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THE DIFFERENTIAL EMPIRICAL MODEL FOR DESCRIBING
THE SEMANTICS OF METAPHORS

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Abstract

The article presents an exposition of a new DEM for describing and lexicographic fixating of metaphor semantics (DEM is differential empirical model). It is developed in Voronezh scientific theoretical and linguistic school of the Dagestan psycholinguistic circle at the Dagestan Federal Research Center of the RAS and the Laboratory of Philology and Cultural Studies Integrated Research Institute of the RAS. The study of the meanings of metaphors in accordance based on the DEM is carried out according to an algorithm consisting of two basic and one optional stages. The first basic stage involves pilot experiments. In order to form the initial list of metaphors for their use as stimuli in psycholinguistic experiments, and a vocabulary for the dictionary, it is planned to conduct pilot experiments to identify metaphors that are relevant for native speakers. The second basic stage involves basic experiments. After the semantic interpretation of the integral associative field of stimuli, the semantic components (semes) and meanings (sememes) of metaphors are identified. The semes are differentiated by age (age semantics), gender (gender semantics), social parameters (social semantics), ethnocultural (ethno-semantics) parameters. The third stage (optional) involves data verification experiments. The result of the research will be used for compiling the Differential Dictionary of Metaphors, which will consist of two parts: 1. Associative fields of metaphors (direct associative dictionary). 2. Psychological meanings of metaphors.

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1. Introduction

One of the current trends in modern theoretical and practical lexicography is a description of the semantics of figurative linguistic units that make up the figurative fund of any national language (figurative words, phraseological units, metaphors and comparisons, proverbs, sayings, winged words).

Yurina has proposed to designate this area by the term "figurative lexicography" (Dictionary of Russian food metaphor, 2015).

In particular, the problem of lexicographic fixating of the semantics of metaphor – one of the key units of the figurative fund of any national language – is relevant for figurative lexicography.

The problem has been analyzed in various works (Blinova & Yurina, 2008; Baldova & Grekova, 2018; Mussi, 2015; Sklyarevskaya, 1988; Shendeleva, 1998; Yurina, 2012; Yurina, 2005).

In Russian philology, there are many dictionaries of metaphors, in which meanings of metaphors of the Russian language are fixed by various methods and based on various theoretical principles.

There are dictionaries describing the semantics of metaphor based on the language of fiction (Kozhevnikova & Petrova, 2015; Pavlovich, 2007), political discourse (Baranov & Karaulov, 1994), figurative units of dialects (Blinova et al., 2001; Dictionary of figurative units of the Siberian dialect, 2014) and others.

An analysis of definitions of metaphor dictionaries showed that the main sources of lexicography of the semantics of metaphorical units are explanatory dictionaries (in which figurative meanings of words are recorded) and contextual databases. The data of the National Corpus of the Russian language are also used.

2. Problem Statement

One of the disadvantages of describing the semantics of metaphors based on explanatory dictionaries is a weak relationship between the semantic components identified by lexicographers and consciousness of native speakers.

This relationship is important, because within the anthropocentric paradigm, “a natural interest arose in real rather than dead language abstracted from the native speaker and reflected in dictionaries and grammars” (Sternin, 2002, p. 34).

Lexicographers believe that the meaning of metaphor exists in the semantic volume presented in dictionaries. This lexeme is understood and used by native speakers in the same volume.

Nevertheless, the analysis and experimental studies of the semantics of lexical units (Makhaev et al., 2019) showed that there are many semantic components not recorded in dictionary definitions.

Members of the Voronezh scientific theoretical and linguistic school are developing a psycholinguistic approach to the semantics of metaphor within the anthropocentric linguistic paradigm, in which linguistic phenomena are studied as part of human cognitive activity.

Within the psycholinguistic approach, the metaphor is defined as a phenomenon of linguistic consciousness.

Linguistic consciousness is mental mechanisms of speech that are responsible for the speech activity or "a set of images of consciousness formed and expressed with linguistic means – words, free and stable phrases, sentences, texts and associative fields" (Tarasov, 2000, p. 61).

The psycholinguistic study of the semantics of metaphors includes the appeal to linguistic consciousness.

