19th PCFS 2019
Professional Culture of the Specialist of the Future

DETERMINING STUDENTS' COMMUNICATIVE COMPETENCY BY THEIR USE OF SPEECH REDUNDANCY

Mary Nechepurenko (a)*, Yulia Privalova (b), Alexey Yakovlev (c)
*Corresponding author

(a) Southern Federal University, 44, Nekrasovsky, Taganrog, Russia, nechepurenkomyu@sfedu.ru
(b) Southern Federal University, 44, Nekrasovsky, Taganrog, Russia, privalovatyu@sfedu.ru
(c) Southern Federal University, 44, Nekrasovsky, Taganrog, Russia, ayakovlev@sfedu.ru

Abstract

The article discusses the problem of using speech redundancy as a means of determining the level of communicative competence in Russian as a foreign language. In our research, the issue of speech redundancy is considered from the point of view of the speaker and the listener and should be taken into account both during day-to-day communication and while communicating in academic settings. On the one hand, when facts are explained repeatedly, in a detailed way, they lose their informativity. On the other hand, redundancy facilitates a more adequate understanding. The use of the means of redundancy by the speaker enables us to draw a number of conclusions about the level of his or her communicative competency. To do this, we conducted a two stage statistical study. At the first stage, the frequency of the main types of segmental redundancy in students' speech was analyzed. At the second stage, we looked into the language units representing each type of redundancy. We videotaped students' speech during classes after which 50 samples containing 50 redundancy phenomena each were selected. Statistical analysis of the samples was carried out using the method proposed by Golovin and showed that there is a certain correlation between the types and frequency of redundancy means in students' speech and the level of their communicative competency.

© 2019 Published by Future Academy www.FutureAcademy.org.UK

Keywords: Communicative competence, redundancy, speech, speech behaviour.

1. Introduction

Interest in studying the speech activity of a person, his speech behavior, and the laws of using language is caused by special attention that the complex process of interaction between language and human as an individual, and as a representative of a certain society received at the end of the 20th century and the beginning of the 21st century.

The interest of modern linguistics in studying language in action and its real functioning conditioned the rise of the communicative approach to language. This approach to the units of the language system allows them to be included in the speech activity of people, that is, it connects them with the objective world and cognitive activity, as well as with the conditions of communication in a specific speech environment.

2. Problem Statement

The reasons for the increased attention to speech communication can be divided into internal and external ones. The most obvious internal reason are excessive hopes associated with various formalized methods of language learning.

There are several external reasons:

- the development of social sciences, especially sociology. The study of functioning of society as a whole, of the problems of the functioning of a social group, etc., equips the linguist with knowledge of the patterns of social interaction of communicants in the process of verbal communication and provides a conceptual apparatus for studying social factors affecting speech communication;
- the development of psychology, especially the study of activities of the individual as a fundamental factor in the development of the higher mental functions and the formation of personality;
- reaction to the non-dialectical reduction of linguistics, limiting the subject of linguistics to a language system and excluding human speech and, more broadly, verbal communication from research.

The active development of the anthropocentric approach, the strengthening of the role of the human factor, characteristic of modern science leads to a shift in the focus of research efforts from describing language structure to the problems of describing the speaker. It's widely acknowledged that linguistics has imperceptibly entered into a new period of its development, a period of overwhelming interest in the language personality. Anthropocentric principle in linguistics is connected with the study of a wide range of linguistic phenomena reflecting the presence of the speaker in the act of speech and establishing the system of his or her coordinates. The language reflects the various aspects of human activity, the relationship between objects and phenomena of the world. Despite the variety of relations of objective reality, embodied in the language, the human occupies the leading place among them. According to Zolotova (1982), "man is the central part of the language both as a speaker, and as the main character of the world he speaks about" (p. 5).

3. Research Questions

The speech product belongs to the speaker, and the speaker acts as a reference point for observing the development of the speech process and describing numerous phenomena of the language system. Any statement contains information about certain events or facts and expresses a certain position of the speaker in relation to this information: the "I" of the speaker is present in every speech message, in each text. The speaker inevitably expresses his assessment, emotions, and will in his or her statements.

