

*communication", "Pedagogy of Higher Medical Education" training "Development of communication skills in future physicians" and "psychopedagogical support of future doctors in the system competency approach to learning", contents and didactic component which provides psychological development of personality structures of medical students. We investigated the motivational area of personality level of subjective control and one of the most important professional competencies doctor – empathy.*

**Key words:** *personal development, motivation, adaptive-dynamic studies, professional activities of doctor, personal and professional development.*

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## SEMANTIC ANALYSIS OF MEMORIZING AND UNDERSTANDING OF THE TEXT WITH TECHNICAL CONTENT

*R.S. Fesenko. Semantic analysis of memorizing and understanding of the text with technical content. This article is about investigation of the effect of changing the goals of reading on communicative structure of meaning of the text with technical content, influence of the semiotic level and knowledge of the technical terms on the results of the text memorizing.*

**Key words:** *understanding, the structure of meaning, proposition, syntax, memorizing, text*

*Р.С. Фесенко. Змістовний аналіз запам'ятовування та розуміння тексту з технічним змістом. У статті досліджується вплив зміни цілі читання на комунікативно-цільову структуру смислу тексту з технічним змістом при його відтворенні адресатом, вплив семіотичного рівня підготовки та знання спеціальних термінів на результати запам'ятовування тексту.*

**Ключові слова:** *розуміння, структура смислу, предикація, синтаксема, мнемична діяльність, текст*

*Р. С. Фесенко. Содержательный анализ запоминания и понимание текста с техническим содержанием. В статье исследуется влияние изменения цели чтения на коммуникативно-целевую структуру смысла текста с техническим содержанием при его воспроизведении адресатом, влияние семиотического уровня подготовки и знания специальных терминов на результаты запоминания текста.*

**Ключевые слова:** *понимание, структура смысла, предикация, синтаксема, мнемическая деятельность, текст*

**Formulation of the problem.** In terms of theory of activity, the memory is a mnemonic activity that is a functional system of mnemonic abilities (FSMA) [13, p.32] and has the general structure in accordance with general architecture of the psychological system of activity [14, p.106].

Usually, understanding is considered as a process of constructing semantic structure [16, p.62] or as a positive result of semantic perception, which in turn is considered as difficult perceptual, mentally and mnemonic activity [5, p.5-6].

In general the memory is a necessary condition for reproduction of activity through assimilation of culture space elements (knowledge, norms, standards and samples) [15, p. 145]. At the individual level, the reproduction is the realization of activities, thus we can say that the memory is a necessary component of any activity. The understanding is a necessary component of the communication process. The communication provides the translation of culture elements. In this way the communication, which includes the understanding, also is a necessary condition for the reproduction of activity in general.

Mnemonic activity and understanding are necessary components of the reading process. According to L. S. Vygotsky's methodological requirement of the analysis of mental processes we should use the unit analysis (unit is the smallest element of the manifestations of mental processes, which retains its qualities as whole) [2, p.10]. If we accept a unit of activity as a unit of reading, then its structure will be consistent with the overall architecture of the psychological system of activity [14, p.65]. If we will consider and investigate the reading as an activity, we have to solve the following problems:

1) it should be decided whether reading is a homogeneous type of activity or it consists of various types of activities. It is necessary to resolve the question of whether the processes of perception, understanding and memorizing are realized successively in the process of reading and connected among themselves through the products of activity or the reading includes them in themselves as elements of the structure [14, p.107]. For example L. S. Tsvetkova's model of the reading process has a three successive stages [3, p.187-190];

2) it should be investigated the concrete implementation and the structure of unit activity of reading. On this basis we should investigate the structure of reading as the system of activity;

3) it should be investigated the operation of the system in the dynamics.

**Analysis of the researches and publications.** The main previous results of the researches of memorizing texts are the following:

1) Bartlett F. Ch. on the basis of his investigations came to the conclusion that all people tried to understand the meaning of the text, when they perceived it, and that the reproducing of the text becomes more standard and schematic. Type of schemes, according to which they memorized and reproduced the text, depends on cultural factors [12, p.105].

