Odinokova N.Yu.

PROFESSIONAL ASSOCIATIONS OF RUSSIAN- AND ENGLISH-SPEAKING MATHEMATICIANS, PHYSICIANS AND PHILOLOGISTS

Odinokova Nataliya Yuryevna
PhD in Philology, Associate Professor
The Institute of Philology and Journalism, N.G. Chernyshevsky Saratov State University
83 Astrakhanskaya St., Saratov, 410012, Russia
E-mail: NYOdinokova@yandex.ru

Abstract

The paper provides a linguistic study of the professional sphere influence on speech consciousness in the socio- and psycholinguistic aspects. The article analyses the results of the original experimental studies of the associative response of different professional groups' representatives. The author introduces a new term "professionally determined associations" to show the degree of the influence of profession and professional communication on speech consciousness and behaviour as well as to widen the existing typology of associations. For the first time the research has been carried into the stimuli functioning in the terminological systems of mathematics, medicine, and philology. Also, the stimuli effect on the origination and number of professional responses is described, the general and professional associations of respondents are compared in detail, the general and specific peculiarities of the associative response of English and Russian speakers are identified..

Key words: professional role; associative response; stimulus; professional association; professional group; professional sphere; subjects (respondents).

Одинокова Н.Ю.

РУССКО- И АНГЛОЯЗЫЧНЫЕ ПРОФЕССИОНАЛЬНО ДЕТЕРМИНИРОВАННЫЕ РЕАКЦИИ

Одинокова Наталия Юрьевна, *доцент кафедры английской филологии,*
кандидат филологических наук
Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования «Саратовский государственный университет имени Н.Г. Чернышевского», Институт филологии и журналистики, ул. Астраханская, 83, г. Саратов, 410012, Россия
E-mail: NYOdinokova@yandex.ru

Аннотация

Данная статья посвящена рассмотрению проблематики лингвистического изучения воздействия профессиональной сферы на речевое сознание в социолингвистическом и психолингвистическом аспектах. В статье отражены результаты оригинального экспериментального исследования ассоциативных реакций русско- и англоязычных представителей разных профессиональных групп. Автором вводится новое понятие «профессионально детерминированная реакция», которое отражает уровень воздействия профессии и профессиональной коммуникации на речевое сознание и речевое поведение, а также позволяет расширить имеющуюся типологию ассоциаций. Впервые исследуются особенности функционирования стимулов в терминологических системах математики, медицины, филологии, выявляются закономерности влияния стимулов на возникновение и объем профессионально детерминированных реакций, подробно сравниваются общие и профессионально детерминированные реакции русско- и англоязычных математиков, врачей, филологов, определяются универсальные и специфичные особенности ассоциативного реагирования носителей разноструктурных языков..

Ключевые слова: профессиональная роль, ассоциативная реакция, стимул, профессионально детерминированная реакция, профессиональная группа, профессиональная сфера, информант.

38

Odinokova N.Yu.
PROFESSIONAL ASSOCIATIONS OF RUSSIAN- AND ENGLISH-SPEAKING
MATHEMATICIANS, PHYSICIANS AND PHILOLOGISTS

НАУЧНЫЙ
РЕЗУЛЬТАТ
Сетевой научно-практический журнал

INTRODUCTION

The article specifies the influence of profession on speech consciousness of representatives of different professional groups. The influence can reveal through professional speech constantly investigated by sociolinguistics [3; 11], theory of discourse [1; 8], terminological studies [5; 7] and others.

Though professional speech itself has been rather fully described, there are still many questions unanswered which concern the importance of professional subjects in communication or the usage of languages for special purposes (terms and professional words) outside professional communication. The above questions belong to the insufficiently observed sphere of the general influence of profession and professional communication on speech consciousness and speech behaviour, thus making the scientific research under consideration topical and its object (influence of profession on speech consciousness of native speakers of languages with different structures) logical.

MAIN PART

It is possible to receive answers to the above questions, on the one hand, via observations on natural communicative activities of different professional groups' representatives, on the other hand, via specially arranged experiments which are based on numerous researches into word associations [e.g. 2; 3; 5]. The latter option not only completes the results of the above observations, but enables to focus on the structure of speech consciousness of different professional groups' representatives. So the free associative experiment is the main instrument for the scientific research under study.

