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DOI: https://doi.org/10.15688/jvolsu2.2022.1.4

UDC 81’373.46
LBC 81.053.1

Submitted: 15.03.2021
Accepted: 29.11.2021

CHANGE IN THE PERCEPTION MODEL AND SPECIFICS OF YOUNG PEOPLE’S COMPREHENSION OF TERM MEANING

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Abstract. The article discusses some changes that have been taking place in particular structures of mental lexicon. It presents the results of linguistic experiment aimed at revealing some shifts in perception of terms resulting from global virtualization of reality, which greatly affects all the structures of language consciousness, and transformation of information perception processes due to computerization. A new test was developed and used to get true information about dominant perceptional modality of the experiment participants. The results of the first stage of the experiment show that during the period of eleven years (2010–2021) the perception model of people aged from 18 to 20 has been shifting towards a digital type, when comprehension of a word meaning is based on logic, real facts, proofs. Some possible reasons for digital modality prevalence, the use of visual modality as an auxiliary tool for the digital representational system, decrease in the significance of kinesthetic and auditory modalities are described. The results of the second stage of the experiment reveal a rather high level of emotional attitude to the stimuli connected with the professional sphere of digital generation. In this case the psychological emotionality of term meaning implies great interest, involvement and good understanding of the notion.

Key words: term meaning, perception modality, representational system, mental lexicon, language consciousness.

Citation. Navalikhina A.I., Efimova M.V. Change in the Perception Model and Specifics of Young People’s Comprehension of Term Meaning. *Vestnik Volgogradskogo gosudarstvennogo universiteta. Seriya 2. Yazykoznanie* [Science Journal of Volgograd State University. Linguistics], 2022, vol. 21, no. 1, pp. 44-58. DOI: https://doi.org/10.15688/jvolsu2.2022.1.4

УДК 81’373.46
ББК 81.053.1

Дата поступления статьи: 15.03.2021
Дата принятия статьи: 29.11.2021

ИЗМЕНЕНИЕ МОДЕЛИ ВОСПРИЯТИЯ И ОСОБЕННОСТИ ПОНИМАНИЯ ЗНАЧЕНИЯ ТЕРМИНА МОЛОДЫМИ ЛЮДЬМИ

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Аннотация. Статья посвящена изучению актуальных изменений в определенных структурах ментального лексикона. С опорой на положения о том, что современное общество характеризуется глобальной виртуализацией реальности, которая оказывает значительное воздействие на все функции языкового сознания, а компьютеризация трансформирует процессы восприятия информации, проведен лингвистический эксперимент с целью определения изменений восприятия значений профессионального термина. Использование авторского теста, разработанного для этого эксперимента, дало возможность получить достоверную

информацию о доминирующей модальности восприятия у испытуемых. Результаты первого этапа эксперимента позволили обнаружить изменения модели восприятия информации людей в возрасте от 18 до 20 лет за исследуемый период времени (2010–2021 гг.), способствующие значительному преобладанию дигитальной модальности, если понимание значения терминологической единицы основывается на логике, реальных фактах и доказательствах. Описаны возможные причины доминирования дигитальной модальности восприятия, функционирования визуальной модальности в качестве вспомогательного инструмента для дигитальной репрезентативной системы, снижения значимости кинестетической и аудиальной модальностей. Результаты второго этапа эксперимента показали, что дигиталы показывают довольно высокий уровень эмоционального отношения к стимулам, связанным со сферой информационных технологий.

Ключевые слова: значение термина, модальность восприятия, репрезентативная система, ментальный лексикон, языковое сознание.

Цитирование. Навалихина А. И., Ефимова М. В. Изменение модели восприятия и особенности понимания значения термина молодыми людьми // Вестник Волгоградского государственного университета. Серия 2, Языкознание. – 2022. – Т. 21, № 1. – С. 44–58. – (На англ. яз.). – DOI: https://doi.org/10.15688/jvolsu2.2022.1.4

Introduction

The article represents the investigation of associative structure of word meaning of different perception modalities and the term meaning as a conventional lexical unit and a means of professional communication. The use of psycholinguistic approach in word meaning research extends authors' capabilities to integrate different methods and techniques of various fields of knowledge. The most widely used experimental procedure is the associative experiment which helps to study word meaning as the access to the individual single information base. The base includes the thesaurus which reveals the results of people's emotional, rational, individual, social and language interconnection experience with the world around. It is the way how the subjective lexicon as a lexical component of speech activity is formed. The lexicon is the system of codes allowing the realization of speech production sense and the sense retrieval from the coming information. A.A. Zalevskaya speaks about holographic hypothesis of information coding and reading when the word functioning is compared with the laser beam hologram reading makes available the definite conditional and discrete fragment of continuous and multilateral individual worldview with a variety of links and relations [Zalevskaya, 1999, p. 20]. The scientist considers the lexicon as a dynamic self-organizing system integrating perceptional, emotive and cognitive processes. The notion of mental lexicon is used as a synonym to language consciousness which images reflect knowledge defined by the culture of a native speaker [Ufimtseva, Balyasnikova, 2019, p. 11].

The word meaning investigation is based on two approaches, on the one hand, scientific word study as a logical and rational process and, on the other hand, the real word functioning in individual mind correlating language forms with world cognition experience. They are the correlations of language characteristics with individual psychical processes, namely, perception, memory, imagination, thought, attention, emotional-value attitudes. So, the word is a "living" individual word and the access to the world image and specific tool of social human activity [Zalevskaya, 2013].

B.G. Anan'ev, L.M. Vekker describe different factors indicating that sensor events can not be referred to as simple mental phenomena, on the contrary, they are characterized by complex structure, cultural and historical features. The research of associative structure of the word meaning of different perception modalities proved the hypothesis of characteristic-defining change stating that the word meaning is considered to be a set of semantic features having linguistic and psychological differences [Anan'ev, 2001; Vekker, 2000]. The analysis of the associative field allows us to find specific and common features of association processes for all four types of modalities. L.J. Rips, E.J. Shoben, E.E. Smith present the feature comparison model according to which all the concepts are stored in our memory in the form of sets of semantic features. They differ by correlation degree with the concepts where defining parameters are the central ones and characteristic for all the members of the given category [Rips, Shoben, Smith, 1973; Smith, Rips, Shoben, 1974]. F.C. Keil and N.A. Batterman say that word meaning comprises two types of

representational features: defining ones are obligatory and necessary and have their equivalents in the dictionaries, characteristic ones are not obligatory and have their explanations in encyclopedias [Keil, Batterman, 1984].

While studying the associative structure of term meaning the authors took into consideration the strategic nature of cognitive processes of individual data processing. In the individual memory the mental representations as subjective intentional species of the given event are formed. This event can be transformed if the situation and individual intellectual efforts are changing [Kholodnaya, 2002]. The system of individual intellectual activity depends on the fact that people are different in their attention distribution, the time of getting to know situations, the forms of subjective presentation of events and the characters of emerging questions [Hunt, 1983]. These statements allowed us to study the received verbal associations of our respondents considering the difference between individual viewing and socially fixed situations of examinees with different intellectual competence. Here the term identification is studied in the context of the respondents' professional knowledge, individual experience and social and cultural standards. The strategies of word identification were studied in the works of the following authors, such as T.M. Rogozhnikova [Rogozhnikova, 2000], M.V. Orlova [Orlova, 2008], T.Yu. Sazonova [Sazonova, 2000].

