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A STUDY OF SENSE COMPREHENSION OF LOGICO-GRAMMATICAL CONSTRUCTIONS BY SENIOR PRESCHOOL CHILDREN

Abstract. The article presents the results of an experimental research of sense comprehension of logico-grammatical language constructions by senior preschool children. It defines the notion “sense comprehension of speech”, shows the role of logico-grammatical constructions in diagnostics of speech development of children and describes the methods and results of research of sense comprehension of logico-grammatical language constructions by senior preschool children with general speech underdevelopment.

The authors proceed from the assumption that in conditions of speech underdevelopment perception of space has a specific nature and influences sense comprehension of logico-grammatical constructions. The article describes the peculiarities of comprehension of such constructions by preschoolers with general speech underdevelopment. This specificity is caused by inclusion in sense comprehension of a verbal component which, as a result of speech underdevelopment, is characterized by extreme weakness, being at the same time a significant factor in evaluation of successful decoding of simultaneous schemes that lie at the basis of logico-grammatical constructions. In the conditions of speech dysontogenesis, formation of ability to fully understand such constructions lags behind time in comparison with normal development. The given assumption is corroborated by the differences obtained in the course of the comparative research. Thus, the level of formation of comprehension of logico-grammatical language constructions may be regarded as a marker of speech ontogenesis and dysontogenesis.

Keywords: perception, oral speech comprehension, logico-grammatical constructions, senior preschool children, general speech underdevelopment.

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Introduction

The process of comprehension is mediated by meanings or sense, i.e. it is categorized. According to a pertinent remark of L.S. Vygotskiy, starting from a certain moment of child's

development their “speech becomes intellectual, and thinking becomes verbal” [8, p. 98]. As long as meanings and senses are expressed through speech, it would be logical to presume that in cases of violation of speech

development comprehension is specific. Speech comprehension as a psychic process in children with speech underdevelopment has not been a target of special research both in terms of formation of separate modalities and from the point of view of intermodal interaction. There are several psychological works characterizing certain aspects of the process of perception in children with speech underdevelopment: perception of color, form and separate signs by preschoolers (V. V. Yurtaykin, 1986; L. I. Belyakova et al., 1991), perceptive development of junior schoolchildren (E. A. Zakharova [10]), polimodality of perception (I. Y. Murashova [16]).

But perception cannot be regarded as a psychic function in isolation. Its obligatory participation in various kinds of activity makes us widen the scope of research. Perception can be studied from different angles: both as a research-orientative action and as sense comprehension. The latter plays a most important role in information support of learning-cognitive activity of senior schoolchildren.

1. The essence of the notion “sense comprehension of speech”

The existing interpretation of speech comprehension in the light of interdisciplinary approach specifies the complex integrative character of this phenomenon. It is logical to consider this process to be a unit of a complex functional system (comprehension – inner speech) referring to impressive speech and aimed at reception and processing of verbal information coming in from other people

in oral or written form [21].

According to the conception of B. S. Muchnik (1973), the process of sense comprehension (decoding) includes reconstruction of the linguistic meaning of the utterance (lexical, grammatical and syntactical) into the psychological sense, which, according to V. L. Rodnyanskiy (1986), is similar to a cognitive act followed by manifold re-coding of the lexical components of the utterance into sense components [22].

From the positions of the psycholinguistic approach the sense generating level of speech comprehension presupposes closest connection between linguistic and cognitive components. Functional deficiency of the latter reduces children’s ability to master such linguistic skills as semantic transformation, linguistic interpretation, categorization and verification of linguistic structures. This radically reduces the semantic field of their speech, makes it difficult to understand complex linguistic constructions, and interferes with the identification of the semantic focus of the utterance, which is responsible for decoding the general sense of speech [21]. This situation may be typical in reference to children with underdevelopment of speech.

Comprehension in its broadest sense is an inherent property of any education process. Taking into account the experience of Europe and the USA where comprehension-related competences received priority status in the process of reconsideration of primary education standards, we also give primary importance to

the problem of comprehension and pay considerable attention to testing, evaluation and prevention of learning disadaptation in senior preschool – junior school children with general speech underdevelopment.

Special educational needs of such children integrated in general education institutions (general schools and nursery schools) demand monitoring the quality of understanding the whole learning material, and especially the one presented in the verbal form. In the changing educational conditions of today, there are no more or less objective criteria for such monitoring; and this fact sets enticing challenges to psycho-pedagogical diagnostics.

2. The role of logico-grammatical constructions in the diagnostics of speech development of children

Assessment of oral comprehension alongside with assessment of other skills is always present in foreign diagnostic tests (A. Anastazi, 1982 [1]; S. R. Baluyan, 2007). This fact is also specified in domestic psychological research [3; 4; 5; 15]. From the point of view of special psychology the problem of speech comprehension of children with various types of dysontogenesis needs separate investigation both in terms of theory and practical assistance in cases of developmental disorders.