The research matter includes the associative responses resulted from the free associative experiments I organized with 422 Russian- and 183 English-speaking mathematicians, physicians and philologists. The three professions have been chosen due to their belonging to different spheres of exact, human and natural sciences respectively. Also, each of the professions has a special language with a developed vocabulary.

Within any professional group specific norms and attributes of speech and non-speech behaviour appear to differentiate the professional role from any other. Representatives of a professional group follow the norms of speech behaviour accepted in the group, up to strict adherence to some collocations. This results in

speech homogeneity of the group, with the subsequent development of their universal speech behaviour so that all the members of the group use the same codified language. The more united the group is and the more traditional and stable their language and attributes are, the more professionally determined the speech behaviour of a representative of the group is.

Speech activity of a professional is known to result from realization of professional linguistic consciousness. The thesaurus of an individual (or the system of knowledge about the world of an individual) is one of the ways to represent linguistic consciousness. The image world of a professional linguistic individual differs not only from the image world of a non-professional, but also from the image world of a representative of another profession, for a specific, the so-called *professional* image world inaccessible to others is produced in consciousness of a professional linguistic individual. The degree of inaccessibility depends directly on the specific features of the profession, which can be proved, for example, by the degree of term formation typical of the professional language, *i.e.* non-professional individuals can hardly understand the highly terminological professional language of physicians as well as their image world.

The image world of a professional to a large extent depends on his ability to switch his professional role to other social roles after the working day is over. Individual factors are mostly important in the process, but professional peculiarities can accelerate or slacken it. Thus the well-known ability of physicians and programmers to stay deeply absorbed in their professions has produced in social consciousness the images of "people in white coats" or "lunatic geniuses".

The system of human knowledge about the world is reflected in the lexicon which is understood as an accessor to the data base of a human. According to the hypothesis of the mental lexicon structure, the most frequently used words as well as notions mostly important for an individual are kept in the zone of the lexicon nucleus. The professional sphere is important for the majority of people, so the professional vocabulary is supposedly stored at different levels within the lexicon nucleus: the most frequently used words and collocations, including clichés, are situated closer to the central part of the nucleus. Professional texts serve as sources of such words and collocations, for they are highly stereotyped

39 Odinokova N.Yu.
PROFESSIONAL ASSOCIATIONS OF RUSSIAN- AND ENGLISH-SPEAKING MATHEMATICIANS, PHYSICIANS AND PHILOLOGISTS

НАУЧНЫЙ
РЕЗУЛЬТАТ
Сетевой научно-практический журнал

(even their structure is a cliché); so they actualize constant associative connections in the linguistic consciousness of a professional individual. Professional and non-professional linguistic individuals, as well as representatives of different professions possess diverse combinations of the lexicon units and their ways of distribution in the zone of the lexicon nucleus and periphery.

A professional speaking his professional language at formal and informal occasions demonstrates constant associative connections in his consciousness with different stimuli linked, directly or indirectly, to his profession. Thus the stimuli reveal professional determination that shows the influence of the professional sphere on the linguistic consciousness of the speaker, with the force and regularity of the influence depending on the place the profession occupies in the mind of a professional.

I suppose the comparison of the Russian and English sets of response makes it possible to expose general and specific features of associative behaviour of mathematicians, physicians and philologists who belong to different national and language cultures. The response set of Russian professionals is included into *Russian General Associative Thesaurus* (or RGAT), the response set of English professionals is included into *English General Associative Thesaurus* (or AGAT). To make the comparison valid *Russian Associative Thesaurus* (or RAT) [10] and *An Associative Thesaurus of English* (or EAT) [6] are used to analyse the data.

The completed psycholinguistic experiments have resulted in the composing of associative thesauri of mathematicians, physicians and philologists in Russian (PAT) and of associative thesauri of mathematicians, physicians and philologists in English (EPAT) published in [9].

Analysis of the matter of experiments with Russian respondents

(This article represents the Russian-English variant of the analysis as in a psycholinguistic experiment only the original set of results is considered valid.)

The article analyses the stimulus – noun *действие (action)* that belongs to the group of the so called mixed stimuli, words that have / have not special meanings in a professional sphere.