The term is considered to be a psycholinguistic reality, it is a "verbal model which owns the inner form" [Rogozhnikova, 2014, p. 232]. This form helps to reveal the latent informative value and suggestive potential of the model which activates different states of mind and activity. Moreover, this model has associative nature and is found experimentally and through the subjective parameters of the term, such as, psychological emotionality and polysemy.

E.Yu. Myagkova developed the concept of emotional-value component of the word meaning. The author believes that any word is the unity of intellectual and emotional parameters. The word "deflecting in the individual experience can't help being colored by impressions, feelings and attitudes" [Myagkova, 2000, p. 6] So, such coloring is available for any word, even, for terminological units.

The study of polysemantic features of a term was based on the concept of the ambiguity of word meaning. T.M. Rogozhnikiva describes different aspects of polysemantic word functioning in individual mind [Rogozhnikova, 2000]. The author stresses the dynamic common factors of word functioning and studies the main hypothesis of semantic development, on the one hand, deepening differentiation of word meaning due to the clear distinction of objects features and reality events, on the other hand, deflecting from distinctive features leading to more higher levels of generalization. The scientist built a new integrative helical model of word meaning development which shows the gradual rising along the helical with the increase of diameters of each next whorl.

Previous experiments

Previously each of the authors of this paper conducted a personal study. In 2010, A.I. Navalikhina carried out a series of experiments involving 700 students of 5 different universities of Ufa, Russia [Navalikhina, 2013]. Their majors included computers, data processing, electric systems, marketing, finance, aircraft engines, protection in emergencies, biomedical systems, nanotechnologies, piano, choral conducting, folk orchestra, vocal art, pop orchestra, wind instruments, design, visual art etc. The study was aimed, inter alia, at revealing if there was any difference in associative word meaning structure in people with different dominant perception modalities (representational systems). The language of the experiment was Russian. At the first stage of the experiment, we had to break students down into four groups according to a dominant modality. Two tests showed that digital persons prevailed over kinesthetic, auditory and visual ones. At the second stage we analyzed the reactions given by the students during the free associative experiment. The results of this work are described in [Navalikhina, 2013; 2018]. During the previous experiment in 2010 two tests by L.D. Stolyarenko [Stolyarenko, 2005] and by R. Ellerton [Ellerton, 2010] were used.

The differences in modalities prevalence were proved not only with the help of the test but also by comparing the answers (reactions to the stimuli). The list of stimuli contained 15 words

belonging to the language consciousness core. All Russian speakers are familiar with these words and have been using them since their early childhood, as they are central to the consciousness. The suppositions that the differences in answers to those highly frequent stimuli verify the dominance of different modalities in testees proved to be true [Navalikhina, 2013].

Here are some reactions to the stimulus СЧАСТЬЕ (Happiness) received from participants broken down into four groups according to the results of the test (the 1st stage of the 2010 experiment):

1) digital people reactions specifics are: short stereotypic reactions prevalence such as *радость* (joy), *семья* (family), *любовь* (love); use of words typical for this category of interviewees, reflecting the logic constituent, e.g. *есть* (exists), *познавать жизнь* (to explore life), *смысл жизни* (meaning of life), *когда нет проблем* (when there are no problems); small fraction of single reactions. The analysis of all the reactions to all the stimuli allows us to say that the collective associative field of digital people can be presented as a tight concentrated system;

2) kinesthetic people reactions specifics are: a rather large amount of single, "unique" reactions such as *регулярная эйфория* (regular euphoria), *самое лучшее* (the best), *воздушное* (aethereal); use of words typical for this category of interviewees, reflecting emotional and sensual constituent, e.g. *наслаждение* (enjoyment), *эмоции* (emotions), *вдохновение* (inspiration), *уют* (coziness); there are many extended answers: *счастье будет, если ты здоров* (you will be happy if you are healthy), *ходить босиком по траве* (walking barefoot on the grass), *это когда рядом твои близкие* (this is when close people are near you). Having done the thorough investigation, we can present the collective associative field of kinesthetic people as a system of medium concentration degree and medium size;

3) visual people reactions specifics are: a rather large amount of single, different reactions such as *солнечное* (sunny), *природа* (nature), *воздушный шар* (balloon), *яркость* (brightness); use of words typical for this category of interviewees, reflecting color perception such as *желтый* (yellow), *зеленый* (green), *оранжевый* (orange), *светлое* (light); there are two-word reactions one of which is directly connected with visual component: *голубое небо* (blue sky), *чистое небо* (clear sky), *видеть малышей* (to see infants), *зеленое с желтым* (green with yellow), *желтый цвет* (yellow color). Having done the thorough investigation, we can present the collective associative field of visual people as a system of medium concentration degree and medium size;

4) auditory people reactions specifics are: the largest (compared to other groups of participants) amount of extended explanatory reactions: *это когда исполняются мечты* (it is when your dreams come true), *это когда ты на седьмом небе* (it is when you are on cloud nine), *это хорошее чувство* (it is a good feeling), *иметь полноценную семью* (to have a full family); use of words typical for this category of interviewees, reflecting sound perception such as *мелодичное* (melodic), *песни* (songs), *музыка* (music), *нежный шепот* (tender whisper), *тишина* (silence); there are answers directly connected with the job of a musician such as *джаз-концерт* (jazz concert), *до мажор* (C major), *достичь цели в музыкальном творчестве* (to reach one's aim in the musical creativity), *петь на сцене* (to sing on the stage). The analysis of all the reactions to all the stimuli allows us to say that the collective associative field of auditory people can be presented as a loose diffuse system. The whole list of reactions to the stimulus СЧАСТЬЕ (Happiness) and other stimuli analysis are given in [Navalikhina, 2013].

The linguistic analysis of the received material done by A.I. Navalikhina revealed some qualitative differences in reactions of *digital*, *kinesthetic*, *visual* and *auditory people*. We created *specific models* based on the results of our experiment and the advancements of other authors such as the helical model of semantic development worked out by T.M. Rogozhnikova [Rogozhnikova, 2000], feature comparison model developed by E.E. Smith, L.J. Rips and E.J. Shoben [Rips, Shoben, Smith, 1973; Smith, Rips, Shoben, 1974] and the characteristic-to-defining shift revealed by F. Keil and N. Batterman [Keil, Batterman, 1984]. The graphic presentation of *four associative meaning models* (of digital, kinesthetic, visual and auditory people) is given in [Navalikhina, 2013].

We grouped the reactions according to *defining* and *characteristic features* of a word

meaning. The term defining feature means constant, objective, logic marks, that are inherent in the essence of the notion. These features of a word are usually given in dictionaries. The term characteristic feature means nonconstant marks, they can appear under the influence of different factors such as personal attitude. Such features are usually emotionally- and/or sensorially-colored. The analysis of all the reactions given by four groups of participants showed some structural semantic differences.

Most part of the associative field of digital people possesses defining features. Let's take the stimulus КИНО (Cinema) as an example. Most of the answers in this group are characterized by defining features, that are logical and can be found in a dictionary: *фильм* (movie), *кинотеатр* (movie theatre), *искусство* (art), *актер* (actor), and only small number of answers have characteristic features. So, the evolution of meaning in the language consciousness of digital people is shifting towards defining plane.

Most part of the associative field of kinesthetic people possesses characteristic features. Most answers to the stimulus КИНО (Cinema) can be described as characteristic ones, that are not based on logic, they are highly subjective and emotional: *слезы* (tears), *задевающее за живое* (to hit a nerve), *дает знак, чтобы встать на верный путь* (gives the sign to take the right path), *когда как... по настроению, смотря еще с кем* (it depends... if I am in the right mood, depends on the company), and only small amount of reactions can be characterized as defining ones. Hence, the evolution of meaning in the language consciousness of kinesthetic people is shifting towards characteristic plane.

