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VARIETY OF CHILDREN'S NARRATIVES AS THE REFLECTION OF INDIVIDUAL DIFFERENCES IN MENTAL DEVELOPMENT*

The variety of narrative development reflects individual differences in the rate of neuropsychological development: evolution of different hemisphere strategies of information processing and regulative function. Regulative function in a narrative generated to a wordless book or pictures performs the key role because it provides hierarchical structure and semantic programming (global structure). The visual-spatial information processing essentially influences global and local structures of such kind of stories. Many specific features of narratives – incompleteness, omission in the narrative field and distortion of the narrative line, lexical substitutions, syntactical simplicity – are connected with the immaturity of the gestalt strategy of visual-spatial information processing. The visual-spatial information processing turns out to be one of the neuropsychological prerequisites for complex speech programming, especially for a narrative as a discourse type.

Introduction

The purpose of this research is to establish the variety of expanded narratives generated by children aged 6 based on a series of pictures, which is determined by his or her individual neuropsychological characteristics, as well as by the maturity of perception and of processing visual-spatial information.

The material of the research is a number of stories produced by Russian children based on the wordless book “Frog where are you?”. The 24 picture series telling the story of a boy and his dog searching for a runaway frog is standard material for studying the narratives of children speaking different languages (Berman & Slobin, 1994), allowing for insights into the norm and deviation in verbal and cognitive development (cf. Clifford, Reilly, & Wulfeck, 1995; Norbury

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& Bishop 2003). General data on the Russian version of the Frog stories are provided in Durova and Jurieva (1998). Our databank includes 120 audio records of stories told by children aged 5-8 (31 stories were published in Ovchinnikova et al., 1999). The present research deals with 56 stories by children aged 6-7 who passed the neuropsychological tests.

We observed children's speech and cognitive development over six months while working with them at preschool educational courses. There were no children with language or cognitive impairment; every child passed through the IQ test, test of arbitrary memory development, test of neuropsychological characteristics (Akhutina's variant of the test; Akhutina & Pylajeva, 2003). All the children were asked to generate a narrative to the wordless picture book "Frog, where are you?" (Mayer, 1969). 56 narratives from 6 year old children (31 girls and 25 boys) were recorded on tape.

Preliminary notes

This research is an attempt to reveal individual variety by establishing a correlation between relatively autonomous spheres – mental, verbal (linguistic) and communicative. The correlation and interaction of verbal and communicative spheres were discussed by I. Kurcz (2004). She regards cognitive sphere development as the prerequisite for developing verbal communicative competence during the process of socialization.

Fodor (1983) noted that language appears to be processed by an autonomous, encapsulated brain system (module) that operates largely independently of other cognitive operations. From another point of view, from the standpoint of cognitive development modelled by connectionist networks, modularity can be an emergent property of a developing system, without requiring any pre-programmed knowledge (Elman et al, 1996). We are far from discussing the advantages of modularity or connectionism. We just try to find a correlation between specific peculiarities of the mental (cognitive) sphere and definite lexical, syntactical and semantic features of a child's narrative, taking into consideration his or her communicative behavior during recording or video taping.

Individual variety of language acquisition

Differences in language acquisition by children are rather essential. Individual differences in language acquisition are generally believed to reflect both the natural variety and different strategies or styles of language acquisition (Bates, Marchman, Thal, Fenson, Dale, Reznick, Reilly, & Hartung, 1994, p. 86). Summing up the data available in the literature, E. Bates, F. Dale, and D. Thal systemize the stylistic differences in a table (Bates, Dale, & Thal, 1995, p. 123). Different styles are based on the priority of different mechanisms responsible for the acquisition of certain cognitive (and linguistic) structures.