The following entry of *A Professional Associative Thesaurus in Russian* (PAT) has been composed that includes words – the response to stimulus *действие* (action):

ДЕЙСТВИЕ (ПАС) (*action PAT*)
Mathematicians: вычитание (subtraction) **5**; сложение (addition) **4**; арифметическое (arithmetical), вектор (vector), выражение (expression), вычисление (calculation), компьютер (computer), оперативная работа (work with random access memory), операция (operation), программа (programme), результат (result), решение (solution), "+" "—" **1**; 101+13+24+11

Physicians: работа (work) **19**; лекарства (of the medicine), препарата (of the drug) **2**; врач (doctor), врача (of the doctor), крик (a cry), манипуляция (manipulation), операция (operation), стремление к совету (striving for advice), хирурга (of the surgeon), хирургические (surgical) **1**; 199+11+26+8

Philologists: глагол (verb) **7**; 122+1+10+0

In the RAT entry only mathematical and medical terms are represented:

Mathematical terms: дробь *(fraction)*, математика *(math)*, математическое *(mathematical)*, плюс *(plus)*, угол *(angle)*, умножение *(multiplication)* **1**;

Medical terms: лекарство *(medicine)* **1**.

It can easily be seen that there are very few similar associations in the PAT entry and in the RAT groups of terms. However, the professionally determined associations of mathematicians and physicians form similar associative lines within some frames.

a) Frame "Mathematical operation":
RAT – *математика (math), математическое (mathematical), <u>плюс (plus)</u>, умножение (multiplication)* **1**;
PAT – *вычитание (subtraction)* **5**; *сложение (addition)* **4**; *арифметическое (arithmetical),* <u>*"+" "--"*</u> **1**.

The verbal associative response *плюс (plus)* and the associative response with a symbol ("+" "—") are alike. Also, both groups include only general terms learned at high school. However, the general terms are used in PAT with a higher rate (*вычитание (subtraction)* **5**; *сложение (addition)* **4** are the response with the highest rate which are given by mathematicians), so they relate to the group of professionally determined associations.

b) Frame "Calculation":
RAT – *дробь (fraction), угол (angle)* **1**;
PAT – *вектор (vector), выражение (expression), вычисление (calculation), результат (result), решение (solution)* **1**.

40

Odinokova N.Yu.
PROFESSIONAL ASSOCIATIONS OF RUSSIAN- AND ENGLISH-SPEAKING MATHEMATICIANS, PHYSICIANS AND PHILOLOGISTS

НАУЧНЫЙ РЕЗУЛЬТАТ
Сетевой научно-практический журнал

The associative response in RAT belong to the group of relative terms, the associative response in PAT include an absolute term *vector (вектор)* and general scientific terms used in different terminologies *(выражение, вычисление, результат, решение – expression, calculation, result, solution)*. The frame also includes a number of isolated associations – programming terms *(компьютер (computer)* – an absolute term, *программа (programme)* – a relative term, *оперативная работа (work with random access memory), операция (operation)* – general scientific terms). The associations relate to the group of professionally determined associations as they are terms which are given by mathematicians.

c) Frame "Medical manipulation and its results"

RAT – *лекарство (medicine) 1*;

RGAT – *врач (doctor), врача (of the doctor), крик (a cry), лекарства (of the medicine), препарата (of the drug) 2; манипуляция (manipulation), операция (operation), хирурга (of the surgeon), хирургические (surgical) 1*.

RAT and PAT share an association *лекарство – medicine (лекарство – medicine* in RAT and *лекарства – of the medicine* in PAT – are word forms belonging to the same paradigm).

The associative response in RAT given by physicians contain a nonspecial word *(крик – a cry)*, medical terms *(врач – doctor, врача of the doctor, лекарства – of the medicine 2; операция – operation, хирурга – of the surgeon, хирургические – surgical 1*) and general scientific terms *(препарата – of the drug 2; манипуляция – manipulation 1*) used in different terminologies, so they relate to the group of professionally determined associations.

d) Frame "Medical activities" contains only associations from PAT and shares some of them with Frame "Medical manipulation and its results": *работа (work) 19; врач (doctor), врача (of the doctor), манипуляция (manipulation), операция (operation), стремление к совету (striving for advice), хирурга (of the surgeon), хирургические (surgical) 1.* The associative response given by physicians has the highest rate: ДЕЙСТВИЕ (action) – *работа (work) 19*. This is considered typical and is proved by the results of my experiments, for associations of most physicians are connected with working activities. The frame includes relative terms *(работа (work) 19; стремление к совету (striving for*

advice) 1), absolute medical terms *(врач (doctor), врача (of the doctor) 2; операция (operation), хирурга (of the surgeon), хирургические (surgical) 1)*, and also a general scientific term that functions in the medical terminology as a relative term *(манипуляция (manipulation) 1)*, so they relate to the group of professionally determined associations.