There are similar tendencies in the evolution of meaning in the language consciousness of visual people and auditory people, as we can see both defining and characteristic features of the answers, with a slight prevalence of characteristic reactions. The defining examples for the stimulus КИНО (Cinema) in the group of visual people are: *фильм* (movie), *комедия* (comedy), *кинозал* (cinema hall). The examples of defining reactions in the group of auditory people are: *кинотеатр* (movie theatre), *билет* (ticket), *мелодрама* (melodrama). The characteristic examples for the stimulus КИНО (Cinema) in the group of visual people are: *свет* (light), *темный* (dark), *Мулен Руж* (Moulin Rouge), *часто смотрю* (I often watch it). The examples of characteristic reactions in the group of auditory people are: *смех* (laughter), *громко* (loud), *Александр Абдулов* (Alexandr Abdullov), *Франкенштейн* (Frankenstein), *и люблю, и не люблю* (like and dislike at the same time). So, the evolution of meaning in the language consciousness of visual and auditory people is taking place in both characteristic and defining planes, with a slight shift towards characteristic one.

In 2011, M.V. Efimova conducted several interconnected experimental studies with the students of Ufa State Aviation Technical University and Ufa State Academy of Arts [Efimova, 2015]. 100 students majoring in technical specialties and 100 learners studying music were chosen. They were tested twice, at the first stage of the experiment they analyzed the terms of Internet as future specialists, at the second they evaluated the terms of music theory as non-specialists. Free and chain associative experiments were conducted asking the students to write down as many reactions as possible. As a result, M.V. Efimova obtained 14,456 estimation marks showing the similarity and difference of associative processes, having found out that there are a lot of reactions connected with the special field of knowledge and these reactions were presented by the respondents majoring in these spheres. For example, КЕШ (Cache) – *промежуточный буфер с быстрым доступом* (quick access intermediate buffer);

ВИДЖЕТ (Widget) – *элемент интерфейса* (interface element); ХОСТ (Host) – *Интернет* (Internet); МУЛЬТИПЛЕКСОР (Multiplexor) –  ; ПЕНТАТОНИКА (Pentatonic scale) – *национальные мотивы* (national tunes); НОТНЫЙ СТАН (Musical staff) –  . Also, the reactions based on everyday knowledge were presented mainly by the respondents not majoring in these spheres. For example, ДОРВЕЙ (Doorway) – *шарпей* (sharpay); БАН (Ban) – *конец* (the end); РЕСЕЛЛЕР (Reseller) – *боец* (fighter); ДУБЛЬ-БЕМОЛЬ (Double-flat) – *печаль* (sadness); ОПТИМИЗАТОР – *солнце* (sun). The analysis of the reactions revealed two ways of associative processes, the testees were good at their special

subjects and used terms, phrases, even explanations of the words and reacted more emotionally; while testing other special fields they found it difficult to identify the stimuli and tried to explain them using words and situations from their everyday life.

The results of the experiments revealed the new peculiar characteristic features of the term meaning, namely, the subjective emotionality and polysemy of the professionally-oriented terminological units. According to the obtained findings M.V. Efimova drew the conclusion that a term which was considered to be linguistically monosemantic and unemotional acquired subjective attitudes of future professionals towards the vocabulary of their special fields [Efimova, 2015]. The highest point of psychological emotionality of a term was shown by the students majoring in such spheres as information technology, software programming, information and communication technology, etc. It became clear that these fields were connected with computers and Internet the language of which was characterized by a variety of speech practice, modern discourse, voluntary participation and readiness to communicate, anonymity and emotionality of web users and, besides, by great hypertext capabilities of the web to change the processes of text production and perception [Goroshko, 2021].

As for the Internet terms it is Information technology which contributes greatly to the new field. Glossaries on the Internet provide numerous computer terms daily and present quick changes in the terminology. Usually new terms are offered by young people who wish to use simple language to describe technical concepts (e.g., cookies, mouse) and these words are not assigned an agreed meaning and are not officially approved and published in a standard [Pearson, 1998, p. 23]. A lot of computing words and phrases are metaphors used in an imaginative way to describe something. For example, the computer storage holds information like people's memory or cloud computing offers an idea of storing information on the clouds, etc. Most computer terms can be abbreviated forms with the first letters of each word (IT) and shortened forms (NET), new words made from two or more separate words or compounds, etc. So, the Internet terms are new terminology with fast way of borrowing the lexical units from different term systems [Jaleniauskienė, Čičelytė, 2011].

The main way of communicating is by means of terminological units. The notion "term" is the unit of two systems, on the one hand, it is a unit of scientific knowledge, on the other hand, it is a unit of lexicology. At the same time, it is a word of our everyday language and a special notion of a field of expertise [Superanskaya, Podol'skaya, Vasil'eva, 1989]. There are a lot of definitions of that notion as the scientists study the problem from different points of view. The term is a word with the definite meaning [Budagov, 2003, p. 33], a lexical unit having the definite scientific notion [Galkina-Fedoruk, Gorshkova, Shanskiy, 2009, p. 66]. I. Desmet and S. Boutayeb distinguish between general language and language for special purposes considering the latter to be linguistic representations of units of knowledge. The concepts of special fields own phraseological, syntactic and textual characteristics [Desmet, Boutayeb, 1994]. A. Condamines researches the term as a linguistic sign with certain peculiarities and a knowledge marker and emphasizes the fact that a term is a word system which functions in a deviant way in relation to the lexicon of the language of reference. The author considers terms to be homonymous with well-known words and only experts in the given domain can identify them as terms [Condamines, 1995]. K. Kageura considers terms as special elements of language system and linguistic symbols having one or more notions. On the one hand, they are mental representations of individual objects and, on the other hand, mental constructs of cognitive processes used for classification of inner and out world objects. The term formation is an artificial process of choosing a necessary language element for a definite notion [Kageura, 1995].

If we research terminology as a cognitive science, we are sure to deal with scientific knowledge and cultural peculiarities of special knowledge acquiring. Terms reflect the result of professional thinking and are the most important element of professional communication and activity [Golovanova, 2004].

The notion perception modalities is used to describe the basic ways of representing, coding, storing and giving meaning and language to our experience. A person is known to perceive the

world with the help of four representational systems: digital, kinesthetic, visual and auditory. Meanwhile the kinesthetic system includes olfactory and tactile ones. People having a digital perception way are logic driven and find it difficult to understand anybody who isn't. They focus on real things and facts. Digital people are very good at understanding and using logic presentation of ideas, prefer to use schemes, formulae, proofs. Kinesthetic people are emotionally driven and sensitive, and they need to feel comfortable to be productive. They are good at making things with their hands. The perception of visual persons relates to colors and pictures. They are interested in how things look. People having a visual perception way are good at creating beautiful images, good-looking designs, photos. Auditory people learn the information about the world by listening. Tons of words and rhythm of speech are crucial to them. They are good at comprehending and creating music, singing, understanding oral speech.

It's very important that a dominating perception modality is not a constant feature, and the modality development and change is a lifelong process. Moreover it's incorrect to say that one modality is better than the other one, but in some situations different modalities can be more effective than others. So, it's crucial to study all the modalities in order to understand the mechanisms underlying the building of connections and relations inside the mental lexicon. Some approaches to representational systems investigation can be found in: [Avdevnina, 2011; Manusadzhyan, 2008; Martinek, 2007; Molodkina, 2010; Pligin, Gerasimov, 2006; Pul'kina, 2007; Yusupova et al., 2002].

