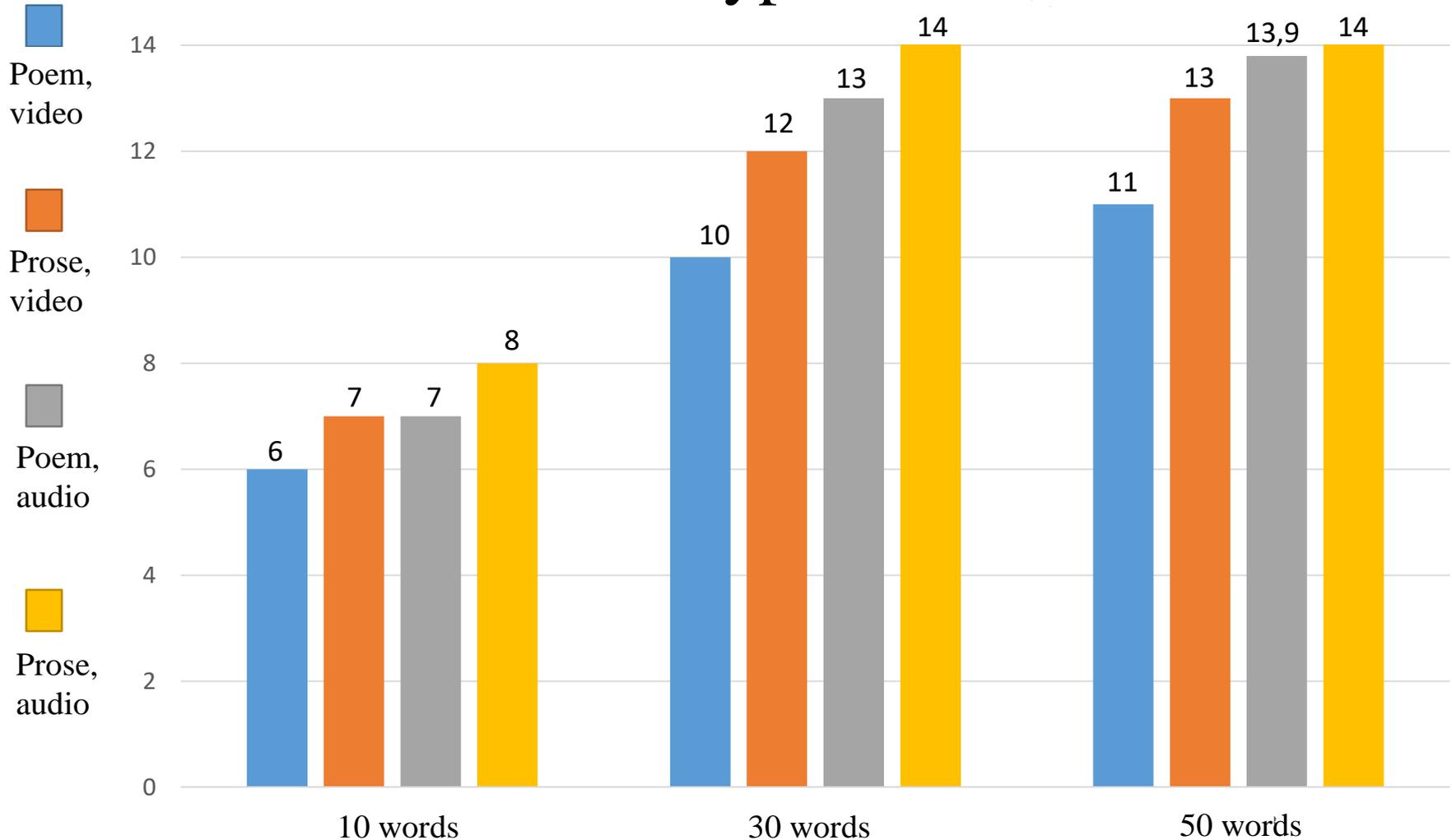


Experiment 1.

Purpose: carry out a comparative description of the short-term memory capabilities depending on the way of presenting information.