2) O. A. Smirnov as a result of their research found:

a) involuntary mnemonic activities with the text material is more productive than voluntary without such level of activity [6, s.477];

b) understanding does not ensure the success of remembering [7, p. 117];

c) the presence in the retelling text: the generalization, specification and

detailing, replacements one content to another, reducing of the individual parts, consolidation or separation of parts of the text, additions that go beyond the original semantic content, the distortion of the original text [7, p. 127-128].

In P.I. Zinchenko's research of memorizing texts were found out:

a) the dependence of productivity of memorization from place of the material in the structure of activity;

b) improving of productivity of the memorization when using planning and classification;

c) conditions of mutual interference cognitive and mnemonic activities;

d) conditions of improving the productivity voluntary mnemonic activity in comparison with involuntary [6, s.408].

4) W. Naysser in its research found out:

a) dependence of the form and content of the reproduced text on the instructions ("to memorize" or "to understand");

b) using schemes in retelling texts [8, s.586].

5) setting to memorize for long time leads to increased productivity [7, str.116];

6) the correlation between working memory and the ability of text perception [1, str.91]

7) active sentence is memorized easier than passive [10 str.89].

8) the effect of context for orders less than 5-7 [10, str.43]

9) success of the memorization depends on the coherence and meaningfulness of the text [11, p.54].

**Research objective.** In this article, according to the first task of the research, we investigated the relations between understanding and memorizing, such as the effects of changing reading goals from understanding to memorizing on to the communicative meaning structure of the text with technical content, the impact of the semiotic level on results of the text memorizing.

**The content of the research.** For this research we recruited a group of eight people of different age, gender and education (Table 1). In order to comply the internal validity of experiment we used group control [9]. Group control was implemented with using pairwise alignment strategy

*Table 1*

**The participants of the experimental group**

№	The participants of the experiment	Age	Gender	Education
1	A. O.	28	female	Higher humanitarian education
2	I. M.	30	male	Higher humanitarian education
3	M. B.	29	female	Higher humanitarian education
4	O. B.	28	female	Higher technical education
5	D. B.	23	male	Vocational education
6	C. P.	31	male	Vocational education
7	O. A.	52	female	Vocational education
8	C. I.	58	male	Vocational education

To make pairwise alignment we conducted preliminary test in which study participants were evaluated in terms of semiotic competence. For this test we applied T. N. Dridze methodology for determining the semiotic groups [4].

The test complex consists of the following tests:

1) Test X: estimating the level of the language semantic competence (for computer lexicon),

2) test Y: estimating the level of the text semantic competence,

3) Test Z: estimating the level of the perception the text semantic hierarchy.

Test X is a procedure for interpreting by participants of the common computer vocabulary. Tasks procedures are reduced to: 1) evaluation of the knowledge level of the common computer vocabulary, evaluation the degree of interpretation adequacy; 2) evaluation of the speech skills through the analysis of the operating with the words.

Vocabulary has been selected on the base of text material of the computer topic: D. Kolisnichenko "Tutorial work with computer", 2008 (1-350 pages, 48,590 words), V. Leontiev "Modern computer encyclopedia 2011", 2010 (13-70 pages, 48,505 words) and the magazine "Home computer №1 2008" (3-58 pages, 48,519 words). We selected the 50 most frequent computer terms for our vocabulary. Blank, which was filled by the participants, is shown in the Table 2.

Table 2

**The blank "The knowledge of common vocabulary"**

TN <sup>o</sup>	Word	Have you met this word? Are you familiar with it?		What is the meaning of this word? Try to give the definition	Write another word which has the close meaning for this word	Write the words which you have met along with this word
		Yes	No			

Test Y is a procedure for identifying the knowledge of the vocabulary of the Text 1 "RAM" (5 pages, 1534 words). Participants filled out a blank, the form of which is shown in Table 3.