Methods

Summing up the experience of their own and considering other scientists researches the authors of the article decided to collaborate. The experiment was aimed at revealing if there has been any shift in a dominant perception modality among young people and professional term meaning understanding over the last 11 years.

The experiment involving 100 students was expected to identify the changes that had happened in associative thinking of students over rather a long period of time. Besides it was essential to see if there were any changes caused by the online education. By the end of February 2021, the students of Ufa State Aircraft Technical University (hereinafter USATU) had been studying online for almost a year (11 months). The experiment was conducted online, the same 100 students taking part in both stages.

At the first stage the participants of the experiment (students of computer science and robotics department) were told what it was aimed at. We explained that we wanted to see what perception modality prevailed in them, what it was caused by, and how we could use the received data to improve English teaching methods. For the purpose of the experiment in 2021 a new test was developed by A.I. Navalikhina The test included 14 questions or statements in Russian. Students could choose among 4 options. They chose one option which suited them the most and gave it 1 point. Besides they could choose one more relevant but less suitable option and gave it 0,5 point. The test typed in Word program was demonstrated on the screen in a program for video conferences (Zoom). The instructions were read aloud by one of the students and explained by the organizers to make sure that everyone understood them. The students were not limited in time. It took them about 10-15 minutes to do the test. The participants counted the points themselves and sent it back in the chat of the program Zoom.

At the second stage we tested the same 100 students of computer science and robotics department, looking at them, on the one hand, as future specialists examining terms of Internet and, on the other hand, as non-specialists examining music theory terms. The goal of this experiment was to investigate the psychological emotionality and value of term meaning. We used the subjunctive scaling technique which is based on the semantic differential method worked out by Ch.E. Osgood. It was considered to be the method of qualitative and quantitative indexing of word meaning with the help of high-frequency adjectives on the basis of estimation, potency, activity [Osgood, Suci, Tannenbaum, 1967]. Though originally it was a scale of 25 digits with antonymic features of the given factors (for example, light-heavy, weak-strong, small-large, etc.), it was modified many times by scientists for their special purposes. In our experiment it was the seven-digit scale (good-bad) and the

examinees estimated a set of stimuli according to the set of variables on the scale bad-good with scale gradation from -3 to +3. This scale had the following gradation points: bad [-3] → bad rather than neutral [-2] → neutral rather than bad [-1] → neutral [0] → neutral rather than good [+1] → good rather than neutral [+2] → good [+3] [Efimova, 2014, p. 96]. So, the scale in our investigation had three different zones: negative [-3,-2], neutral [-1, 0, +1] and positive [+2,+3].

-3_____-2_____-
1_____0_____+1_____+2_____+3

We asked the participants to mark each word with one scale point expressing their emotional feelings towards the given stimuli. The scale was demonstrated on the screen in Zoom and also the table consisting of Internet words and the table with music terms were shown online. The students were instructed how to do the tasks and all the questions were answered and they started the experiment.

Results and discussion

The results of the first stage showed that 53% of the participants are digital persons, 20,5% are kinesthetic ones, 20,5% are visual people, and 6% are auditory ones. So, we can see even a greater shift towards a digital modality in students compared to our previous data, as 11 years ago (in 2010) the results showed that 41% of the participants were digital persons, 36% were kinesthetic ones, 16% were visual people, and 7% were auditory ones. Our longitudinal survey revealed that the amount of digital people and visual people had increased by 12% and by 4,5% respectively. On the contrary, the amount of kinesthetic people and auditory people had decreased by 15,5% and by 1% respectively. We can see not only more digital students, but also more visual students now. Students unconscientiously prefer to use digital and visual modalities more often now than it was 10 years ago, and the use of kinesthetic modality is getting less and less necessary. The comparison of the results of 2010 and 2021 is presented in Figure 1.

One of the reasons of such a shift may be found in online learning that Russian students had at the time when they were tested. As it was mentioned before, by the end of February 2021, the students of USATU had been studying online for almost a year (11 months). Students were mostly taught via 3 tools: 1) special programs for video conferences, such as Zoom and Webex; 2) email; 3) an educational online platform of USATU, called system of distance learning (SDO), where they could find assignments, attach their fulfilled work, see the points given by the teachers and communicate with them by means of messages and comments. When you study online using such

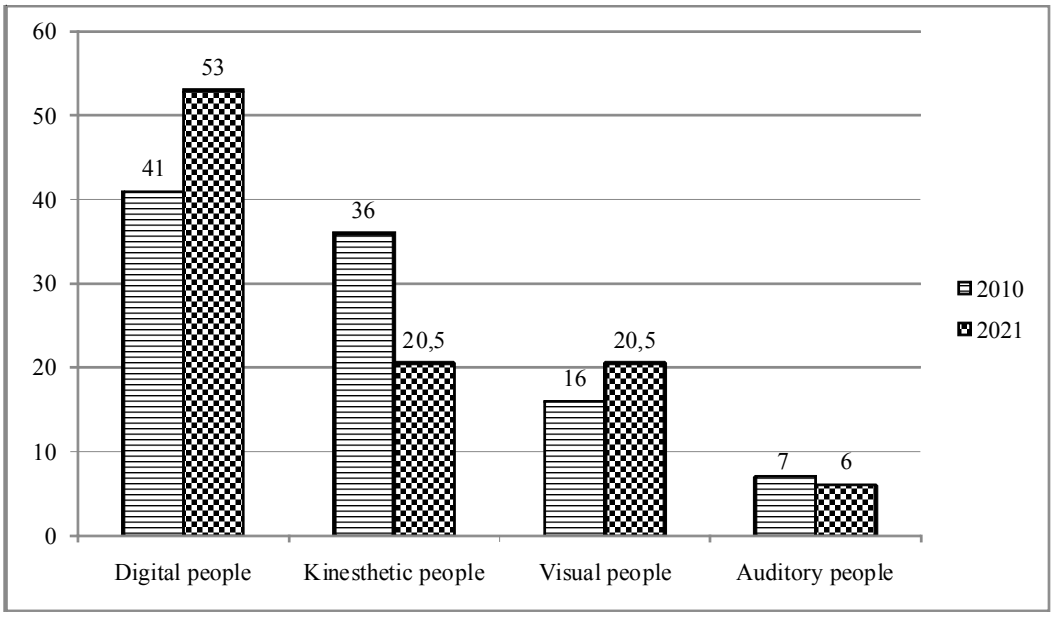

Fig. 1. Dynamical change in dominant perception modalities (2010–2021)

tools, you are more likely to use digital and visual representational systems. Most information was presented in the form of images, presentations, schemes, formulae, tests etc. Somehow a real teacher was replaced by a personal computer or a tablet PC. Whatever students were doing they had to use their computer. Besides, students were deprived of face-to-face communication with their lecturers, teachers, and groupmates. They couldn't feel the atmosphere of the lesson, they were devoid of energy exchange with their university buddies and tutors, it was rather hard to show and feel any emotions, so the need in kinesthetic modality was minimized. As for the auditory modality, it was engaged only during the lectures and practical work in such programs as Zoom (video conference) but was not involved when doing assignment with email or SDO. Recordings and sound files were rarely used alone (it mostly took place at English lessons during listening comprehension). In most cases auditory presentation of information only accompanied such things like typed texts, drawn images, tables, videos etc. Most students admitted that it was rather difficult for them to perceive the information when hearing without watching, which is true not only to online education but also to offline courses when you study at the campus.