In the Russian scientific tradition, as T. Akhutina points out, variety in language acquisition was first described in 1926, and has consistently been the object of neuropsychological study since the 1990s (Akhutina, 1998). The major stylistic differences and their manifestations in the course of Russian children's linguistic competence development are discussed by S. Tseitlin (2000). Separate stylistic differences in Russian language acquisition in comparison with other languages have also been researched (Dobrova, 2003). The styles are indisputably "extremes" on the scale of native language acquisition which can rarely be found in their "pure form". The complexity of comparing types of children and strategies of language acquisition has been exhaustively covered by T. Zubkova: "Now it is considered to be proved that there are two strategies in language acquisition: the analytic one, which entails a progress from parts to the whole, and the holistic one, i.e., a movement from the whole down to its parts (referential and expressive children are accordingly distinguished). I believe there's a point in speaking not only about the dominance of one of these strategies in a child's linguistic development, but also about the complex intertwining of both strategies in the speech of most children. The formulation of these strategies is a model that simplifies speech behavior, while reality is always more complex than any model" (1999, p. 73).

The problem of establishing the reality of the two styles described by E. Bates and her colleagues as well as the very status of a style has become a much debated issue in Russian ontolinguistics, psycholinguistics, and neuropsychology. The discussion of this problem has resulted in establishing the variety of language acquisition strategies depending on different characteristics of a speaker, and in reconsideration of the concept of the norm of speech development rather than in defining the features characteristic of the analytical and holistic (referential and expressive) styles of child speech behavior (Akhutina, 1998; Tseitlin, 2000). This is the reason for the discussion of individual characteristics over the last few years (and not the stylistic features of language acquisition). Moreover, the diagnostic of speech impairment has been developed, which allows for pinpointing the defects of speech syntagmatics that underlie specific speech failures, and the mechanism of selecting (paradigmatic) a unit (Akhutina, 1998; Fotekova & Akhutina, 2002). So there is a point in studying the manifestations of stylistic differences and paying attention to a child's neuropsychological characteristics.

Mental sphere

The individual characteristics of a child were determined by means of a neuropsychological test and standard psychological testing conducted by a school psychologist. In the neuropsychological test the methods developed by T.V. Akhutina and her colleagues (Akhutina & Pylajeva, 2003; Fotekova & Akhutina, 2002) were used. Additionally, all the children were under observation during a year at classes of speech competence development by playing games. In the course

of the research the variety of the norm conditioned by the unevenness in maturity of higher psychic functions was established.

Since the research was visually supported in order to expand the narrative (a picture series), special attention was paid to the diagnostics of such individual characteristics as the regulatory function, perception and processing of visual-spatial information.

Linguistic sphere

In this research, the linguistic sphere is understood as an individual variant of the national language system represented in a child's mind. The individual linguistic system is developed in an individual's mind from his or her birth through older age as a result of processing diverse cognitive and communicative experience (Lepskaya, 1997; Tseitlin, 2000). The level of linguistic competence partially pre-conditions the success of communication and is directly reflected in speech. The actualization of linguistic competence in verbal behavior is provided by a psycholinguistic vocabulary and grammar, "i.e., a set of units and psycholinguistic mechanisms allowing for handling the elements of the vocabulary" (Rusakova, 1996, p. 118).

Standard speech parameters are analyzed in the recorded children's narratives:

- the length of word forms and simple sentences;
- lexical diversity (the Horwath index: the relation of the number of different lexemes to the total number of word forms);
- syntactic complexity (the relation of the number of complex sentences to the number of simple ones);
- number and length of hesitation pauses.

Apart from these parameters, I also tried to take into account the semantic completeness of description of events depicted in the wordless book.

Narrative is a complex task that requires integration of linguistic, cognitive and social skills. Regarding narrative development, scholars argue that, firstly, a child acquires a script as a kind of verbal rendition of a general representation of events, approximately at the same time that a child produces personal narratives. Nevertheless, both discourse types may develop at different rates in the preschool years (Shiro, 2003, p. 166). Stories differ from the both discourse types by complex hierarchy of events and heroes' motivation (narrative perspective). However, an ideal hierarchy of events in children's narratives (proper structures of complete episodes) does not occur in the narratives of children under age of 7 (Peterson & McCabe, 1983, p. 192).