Equipment: stopwatch, sheets of paper, pens, respondents aged 15–16 years, text consisting of 10, 30, 50, unrelated words, presentation containing the same words.

Dependence of text reproduction depending on the volume and type of text, the word



Experiment 1.

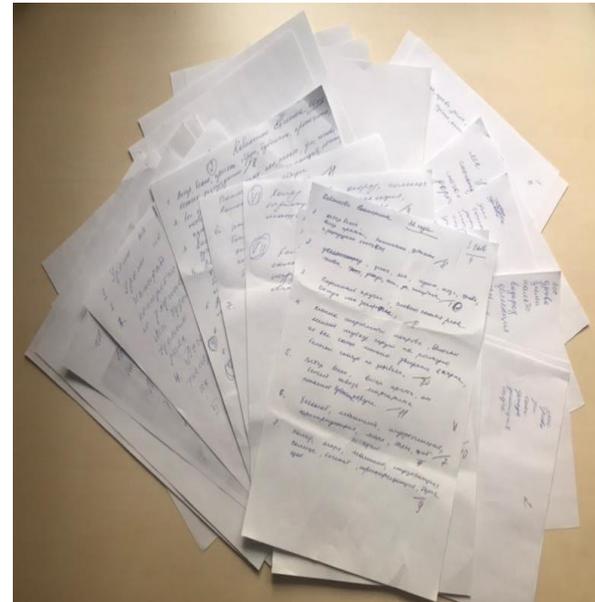
Conclusion №1

- Conducted 2 experiments with the same source data.
- We found that our respondents remembered audio information on average 10% better.
- Based on this indicator, let's continue research with audio information.

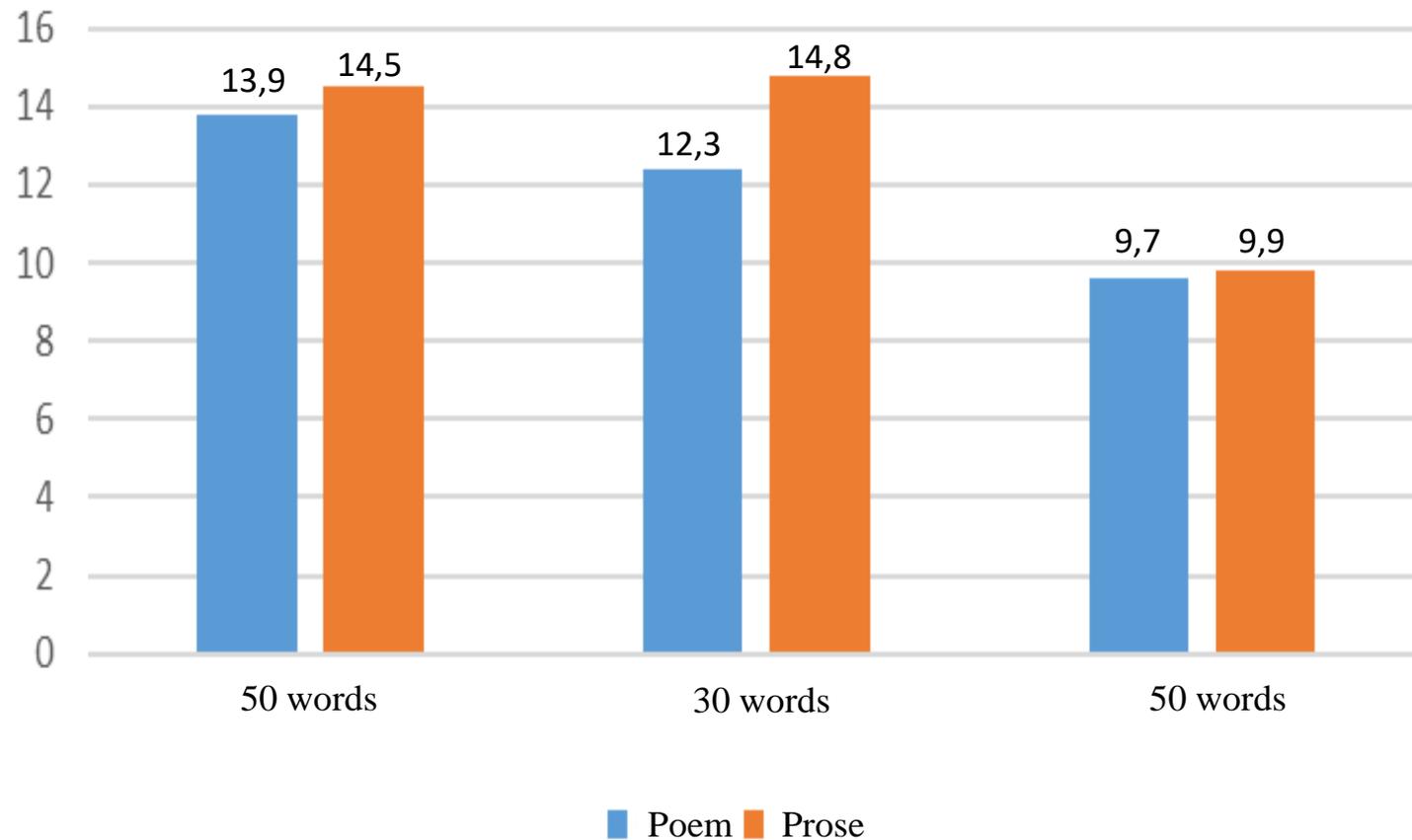
Experiment 2.

