

## The abstract lexicology of children with visual – motor deficits

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### *Abstract*

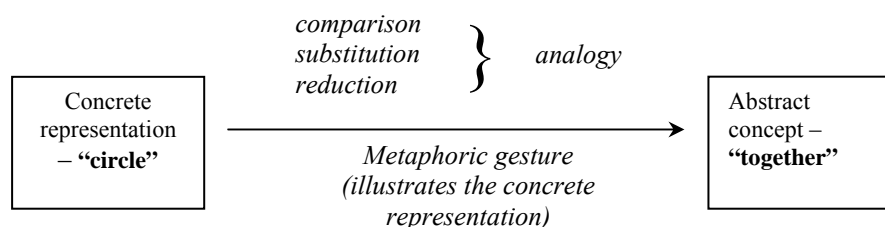
*The basic purpose of the investigation is to show, that the learning of the abstract ideas to a great extent depends and on the quality of the visual representation and the ability of the child to use analogies. In this process the deiktical and the metaphoric gestures play a great role. 16 children without language and visual – motor deficits are investigated, 16 children with language and visual – motor deficits and 16 blind children with language deficits at the age of 7,3 are investigated. From the children it's required to show the localization of 1) prepositions and adverbs for space and 2 ) prepositions and adverbs for time according to their own body. However there is no deiktic gesture for the abstract category time; that's why in the localization of the category for time the deiktic gesture for space is used. The results show, that the children with visual – motor deficits have unstable and fragmental visual representations of the space. They need significantly more time in order to fulfill all the instructions and experience great difficulties in the localization of the time. The blind children from the very beginning do not possess visual ideas and are in an extremely difficult situation in all kinds of problems. The conclusions from the investigation are significant for the logopedic practice, prevention, early diagnosis and specialized intervention of children with strabismus , nistagum and dispraxis of the look by a group of specialists, development of plays with included in them gestures; putting an accent on the ability for reaction according to an analogy.*

### **Theoretical Introduction**

The mastering of the abstract concepts up to a great extent depends on the quality of the visual representations and on the ability of the child to use analogies. One of the most significant conclusions of the cognitive science is this, that the abstract concepts usually become understandable by use of metaphors (Lakoff & Nunez, 2000). The formation of metaphors is a long cognitive process, which in its early ontogenetic variant is based on the comparison with natural or artificial prototypes, supposes substitution (the effects usually are expressed verbally by concepts for physical heat – “he is cold as a piece of ice “) and requires reduction – for example the appearance of the concept for number, requires reduction of the categories size, form, color, spatial orientation of the objects etc. (Desailly, 1992). It is assumed that this process achieves its end at the age of 12.

For understanding of the abstract concepts a great role play the metaphorical gestures. On scheme № 1 the place of these gestures in the common cycle is shown.

*Scheme № 1*



The metaphorical gestures, described by McNeill (1992), are done in the absence of a referent, designated verbally most often with abstract noun or with adverbs, prepositions and other, in order to convert him into a concrete referent, passing “the bridge” from the abstract

concept to the concrete one by means of a concrete illustrative or deictic gesture. Poggio & Caldognetto (1998) contemplate the deictic and the pantomimic gestures as creative structures. As the deictic and the pantomimic gestures are not represented in the consciousness rules for the formation are represented. The gestures are fulfilled in concrete situations, in order to express some meaning and their creation supposes choice of one or more perceptive sides of the referent. When the referent is present in the surrounding context he may be shown. In this way the deictic gestures are created. When the referent is absent in the direct spatial-time context, we must “take him out” of the cognitive store, but this is a more complex task: construction of a concept for the referent, which supposes a process of abstraction and description most of all with the help of the hands. This is the procedure of formation of pantomimic gestures.

Until here the deictic concepts were introduced in connection with their gesture coding. The deixis however may be expressed by means of a kinetic code and verbally. All natural languages possess means for expressing the personal deixis (in the Bulgarian language for example the participants in the communicative act are coded by means of the pronouns and by the forms of the conjugated verbs), of the spatial deixis (for example in the Bulgarian language the objects are located by means of their position towards the speaker by the pronouns – “this” – “that”, the pronoun adverbs “here” – “there”, the verbs “come” – “go” etc.) and of the temporal deixis (for example in the Bulgarian language the time is oriented towards the moment of speaking by the system of the verb tenses, by adverbs as “today”, “yesterday” and “tomorrow” etc.) (Fijalkov, 1982, Montredon, 1998, Moskov), 2000, Shults, 202 and other). The deictic gestures, realized by hand, hands, finger, fingers, chin, top of the nose, distortion of the lips, movements of the head, look, leg, carry out analogical role in the communication.