According to J. Bruner's theory of narrative (1990), narrative includes agentivity (action directed towards goals controlled by agents) and linearization of events and states first of all. Discussing agentivity and linearization B. Bokus distinguished:

- narrative line – the course of changes of referenced reality over time + agents (heroes);
- narrative field – events and states “that are not engaged directly in changes of referenced reality” + participants (Bokus, 2004, p. 393).

As far as I can conclude, both characteristics belong to the global structure or macrostructure of narrative and reflect a child's ability to interpret causes and reasons, the influence of different circumstances, motives and mental states of the heroes of the narrative line and participants in the narrative field. The ability to construct a hierarchical representation of the main story elements – linearization according to J. Bruner – is represented in the narrative's global structure (Berman, Slobin, 1994). In keeping up the existing tradition (Berman & Slobin, 1994; Norbory & Bishop, 2003), I suggest considering a story with “proper agentivity and linearization” as one with a central thesis (the search and finding of a missing frog) kept in place, and all episodes of the search mentioned (i.e., all pictures are described). The loss of the central thesis reflects a defect of the narrative line, the instability of the semantic program. The omission of episodes indicates that the semantic program has been simplified, which is a defect of the narrative field. So I try to examine variety of agentivity, narrative line and narrative field in the “frog stories” of 6-year-old Russian-speaking children depending on the peculiarities of the child's neuropsychological characteristics.

Communicative sphere

The communicative sphere includes individual communicative competence, which reflects the representation of laws, canons and rules of verbal behavior in different communicative acts and situations with different partners (communicators). Specific features of the communicative sphere manifest themselves in the communicative strategies. So I examine preferred communicative strategies of 6-year-olds during recording and videotaping narratives. E. Bates with her colleagues have shown that orientation on persons and high variety of speech acts were typical of the holistic style, while orientation on objects and low variety of speech acts characterized the analytic style. Developing this proposition I suggest that preferred strategies would be rather interactive monologue communication in didactic discourse.

I analyze the following parameters of the communicative sphere in the records of frog stories:

- questions about depicted events, participants, details ($\times \check{n} \acute{i} \check{n} \acute{r} \acute{e} \acute{i} \acute{l} \acute{o} \acute{i} \acute{l} \acute{a} \acute{i} \acute{a} \acute{d} \acute{o} \acute{e} \acute{r} \acute{o}$? – *What is he holding in his hands?*);
- egocentric remarks ($\check{N} \acute{r} \acute{e}$, \div , $\acute{o} \acute{i} \acute{r} \acute{n} \acute{a} \acute{r} \acute{e} \acute{u} \acute{r} \acute{l}$?; \times , $\acute{a} \acute{u} \check{n} \acute{r} \acute{e} \acute{i} \acute{a} \acute{i} \acute{d} \acute{d} \acute{c} \acute{a} \acute{o} \acute{e} \acute{r} \check{n} \acute{u} \check{n} \acute{i}$? – *So what is the next?; What can I think up?*);
- contact remarks (showing the picture: $\beta \acute{a} \acute{i} \check{n} \check{n} \acute{o} \check{n}$! – *I am here!*);
- metacommunicative remarks ($\acute{I} \acute{o} \div$, $\acute{d} \acute{e} \acute{i} \acute{o} \acute{i} \acute{n} \acute{e} \acute{r} \acute{c} \acute{e} \acute{c} \acute{y} \acute{n} \acute{c} \acute{d} \acute{r} \acute{n} \acute{n} \acute{e} \acute{r} \acute{c} \acute{u} \acute{a} \acute{r} \acute{t}$? – *Well then, am I a bad story-teller?*).