Purpose: to study the possibilities of auditory short-term memory, depending on the shape and volume of the material proposed for memorization.

Equipment: stopwatch, sheets of paper, pens, respondents aged 15–16 years, aged 30–50 years old, aged 60–80 years old, popular science text consisting of 50 (30.10) words, a poem consisting of 50 (30.10) words, text consisting of 50 (30.10) arbitrary words.



Dependence of reproduction on text size, word



Experiment 2.

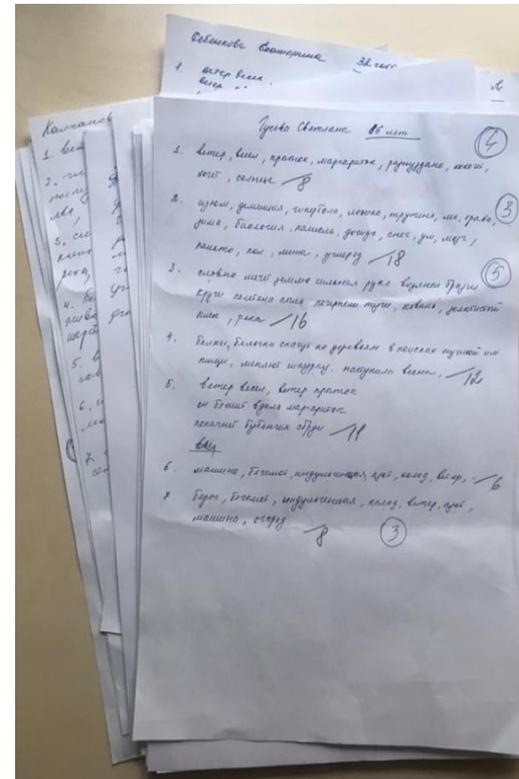
Conclusion №2

- We measured the amount of short-term memory in representatives of various groups, depending on the type and volume of the proposed text.
- At the same time, it was established that the optimal for memorizing volume of information is a text consisting of 10 rhymed words.
- Interestingly, all respondents, regardless of age and occupation, reproduced the text from the last phrases. This is a confirmation that in order to understand the general meaning, a person must retain not completely the beginning of the text, but only its “processed” meaning.