Table 3

**Blank "Vocabulary of the Text №1"**

№	Word	Have you met this word? Are you familiar with it?	
		Yes	No

The vocabulary included 35 most frequent computer terms from the text "RAM". Test Z is a task to retell the text "RAM" after the double reading. We estimated:

- 1) adequacy of the text interpreting;
- 2) verbal skills.

For providing the evaluation we analysed the text "RAM" according to the "Instructions for identifying of the motivational target text structure

(macrostructure analysis)" [4, p. 88-89]. As a result we obtained the results, which are shown in the Table 4. Applying pairwise alignment strategy we obtained distribution into the experimental and control group according to the columns "Further shares to the group" Table 4.

1) we gave to the participants from experimental and control group the blanks for filling (Table 5), which contained the 25 most frequent terms of the text "Processor" (3 pages, 662 words);

Table 4

### Test results

№	Partisipant	Test X	Test Y	Test Z	Total	Further sharing into the groups	
						Experimental	Control
1	A. O.	5,34	2,5	6	13,84	x	
2	M. B.	4,58	2,00	6	12,58		x
3	C. B.	4,5	2,00	6	12,5		x
4	O. B.	4,02	2,50	5,5	12,02	x	
5	Д. В.	3,67	2,50	4,5	10,67		x
6	С. П.	3,31	2,50	3,5	9,31	x	
7	О. А.	3,05	1,50	3,5	8,05	x	
8	С. I.	2,72	1,50	3,5	7,22		x

2) after filling the blank, we gave to the participants the text "Processor". Before reading we gave to the experimental group the next instruction: "Read text two times. Please, memorize it and then retell", and to the control group we gave the instruction "Read text 2 times. Please, try to understand it". After reading the text we asked the control group to set out what they remembered. All participants rated the text as "difficult for understanding and memorizing"

Table 5

### Blank "Vocabulary of the Text № 2"

№	Word	What is the meaning of this word? Try to give the definition

To provide analysis of the experimental results we implemented the analysis of the text macrostructure [4, pp. 93-94] and microstructure ("The instructions for identifying of the logical and factual chain with calculating the informative text factor" [4, p. 93-94]). The analysis results are shown in Table 6 and Table 7.

Table 6

### Macrostructure of the text №2 "Processor"

The rank of the proposition	Proposition text structure	The rank of the proposition	Proposition text structure
1 rank	The message goal		
2 rank	A-1 The main theses:	3 rank	B-1 The illustration to the second rank proposition
	A-1a		B-1.1b

The continuation of the table 6

The rank of the proposition	Proposition text structure	The rank of the proposition	Proposition text structure
	A-1b		B-1.1c
	A-1c		B-1.2a-1
	A-1r		B-1.2a-2
	A-1д		B-1.2B-1
	A-1e		B-1.2b-3
	A-2 The explanation of the main theses		B-1.2c-1
	A-2a-1		B-1.2r-1-1
	A-2a-2		B-1.2r-1-2
	A-2b-1		B-1.2r-1-3
	A-2b-2		B-1.2r-2-1
	A-2b-3		B-1.2r-2-1
	A-2c-1		B-1.2д
	A-2c-2		B-1.2e
	A-2r-1	4 rank	B-2 The background and explanations to the second and third rank proposition
	A-2r-2		B-2.1b
	A-2д		B-2.2b-1
	A-2e		B-2.2b-2
	A-3 The evaluation, describing the problem situation		B-2.2b-3
			B-2.2c-1
			B-2.2c-2-1
			B-2.2c-2-2
			B-2.2д
			B-2.2e
		5 rank	B-3 The background and explanations to the fourth rank proposition
			B-3.2b-1
			B-3.2b-2

Table 7

**The microstructure analysis of the text №2 "Processor"**

The total number of words in the text	The number of the syntaxemes	The informative text factor
659	297	0,45

Results of the filling the blank "Vocabulary of the text №2 "Processor" and texts which have been reproduced by participants were analyzed as follows: 1) we exhibited score for the knowledge and skills of giving definitions; 2) we calculated the number of reproduced elements of the proposition text structure (see table 6) for each rank; 3) we calculated the number of the available syntaxemes, the number of substitutions syntaxemes which are close in meaning, the number syntaxemes reproduced accurately, and we estimate the

number of the syntaxemes that include terms. The Results for experimental and control group are shown in Tables 8 and 9 respectively.