Table 1. Distinguishing features of task execution in the neuropsychological tests (% of the total number of children tested)

Distinguishing features of task execution	Total (%)
Element-by-element (sampling probe of dynamic praxis)	66
Simplification of the proposed program (sampling probe)	48
Distortion of the proposed program (sampling probe)	49
Distortion of small details (reproducing the figures by memory)	56
Specular reflection (reproducing the figures by memory)	32
Spreading (copying a three-dimensional object)	19

Discussion of the neuropsychological research results¹

The quantitative data resulting from the neuropsychological testing are summarized in Table 1. The table presents the percentage of children who showed distinguishing features during the tests to the total number of those participating in the research (71 children).

The most frequent defect of the sampling probe is the element-by-element. This is the evidence of inadequate maturity of visual-motor coordination coupled with failures in the programming of a series of movements (Akhutina, 1998). It is noteworthy that weakness of visual-motor coordination was found in 1 of boys tested. Distortion and simplification of the program in the sampling probe give grounds for referring to a general weakness of the programming function. The “spreading” of a three-dimensional object while copying it reflects special right-hemisphere difficulties of visual-motor perception; the distortion of small details while reproducing figures by memory and copying a three-dimensional object—weakness of the left-hemisphere strategy of visual-spatial information processing. Weakness of processing visual-spatial information was found in nearly all children, with both the right-hemisphere and left-hemisphere strategies suffering. The tests showed that most children combine several characteristics that are due to a dependency on the same neuropsychological factor.

Third of the children thus showed a weakness of the programming and control function. Over half of the children experienced difficulties in their visual-spatial perception of the left-hemisphere type (distorting small details while reproducing figures by memory). A third of the children showed right-hemisphere difficulties of visual-spatial perception. 60% of children (17 boys and 17 girls) were characterized by a combination of weak processing of visual-spatial information and a weak regulatory function. On the whole, the revealed distinguishing features can

¹ I appreciate the approval and support of Professor Tatjana Akhutina during my study of language acquisition.

be viewed as typical for the normal development of a 6-year-old child (Akhutina, Pylajeva, 2003).

Not all children who passed the neuropsychological tests participated in the recording of stories to 24 pictures. Additionally, not all recordings turned out to be technically successful. Owing to this we will further discuss the stories of 56 children (of the 71 tested).

Basing on the results of the neuropsychological tests, one can see three groups:

- The first group comprises children with lower capacities of both the left- and right-hemisphere strategies of visual-spatial information processing and a weak regulatory function. These 34 little story-tellers sit on the periphery of the neuropsychological age norm. We shall refer to this group as peripheral.
- The second group includes those authors whose visual-spatial perception is satisfactorily mature, but regulatory functions are inadequately mature. The second group consists of 17 children reflecting the neuropsychological norm. We shall refer to this group as normative.
- The third group consists of “neuropsychologically successful” children. These children, who showed no weakness of the regulatory function during the neuropsychological tests, have adequately mature strategies of perception and processing of visual-spatial information in both right- and left-hemisphere. We shall refer to this group as satisfactory.

Two features thus lay the foundation of the breakdown. First, the level of development of perception and processing of visual-spatial information. While sampling, the children in the peripheral group showed some features characteristic of weakness of the right-hemisphere strategy: “spreading” while copying a three-dimensional object, specular reflection while reproducing figures by memory. The children from the normative group appeared to have no difficulties with the right-hemisphere strategy of visual-spatial information processing. However, they had difficulties processing visual-spatial information of the left-hemisphere type. Finally, the children from the satisfactory group did not have any tangible difficulties in processing visual-spatial information: during the figure reproduction sampling only a few cases of distortion of small details were registered.

Secondly, the three groups are opposed in terms of the maturity of regulatory functions. The relative weakness of regulatory functions was registered in all the children tested. However, the children of the peripheral group showed serious violations: perseverations, the simplification of the program by dissimilation of the sampling elements. The children of the normative group also made mistakes in the sampling probe: element-by-element, micro- and macrography, incompleteness of a row; no perseverations were registered; the cases of dissimilation are few and are corrected by the child. Finally, five children who passed the probe in the most successful way were brought together in the successful group; the only defect registered in their probes was the element-by-element and tremor.