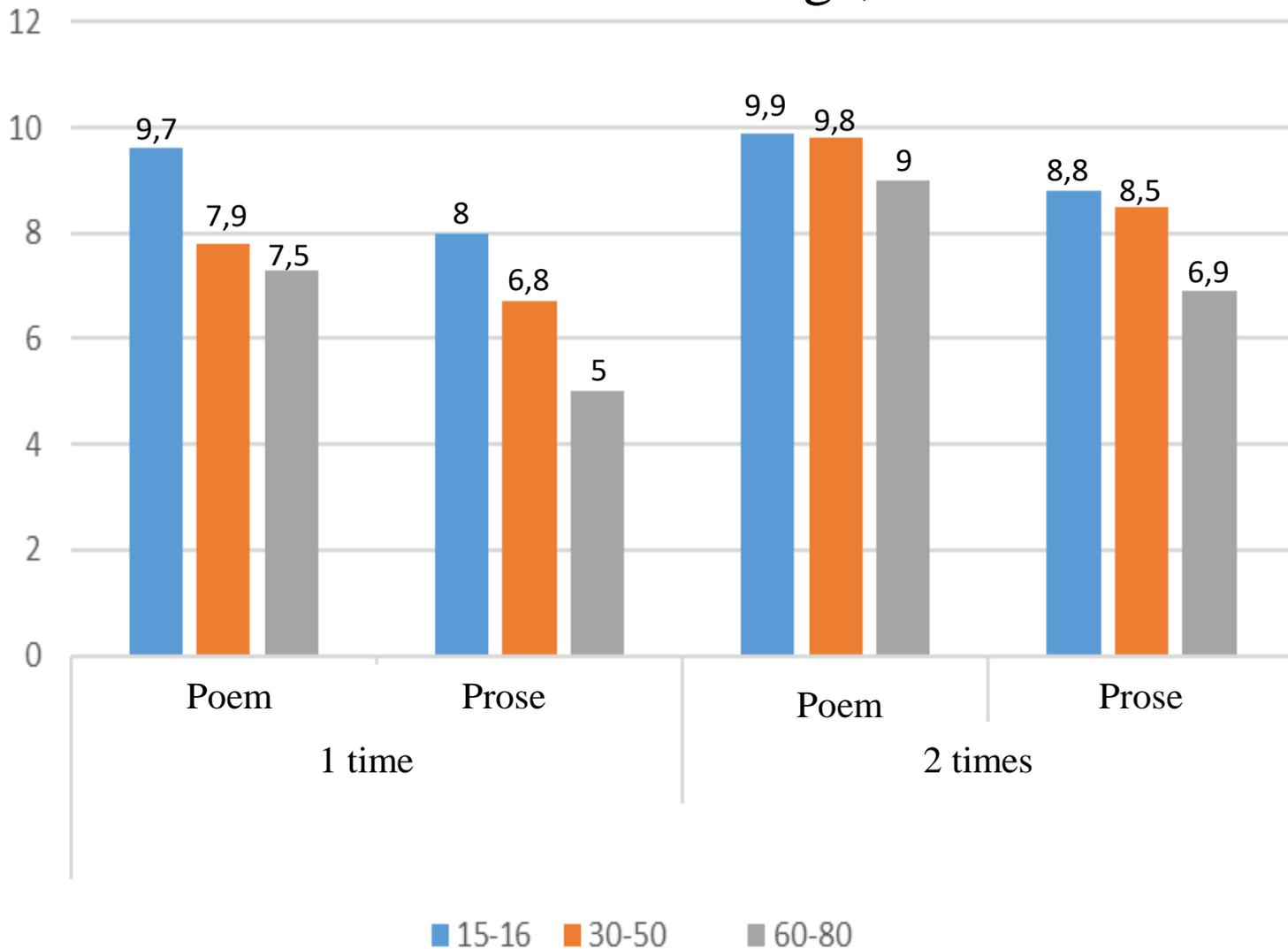
Experiment 3.

Purpose: to investigate the dependence of the volume of aural short-term memory on the age of the respondent.

Equipment: stopwatch, sheets of paper, pens, respondents aged 15-16 years old, aged 30-50 years old, aged 60-80 years old, text consisting of 10 unrelated words, poem consisting of 10 words.



Memorization rates depending on age and number of readings, word



Experiment 3.