We believe that underdevelopment of oral speech comprehension is caused by a number of problems arising at different stages of diagnostic testing. In the very beginning of the test after the presentation of instruc-

tion and tasks there appears a problem on the level of semantization. The tested person with speech disorders may fail to understand the content of the instruction and vocabulary, or this content may be misunderstood or fragmentary, for example, they may fail to understand separate lexico-grammatical or logico-grammatical constructions.

Should the task in the verbal form be clear for understanding, the tested person may have no potential to do it on the level of verbal intellectual activity. In other words, the problem may arise at the stage of transition from inner speech to outer speech; and this difficulty may be aggravated by a loss of a part of information due to instability of memory traces (en-gram). If there are no problems in transition from the inner intellectual background to the stage of verbalization, still there may be problems in doing tasks caused by an inadequate level of speech development of the tested person. Due to a developmental disorder, they may not know the necessary words and grammatical forms or may be incapable of cohesive narration. And, finally, the tested person with speech disorders may have no so called expertise motivation, which blocks their inclusion into activity, or they may have a negative attitude to verbal tasks that doom them to failure ahead of time. The above mentioned reasons radically limit the use of verbal diagnostic methods, especially for the study of intellectual development of children.

Inadequate understanding of logico-grammatical constructions (es-

pecially spatial-temporal ones) by children was first specified by L. V. Yassman in her study of peculiarities of the grammatical aspects of speech of children with disorders of psychological development [25]. It would be logical to conclude that similar problems would arise in cases of other developmental disorders. But these problems have remained neglected by scholars for a long time.

Inclusion of logico-grammatical linguistic constructions into the verbal material of diagnostic testing was looked upon by neuropsychologists as a constituent part of child's observation. This allowed solving several diagnostic tasks simultaneously: to evaluate the level of knowledge of the grammatical structure of a language and to investigate mental operations on the basis of these linguistic constructions. It is generally believed that the complexity of psychological processing verbal information depends on the complexity of the verbal construction, i.e. it is connected with the depth of its structure.

Long ago A. R. Luriya called the given type of constructions "logical units of language" endowing them with the function of being means of abstract logical thinking.

In terms of diagnostics, successful sense comprehension of a certain kind of logico-grammatical construction directly depends on the hierarchy of relations between the components of the phrase: the more evident are the connections between these immediate constituents the better will the comprehension be. It is quite logical to suppose that the processes of decod-

ing constructions of varying complexity are based on psychological mechanisms the state of which is diagnosed by specialists.

The authored methods of diagnostics by neuropsychologists (A. R. Luriya, 1973; A. V. Semenovich, 2000; T. V. Akhutina, 2002; Zh. M. Glozman, 1999; L. S. Tsvetkova, 2000) invariably include tests on comprehension of logico-grammatical constructions. Correct decoding such constructions manifests the formation of the child's skills to perform verbal logical operations, which make the basis of such important ability as solving intellectual tasks adequate to the given age. What is more, a number of authors (S. Yu. Kiselev, 2009, 2011; Yu. Yu. Lapshina, 2011; I. A. Filatova, 1998) dwell on the specific interrelationship between the development of cognitive functions and the formation of comprehension of logico-grammatical constructions by senior preschool children. Scholars argue what cognitive functions are responsible for the low level of comprehension of logico-grammatical constructions by senior preschool children [12].

Some researches criticize an excessively rigid approach to the role of comprehension of logico-grammatical constructions as a marker of formation of logical thinking at preschool age. Because at different stages of preschool childhood the "mediators" of sense comprehension of linguistic constructions (including logico-grammatical ones) change as this is the way in which more complex linguistic operations are gradually

prepared for their procession and, as E. S. Slepovich argues, it is a natural process that does not need special teaching [17].

Criteria for qualitative evaluation of comprehension of logico-grammatical constructions by preschool children have not been worked out in special literature. Evidently, they should be based on developmental abilities of the child to use grammatical structures as a means of logical thinking.

At the same time, in the conditions of speech dysontogenesis (e.g. general underdevelopment of speech), preschoolers always have difficulties in perception and comprehension of such constructions, which can be attributed to the cognitive weakness of their linguistic competence. What is more, the problems of sense comprehension of speech also stay at later stages of their development (I. T. Vlasenko, 1990; O. E. Gribova, 2010; T. A. Fotekova, 2003; Yu. A. Shulekina, 2008, 2011), which is sure to influence the mechanisms of discovering potential possibilities of education and communication.