According to an investigation of Todorova and Yakimova (2006) the Bulgarian boys express the deictic gesture at the age of 11,3 months, while the Bulgarian girls - about 11-th month.

The ontogenesis of the personal deixis is a comparatively early phenomenon, determined by the ability of the child to become conscious as “the actual speaker in the actual discourse” (Shults, 2002).

The neuropsychological norms require the children at the age 3,0-3,6 years successfully to show “up”, “down”, “in front of you” and “behind you” after verbal instruction, between the sixth and the seventh year – to show correctly “left” and “right” towards itself, between the seventh and the eighth year – to direct these gestures and towards the opposite object (Lasarre & Lacanterra – Neybourger, 1996). For the formation of the somatognosis and the orientation in “left-right” the role of the peripheral vision is great.

The temporal deixis is significantly more complex than the personal and the spatial – as well as in conceptual and in language aspect. The mastering of the verbal means for orientation of time towards the communicative situation begins with the inclusion of the first temporal-aspect contrasts between verbs in present tense and in aorist, and after several months – and in future tense. Until the end of the third year most of the Bulgarian children begin to use five of all nine verb tenses ( Stoyanova 2006, 175 -185 ), some basic temporal adverbs appear such as “now”, “then”, “yesterday” “today”, “tomorrow” etc., which at first often are with utmost generalized semantics (Stoyanova 1992; 121-126).

Montredon (1998) comments the possibility by means of the spatial deictic gestures to “show” the temporal aspects of the communication and comments : “It is difficult to imagine the time when in any way the space doesn’t participate”. According Calbris (1985) the present is located shown down, in the feet of the speaker. The future is disposed in the direction of the walking or of the writing – in front of us or to the right, the past – behind us or

to the left. The special literature doesn't propose data for the ontogenesis of the temporal deictic gestures.

In the dyad "space – time" the space appears as a concrete object and the time – as an abstract object.

## **Design of the investigation**

### *Purpose*

The purpose of the investigation is to show the degree at which the mastering of the temporal deictic kinemas (perceived as abstract) depends on the mastering of the spatial kinemas (perceived as concrete) by children without visual problems; children with visual-motor problems and blind children.

### *Tasks*

To make suitable instrumentation for carrying out research experiments; to determine the kind and number of the investigated people (IP), to formulate hypothesis of the study, to draw analogies and conclusions of the results, to give concrete recommendations to the logopedic practice.

### *Hypothesis*

We assume, that for the children with visual-motor problems and the blind children we shall determine qualitative differences in the time for reaction and in the correctness of the answers because of fragmentation or absence of concrete representations due to the vision status.

### *Investigated people*

48 children at the age of 7,3 years were investigated classified into three groups:

- control group – 16 children without visual problems;
- experimental group 1 – 16 children with visual-motor difficulties of the type strabismus and diplopia;
- experimental group 2 – 16 blind children.

### *Instrumentation*

Because of the portability of the spatial deictic gestures in the temporal sphere, an investigation experiment is constructed in which the children must show towards their body:

- 1 - "in front of you", "behind you", "up", "down", "left", "right";
- 2 - "yesterday", "tomorrow", "today";
- 3 - "now", "before one day", "after two days".

As it's seen, in the test are used language units, naming spatial and temporal deictic concepts. These are the adverbs, prepositions and preposition phrases.

### *Results and discussion*

On fig. 1 are shown the right kinetic answers, which are obtained during verbal instructions for showing "in front of you", "behind you", "down", "yesterday", "tomorrow", "today" and "now". Our expectation is, that we shall find out a connection between the achievements in the spatial spheres with these in the temporal sphere, which will form couples "down – today/now", "behind you – yesterday" and "before you – tomorrow".