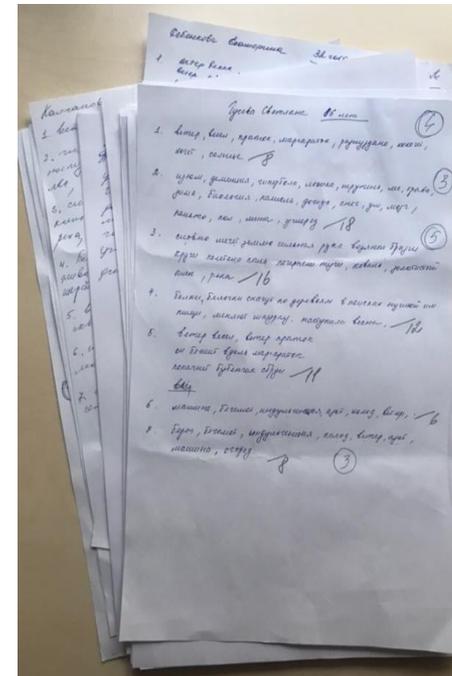
Conclusion №3

- During the experiment, investigating the dependence of short-term memory on the age of the respondent, found that memorization happens worse with age; the process of memorization is influenced by the number of times the text is read.
- Despite the smaller presence of the sports factor in the life of the middle-aged group, their brain is almost always in a state of solving complex problems: problems at work, domestic difficulties, etc., which contributes, if not to development, then at least to maintain the current state of the brain.
- Most of the third age group (60-80 years old) are retired. Training of the brain and body practically does not occur, allowing the brain parts to recess at an individual rate, depending on the efforts made for the development of the brain in youth.

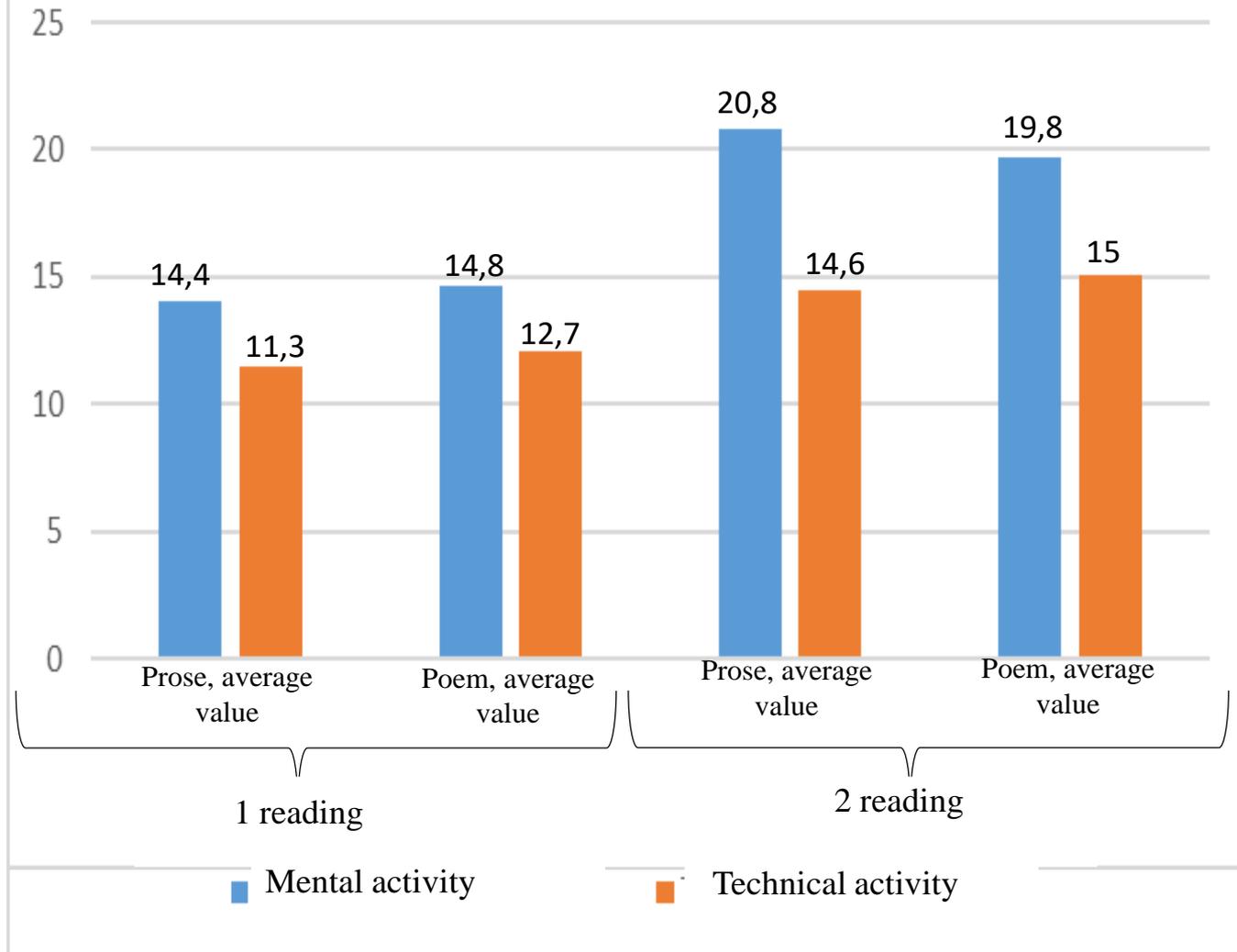
Experiment 4.