It has been said RAT does not contain philological terms. The associative response in PAT is an isolated association ДЕЙСТВИЕ (action) – *глагол (verb) 7* which is an absolute term, so it relates to the group of professionally determined associations. The given response has not actualized any of the meanings of the noun – stimulus.

To establish the degree of professional determination of stimuli (*i.e.* output of professionally determined associations) it is crucial to find out which meanings of the stimulus are actualized in professionally determined associations of Russian mathematicians, physicians and philologists.

The group of physicians have given the greatest number of professionally determined associations (7, 83% of the general number of all associations to the stimulus *действие – action*).

The largest number of the associations (74, 2% of the general number of all professionally determined associations of physicians to the stimulus *действие – action*) result from the activation of the basic meaning of the stimulus "functioning of something": ДЕЙСТВИЕ *(action)*: *работа (work) 19; манипуляция (manipulation), операция (operation), стремление к совету (striving for advice), хирургические (surgical) 1*.

Associations ДЕЙСТВИЕ *(action)*: *лекарства (of the medicine), препарата (of the drug) 2; крик (a cry) 1* (16, 1% of the general number of all professionally determined associations of physicians to the stimulus *действие – action*) result from the activation of the peripheral meaning of the stimulus "effect; influence". Associations ДЕЙСТВИЕ *(action)*: *врач (doctor), врача (of the doctor), хирурга (of the surgeon) 1* (9, 7% of the general number of all professionally determined associations of physicians to the stimulus *действие – action*) result from the activation of the peripheral meaning of the stimulus "actions; behaviour".

The least number of professionally determined associations have been given by mathematicians (5, 03% of the general number of all

41

Odinokova N.Yu.
PROFESSIONAL ASSOCIATIONS OF RUSSIAN- AND ENGLISH-SPEAKING
MATHEMATICIANS, PHYSICIANS AND PHILOLOGISTS

НАУЧНЫЙ
РЕЗУЛЬТАТ
Сетевой научно-практический журнал

associations to the stimulus *действие – action*). All these associations result from the activation of the peripheral special meaning of the stimulus "arithmetical operation": ДЕЙСТВИЕ *(action)* – *вычитание (subtraction)* **5;** *сложение (addition)* **4;** *арифметическое (arithmetical), вектор (vector), выражение (expression), вычисление (calculation), компьютер (computer), оперативная работа (work with random access memory), операция (operation), программа (programme), результат (result), решение (solution)*, "+" "−" **1.**

Also, PAT entry includes some professionally determined associations of <u>philologists</u> (1, 94% of the general number of all associations to the stimulus): ДЕЙСТВИЕ (*action*) – *глагол (verb)* **7.**

In the course of analysis there were detected similar groups of associative response (or similar associative lines of frames) to identical meanings of the group stimuli. All the group stimuli have activated different numbers of professionally determined associations of Russian mathematicians, physicians and philologists.

Analysis of the matter of experiments with English respondents

The English stimulus – noun *back* that belongs to the group of mixed stimuli has been analysed in the same way.

The following entry of *A Professional Associative Thesaurus in English* (EPAT) has been composed that includes words – the response to stimulus *back*:

BACK (EPAT)

<u>Mathematicians:</u> *backtrack* **4;** *panel* **2;** *59+2+3+0*

<u>Physicians:</u> *pain* **14;** *ache, bone, spine* **7;** *bend, breast, hollow* **2;** *backrest, backwardness, hump, saddle back* **1;** *63+11+1+4*

<u>Philologists:</u> *consonant, vowel* **2;** *advanced, of the tongue* **1;** *61+4+5+2*

BACK (EAT)

<u>Mathematical terms:</u> *ache* **6;** *bone* **2;** *pain, spine* **1**

Professionally determined associations of mathematicians (BACK – *backtrack* **4;** *panel* **2**) refer to the sphere of general scientific terms. However, in the professional context they function as an absolute and a relative IT terms (*backtrack* – the name of a computer operation; *panel* – an article of computer-based equipment, respectively). The high usage rate and the fact that the associations are given by the programmers prove their

professional determination. The absence of similar associations in EAT also confirms it.