A complex of scientific disciplines, comprising the anthropological approach - psycholinguistics, pragmalinguistics, sociocultural linguistics, ontolinguistics, etc. are united by their object of research – the linguistic personality, i.e. the sum total of human abilities and characteristics that determine his or her creation and perception of speech products.

Communication is the transmission of information through language, speech or through various semiotic systems.

Based on the data already known, the communication scheme in the generalized form looks as follows: the speaker (source of information) has a message (message-1). With the help of speech organs (transmitter), the speaker encodes this message, converting it into a signal. The signal (air vibration) is transmitted over the communication channel. It then reaches the receiver (hearing organs) of the addressee. The decoding occurs, that is converting the signal into message-2. For communication to take place, both coding and decoding should be carried out on the basis of a single code (language). During communication, noise also occurs, so people can misunderstand each other or even not understand at all.

Approaching communication from the point of view of information theory leads to an important conclusion: any communication channel has a certain limitation, bandwidth, and it is impossible to transmit more information through this channel than is designed for.

That is why it is important to increase the efficiency of using the communication channel, that is, the amount of information that is transmitted over it per unit of time. The greater the efficiency, the better the communication channel is utilized, and the less time and effort is spent to transmit the message. Therefore, people tend to ensure that their messages are as short and compact as possible. In linguistics, this tendency is called the principle of economy (Röer, Bell, Körner, & Buchner, 2019).

However, in real communication, the principle of economy is not the only important matter (Chaouch, Merazka, & Marthon, 2019). Due to different kinds of noise, message-2 does not always correspond to message-1. The speaker enters into contact with the listener hoping that the latter will adequately perceive what the speaker intends to say, that is to achieve a certain communicative effect. In information theory, the degree of correspondence of message-2 to message-1 is usually called reliability. To increase the reliability, the speaker seeks to transmit a message more slowly, repeat it, increase its size, and so on, the result of which is a decrease in efficiency. Then the following dependency arises: the higher the efficiency, the lower the reliability, and conversely, the higher the reliability, the lower the efficiency (Klyshinsky, Lukashevich, & Kobozeva, 2018). The balance between efficiency and reliability, or economy and redundancy, is a universal feature of speech. Their unity and their constant tug-of-war to a great extent determine the real processes of speech itself, and the real structure of language.

4.   Purpose of the Study

Obviously, the information is contained in the text, not in the language, and the text is constructed using the language, the language system. The central component of the act of communication, from the point of view of the generation of the text, and therefore its information content, is the speaker. Text is a specific form of practical activity of the individual, who constructs and verbalizes it. The ability of the text to transmit information is set by the speaker in the process of creating the message (Demyankov, 2017). The utterance (text) in all its variable properties of a substantive and pragmatic nature, directly or indirectly, is determined by the speaker. The speaker determines the set of linguistic means, corresponding to a certain specific speech activity in a particular sphere of communication. In this case, an important role is played by the internal vocabulary (language memory of the speaker), which is an important component of speech activity (Craik, Rose, & Gopie, 2015). Speech activity of the speaker depends on a number of individual characteristics, social factors and circumstances, the leading ones in terms of language implementation of the informative nature of the text are:

- the language competence of the speaker, reflecting the knowledge of vocabulary, word formation, the organization of syntactic structures, the mechanism of reference, modes of expression of modality, stylistic parameters, etc.;
- ideological competence, i.e. values of the individual, regulating the selection of information and the way it is presented in the text;
- socio-cultural competence providing background knowledge acquired by an individual as a result of education, cultural level, social status, etc. Sociocultural competence influences the formation of the first two competencies of an individual.

Information cannot be transmitted in the form in which it is created, therefore, it must somehow be modified, limited, subject to some kind of compression in order to be transmitted and perceived. Various specific conditions for the creation of information, individual characteristics of perception and processing of knowledge about the world create unique types of information systems. For the language, the function of transforming information – its conceptualization – is important.

A deeper and more comprehensive study of information is offered by the pragmatic approach, in which an attempt is made to determine the value of information for those who perceive and use it. The very concept of the value of information makes sense when there is a subject and the goal that this subject sets. The pragmatic level of information implies the study of human communication as such, the exchange of information, the appropriate use of certain information by specific people in specific situations. The concept of the value of information is closely connected with aesthetics and axiology. For one person, a certain piece information may present great value, while for another it may not present any value at all. One type of information will be a purely intellectual act, i.e. it will communicate something without affecting the emotions of the receptor. Another type of information along with the intellectual process of perception will also cause certain emotional reactions to what is being said. The value of these two types of information will be different objectively, i.e. regardless of how this information is perceived by an individual.