Characterizing the processes of verbal comprehension of children with general underdevelopment of speech O.E. Gribova analyzes mechanisms that lead to their degradation. The author stresses the fact that at initial stages of education children with a stable form of general underdevelopment of speech use special strategies of non-parcellated comprehension of the verbal material which, in their turn, prevents adequate formation of their linguistic competence.

At the same time, the postponed strategies of differentiated comprehension ensuring dynamic formation of linguistic actions and operations for sense speech processing are distinguished, according to O.E. Gribova, by clearly marked specificity. In other words, in the process of their communicative activity, children with general underdevelopment of speech form certain strategies of analysis of linguistic structures, for example, syntactic constructions which turn out to be ineffective [9].

In speech therapy, tasks on comprehension of logico-grammatical constructions are used mainly in special methods of observation of speech of junior schoolchildren (T. V. Akhutina, T. A. Fotekova, Yu. A. Shulekina) and are presented orally. In order to solve similar tasks preschool children are asked to describe pictures illustrating logical, spatial or other relations (T. B. Filicheva, G. V. Chirkina, 1991; E. F. Sobotovich, 1998; E. L. Maliovanova, 2009; L. A. Andrusishina, 2012).

3. Methods and organization of research

Research was carried out on the basis of state budgetary education institutions of Moscow (lyceum # 504, school # 771). We studied sense comprehension of senior preschool children with general underdevelopment of speech (third level of speech underdevelopment according to the classification by R. E. Levina) and children with normal speech development. The total sample included 60 preschoolers. The experimental group

consisted of 30 children (at average age of 6); 22 of them were boys and 8 – girls. The control group comprised 30 children of the same age with normal speech development.

The research hypothesis is based on the supposition that speech underdevelopment at senior preschool age brings about specific difficulties in comprehension of logico-grammatical constructions.

The complex research method was originally worked out for junior school-children [21]. It was adapted and tested on 30 preschool children: 20 children with third level general underdevelopment of speech and 10 children with normal speech development.

The test materials included logico-grammatical constructions reflecting various relations (spatial, temporal and quasi-spatial). As long as inadequate oral comprehension of logico-grammatical constructions has been established for some types of dysontogenesis, we made an a priori supposition that preschool children with general underdevelopment of speech may demonstrate even more severe deficiency and, consequently, have even bigger problems.

That is why the instructions for exercises 1, 2, 4 were accompanied by presenting visual supports in the form of color pictures of the characters mentioned in the instructions. Task 3 did not presuppose visual supports – the instructions were comprehended by the children only orally.

Task 1. Assessment of comprehension of active constructions containing spatial relations expressed by means of prepositions and spatial notions.

Instruction: “Listen to the phrase and choose the matching picture”.

The children were offered the following phrases for analysis:

- A bicyclist is riding after a car. Who is going first?

- A bee is flying over a flower. Which of them is lower?

- The notebook lies on the book. Which of them is above?

- A horse is running before a train. Which of them is going last?

Task 2. Assessment of comprehension of passive constructions reflecting “quasi-spatial” relations.

Instruction: “Listen to the phrase and choose the matching picture”.

The children were offered the following phrases for analysis:

- The grandson was fed by the grandmother. Who fed whom?

- The mother was met by the father. Who met whom?

- The brother was punished by the sister. Who punished whom?

- The elephant was frightened by the mouse. Who was frightened and by whom?

Task 3. Assessment of comprehension of active back constructions containing temporal sequences.

Instruction: “Listen to the phrase. Choose the phrase where everything is correct”.

The children were offered the following pairs of phrases for analysis:

- Summer comes before spring. — Spring comes before summer.

- Friday comes after Saturday. — Saturday comes after Friday.

- Lunch comes before supper. — Supper comes before lunch.

- December comes after January. — January comes after December.

Task 4. Assessment of comprehension of active constructions containing comparative relations.

Instruction: “Listen to the phrase and choose the matching picture”.

The children were offered the following phrases for analysis:

- The pencil is longer than the pen. What is shorter?
- The kitten is bigger than the puppy. Who is smaller?
- The palm tree is lower than the oak tree. Which tree is higher?
- The chicken is heavier than the crab. Who is lighter?

The results were processed by counting the right answers in each task (each right answer scored one point).

For processing the statistical data obtained in the course of our investigation on the basis of research materials by Yu. A. Shulekina [21], the following levels of success in doing tasks were singled out (statistical analysis was performed with the help of the χ^2 criterion, the paired Wilcoxon T-criterion, the Mann–Whitney U criterion for independent samples):

Level I — «Unsuccessful» (0 — 12 % of correct answers);

Level II — «Almost Unsuccessful» (12, 5—25 % of correct answers);

Level III — «Medium Success» (26—50 % of correct answers);

Level IV — «Almost Successful» (51—75 % of correct answers);

Level V — «Successful» (76—100 % of correct answers).