Professionally determined associations given by physicians belong to the spheres of nonspecial (*pain* **14;** *ache, bone* **7;** *bend, breast, hollow* **2;** *hump* **1**), general scientific (*spine* **7;** *backwardness* **1**) and special terms (*backrest, saddle back* **1**). All the terms except the last group can be used in different contexts. The presence of such associations in EAT (*ache* **6;** *bone* **2;** *pain, spine* **1**) and their high usage rate in AGAT confirm the fact that they are frequently used words.

The group of physicians have given the greatest number of such associations in AGAT. In the special context the frequently used words start functioning as relative terms (BACK – *pain* **14;** *ache, bone, spine* **7;** *bend, breast* **2**) and absolute terms (BACK – *hollow* **2;** *hump* **1**), so they can be treated as professionally determined associations as well as the other associations that function as absolute medical terms (BACK – *backrest, backwardness, saddle back* **1**).

All professionally determined associations of physicians are directly connected with their working activities as the associations are connected with the anatomic term *back*. Thus the associative response name some anatomic peculiarities of the back of a human (BACK – *bend, bone, breast, spine*) or reasons to go and see the doctor (BACK – *ache, backrest, hump, pain, saddle back*).

The associative response *backwardness* describes the general (retarded) state and / or development of a patient. The word is not connected directly with the anatomic term, for the associative response has actualized the basic meaning of the adverb *back* – *"backward; in a way contrary to the normal or usual way"*, which is figurative in the context.

Professionally determined associations of philologists refer to the spheres of nonspecial (BACK – *advanced, of the tongue* **1**) and special terms (BACK – *consonant, vowel* **2**). However, all of them function as absolute terms in a special, phonetic context. Associations name the active organ of articulation (BACK – *of the tongue*), also name and define the sounds produced (BACK – *advanced, consonant, vowel*). The high usage rate and the set of associations prove their professional determination. The absence of similar associations in EAT also confirms it.

To establish the degree of professional determination of stimuli (*i.e.* output of professionally

42

Odinokova N.Yu.
PROFESSIONAL ASSOCIATIONS OF RUSSIAN- AND ENGLISH-SPEAKING MATHEMATICIANS, PHYSICIANS AND PHILOLOGISTS

НАУЧНЫЙ
РЕЗУЛЬТАТ
Сетевой научно-практический журнал

determined associations) it is essential to find out which meanings of the stimulus are actualized in professionally determined associations of English mathematicians, physicians and philologists.

The group of <u>physicians</u> have given the greatest number of professionally determined associations (24, 6% of the general number of all associations to the stimulus *back*) that actualize different meanings of the stimulus.

The associative response BACK – *backwardness 1* (2, 2% of the general number of all professionally determined associations of physicians to the stimulus *back*) results from the activation of the basic meaning of the adverb *back – "backward; in a way contrary to the normal or usual way"*.

The associative response BACK – *pain 14; ache, bone, spine 7; bend, breast, hollow 2; backrest, hump, saddle back 1* (97, 8% of the general number of all professionally determined associations of physicians to the stimulus *back*) results from the activation of the basic meaning of the adverb *back – "the part of the body opposite to the front; in humans and many other animals, the part to the rear or top reaching from the nape of the neck to the end of the spine"*, and peripheral – *"the backbone or spine"* – meanings of the noun *back*.

The numbers of professionally determined associations of mathematicians and philologists are the same (3, 28% each of the general number of all associations to the stimulus *back*).

In the group of <u>mathematicians,</u> the associative response BACK – *backtrack 4* (66, 7% of the general number of all professionally determined associations of mathematicians to the stimulus *back*) result from the activation of the basic meaning of the verb *to back – "to move or go backward"*. The associative response BACK – *panel 2* (33, 3% of the general number of all professionally determined associations of mathematicians to the stimulus *back*) result from the activation of the basic meaning of the adjective *back – "at the rear or back; behind"*.