The members of Voronezh scientific theoretical and linguistic school have developed a DEM for describing and lexicographic fixating of the metaphor semantics:

a) the approach is differential, since it takes into account ethnic, age, social, gender aspects (based on the results of the experiments, the gender semantics of metaphors, ethno-semantics, age semantics, social semantics will be revealed).

b) the approach is empirical, since it relies on the experimental research methods that require an appeal to the linguistic consciousness of native speakers.

The DEM will allow determining the actual psychologically relevant meanings of metaphors as phenomena of linguistic consciousness (i.e., the real semantic volume in linguistic consciousness); to determine the brightness of each semantic component and meanings of metaphors in the linguistic consciousness (taking into account gender, age, gender, ethnic parameters); provide an opportunity to predict the further semantic development of metaphors (by analyzing trends in changes in the brightness indices of semantic components, which will become possible, since the dictionary data will be updated annually by repeated experiments), etc.

3. Research Questions

The subject of research is the DEM for describing and lexicographic fixating of the metaphor semantics.

4. Purpose of the Study

The purpose of the study is to expose the differential empirical model (DEM) of description and lexicographic fixation of the semantics of metaphors, within which new methods of lexicographic description of the metaphor have been proposed, which make it possible to reconstruct a fragment of native speakers' linguistic consciousness and present it in dictionaries.

5. Research Methods

The theoretical basis of the research is *semen semasiology*, which is based on the idea of studying lexical meanings through their description as an ordered set of minimal components of meaning (*semes*, content plan figures, *allosemes*, etc.) as part of the *sememe* (meaning), as well as the theory of speech activity intended to study "mechanisms of speech generation and perception in connection with the functions of speech activity in society and development of personality" (Leontiev, 1996, p. 27).

6. Findings

The differential empirical model for describing and lexicographic fixating of the metaphor semantics involves an algorithm for studying the meanings of metaphors, which includes basic and one optional stages.

As part of the first basic stage, to form an initial list of metaphors for their further use as stimuli in the psycholinguistic experiments, and as a vocabulary for future dictionaries, pilot experiments were conducted to identify metaphors (for example, zoomorphic metaphors) that are relevant to the linguistic consciousness of native speakers.

A typical instruction was used as an stimulus:

“You are taking part in the survey. Here is a two-column table. Please write down which animals with which you can compare males (the first column in the table), females (the second column in the table). The quantity is not limited.

Please indicate the following data: gender __, age ____, occupation ____, nationality ____

Time limit is 5 minutes.

The pilot experiment data were processed.

As part of the second basic stage, psycholinguistic experiments were conducted. The methods of free non-chain associative experiment, directed chain associative experiment, and subjective explication were used.

The data of pilot experiments were used as a stimulus.

The groups of subjects in the experiments should not overlap.

Instructions for conducting the psycholinguistic experiments will consist of four tasks:

Task-1 (the free non-chain associative experiment).

“You are participating in a psycholinguistic experiment. What word comes to your mind first when you hear the following phrases:

1.Human X1

2.Human X2

...

3.Human-n

where the names of animals (zonyms) selected at the first stage of the study within the pilot experiments will be used as X1,2 ... n.

Task-2. (directed chain associative experiment)

1.What kind of human-X1?

2.What kind of human-X2?

...

3.What kind of human?

Task-3. (directed chain associative experiment)

1.Human X1, what does he do?

2.Human X2, what does he do?

...

3. Human-n what does he do?

Task-4. (the method of subjective explication)

How would you explain the meaning of the expression to an unaware person?

1. Human X1 is

2. Human X2 is

...

3. Human-n is

Please indicate the following data: gender __, age ____, occupation ____, nationality ____

Based on the results of the experiments, a variety of associative reactions was obtained.

After data processing, three associative fields of the same name were built:

1) the associative field containing data of the free non-chain associative experiment (task-1);

2) the associative field containing directional chain data of the associative experiment (task-2 and task-3);

3) the associative field containing data of subjective explications (task-4).

The associates of all four fields were combined into a single integrated associative field.

The dictionary entry representing the associative field of a stimulus has the following structure:

- headword (stimulus);
- the subjects involved in the experiments;
- the list of associates (reactions to a stimulus), arranged in the decreasing frequency, which is indicated after the word-reaction; associates with the same frequency were arranged in the alphabetical order.