4. Research results of sense

comprehension of preschool children and their discussion

We obtained data about the success of sense comprehension of logico-grammatical constructions in the group of preschool children with normal speech development and the group of preschool children with general underdevelopment of speech.

Preschool children with normal speech development were divided into two categories – “Successful” (86.7%) and “Almost Successful” (13.3%).

Qualitative analysis registered insignificant difficulties which were overcome by the children themselves. In general the children understood the task at first presentation and did the tasks quickly.

Children from the group of preschoolers with general underdevelopment of speech showed results of two success levels: “Medium Success” (80%) and “Almost Unsuccessful” (20%). Task 3 presented orally with no supports created most problems.

Problematic moments in doing tasks in the given group included the following difficulties: 1) failure to understand the construction at first presentation; 2) random answering in most cases; 3) need of help (e.g. asking to repeat the task).

We attribute the revealed problems, first of all, to poor memorizing a verbal construction – the children are unable to keep it in memory in its full volume. But after optimization of operative memory by repeating its presentation, the construction is understood much more effectively.

Secondly, the revealed problems may be caused by poor verbal atten-

tion – by concentration on the sequence of elements, on its linguistic picture.

Counselling also raises the child's records in decoding logico-grammatical constructions. A more detailed analysis of correlation ties has not been undertaken in the framework of our research.

Comparing the study results of both groups of senior preschool children is necessary to highlight statistically significant differences in the obtained data.

The qualitative-quantitative analysis on the basis of statistical data processing with the help of the Mann–Whitney *U* criterion (see Fig. 1) confirmed a higher level of formation of sense comprehension of logico-grammatical constructions of language in normally developing senior

preschoolers in comparison to their peers with general underdevelopment of speech.

Consequently, in the conditions of speech dysontogenesis this ability forms behind time in comparison with the norm. We singled out the main reasons for the difficulties preventing children from adequate understanding the constructions under study.

Diagnosis

Normal development

General underdevelopment of speech

Average rank = Average rank =

Frequency

Frequency

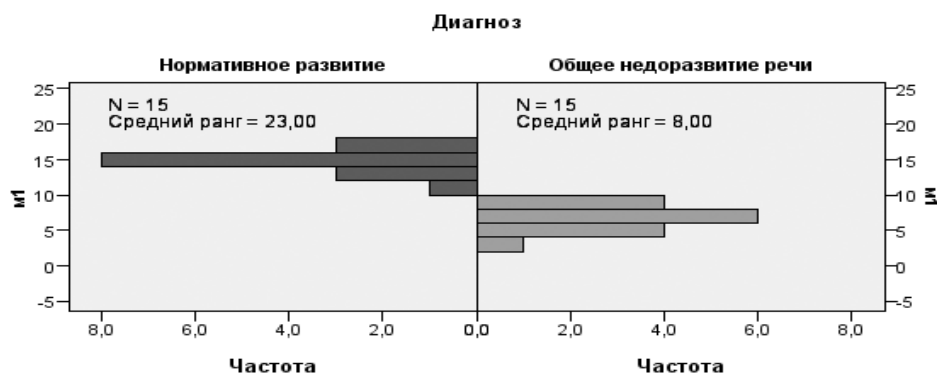


Figure 1. The Mann–Whitney *U* criterion for independent samples

In general, comprehension problems are connected with verbal components of the integrative function – sense comprehension of speech (poor formation of verbal memory and verbal attention).

The obtained statistically relevant differences in comprehension of logico-grammatical constructions argue a specific typical pattern put forward by V. I. Lubovskiy, which runs as follows: reception and processing information in preschool children with speech dysontogenesis are specific and are effected with difficulties and are limited in volume [17].

Conclusion

The experimental data obtained in the course of the given research fully confirm the existence of direct correlation between the state of speech development and comprehension of logico-grammatical constructions by senior preschool children at the age of 6. The supposition about the existence of such correlation was put forward and scientifically confirmed on the basis of neuropsychological observation of preschool children [11; 12].

The authors of the given article managed to establish this relationship by comparing sense comprehension of logico-grammatical constructions by normally developing senior preschool children and their peers with general underdevelopment of speech. It was demonstrated that preschool children with general underdevelopment of speech are less successful in decoding logico-grammatical constructions mainly because of the verbal compo-

nents ensuring sense comprehension of speech functions.

Further investigation of the problem should be carried out in the context of sense comprehension of logico-grammatical constructions with the accent on spatial-temporal constructions which are formed rather late even in normal ontogenesis. This is one of the general tasks to be solved by specialists in the light of expansion of inclusive education [7; 14].

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