Thus, one of the results of the study may be the identification of the fact that online education affects the way people perceive, code, store and use information. We believe that studying online, on the one hand, contributes to the dominance of digital modality and increases the need in visual modality. On the other hand, distance learning hinders the development of kinesthetic modality in students and doesn't encourage the use of auditory modality. Computer technologies spread is taking place on a progressively larger scale, and due to the pandemic and lockdown we became fully dependent on computer and Internet technologies.

But it's not only about distance learning. There are some other reasons that has been fostering digital modality dominance for at least a decade. Many factors influence the human consciousness evolution. Modern computerized society is characterized by global virtualization of reality that triggered a drastic growth of the role the digital modality plays in perception, processing and storing information. Probably, the emergence of this new dominant is since if one wants to be successful in this world and keep pace with it one should often use digital modality.

Obviously, the interpersonal communication structure has been changing, people have less face-to-face interaction. People prefer to communicate in social web, messengers, and email, which means that people use kinesthetic and auditory representational systems far more rarely than they do when they are offline. Besides, visual system is often used only as the channel of obtaining data that are coded by digital system later. Not the real world, but its digital model easily created by modern technology is being often perceived. Another reason of the digital people growth is that a diploma of an IT specialist is the goal of many young people. One is bound to find a good job if he is good at computers and modern technologies. It's not a surprise that digital people prevail among the students of IT.

In case of a vivid digital dominance young people's minds refer to a computer. Digital people are logic driven. They are usually calm and practical, prefer to use concrete definitions and terms in their speech. Living in virtual reality and neglecting the real world are some negative points of digital modality dominance. Digital people have problems with face-to-face interaction. They prefer to stay away from people in real world, and cyberspace gives them the opportunity to minimize offline communication. During discussion of the test results students admitted that they felt unsafe without their smartphones, they needed to be always online. The problem is being exacerbated by the fact that children have access to cyberspace now. Such important aspects of young person upbringing as communication and learning are getting digitalized. So, global computerization affects the minds of future generations, and learners easily adapt to the new learning techniques and methods and the majority prefer to study online.

As the test results showed the prevalence of digital people and it is obvious that their number tends to grow, the reactions of this group of participants were taken for the linguistic analysis (the second stage of the experiment). One of the aims of the investigation was to reveal *professional term understanding strategies* in the context of *digital perception modality dominance in the consciousness of young people*. The list of stimuli included 20 Internet

terms: ГИПЕРССЫЛКА (Hyperlink), КЕШ (Cache), КЛИК (Click), РУНЕТ (Runet), ФЛУД (Flood), ШЛЮЗ (Gateway), ЯВАСКРИПТ (Javascript), КОНТЕНТ (Content), ХОСТ (Host), БАН (Ban), ОПТИМИЗАТОР (Optimizer), БРАНДМАУЭР (Firewall), ГЕЙТВЕЙ (Gateway), МУЛЬТИПЛЕКСОР (Multiplexor), ГИПЕРТЕКСТ (Hypertext), ВИДЖЕТ (Widget), ДЖАВА (Java), ДОРВЕЙ (Doorway), КИБЕРПРОСТРАНСТВО (Cyberspace), РЕСЕЛЛЕР (Reseller); and 20 music terms: БАС (Bass), ПАРТИТУРА (Score), ПОЛУТОН (Semitone), СИНКОПА (Syncopation), ТАКТ (Bar), АППЛИКАТУРА (Finger notation), ЗАТАКТ (Off-beat), ОБЕРТОНЫ (Partials), СЕПТИМА (Seventh), СОЛЬФЕДЖИО (Solfegio), ВОЛЬТА (Volta), МЕЛИЗМЫ (Ornaments), ДУБЛЬ-БЕМОЛЬ (Double-flat), НОТНЫЙ СТАН (Musical Staff), КАНТАТА (Cantata), ПЕНТАТОНИКА (Pentatonic scale), КВАРТА (Quarte), ОРАТОРИЯ (Oratorio), ГРУППЕТТО (Turn), МОРДЕНТ (Mordent).

The analysis of the answers revealed the following identification strategies:

1) defining and characterizing strategy: БРАНДМАУЭР (Firewall) – *защита* (protection);

2) direct definition when respondents try to give the correct definition of the stimuli: МУЛЬТИПЛЕКСОР (Multiplexor) – *в телекоммуникациях* (in telecommunications) – *устройство, передающее по одной линии одновременно несколько различных потоков данных* (the device transmitting several different single line data flow at the same time);

3) attributive strategy: КОНТЕНТ (Content) – *платный* (paid); ШЛЮЗ (Gateway) – *открытый* (open);

4) metaphorical transfer strategy which is based on the theory of semantic development of a word by Yu.S. Stepanov [1975]. The author studied the interaction of word meaning system and scientific concept system that is the change of concepts and deepening of significant content. These two approaches provide the main two language functions, namely, the practical perception of the world with the help of metaphors and the world cognition with the help of scientific concepts: ФЛУД (Flood) – *нечто живое* (something alive); *гномик* (dwarf);

5) quotation situations strategy when the analysis of the connections between a stimulus and a reaction are explained by the fact that the respondents identify the stimuli with the events and facts taking place at the same time when the experiment is being carried out, for example, ДОРВЕЙ (Doorway) – *Дарт Вейдер* (Darth Vader);

6) word translation strategy: БАН (Ban) – *запрет* (prohibition). The testees of our experiment are students majoring in technical spheres and they respond using their prior experience including professional knowledge and give translation of the stimuli showing their competence;

7) strategy on the basis of designation, symbols, schemes: ГИПЕРССЫЛКА (Hyperlink) – *http*;

8) strategy on the basis of oral communication of experts, for example, ШЛЮЗ (Gateway) – *железка* (iron); professional slang words differ from terms: they don't express scientific concepts, don't form the system of concepts, have limited professional environment and they are usually characterized as emotionally and stylistically colored.

The analysis of the data received during the second stage of the experiment showed *the quantitative estimations of stimuli* by the students. Figures 2 and 3 show the results of the experiments carried out with students as future specialists and non-specialists in 2011.

Figures 4 and 5 show the results of the experiments with students as future specialists and non-specialists conducted in 2021.

As the figures show, the highest concentration of associative estimates is found in the neutral zones of all four groups. It can be explained by the fact that examinees hesitate while being tested and don't express very emotionally either negative or positive attitude towards the words as they treat them as socially and professionally fixed lexical units.

At the next stage of the analysis of the received materials we aimed at verifying the results of the experiment. We modified the scale and joined two zones in one (negative and positive) and named it emotional. Here we included the following scale points: -3, -2, +2, +3. The neutral zone included -1, 0, +1. So, we got the different results. Figure 6 shows the comparative analysis and the main results of the subjunctive scaling method, namely, the quantitative parameters of psychological emotionality and neutrality of term meaning for both future specialists and non-specialists.