Instructions for showing	in front of you	behind you	down	yesterday	tomorrow	today	now
Children without problems	15	15	16	7	10	10	14
Children with visual-motor	9	8	14	2	2	9	11

problems

Blind children

11

13

15

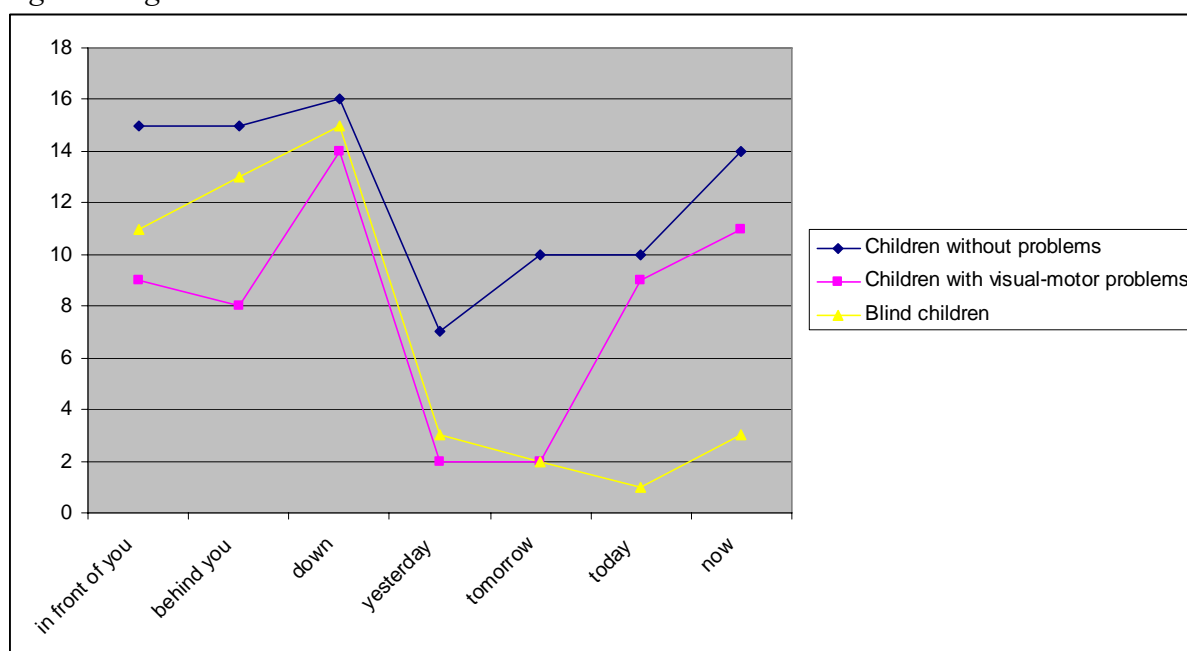
3

2

1

3

Fig. № 1 right kinetic answers



In the spatial field the children with visual-motor problems approach the children without problems only in showing of the spatial locality “down”. The blind children show similar results with respect to the showing “down” and comparatively better results for the other spatial localities in comparison with the children with visual-motor problems. The explanation of this fact we seek in the fact, that the blind children have been trained in spatial orientation and mobility since early age, in order to secure their physical safety.

In the temporal field the children with visual-motor problems follow the trend, comparatively similar with this for children without problems, but with quantitative big difference in the number of the correct answers. A complete coincidence is found out in the frames of the couple “down now/today”. The blind children show as well quantitative and qualitative differences in the answers of the instructions, requiring showing of temporal localization. The greatest difference with the other two groups of children is demonstrated in the inability to localize “today/now”.

For the qualitative analysis it is important to follow to which extent the investigated children of all groups use personal deixis in spite of spatial or temporal. The children without problems use minimum number changes of one kind deixis with another. The children with visual-motor problems use personal deixis in spite of spatial deixis in 19,79% of the cases. The blind children use personal deixis in spite of temporal deixis 36,4 % of the cases and use personal dayksis in spite of spatial dayksis in 9,3 % of the cases. This shows, that in 45,75 % of all tasks the blind children show their bodies in spite of the spatial and time localizations.

### Conclusions and recommendations

The carried out investigation gives information about the peculiarities of the relationships between the spatial, the temporal and the personal deixis for children without problems, children with visual – motor problems and blind children. The children with visual-motor problems follow trends, similar with these, which are shown by the children without

visual problems (with the exception of showing left and right), but differ from them in quantitative proportion. The blind children follow another tendency especially with respect to the right localization of time. The results support our basic hypothesis, that the quality of the visual-spatial representations reflects on the category time. The basic directions in the therapeutic work with the children with visual-motor problems refers to two big fields:

- 1) improvement of the qualities of the visual representations by multidisciplinary therapeutic action and
- 2) systematic and purposeful inclusion of the tasks for comparison, substitution and reduction in the visual modality as well as and for all suitable for the age group of the child tasks for procedures through analogy/metaphor.

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