In the group of <u>philologists</u>, the associative response (BACK – *consonant, vowel 2*; *advanced, of the tongue 1)* result from the activation of the peripheral special meaning of the adjective *back "articulated with the tongue toward the back of the mouth"*.

While analysing the experiment matter from the group of stimuli in EAP and AGAT, there were detected similar groups of associative response to identical meanings of the group stimuli. All the stimuli have activated different numbers of professionally determined associations of English mathematicians, physicians and philologists.

CONCLUSIONS

The experimental research with Russian- and English-speaking mathematicians, physicians and philologists has provided evidence that stimuli manifest a certain degree of professional determination through activation different numbers of professionally determined associations.

Origination of professionally determined associations and their number are connected with the specific nature of stimuli. The peculiarities of stimuli functioning in terminological systems of mathematics, medicine and philology control the origination of professionally determined associations of mathematicians, physicians and philologists, and their number.

The lexical sphere the stimulus belongs to does not influence the origination of professionally determined associations of Russian and English respondents nor the number of professionally determined associations of English respondents. However, the number of professionally determined associations of Russian respondents depends on the lexical sphere of the stimulus.

The experiments have verified my supposition that professionally determined associations of Russian- and English-speaking respondents have general and specific features. The correlation between similar numbers of Russian and English mathematicians, physicians and philologists demonstrates the correspondence between professional consciousness and the image world of representatives of the same professions speaking different languages. The different numbers of Russian and English professionally determined associations are caused by the following reasons: linguistic (languages with different structures and types of word-formation are contrasted) and sociocultural (different national systems of values and education are opposed); they also reflect distinction between national concepts of the professional spheres under analysis.

In conclusion, it is the first time when Russian and English Professional Associative Thesauri of mathematicians, physicians and philologists have been composed and the features of professionally determined associations have been described. Also, the experiment has revealed the peculiarities of stimuli that influence origination and number of professionally determined associations.

43

Odinokova N.Yu.
PROFESSIONAL ASSOCIATIONS OF RUSSIAN- AND ENGLISH-SPEAKING
MATHEMATICIANS, PHYSICIANS AND PHILOLOGISTS

REFERENCES:

1. Beilinson, L.S. *Professional Discourse as a Subject of Linguistic Research. Bulletin of VGU (Linguistics. Series 2) 9, no. 1.* 2009. Pp. 145-149.
2. De Deyne, S. & Storms, G. *Word Associations: Network and semantic properties. Behavior Research Methods 40, no. 1.* 2008. Pp. 213-231.
3. Gerd, A.S. *Language for special purposes.* St. Petersburg, 2011. 58 p.
4. Joyce, T. *Constructing a Large-scale Database of Japanese Word Associations. Glottometrics 10.* 2005. Pp. 82-98.
5. Khizhnyak, S.P. *New Studies in Terminological Systems (in terms of law). Higher Institutions Bulletin.* Povolzhsky Region. The humanities, no. 1 2008. Pp. 92-99.
6. Kiss G., Armstrong C., Milroy R. & Piper J. *An Associative Thesaurus of English. Edinburgh: University of Edinburgh, MRC Speech and Communication Unit,* 1972. URL: http://www.eat.rl.ac.uk (date of access: May 2, 2015)
7. Leichick, V.M. *Terminological Studies. Subject, Methodology, Structure.* Moscow: Librocom, 2014. 264 p.
8. Mishlanova, S.L.; Utkina, T.I. *Metaphor in Popular Medical Discourse (semiotic, cognitive-communicative and pragmatic aspects).* Perm: PSU, 2008. 428 p.
9. Odinokova, N.Yu. *English and Russian Professional Associative Thesauri. Philology and Man, no. 4,* 2007. Pp. 103-120.
10. Karaulov, Yu.N.; Sorokin, Yu.A.; Tarasov, Ye.F.; Ufimtseva, N.V. & Cherkasova, G.A. *Russian Associative Thesaurus.* Moscow: Pomovsky and Partners, 1994. Vol. 1. 224 p.
11. Yerofeyeva, T.I. *Vertical Segmentation of Language: about the Objects of Social Dialectology. Problems of socio- and psycholinguistics. Collected articles.* Perm: PSU, no.3. 2003. Pp. 3-5.