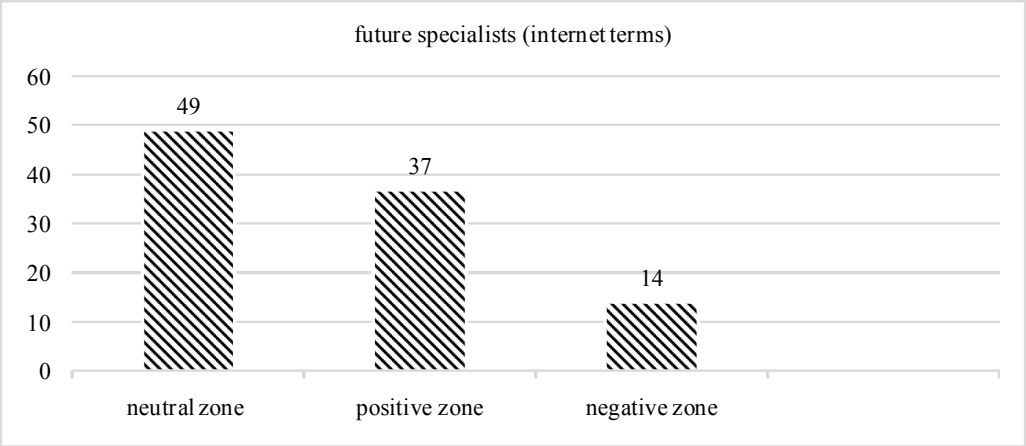

Fig. 2. Internet term quantitative estimations (2011)

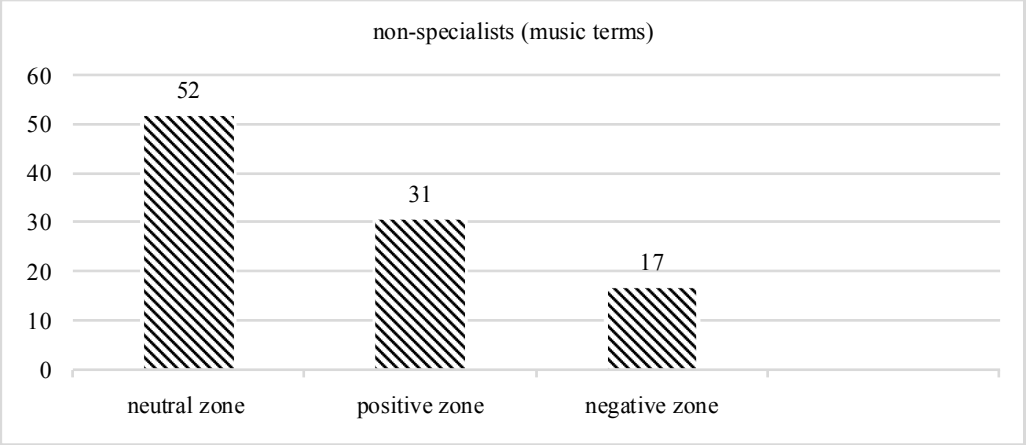

Fig. 3. Music term quantitative estimations (2011)

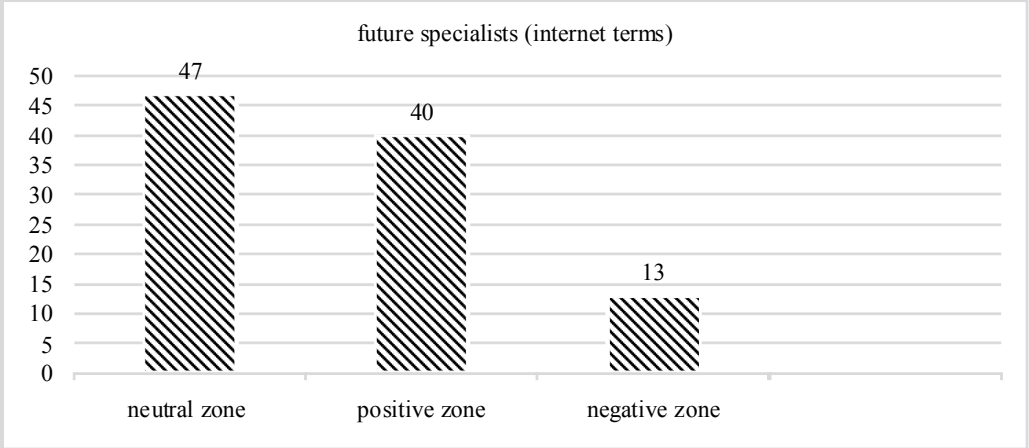

Fig. 4. Internet term quantitative estimations (2021)

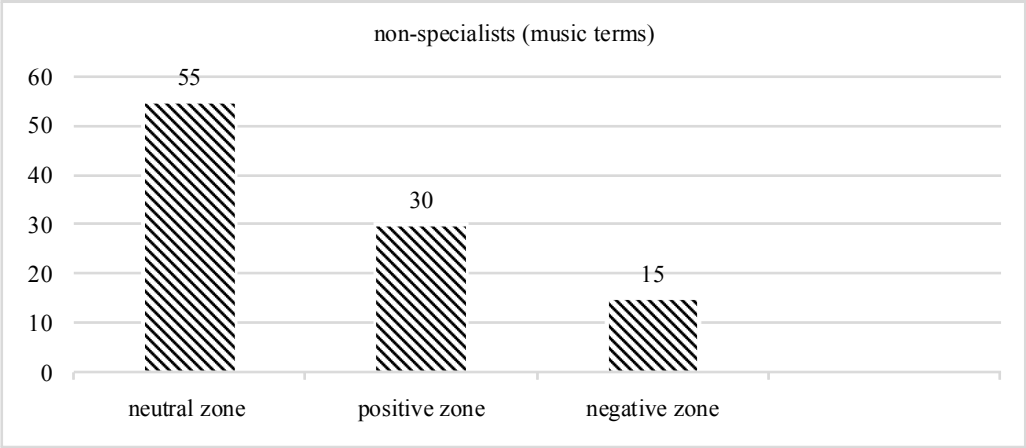

Fig. 5. Music term quantitative estimations (2021)

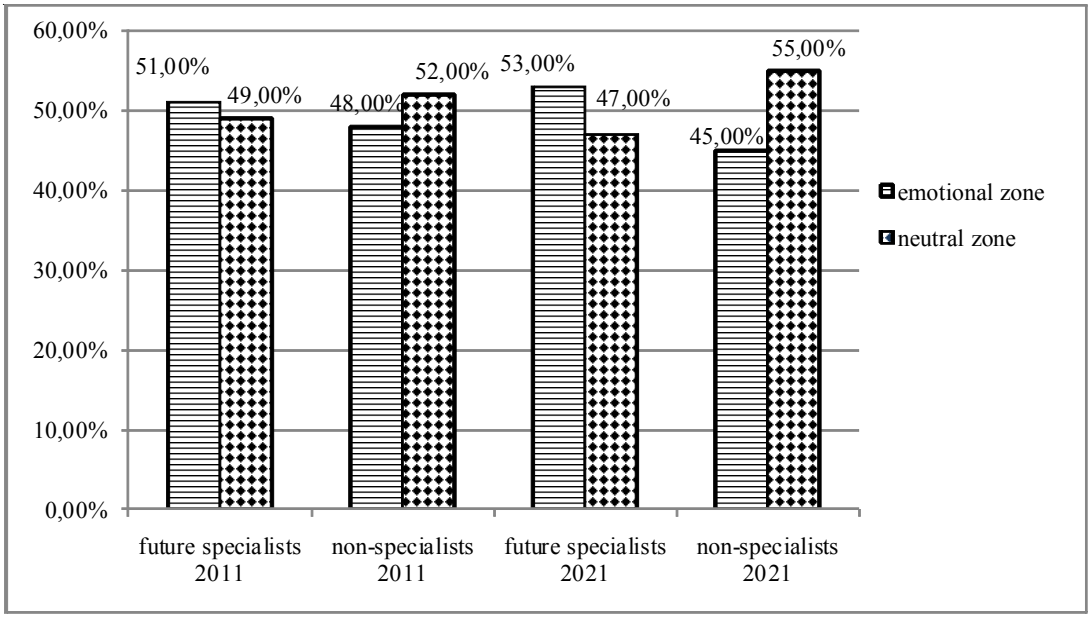

Fig. 6. Quantitative proportion of emotionality and neutrality in psychological term structure in groups of future specialists and non-specialists in 2011 and 2021

We can see that in the groups of the future specialists the emotional zones have the predominance over the neutral ones. The emotional zones covered 51% of associative marks in 2011 and 53% in 2021 respectively. So, the conclusion done in 2011 about the psychological emotionality of term meaning proved to be true after the 2021 verification experiment was conducted. In the groups of non-specialists the neutral zones are of greater importance. These zones covered 52% of associative marks in 2011 and 55% in 2021 respectively. So, scale marks close to the neutral zone are considered to trigger definite contradictions which turned to be hesitative in individual mind.