Table 2. Types of narratives depending on the completeness of description of events depicted in the wordless book

	TYPE OF NARRATIVE		
	Complete ("psuedostandard")	Simplification of the narrative field (omission of some episodes)	Distortion of the narrative line (central thesis lost)
Number of narratives	3 (5%)	35 (63%)	18 (32%)

Unfortunately, our material does not allow for distinguishing the maturity of perception and processing of visual-spatial information and the level of regulatory function development: the weakness of the regulatory function is coupled with difficulties the children face in the visual-spatial information processing. The latter is in particular characteristic of pre-school children.

Discussion of the narratives

Global structure (semantic completeness) of narratives

Let us consider a complete narrative with proper global structure (macrostructure) as one with (1) all events described, (2) the main thesis of frog searching and finding manifested. Let us accept such type of narratives as a standard model. Omission of some events means simplification of the semantic program concerned with the narrative field. Loss of the main thesis means distortion of the semantic program concerned with the narrative line. As a result children could not conclude the story adequately.

But it is natural for children to include additional information in their stories. What is more they can include bizarre or irrelevant information. We regard these inclusions as distortion of the initial semantic program given by the book with 24 pictures.

So we found three kinds of narratives (see Table 2):

- Firstly, there were narratives close to the standard model, so to speak «pseudostandard» narratives. The authors lost no more than three events. The semantic program was slightly simplified by the restriction of the narrative field. In any case, we can characterize this kind of narrative as a complete one. We obtained only 3 complete frog stories.
- Secondly, there were narratives with a substantially simplified semantic program with several events omitted and participants of the narrative field. So our 6-7-year-old children omitted several episodes. Several story-tellers included new details in their narratives. We obtained 45 reduced frog stories.

- in the wordless picture book “Frog, Where are you” you can’t find images of a thermometer or a breakfast. However one can see a variant of “the morning script” in the beginning of the story;
- several episodes were ignored by the story-teller: wasp attack, the boy and his doggy escape, meeting the deer, finding a frog family.

Let us proceed to the examples of ‘Frog stories’ of Russian speaking children with different neuropsychological characteristics.

Peripheral group

Below is an example of the narrative by Nadya O. who showed during the neuropsychological tests some difficulties processing visual-spatial information and weakness of the programming and control function. Nadya O. is right-handed, showed weakness of processing visual-spatial information of the right- and left hemisphere types (copied a three-dimensional object by spreading; distorted smaller details while reproducing figures: perceived the object as a whole, processed information by structuring, not classifying); weakness of regulatory functions (the “sampling” probe was executed element-by-element but without perseverations).

Once... mammy sent her own granddaughter to granma... To bring her pies. So she went. She went to a forest. She went, and went, and went. Suddenly she saw a wolf. ... Once upon a time there lived a boy with his puppy. Once he... Once the dog looked at a frog..., and the boy was sitting and looking... at the frog... When he went to bed, the frog escaped from... a small jar... Then the little boy waked up with his dog, and the frog was not in the small jar... He began to search all places...the dog unwillingly dropped the jar and its snout there... and its head got into there... Then it rushed off head over heel with the small jar... is falling. At the same moment the boy... jumped out and held it in his hands... and it licked him... Then they went to shout. Went... to shout... from their home along the path. Suddenly they found a small hive... in the forest... There were bees... they didn't notice, and the dog stood up on two paws and looked into there. Then just... he saw somebody unknown, the boy. And the dog held on the tree and barked and looked at it... Suddenly the hive fell down... And the boy began to climb up the tree, the thickest one. He looked into and was watching... how many... something was. And there was an owl. It frightened him, he fell down and... he was lying on the path... Then he ran... climbed onto the stone and is shouting... then he is looking and hanging on the tree... himself... And a donkey pursued the dog and the dog was barking. Suddenly the boy and the dog began to fall down... into the swamp. And... there was shallow swamp. Then he laughed and held the dog on his head... Then they got out of the water. Then they shouted in the water, but they didn't get attention. They climbed: they were tired of swamp... they climbed over the tree. The dog went up, climbed over the first, and the boy was the second. And they looked at... They looked at and saw little frogs... and saw the frog sitting there... They turned around and saw two frogs. They...jumped with joy... they

then... went... home... They came home and sat down and thought: 'How happy we were today!'