If a linguist treats the language as a code system and if he examines this code's transmitting power without regard to the contents of the message, then he deals with statistical information; if he is interested in the content of the message, then he is dealing with meaningful information.

The notion of the value of information is closely related to the concept of "redundancy of information".

Redundancy is defined as repeated (multiple) transmission of the same information both explicitly (pleonasm), and implicitly. In the latter case, the excess of information can be transmitted either by tradition or to increase the reliability of the message.

Indeed, every message is more or less redundant (Cleary, & Claxton, 2015; Yap, Sibley, Balota, Ratcliff, & Rueckl, 2015). Redundancy of information, of course, makes language resistant to noise. In speech, there is always a lot of redundancy, to repetition of individual words, phrases, clichés, so-called dummy words, etc. is inevitable. In the flow of speech, such information helps to distinguish the main idea, to highlight the essential, to muff the unimportant and, thereby, to give the opportunity to concentrate attention on the message itself. Written speech is not devoid of redundancy, too. Connecting elements of speech, such as "hence", "so to say," etc., are redundant in relation to the essence of information.

5.   Research Methods

In the course of analyzing the redundancy of language units, we differentiate between the content plane and the expression plane of the language unit. At the first stage of classification of the language units expressing redundancy, each of them is regarded as fulfilling or not fulfilling a communicative function from the point of view of the speaker and/or the listener.

This allows us to distinguish the following types of redundancy – complete redundancy and communicatively significant redundancy. The first type is redundancy of the plane of expression (Scharenborg & Os, 2019). In the plane of content, here we find isolated phenomena that are redundant only from the point of view of the listener (these are the components of information noise that help the speaker form a statement), and phenomena that are excessive from the position of both the speaker and the recipient (tautology, pleonasm, duplication of word combinations and sentences). In other words, complete redundancy represents absence of information. It is obvious that too much redundancy makes it difficult to understand the message, because it is drowned in a mass of meaningless or insignificant language units. Too little redundancy, on the other hand, makes it difficult to understand the message due to information overload.

The second type is redundancy, which performs a communicative function (Nechepurenko, 2016). These are phenomena that are redundant only in the plane of expression, not in the plane of content, since language units here that have additional meanings and are used by the speaker for communicative purposes, as a means to facilitate understanding. The actual communication goals are often achieved through the use of structures that are formally redundant in their composition.

These are doubling, structures with nominative theme, intercalary structures, structures-additions, structures with repetition, self-correction. Language elements that are considered to be communicatively significant, communicatively justified redundancy, are common for both oral and written speech and perform certain functions: perceptual, control, and emotional expressiveness.

In oral speech, there is always a lot of redundancy, repetition of individual words, phrases, stamps, so-called dummy words, etc. is inevitable (Goldrick et al., 2019; Potts, Davies, & Shanks, 2019). In the flow of speech, such information helps to single out the most important information, to draw attention to the essential elements and to muffle the elements that are secondary and minor. It gives the listener the opportunity to concentrate attention on the information itself. Written speech is also not devoid of redundancy.

The effect of redundancy on memory has been the subject of research for many psychologists and psycholinguists. All studies of the effect of redundancy on memory can be divided into two groups. In the first group, an increase in redundancy was achieved by adding symbols that do not carry any information; in the second group, this increase was caused by a decrease in the average information load per symbol. Nevelsky and Flanchik (1969) conducted a detailed review of the results of experiments, during which they arrived to the following conclusion: redundancy has a great positive effect on memorization, because it creates opportunities for effective ways of mnemonic activity, the result of which is the formation of large subjective "chunks" of information that the person operates while memorizing.