The interpretation of the integrated associative field was performed (each associate was interpreted as a verbalization of a specific semantic feature of the stimulus word), which will make it possible to formulate the psychologically relevant (psycholinguistic) meaning of the metaphor.

The structure of the psycholinguistic dictionary entry is as follows: 1) headword 2) the number of subjects; 3) interpretation of the word (coherent definition): semes; seme brightness index (opposite each seme); expressive labels (approving / not encouraging); non-interpretable reactions (given at the end of the article along with a frequency); the index of mastering the semantics of metaphor by linguistic consciousness, which is calculated as the ratio of “non-zero” associates to the total number of respondents (“zero” reactions are refusals).

The differential description of the semantics of metaphor was carried out, psycholinguistic definitions were compared on a scale of similarities / differences (Table 01) according to the selected semes and sememes and gender, age, temporal, and ethnocultural characteristics (Table 01).

Table 1. Scale of similarities / differences between semes and sememes

No differences	Insignificant level	Low level	Evident level	Significant level	High level	Very high level
0	1–4 %	5–10 %	11–25 %	26–50 %	51–70 %	71 % and more

The third optional stage of the study involves the verification of a semantic description of the psycholinguistic meanings of metaphors by asking native speakers for confirmation of the semantic components identified during the interpretation of experimental data.

The following standard instruction is as follows: “Confirm the presence of the indicated signs in the meaning of the word by placing a" + "sign next to the corresponding sign. If you think that this feature does not exist, do not put anything” (for more details – Vinogradova & Sternin, 2016).

There are several variants of verification: the method of semantic verification, the method of synonymous substitution, etc. (Sternin & Rudakov, 2011).

7. Conclusion

A brief overview of some dictionaries of metaphors of the Russian language was carried out.

The main sources for the lexicography of semantics of metaphorical units are explanatory dictionaries, contextual databases, and the National Corpus of the Russian language.

The article has proposed a new model for describing the semantics of metaphor (the DEM), in which the main source of lexicography of the semantics of metaphorical units is data of psycholinguistic experiments (associative fields).

The main advantages of the DEM are as follows:

- The determination of semes of metaphors (nuclear and peripheral)
- The determination of new semes not recorded in the explanatory dictionaries and national languages’ corpora
- The fixation of obsolete (inappropriate for linguistic consciousness) components of metaphors (on the basis of the results of comparative analysis with the lexicographic meanings of metaphors included in explanatory dictionaries).
- The determination of occasional meanings on the basis of the semantic interpretation of personal associative reactions (far and extreme peripheries). Occasional meanings will allow determining the semantic potential of a metaphor, the possible direction of semantic development. They will be marked with # in an entry
- The determination of the ethnic and cultural specifics of metaphors the importance of which is explained by the fact that the figurative structure of language is “a nationally and culturally determined system of images fixed in the usus, metaphorically realized in the semantics of lexical and phraseological units and forming a linguistic picture the world” (Yurina, 2004, p. 12).
- The determination of gender, social and age semantics will allow qualitative differentiation of semes by groups
- The determination of the temporal semantics of metaphors, which leads to repeated experiments. It allows obtaining the data on the semantics of metaphors at time t and fixing the semantic processes’ dynamics (the transformation of the content and semantic structure of metaphors at different times).
- The determination of the level of mastery of metaphor semantics by linguistic consciousness

The research result will be the Differential Dictionary of Metaphors, which will consist of two parts: Part 1. Associative fields of metaphors (the direct associative dictionary). Part 2. Psychological meanings of metaphors.

The dictionary has no analogues in psycholinguistics and lexicography.

Translators can use the dictionary when translating figurative vocabulary (zoomorphic metaphors).

The dictionary will have materials for fixing patterns of metaphorical transfers, identifying semantic components prevailing in the semantics of metaphors in linguistic consciousness, obtaining new information about the semantics of other tropes, phraseological units.

Cultural linguists will receive information about national and universal components of the semantics of metaphors.

Ethnologists will receive the information necessary to analyze ideological attitudes and cultural stereotypes of ethnic groups.

Business entities can use the dictionary when compiling advertising strategies (creating logos, advertising hero images).

"Since metaphor and metonymy are the main means of creating figurative and derived meanings of words and represent a numerous, diverse and mobile fund, their lexicography will continue to be one of the central tasks of vocabulary practice " (Devkin, 2000, p. 62).

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