«... Íäci dŕç ... éřér d'íněřér háit̄ áió÷éó čänč ę áráóřęł... Ďčďíc ę č lé îñilñňč... Íír d'irěř. Čälñ-čälñ á ěln. Řěř-řěř-řěř. Áäďóä d'ďřěň' lé íráňňďł-óäiëę... ... Ččě-áüë éřëü÷čę ní háičě ůlíęiě... Íäci dŕç ii... iäci dŕç ní ářęř çŕäë'íóěr ę ë'äóřęł..., ř éřëü÷čę ñčälě ñěiňďłě ... íř ë'äóřéó... Eřiäär ii ělä ñďřňü, ë'äóřęř äüëłçęř čç... éřëliüęié árii÷ęč... Ďiňiě... éřëliüęčé éřëü÷čę d'ďiňiöëň' ññi ářęié, ř-ř ë'äóřiřęř óc l ílnó... á árii÷ęł... Íi äłčäl íř÷řë d'ďiälď'ňü... ñi ářęř áriéó óďiicěř č ěidäié ñóär... č ó ill... äiëiár ñóär óďřěř... d'iňiě iiř ěóáüďęiě d'iiłñěřňü čç ięiř ñ árięié äělnñł... d'řärln... Ř á ñi äďłë' éřëü÷čę... ñďďüäiöë č äłďc řë lí íř đóęřó... ř iiř lai ëčçřęř... Ďiňiě iic d'irěč ęďč÷řňü. Ďirěč... ęďč÷řňü... iň ñáiläi äiëř d'i ñďiďčięł. Áäďóä iic irřěč á ělnó éřëliüęół řčřł÷éó... Ěřë, ääl äüëč d'÷lëü... iic il çŕělnčëč, ř ñi ářęř ññi'ër íř ääóó ěřďřó č ñěiňďłěř ñóär. Ďiňiě dŕç... ii óáčälě ęiäi-ñi ñŕęiäi ilď'i'ñiäi, éřëü÷čę. Ř ñi ářęř äłďc řěřňü çŕ äłďläi č ěř'ër č ñěiňďłěř ñóär... Áäďóä řčřęř óďřěř... Ř éřëü÷čę d'ielç íř äłďläi, íř ñŕěil ñiëñił. Çŕäë'íóë ñóär č ñěiňďčň... ñęiëüęi ñŕë... ññi-ñi ěłc č ñ. Ř ñŕë äüëř ñiár. Íiř lai čňďóäřęř, ii óďřë č... íř ñďiďčięł ěłc řë... Ďiňiě ii d'ialc řë... íř ęřëliü çŕěłç č ęďč÷čň... d'iňiě ii ñěiňďčň č íř äłďläi äčñčň... ñŕë... Ř iňlë äii'lnñ' çŕ ñi ářęié, č ñi ářęř ěř ln. Áäďóä éřëü÷čę č ñi ářęř íř÷řěč d'řärňü... á äiëñi. Ř... ř ýñi äiëñi äüëi iläëóäięł. Ďiňiě ii ñěl'ëň', ř ñi ářéó äłďc řë íř äiëiäl... Ďiňiě iic äüřěč čç äiäü. Ďiňiě iic á äiäl ęďč÷řěč, ii ič íř ęiäi il äďiňčëč äičěřiç'. Iic d'ielçëč: iräiłëi čë á äiëñł... iic d'ielçëč ÷łďłc äłďläi. Ñi ářęř d'iai'ëřňü, d'łďläďřěřňü d'łďäié, ř éřëü÷čę – äñďié. Ř ñěiňď'ñ iic... Ñěiňď'ñ iic: ë'äóřŕñŕ... č óáčälëč ñó ë'äóřéó... ęiňiďŕ' ñŕë ñčälěř... Ďiälďiöëčňü ířçŕä č óáčälëč ääl ë'äóřęč. Iic... č d'ŕäiňñił çŕďŕäiäřëčňü... iic d'iňiě... d'irěč... äiëié... Ďččřëč äiëié č ñčä'ñ, äóęřŕñ: «Eřęié óiďiřčé äliü äüë ñłäiäi'!»