In linguistics terms are characterized as unemotional units with the definitions fixed in special dictionaries, they are members of the definite structurally and artificially compiled terminologies and terminological systems. Besides, they are the core of professional communication and activity. So, the emotional features of terms can lead to misunderstanding of the context. In terminologies some emotional connotations of terms are possible allowing to reveal the best psychological perception of new scientific concepts. But later terms lose idiomatic meanings and become neutral [Shmeleva, 2010].

On the contrary, psycholinguistic studies have revealed parameters of specifics, idiomatic

meaning and emotionality. All these features are identified by native speakers through the definite example or situation characterized by a set of sensual and emotional feelings [Kolodkina, 1992]. So, the digitals using the Internet terms can't help reacting at them subjectively and emotionally as they are very familiar with the words and consider them as a very useful tool for their communication.

Conclusion

The tendencies revealed during our long-continued survey show that, on the one hand, there has been a shift in a dominant perception modality among young people over 11 years (from 2010 to 2021). The participants are more likely to be characterized as digital people. The reasons of such a shift may be computer technologies spread, communication with the help of gadgets, demand for IT specialists in labor market and a forced measure of online learning during the period of March 2020 – February 2021. The use of new technologies and the need to master special terminological vocabulary gradually change the way people think while studying their special subjects and acquiring knowledge. Digital students unconsciously prefer to perceive the world in the form of regulated complexes based on concrete information and facts, clear and critical thinking. They are believed to focus on the definite goal, to weigh the pros and cons and to get a clear understanding of the consequences, to calculate, probe, research and examine before proceeding.

One the other hand, the conclusion done in 2011 about the psychological emotionality of term meaning proved to be true after the 2021 verification experiment was conducted. The obtained findings show that the term which was considered to be linguistically monosemantic and unemotional acquired subjective attitudes of future professionals. The analysis of the language strategies and scaling technique helped to find out that even though digital people are supposed to be unemotional, being future specialists, they show a rather high level of emotional attitude to the stimuli connected with their professional sphere and neutral attitude to the unfamiliar field term meaning. Thus, we can see that term meaning is always emotionally colored when a person uses it in his professional field and really understands it.

REFERENCES

Anan'ev B.G., 2001. *O problemakh sovremennogo chelovekoznaniya* [On the Problems of Modern Human Knowledge]. Saint Petersburg, Piter Publ. 272 p.

Avdevnina O.Yu., 2010. Pertseptivnyy komponent v formirovanii khudozhestvennoy kartiny mira [The Perceptual Component in the Formation of an Artistic Picture of the World]. *Russkiy yazyk: chelovek, kul'tura, kommunikatsiya – II: sb. st.* [Russian Language: Human, Culture, Communication – 2. Collection of Articles]. Yekaterinburg, UGTU – UPI, pp. 106-115.

Budagov R.A., 2003. *Vvedenie v nauku o yazyke* [Introduction to the Science of Language]. Moscow, Dobrosvet Publ. 544 p.

Condamines A., 1995. Terminology: New Needs, New Perspectives. *Terminology. International Journal of Theoretical and Applied Issues in Specialized Communication. Vol. 2:2*. Amsterdam, John Benjamins Publishing Company, pp. 219-238.

Desmet I., Boutayeb S., 1994. Terms and Words: Propositions for Terminology. *Terminology. International Journal of Theoretical and Applied Issues in Specialized Communication. Vol. 1:2*. Amsterdam, John Benjamins Publishing Company, pp. 303-325.

Efimova, M.V. 2014. Parametry emocional'nosti v psihologicheskoj strukture termina [Parameters of Emotionality in Psychological Structure of the Term]. *Vestnik Cherepoveckogo gosudarstvennogo universiteta. Filologicheskie nauki*, no. 8, pp. 95-98.

Efimova M.V., 2015. *Psikholingvisticheskie osobennosti funkcionirovaniya termina v individual'nom soznanii*: *dis. ... kand. filol. nauk* [Psycholinguistic Features of the Functioning of the Term in the Individual Mind. Cand. philol. sci. diss.]. Ufa. 188 p.

Ellerton R., 2010. *Discover Your Preferred Representational System*. URL: https://www.renewal.ca/nlp11.htm (accessed 14 March 2021).

Galkina-Fedoruk E.M., Gorshkova K.V., Shanskiy N.M., 2009. *Sovremennyy russkiy yazyk. Leksikologiya. Fonetika. Morfologiya* [Modern Russian Language. Lexicology. Phonetics. Morphology]. Moscow, Librokom Publ. 410 p.

Golovanova E.I., 2004. Lingvisticheskaya interpretaciya termina: kognitivno-kommunikativnyj podhod [Linguistic Interpretation of the Term: Cognitive and Communicative Approach]. *Izvestiya Ural'skogo gosudarstvennogo universiteta. Seriya 2. Gumanitarnye nauki*, no. 33. pp. 18-25.

Goroshko E.I. *Lingvistika Interneta: formirovanie distsiplinarnoy paradigmy*, 2021. URL: http://

repository.kpi.kharkov.ua/handle/KhPI-Press/49125 (accessed 7 March 2021).

Hunt E., 1983. On the Nature of Intelligence. *Science*, vol. 219, no. 4581, pp. 141-146.

Jaleniauskienė E., Čičelytė V., 2011. Insight into the Latest Computer and Internet Terminology. *Studies About Languages*, no. 19. URL: https://www.semanticscholar.org/paper/Insight-into-the-Latest-Computer-and-Internet-Jaleniauskien%C4%97-%C4%8Ci%C4%8Delyt%C4%97/a41f6ff545c1151fdf62e77478c50b4cc6a54d33 (accessed 7 March 2021).

Kageura K., 1995. Towards the Theoretical Study of Terms – A Sketch from the Linguistic Viewpoint. *Terminology. International Journal of Theoretical and Applied Issues in Specialized Communication. Vol. 2:2.* Amsterdam, John Benjamins Publishing Company, pp. 239-257.

Keil F.C., Batterman N.A., 1984. Characteristic-to-Defining Shift in the Development of Word Meaning. *Journal of Verbal Learning and Verbal Behavior*, vol. 23 (2), pp. 221-236.

Kholodnaya M.A., 2002. *Psikhologiya intellekta. Paradoksy issledovaniya* [The Psychology of Intelligence. The Research Paradoxes]. Saint Petersburg, Piter Publ. 272 p.

Kolodkina E.N., 1992. Problemy psikholingvisticheskogo issledovaniya termina [Problems of Psycholinguistic Research of the Term]. *Slovo i tekst v psikholingvisticheskom aspekte* [Word and Text in a Psycholinguistic Aspect]. Tver, Izdatelstvo Tverskogo gosudarstvennogo universitrta, pp. 67-73.