Redundancy attracts the attention of linguists dealing with problems of optimization of listening. For example, Elukhina and Kasparova (1973) studied the influence of informative value and redundancy on the effectiveness of listening. During their experiments, it was found that redundancy in speech plays a positive role. If facts are repeatedly explained, detailed and refined in the message, they lose their informative value to some extent. The text is composed of elements of different informative value: from highly informative to redundant. Formally, every repetition creates redundancy, but subjectively, from the viewpoint of the listener, a reminder, an explanation sometimes contributes to better understanding and retention of information. Researchers emphasize that redundancy gives the acts of communication greater reliability and conditions a more adequate mutual understanding. One cannot disagree with linguists who point to the significance of various kinds of repetition in the educational process. Repetition helps to better understand new material. Redundancy is especially important in oral messages, when the listener cannot arbitrarily return to the previously perceived information and depends on the speaker completely.

Redundancy in speech can give a certain amount of information about the level of communicative competency of the speaker. In order to identify the specifics of the implementation of redundancy elements in students' speech, a two-stage statistical study was conducted. At the first stage, the frequency of the main types of redundancy elements was analyzed. At the second stage, the language units representing each type were analyzed. We videotaped students' speech during classes after which 50 samples containing 50 redundancy phenomena each were selected. Statistical analysis of the samples was carried out using the method proposed by Golovin (1970).

The value, determining the randomness or substantiality of the discrepancy between sample frequencies, is determined using this formula:

$$\chi^2 = \frac{\Sigma a_i}{\overline{X}},$$

where, a_i is the deviation of the sample frequency from the average; X– the average frequency.

σ – the mean square deviation, is calculated as follows:

$$\sigma = \sqrt{\frac{\sum \grave{a}_i^{\,2}}{\kappa}} \ ,$$

where, α_i is the square of the deviation of the sample frequency from the average mean; κ is the number of samples.

The value that allows us to determine the randomness or significance of deviations of sample frequencies from their average is estimated using a special table. If the obtained value of χ2 in the table corresponds to the probability of a larger value, lying in the range from 0.05 to 0.95, the discrepancy between sample frequencies is recognized as random, and therefore, the samples will be statistically regular. If the probability of a larger value is outside the specified interval, the samples are considered to be statistically heterogeneous, and consequently, the differences in frequency are not accidental. They are significant, sporadic for the same probability.

6. Findings

The problem of studying the redundancy of segmental means in students' speech, solved on the basis of the integrated approach proposed in this study, lies at the intersection of a number of topical modern scientific research questions – the tendencies in language organization and the realization of these tendencies in speech, the specifics of speech and its main functions, the ratio of information redundancy and redundancy of segmental means, patterns of reflection of psycholinguistic characteristics of speech in certain groups of native speakers, studies of spontaneous speech, the development of speech abilities, etc.

In light of this, it is appropriate to present a set of features that characterize the levels of students' speech behavior as reflected in their use of redundancy of segmental means.

Thus, a high level of speech development is indicated by hesitation pauses of insignificant length, a small number of self-corrections, by the use of diverse constructions with nominative themes, additions, as well as the preservation of the structure of the utterance when using interpolated constructions.

The low level of speech development is characterized by a significant amount of information noise, long hesitation pauses, frequent self-corrections, and syntactic monotony of redundancy constructions.

The results of our analysis are summarized in Table 01:

Table 01. Analysis Results

Level of communicative competence / Redundancy Elements		High	Low
Information noise		Relatively few pauses of hesitation (3-4). Short pauses of hesitation (1-3) Few repetitions (1-2)	Too many pauses of hesitation (10-12) Long hesitation pauses (7-9) Many repetitions (6-10)
Doubling	Plane of expression (vocabulary)	Tautology and pleonasms are absent	Tautology and pleonasms are present
	Plane of content (grammar)	Absence of repetitions of word combinations and sentences	Regular repetitions of word combinations and sentences
Structures with nominative theme		All seven types of nominative themes are used by students	Only one types of nominative theme is used

Structures-additions		All five types of additions are used by students as well as many transitionary structures	Only one types of addition is used
Constructions with repetitions		Construction is used to express various degrees of expressiveness	Construction is used to express duration of action and quality gradations
Intercalary structures		Syntactic and/or semantic scheme of the construction is preserved Number of words in the part preceding the intercalation and in the intercalation itself is 7±2 (7-9)	Syntactic and/or semantic scheme of the construction is violated Number of words in the part preceding the intercalation and in the intercalation itself is 7±2 (5-6)
Self-corrections	lexical and gramma-tical	Few corrections (2-5)	Many corrections (8-10)

7. Conclusion

On the basis of a relatively small number of samples from the students' speech we have obtained results that are in the boundaries specified by Golovin (1970). So there is every reason to believe that even such seemingly patternless phenomenon as redundancy actually has strict regularities, which our analysis reveals. The practical significance of our research is that the results obtained can be used for the development of students' speech, which is especially important from the point of view of increasing the speech culture of speakers of any age.