Thus the main characteristic features of the narrative are:

- setting out with the beginning of a well-known fairytale (instead of unfolding the narrative based on the given series of pictures, suggests a verbal stereotype);
- lexical replacements: *iňlë* (a donkey) instead of *iělíü* (a deer), *äłďläi* (a tree) instead of *áđłäi* (a log), *d'ielçëč* (climbed) instead of *d'łďłëłçëč* (climbed over), *ič íř ęiäi il äďiňčëč äičěřiç'* (didn't get attention...) instead of *il' iäďŕñčëč äičěřiç'* (didn't pay attention);
- failures in lexical choice that lead to imprecise description of the picture: *ěóáüďęiě d'iiłñěřňü čç ięiř ñ árięié äělnñł* (the dog... with the jar: the dog falls from the window with a jar on its head), *iňlë äii'lnñ' çŕ ñi ářęié* (the donkey pursued the dog: the dog standing aside in the front is barking at a deer carrying the boy away), *ñi ářéó äłďc řë íř äiëiäl* (he was hold-

- ing the dog: the dog is sitting on the boy's head), etc.;*
- low lexical diversity: repeating the item used before: *ěřělíüęé áříî=ęł ... (a small jar) ěřělíüęé ěřěü=čę (a little boy); đřäîññí çřđřäîârěčñü (jumped with joy);*
 - a single case of agrammatism: *óáčäl ěč ääl ě`ăóřęč (saw two frogs with noun in Nominative instead of äáoö ě`ăóřłę with noun in Accusative);*
 - a fairly large number of hesitation pauses—pauses within the limits of a syntagma required for specifying the semantic program (incoherent speech);
 - low diversity in using the means of coherence;
 - grammar structures of the same type;
 - omission of episodes depicted on the pictures being described;
 - no reference to cause-effect relations of the episodes.

The narrative fails to embrace all the events depicted in the pictures, some episodes are omitted (e.g. the dog fleeing the bees), one phrase at most is used to cover every adventure of the boy or the dog. So this narrative has defects of narrative field. Lexical replacements lead to the distortion of a number of episodes. Moreover, it is hard to tell by the girl's story whether she has grasped the central thesis. The story-teller just states the facts (*ě`ăóřííęř óč ł í ĺñ ó... â áříî=ęł – There wasn't the frog in the jar yet*) without interpreting the disappearance of the frog as a flight, and the actions by the boy and the dog as the search. In the meantime there are still some interpretations of the heroes' actions: *íř ä ĺłēī čě â ář ěī ñ ł (they were tired of the swamp); äöě ř ț ñ: «Ēřęéé őîđřčé äliü äüě ĺłäi!» (they think: 'How happy we were today')*. In the end the girl argues that the “detectives” *óáčäl ěč ñó ě`ăóřęó... ęîñîđř` ñřě ñčälěř (saw the frog... sitting there)*, from which it's unclear whether the demonstrative pronoun *ñ ř (that)* is used to refer to the frog sitting on the log, or also to the missing one. This sort of a narrative is incomplete, one can see defects of the narrative line.

The narrative suggests a defective capacity of programming, the grammatical and lexical structuring of the text. Relatively frequent lexical replacements suggest the difficulties in choice of a linguistic unit. In accordance with the criteria of schoolchildren's language impairment diagnostics (Fotekova & Akhutina, 2002), the “front” difficulties reflecting the weakness of the programming and control functions are revealed. The weakness of the regulatory function is also laid bare at the beginning of the story: the girl makes attempts to employ the available speech patterns, namely the fairytale about little Red Riding Hood. