



# The Correlation Between Cognitive and Speech Development of Children with Disabilities Compared to the Norm

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## Abstract.

The article deals with the problem of correlation between the cognitive and speech development of children with disabilities (visually impaired, with intellectual disabilities and complex disorders) in comparison with the norm. The authors analyze the results of research conducted by psychologists, defectologists, linguists on the features of development of intellection and speech within different categories of children. The data on the features of development of speech and thought processes for various developmental disorders are presented. Methods for studying the correlation between cognitive and speech processes of children with disabilities are disclosed. The results of an experimental study of speech and thinking of children with intellectual disabilities and complex developmental disorders are offered. All the features of correlation between cognitive and speech development of children with disabilities are considered by the authors in comparison with normally developing children.

**Keywords:** cognitive development, thinking process, perception, speech, visual impairment, mental retardation, complex vision and intellect disorders.

## 1. INTRODUCTION

One of the central issues of psychology in the context of the ontogenesis of human psyche is the question of correlation between speech and cognitive development. The origins of the solution of the problem go back to the concept of relationship between speech and thinking within the theory of cultural and historical development of the child developed by L.S. Vygotsky. He wrote that "... the development of speech and thinking is done in a non-parallel and uneven manner. The curves of their development repeatedly converge and diverge, intersect, align themselves in separate periods and go in parallel, even merge in separate parts, then branch out again" [1]. Thus, cognitive development is a dialectical unity of the development of thinking and speech in their complex interconnection and interdependence.

The purpose of the article is to analyze the features of cognitive development (thinking, memory, perception) and speech of children with different disabilities in comparison with the norm in the process of producing oral utterances.

Nowadays there are no doubts that the first language facilities used by the child in speech activity are those that correspond to his level of cognitive development. Besides L.S. Vygotsky the analysis of cognitive and speech development of a child under the age of 7 was also conducted by I.N. Gorelov. This analysis allowed him to conclude that children thinking and speech processes develop asynchronously, but with an obvious advance of intellectual ability over speech [2].

However, as A.R. Luria's research showed, with age, speech begins to play a more significant role. He discovered that "mastering verbal system rebuilds all child's basic mental processes and consequently the word is a powerful factor forming psychic activity that improves

reality reflection and creates new forms of attention, memory and imagination, thinking and action" [15].

## 2. METHODS OF STUDYING THE PECULIARITIES OF COGNITIVE AND SPEECH DEVELOPMENT OF CHILDREN WITH DISABILITIES

In modern psychology mental development refers to both quantitative and qualitative new formations of the psyche, which are characterized by irreversibility, direction and regularity.

With the use of the retrospective method we are to consider the peculiarities of cognitive and speech development of children with disabilities, three categories of children in particular: visually impaired, mentally retarded without visual disturbances, and in children with complex visual and mental impairments.

Children with disabilities are considered as a broad concept, which combines several groups or categories of children: with intellectual disabilities (mentally retarded); with a mental developmental delay; with visual impairment (blind and visually impaired); with hearing impairment (deaf and hard-of-hearing); with infantile cerebral palsy; with speech disorders; with autism spectrum disorders; with complex, multiple developmental disabilities. All these categories of children have general and specific patterns of mental development.

Experimental methods have shown that cognitive development and speech formation of children with disabilities occurs unevenly and depends on the type of disorder, its structure, severity and many other factors. For example, for visually impaired children the course of their mental and speech development does not fundamentally differ from the norm, but there are some peculiarities [8, 9, 11].

Weak-sighted people usually use words in one or another context correctly, but sometimes their knowledge, when carefully checked, often turns out to be insufficient, only verbal, not based on specific knowledge and ideas. The meaning of a word is either unreasonably narrowed, and remains tied to a single feature, object or specific situation, or can be extended. Visual impairment does not allow to accurately and directly imitating the external expressive motions of surrounding people, leading to a negative effect for the understanding the situational, mimicry and pantomime, oral speech of communication partners, as well as for the manifestation of speech of the visually impaired children themselves.

The problem of the development of the psyche and speech of children with visual impairment was presented in the studies of Russian and foreign typhlo psychologists. For example, the particular issues of integrating children into the society of sighted people (H. David) and the questions of studying the abilities of visually impaired children to create texts (P. Hartmann) were mainly examined [8].

In research conducted by Russian psychologists speech of children with visual impairment was considered in different aspects. For example, the place, role and significance of speech in the formation and development of mental functions and in compensatory processes were studied by M.I. Zemtsova, Yu.A. Kulagin, A.G. Litvak, I.S. Morgulis, L.I. Solntseva. Dependence of the formation of speech on the development of mental processes of children with visual impairment was studied by T.P. Golovina and T.P. Sviridyuk. The influence of speech as a means of activating educational activity in the assimilation of the content of education was investigated by N.A. Krylova, I.P. Chigrinova, V.A. Feoktistova [8]. The influence of speech on the ability to regulate one's own actions was studied by V.I. Lubovsky [14].