References

Chaouch, H., Merazka, F., & Marthon, P. (2019). Multiple Description Coding Technique to Improve the Robustness of ACELP Based Coders AMR-WB. *Speech Communication, 108*, 33-40.

Cleary, A. M., & Claxton, A. B. (2015). The Tip-of-the-Tongue Heuristic: How Tip-of-the-Tongue States Confer Perceptibility on Inaccessible Words. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 41*(5*),* 1533–1539.

Craik, F. I. M., Rose, N. S., & Gopie, N. (2015). Recognition Without Awareness: Encoding and Retrieval Factors. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 41(5),* 1271–1281.

Demyankov, V. Z. (2017). Transfer znanii i kognitivnaya manipulyatsiya [Knowledge Transfer and Cognitive Manipulation]. *Voprosy Kognitivnoy Lingvistiki, 4*, 5-13. [in Rus.].

Elukhina, N. V., & Kasparova, M. G. (1973). Vliyaniye izbytochnosty rechevogo soobsheniya na audirovaniye [The Effect of Voice Message Redundancy on Listening]. *Teaching Foreign Languages in High School, 79 (1)*, 85–95. [in Rus.].

Goldrick, M., McClain, R., Cibelli, E., Adi, Y., Gustafson, E., … Keshet, J. (2019). The Influence of Lexical Selection Disruptions on Articulation. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 45*(6), 1107-1141.

Golovin, B. N. (1970). *Yazyk i statistika [Language and Statistics]*. Moscow: Prosveshcheniye. [in Rus.].

Klyshinsky, E. S., Lukashevich, N. Y., & Kobozeva, I. M. (2018). Creating a Corpus of Syntactic Co-occurrences for Russian. *Komp'juternaja Lingvistika i Intellektual'nye Tehnologii, 18*, 317-331.

Nechepurenko, M. Y. (2016). Sintaksicheskiye sredstva otrazhayushiye protsess organizatsii i oformleniya vyskazivaniya [Syntax Means Reflecting the Process of Organizing and Processing a Statement]. In L. N. Sokolova (Ed.), *III International Scientific Conference of teachers, young scientists, graduate students and university students "Science. Education. Culture. Contribution of Young Researchers"* (pp.17-21). Novocherkassk, Russia: Platov South-Russian State Polytechnic University (NPI). [in Rus.].

Nevelsky, P. B., & Flanchik, V. L. (1969). Zapominaniye izbytochnykh soobshenii [Storing Redundant Messages]. In A. A. Leontyev & T. B. Ryabova (Eds.), *Psychological and Psycholinguistic*

Problems of Mastering and Acquiring the Language (pp.184-200). Moscow, Russia: Moscow State University. [in Rus.].

Potts, R., Davies, G., & Shanks, D. R. (2019). The Benefit of Generating Errors During Learning: What is the Locus of the Effect? *Journal of Experimental Psychology: Learning, Memory, and Cognition, 45*(6), 1023-1041.

Röer, J. P., Bell, R., Körner, U., & Buchner, A. (2019). A Semantic Mismatch Effect on Serial Recall: Evidence for Interlexical Processing of Irrelevant Speech. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 45*(3), 515-525.

Scharenborg, O., & Os, M. (2019). Why Listening in Background Noise is Harder in a Non-Native Language than in a Native Language. *Speech Communication, 108,* 53-64.

Yap, M. J., Sibley, D. E., Balota D. A., Ratcliff, R., & Rueckl, J. (2015). Responding to Nonwords in the Lexical Decision Task: Insights from the English Lexicon Project. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 41* (3), 597– 613.

Zolotova, G. A. (1982). *Kommunikativniye Aspekty Russkogo Sintaksisa [Communicative Aspects of Russian Syntax]*. Moscow: Nauka. [in Rus.].