Purpose: to investigate the dependence of the auditory short-term memory of the middle-aged group, depending on the type of activity.

Equipment: stopwatch, sheets of paper, pens, respondents who are regularly engaged in mental activity, respondents who are regularly engaged in technical activity, text consisting of 10 unrelated words, a poem consisting of 10 words.



Dependence of memory size on the type of text and the number of reads, word



Experiment 4.

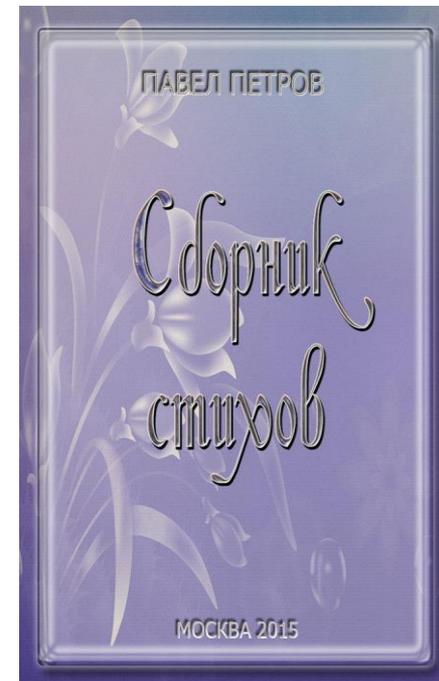
Conclusion №4

- During the experiment, the amount of short-term memory of the middle-aged social group was investigated depending on the regular type of activity.
- Found that people engaged in mental activity, regularly working with documents and texts, have a short-term memory up to 15% more than those who are engaged in technical work.
- At the same time, the tendency to memorize rhyme better than a set of words is preserved regardless of the type of activity.
- The number of times a text is repeated also proportionally increases the performance of both groups of respondents.