Mentally retarded children demonstrate a later start of speech development, a weak growth of passive and especially active vocabulary. And even those words that are learned by them and even included in the active vocabulary are not always understood correctly. R.I. Lalaeva wrote that the meaning of a word, acquired by a mentally retarded child, often does not correspond to its actual meaning. A word as a result of its incomplete mastering remains not a concept, but only a "nickname", the name of several subjects. Alongside this, she also noted that speech disorders of mentally retarded children are manifested against the background of severe cognitive development disorder, and abnormal mental development in general [13].

In recent decades the number of children with multiple developmental disabilities has significantly increased. Oddly enough this happens, along with other factors, due to advances in medicine. So, all resuscitation measures conducted in maternity hospitals, nursing children weighing less than 1000 grams, vaccinations, infants' surgical treatment of cerebral, cardiac, vision and hearing disorders often lead to both survival on the one hand and to multiple developmental disorders and delays in mental development in the future on the other hand.

Studies of the cognitive and speech development

of children with multiple disorders showed that such children experience difficulties in the development of thinking, memory, perception, oral speech while assimilating such concepts as actions, properties, signs of a subject; they also face problems with emotional manifestation of utterances. At the same time, systematic, purposeful corrective work on the development of all mental functions and speech significantly enriches the sensory experience and practical activities of such children.

Thus, the theoretical analysis of works on psychology and pedagogy makes it possible to consider the study of speech and cognitive processes of children with disabilities quite relevant.

### **3. THE RESULTS OF STUDYING THE RELATIONSHIP BETWEEN SPEECH AND OTHER MENTAL PROCESSES**

We are to consider the results of studies of the relationship between speech and other mental processes of different categories of children in comparison with the norm.

Normally, the connection of the word with the sensory basis in the process of child's speech formation and, first of all, the connection of the object-related word with visual perception and the idea of the object is indicated in many scientific works. Thus, the decisive role of perception, visual in particular, in the formation of speech and thinking, was pointed out by L.S. Vygotsky: "... a child without development of perception cannot develop speech, because in the normal functioning of perception we have the premise for normal development of higher systems ..." [1, p. 339]. That is why "perception is the dominant function for a child in early age, and all other functions act only as a result of perception and through it" [1, p. 339].

The research by L.S. Vygotsky showed that the person first forms and develops elementary mental functions, which serve as a basis for the development of higher mental functions and speech. He attached special significance to the process of perception for the normal development of speech. In this connection he said that the child cannot develop speech without developing perception; the child can speak and think only when perceiving. The development of perception, phonemic hearing and phonemic perception, the tactile perception of objects creates the basis for mental development, for forming of images of the real world; therefore the very basis on which speech begins to form is created. Afterwards, speech begins to seriously influence the child's mental development and the formation of images of perception, ideas, specifying and generalizing them. In such a manner L.S. Vygotsky pointed out the connection of speech not only with perception itself, but also with images-representations which are more complex and higher mental functions. In this regard he wrote that absolutely every word proves to be associated with a representation or image, that the concept is formed via perception and processing of sensory material and that the word, like the concept, is associated with sensory material [1]. Other researchers also drew attention to this connection of speech with the sensory basis. In the works of many Russian researchers it is directly spoken of the interaction both

between the processes of speech development, and between the processes of perception, especially perception of visual object. As L.S Tsvetkova writes: "The real world is given to a man at the beginning of his life in sensations and representations, and only later he receives its (real world) reflection in words" [18]. Ontogenesis data indicate the participation of the perception process of any modality in the development of such mental processes as memory, speech, and thinking.

It should be noted that in the modern world the social status of children with disabilities should attract attention of all the members of society and should be the object of social policy of a country. In a just society the needs and interests of all people, regardless of their social affiliation, including those who cannot be more successful for objective reasons, must be taken into account, for example, children with disabilities [2-5, 6]. Creation of all necessary conditions for the realization of personal potential and development of a person, for children with disabilities as well, is a requirement of the principle of social justice and a necessary condition for the transition of our society to the principles of constant development [6, 7].

Perception and speech are also interdependent in their formation: different features of perception, on the one hand, and the mobility of visual images, on the other hand, are formed and developed under the influence of speech, when a recognized object is called with a certain word. Speech, in its turn, is arisen and refined on the basis of the sensory sphere.