*Table 8*

**The results of the data analysis of the experimental group**

Exp. group	Proposition							Syntaxemes ratio of the total amount in the text, %	The ratio of replacements to the total amount syntaxemes in the text, %	Syntaxemes exact ratio of the total amount in the text, %i	Assessment of knowledge terms	Assessment of syntaxemes
	A-1	A-2	B-1.1	B-1.2	B-2.1	B-2.2	B-3.2					
A. A.	5	9	2	9	1	7	2	46,13	25,93	20,20	19	21
O. B.	4	5	2	1		5	1	17,85	11,45	6,40	19	12
C. P.	4	3		1			4	9,43	6,73	2,69	16	12
E. A.	2	2	1	3	1	2		13,47	10,44	3,03	17	6

*Table 9*

**The results of the data analysis of the control group**

Contr. group	Proposition							Syntaxemes ratio of the total amount in the text, %	The ratio of replacements to the total amount syntaxemes in the text, %	Syntaxemes exact ratio of the total amount in the text, %i	Assessment of knowledge terms	Assessment of syntaxemes
	A-1	A-2	B-1.1	B-1.2	B-2.1	B-2.2	B-3.2					
M. B.	4	8	1	8	1	4	2	42,09	28,28	13,80	19	19,00
C. B.	3	7	1	3			3	16,84	12,12	4,71	18	11,00
D. B.	5	4	1	3			2	16,50	14,14	2,36	12	9,00
C. I.	4	3	1	3			3	14,14	10,44	3,70	20	14,00

Further statistical analysis was performed in order to:

- 1) to verify the authenticity of the differences in the number of reproduced syntaxemes for various instructions;
- 2) to check the authenticity of the differences in the number of the exact syntaxemes with different instructions;
- 3) to check the authenticity of the differences in the number of reproduced propositions at different instructions for each rank;
- 4) to verify the correlation between semiotic estimate and the total number of reproduced syntaxemes;

5) to check the correlation between semiotic estimate of vocabulary knowledge and the number of accurately reproduced syntaxemes ;

6) to check the correlation between the vocabulary knowledge of the text terms and assessment of the presence of the syntaxemes which include these terms.

Here are the results of statistical analysis of experimental data:

1) significant differences between the total number of reproduced syntaxemes for various instructions for the experimental and control groups by Mann-Whitney criterion were not found;

2) significant differences between the number exactly reproduced syntaxemes for various instructions for the experimental and control groups by Mann-Whitney criterion were not found;

3) significant differences between the number of reproduced propositions for each rank at various instructions for the experimental and control groups by Mann-Whitney criterion were not found;

4) the correlation between the level of semiotic evaluation and the total number of reproduced syntaxemes is significant with probability of 0.01 for Spearman's rank correlation criterion;

5) the correlation between the level of semiotic evaluation and a total number of the exactly reproducible syntaxemes is significant with probability of 0.05 for the Spearman's rank correlation criterion;

6) the correlation between knowledge vocabulary of text terms and assessment of the presence of the syntaxemes which include these terms : correlation between semiotic assessment and the number of syntaxemes not found; correlation between the assessment of the presence of knowledge of the text terms (only the presence of knowledge, without assessing the type and level definition) and number syntaxemes is significant with probability 0.05 by Spearman's rank correlation criterion.

### **Conclusions.**

On the base of the experimental results we can conclude:

1) the goal "To memorize" for the complex text with technical content did not significantly affect on the performance of memorizing and semantic structure of the retelling text;

2) the performance of memorizing of the text with technical content related with the semiotic level of the reader;

3) the necessary condition of memorizing performance is the knowledge of the technical terms, namely the presence of a minimum representation about the term denotation.

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