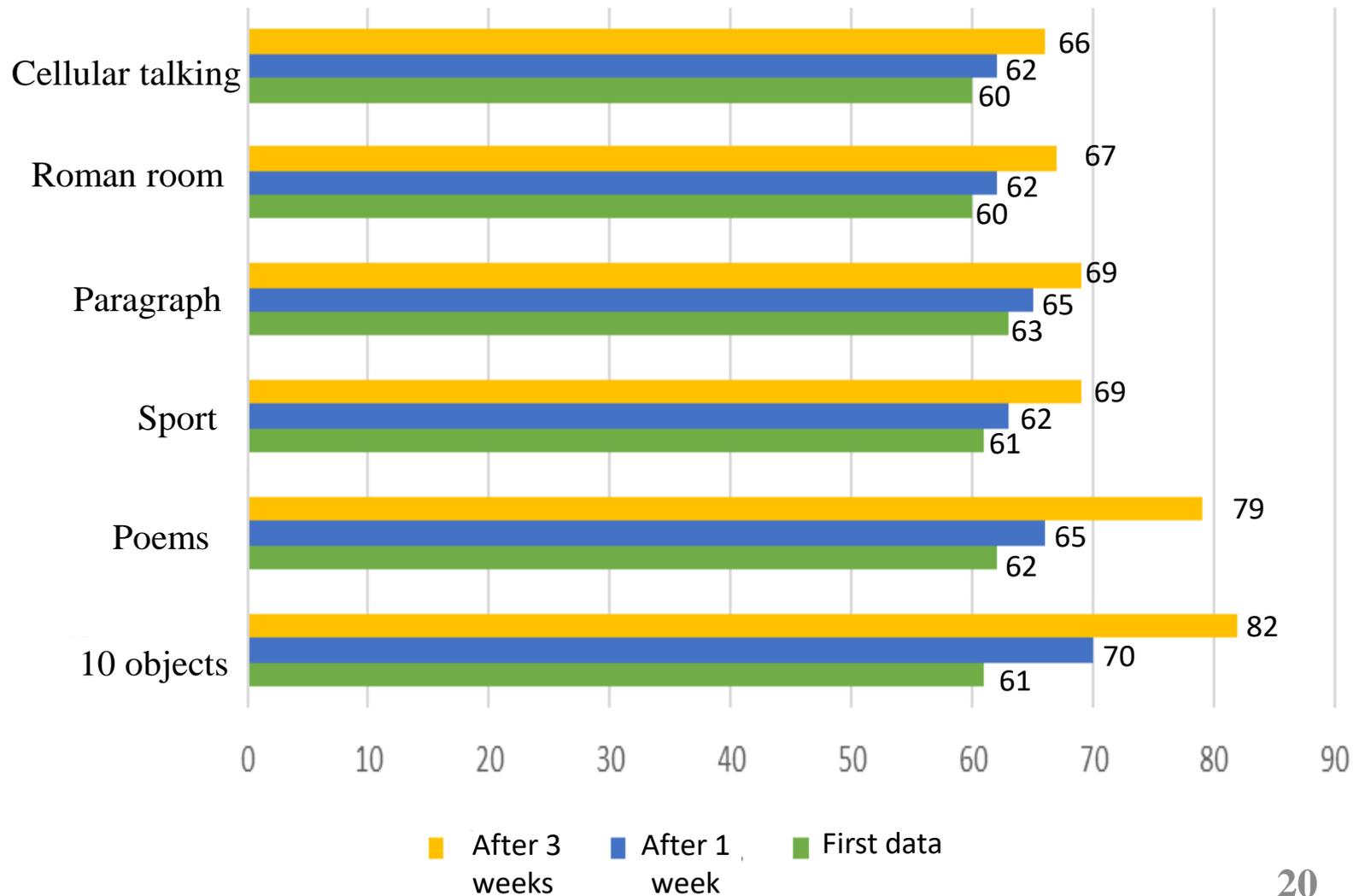
Experiment 5.

Purpose: to create an experimentally tested product memo for the preservation and development of short-term memory.

Equipment: research data, printer, thick paper, respondents, schoolchildren aged 15-16.



The results of applying techniques to improve short-term memory, %



Experiment 5.

Conclusion №5

- Having studied 6 methods on 6 different groups of people, we came to the conclusion that the most productive is the training “10 subjects”, which adds visual perception of information.
- This is explained by the fact that usually memory is not the most reliable keeper of information, since the subconscious mind involuntarily allows us to remember false facts or replace them with more familiar ones. During the course of the training, the respondent tries to disable this feature, calling the most accurate characteristics of the items. It also proves that an important factor in memorization is the reinforcement of audio information with visual images.
- Based on the data obtained in the study, we developed a printed version of the product-reminder for increasing the amount of short-term memory.

References

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Conclusions

- Studied the process of memorization and the phenomenon of short-term memory;
- found out the dependence of the volume of short-term memory on belonging to one or another social and age group;
- Based on the advice of the school psychologist and additional literature, they identified a number of the most effective methods for the development of short-term memory;
- suggested a number of the most useful exercises to help increase the amount of short-term memory at an accelerated pace;
- Developed didactic material on a printed basis, the purpose of which was to attract representatives of all social groups to the problem of the importance of preserving and developing short-term memory at any age.

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