S.L. Rubinstein pointed out a dissonance between what the child uses in speech and what he thinks, between the external and internal side of speech: "The child's possessing certain speech forms does not necessarily mean that he realizes the thought content they express; using a word or a term does not guarantee its understanding or the existence of a corresponding concept" [16, p. 467].

The corresponding linguistic components are not realized in the child's speech until the development of cognitive abilities. Usually the cognitive sphere or non-verbal thinking appears prior to speech and has a profound impact on the whole future communicative function of speech.

Insufficient level of cognitive and speech development of primary school age children may be associated with defects in the sphere of the sensory basis of a word, primarily with defects in visual perception and visual subject representations and images.

According to a well-known statement of L.S. Vygotsky, individual mental functions or systems of functions have their own optimal periods of development. Forming and interacting under the influence of complex factors of the social environment they alternately perform either auxiliary or leading role in the process of the integral development of child's consciousness and all higher mental functions [1, p. 431].

The dissonance of the relationship between individual mental processes is that at an early age perception plays the central role in the development of the child's psyche (while his memory and thinking function only in the form of perception, recognition). Then, in

ontogenesis, a new correlation of mental functions is formed, where the leading role belongs already to memory. Thinking also begins to exist as a process of remembering the accumulated experience. Then generalized memories or general representations dominate in a child that "are the child's first detachment from purely visual thinking" and which presence "presupposes the first stage of abstract thinking". Only after a child completes primary school "the processes that enable forming concepts and abstract thinking begin to develop" [1, p. 151].

#### **4. DISCUSSING THE RESULTS OF EXPERIMENTAL RESEARCH OF CORELATION BETWEEN SPEECH AND THINKING OF CHILDREN WITH DISABILITIES**

Let us examine the specific experimental results of features of the development of thinking and speech of children with disabilities in the process of composing stories basing on pictures. Thus, as the studies of Russian scientists V.A. Kruchinina and L.I. Solntseva showed, the thinking activity of visually impaired children develops in the same way as of those who have normal sight. Although there are certain features caused by the limitation of sensory experience which slow down intellectual development and change the content of thinking in a way, they cannot change its essence [10, 12].

The narrowness of their sensory experience and the insufficient development of practical activity determine the specifics of forming mental operations. Visually impaired children have difficulties in analyzing objects and their images, don't often recognize them. All this affects their expressive speech, especially when such children compile connected stories basing on pictures. The analysis of a picture is not as systematic, versatile and profound as that of normally seeing peers. Weakly-sighted people more often than children with normal eyesight find it difficult to distinguish between spatial relations and different typical features of objects in pictures. Therefore, the stories do not have elements of generalization, and visually perceived surface speech information is related only formally and distorted at the same time.

Research by L.I. Solntseva showed that various visual impairments, both congenital and acquired in early childhood, are the reason to the peculiar mental development of this category of children. This is about difficulties in development of analytical and synthetic activity in the process of identifying essential features of objects of the surrounding world when they are compared. Children with visual impairments cannot first divide an object into parts systematically, single out certain features characteristic to these objects, and then combine the elements into a single whole. It is also difficult for them to compare objects presented in certain relations and make appropriate conclusions on this basis and relate them in coherent utterance [17]. Unlike children with intellectual disabilities, children with visual impairments have great potential for the development of visual-figurative and verbal-logical thinking, in case they rely on visual-effective thinking using various abstracting and generalizing means during their study [8, p. 87].

The thinking of children with intellectual disabilities remains concrete and is for the most part descriptive, superficial. In addition, they have rather weak ability to generalize idea, which is manifested in the fact that they poorly assimilate spelling rules and grammatical concepts in the process of their study [10].

In the process of development there is a separation of thought from practical action. In other words, thought, standing out in an independent act, begins to outstrip the action, to anticipate its result. Thought regulates the actions of a normally developing child, allows him to act more expediently, anticipating the ultimate goal. A mentally retarded child does not think about his actions, does not foresee their result, and does not use his thinking to act more correctly. Consequently, the regulating function of thinking is weakened. He does not doubt the correctness of his barely arisen assumptions, does not check his answers and actions [10].

One of the frequently encountered shortcomings in the thinking of mentally retarded younger schoolchildren is the inconsistency of their reasoning. The correct course of reasoning is hindered by disturbances in the dynamics of thinking: excessive slowness, stiffness of thought, a tendency to get stuck on some minor details, or, on the contrary, haste and scatter of thoughts, inability to concentrate attention on any single issue [10].

The following shortcomings in thinking are characteristic of children with intellectual disabilities: slowness and stiffness of thought, weakness of generalizations, inconsistency of reasoning, insufficient criticality, weakness of the regulatory function of speech.