Manusadzhyan N.E., 2008. Rol' reprezentativnykh sistem pri postroenii kommunikativnogo dialoga v komandakh, igrayushchikh v «Chto? Gde? Kogda?» [The Role of Representational Systems When Building a Communicative Dialogue in Teams Playing the Game "What? Where? When?"]. *Elektronnyy zhurnal "Znanie. Ponimanie. Umenie" (razdel – Pedagogika. Psikhologiya)*. Moscow, Moskovskiy gumanitarnyy universitet, no. 2. URL: http://www.zpu-journal.ru/e-zpu/2008/2/Manusadzhian (accessed 11 February 2021).

Martinek S.V., 2007. Kontseptualizatsiya zritelnogo vospriyatiya (po materialam «Russkogo assotsiativnogo slovarya») [Conceptualization of Visual Perception (On the Material of Russian Associative Dictionary)]. *Uchenye zapiski Tavricheskogo natsionalnogo universiteta im. V.I. Vernadskogo. Seriya Filologiya*, vol. 20 (59), no. 1, pp. 340-348.

Molodkina Yu.N., 2010. *Modeli polimodalnogo perenosa v sinteticheskikh metaforakh* [Models of Polymodal Transfer in Synthetic Metaphors]. URL: http://tl-ic.kursksu.ru/pdf/007-14.pdf (accessed 25 January 2021).

Myagkova E.Yu., 2000. *Emotsionalno-chuvstvennyy komponent znacheniya slova* [The Emotional-Sensual Component of the Meaning of the Word]. Kursk, KGPU Publ. 110 p.

Navalikhina A.I., 2013. *Assotsiativnaya struktura znacheniya slova i modal'nosti vospriyatiya: dis. … kand. filol. nauk* [Word Meaning Associative Structure and Perception Modalities. Cand. philol. sci. diss.]. Ufa. 193 p.

Navalikhina A.I., 2018. Razvitie vysokikh tekhnologiy i angliiskiy yazyk [High Technologies Development and the English Language]. *Vestnik Permskogo gosudarstvennogo tekhnicheskogo universiteta. Problemy yazykoznaniya i pedagogiki*, no. 1, p. 42-50. DOI: 10.15593/2224-9389/2018.1.4.

Orlova M.V., 2008. *Spetsifika identifikatsii kompyuternoy terminologii (eksperimentalnoe issledovanie): avtoref. dis. ... kand. filol. nauk* [Identification Specifics of Computer Terminology (Experimental Study). Cand. philol. sci. abs. diss.]. Kursk. 22 p.

Osgood Ch.E., Suci G., Tannenbaum P., 1967. *The Measurements of Meaning*. S. l., University of Illinois Press. 360 p.

Pearson J., 1998. *Terms in Context*. Amsterdam, Philadelphia, John Benjamins Publishing Company. 246 p.

Pligin A.A., Gerasimov A.V., 2006. *Issledovanie zakonomernostei razvitiya reprezentativnykh sistem shkolnikov* [Research of Representational Systems Development of Schoolchildren]. URL: http://trenings.ru/Stati/NLP_v_obuchenii/Statya_Issledovanie_zakonomernostey_razvitiya_reprezentativnyih_sistem_shkolnikov.html (accessed 15 January 2021).

Pul'kina O.A., 2007. Vzaimosvyaz uspevaemosti studentov pedagogicheskikh vuzov s ikh tipami vospriyatiya [Interrelation of Higher Pedagogical Education Students' Progress with Types of Perception]. *Vestnik MGOU. Seriya «Psikhologicheskie nauki»*, no. 3, pp. 85-89.

Rips L.J., Shoben E.J., Smith E.E., 1973. Semantic Distance and the Verification of Semantic Relations. *Journal of Verbal Learning and Verbal Behavior*, no. 12, pp. 1-20.

Rogozhnikova T.M., 2000. *Psikholingvisticheskie problemy funktsionirovaniya polisemanticheskogo slova: avtoref. dis. ... d-ra filol. nauk* [Psycholinguistic Problems of the Functioning of the Polysemantic Word. Dr. philol. sci. abs. diss.]. Ufa. 42 p.

Rogozhnikova T.M., 2014. Suggestivnye resursy i vnutrennyaya forma verbalnoy modeli [Suggestive Resources and the Internal Form of

the Verbal Model]. *Teoriya i praktika yazykovoy kommunikatsii* [Theory and Practice of Language Communication]. Ufa, UGATU, pp. 232-255.

Sazonova T.Yu., 2000. *Psikholingvisticheskoe issledovanie protsessov identifikatsii slova: avtoref. dis. ... d-ra filol. nauk* [Psycholinguistic Study of a Word Identification Processes. Dr. philol. sci. abs. diss.]. Moscow. 41 p.

Shmeleva O.Yu., 2010. *Terminologicheskie protsessy v diakhronii sinkhronii (na materiale angliyskogo yazyka)* [Terminological Processes in Diachrony and Synchronicity (On the Material of the English Language)]. Saint Petersburg, SPBGU ekonomiki i finansov. 120 p.

Smith E.E., Rips L.J., Shoben E.J., 1974. Semantic Memory and Psychological Semantics. *The Psychology of Learning and Motivation*. New York, Academic Press, vol. 8, pp. 25-43.

Stepanov Yu.S., 1975 *Osnovy obshchego yazykoznaniya* [Fundamentals of General Language Science]. Moscow, Prosveshchenie Publ. 271 p.

Stolyarenko L.D., 2005. *Psikhologiya delovogo obshcheniya i upravleniya* [Psychology of Business Communication and Management]. Rostov-on-Don, Feniks Publ. 416 p.

Superanskaya A.V. Podol'skaya N.V. Vasil'eva N.V., 1989. *Obshchaya terminologiya: voprosy teorii* [General Terminology: Theoretical Questions]. Moscow, Nauka Publ. 246 p.

Ufimtseva N.V., Balyasnikova O.V., 2019. Yazykovaya kartina mira i assotsiativnaya leksikografiya [Language Picture of the World and Associative Lexicography]. *Vestnik Volgogradskogo gosudarstvennogo universiteta. Seriya 2. Yazykoznanie* [Science Journal of Volgograd State University. Linguistics], vol. 18, no. 1, pp. 6-22. DOI: https://doi.org/10.15688/jvolsu2.2019.1.1.

Vekker L.M., 2000. *Mir psikhicheskoi realnosti: struktura, protsessy i mekhanizmy* [The World of Psychical Reality: Structures, Processes and Mechanisms]. Moscow, Russkii mir Publ. 512 p.

Yusupova N.I., Tarasova T.D., Sukhanova M.V., Shveppe Kh., 2002. Reprezentativnye sistemy i psikhologicheskiy tip lichnosti: vliyanie na motivatsiyu k obucheniyu [Representational Systems and Psychological Types: The Influence on the Motivation to Study]. *IEEE International Conference on Advanced Learning Technologies (Kazan, 9–12 avg. 2002 g.)* [IEEE International Conference on Advanced Learning Technologies (Kazan, August 9–12, 2002)], pp. 181-184.

Zalevskaya A.A., 1999. Spetsifika psikholingvisticheskogo podkhoda k analizu yazykovykh yavleniy [Specificity of the Psycholinguistic Approach to the Analysis of Linguistic Phenomena]. *Psikholingvisticheskie problemy funktsionirovaniya slova v leksikone cheloveka* [Psycholinguistic Problems of the Functioning of the Word in the Human Lexicon]. Tver, TGU, pp. 6-20.

Zalevskaya A.A., 2013. «Zhivoe slovo» i interfeysnaya teoriya znacheniya ["Living Word" and Interface Theory of Meaning]. *Vestnik TvGU. Seriya: Filologiya*, iss. 5, no. 24, pp. 54-61.

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