V.G. Petrova notes: "... speech cannot develop in isolation from thinking; it must be meaningful and rely on the whole process of cognition of the real world. Forming speech, it is necessary to work on its enrichment, accuracy, and expressiveness at various levels (words, sentences, text). The development of these speech qualities has a positive impact on the correction of shortcomings and on the improvement of mental activity of oligophrenic children" [10].

## 5. CONCLUSION

Thus, the analysis of peculiarities of the correlation between cognitive and speech development of children with disabilities in comparison with the norm showed the urgency of this issue and the possibility of further research.

The correlation between cognitive and speech thinking of children with normal mental development and of children with pathologies develops in stages, that was proved by L.S. Vygotsky, S.L. Rubinshtein, A.R. Luria, V.I. and others. However, in the future, experimental studies have shown that in the formation of cognitive and speech development of children with disabilities there are significant specific features that require special conditions and measures for their development.

In studies of cognitive and speech development of children with disabilities in comparison with the norm it was proved that disabled children (visually impaired, intellectually disabled, and with complex developmental

disorders) experience some difficulties in the development of thinking, memory, perception and development of oral speech while assimilating such concepts as actions, properties, and attributes of objects. In addition, such children also experience difficulties with emotional intonational utterances formulation. At the same time, many authors point out that a systematic, purposeful corrective work on the development of all mental functions and speech enriches the sensory experience and practical activities of disabled children significantly.

The disrupted social status of children should attract the attention of all members of society. In a normal, just society, the needs and interests of all people, regardless of their social affiliation, including those who cannot be successful for objective reasons, must be taken into account, children with disabilities among them.

## CONFLICT OF INTERESTS

The authors confirm that the data do not contain any conflict of interests.

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## REFERENCES

1. Vygotsky L.S. Thinking and speech. Moscow: State Educational Pedagogical Edition, 2011, pp. 655.
2. Gorelov I.N. Nonverbal communication components. Moscow: Librocom, 2014, pp. 112.
3. Dokhoyan A.M. Communicative competence in the light of the implementation of new standards of education. *Prospects of Science*, 2015, 2 (66): 117-120.
4. Dokhoyan A.M. Development of communicative competence in adolescence. *History and Social Studies. Scientific educational methodic yearbook*. Armavir, 2009, pp. 151-155.
5. Ismailov N.O. Justice as the right to free labor. *Humanitarian and Socio-economic Sciences*, 2007, 6: 33-37.
6. Ismailov N.O. Justice: conceptual bases and actual problems. Monograph. Moscow: Russian State University of Justice, 2016, pp. 209.
7. Ismailov N.O. Sustainable development of society as a new stage in the understanding of justice. *Sociology of Power*, 2009, 5: 133-139.
8. Ismailova I.S. Development of coherent speech of younger schoolchildren with visual and intellectual impairments. Thesis for candidate of psychological sciences degree. Nizhny Novgorod: Nizhny Novgorod State University of Architecture and Civil Engineering, 2009.
9. Ismailova I.S. Specific features of the development of coherent speech of younger schoolchildren with complex visual and intellectual impairment. *Privolzhsky Scientific Journal*, 2013, 4 (28): 239-243.
10. Ismailova I.S. Specifics of coherent oral speech in the process of compilation of stories basing on pictures of junior schoolchildren with visual and intellectual impairment. *Izvestia: Herzen University Journal of Humanities and Science*, 2007, 12(33): 342-348.
11. Ismailova I.S. Psychological features of the development of coherent speech of younger schoolchildren with complex visual and intellectual impairments. *Actual Problems and Prospects for the Development of Modern Psychology*, 2013, 1: 218-225.
12. Kruchinin V.A. Theoretical basis for the formation of spatial orientation of blind children in the process of schooling. Moscow, 1992, pp. 256.
13. Lalaeva R.I. Logopedic work in correctional classes. Moscow:

VLADOS, 2001, pp. 222.

14. Lubovsky V.I. Development of verbal regulation of actions of children (in norm and pathology). Moscow: Pedagogy, 1978, pp. 224.
15. Luria A.R. Language and consciousness. Rostov-on-Don: Feniks, 1998, pp. 413.
16. Rubinshtein S.L. Fundamentals of general psychology. Vol. 1. Moscow: Pedagogy, 1989, pp. 486.
17. Solntseva L.I. Tyflopsychology of childhood. Moscow: Polygraph service, 2000, pp. 249.
18. Tsvetkova L.S. Brain and intellect. Defection and restoration of intellectual activity. Moscow: Russian Academy of Education, 1995, pp. 304.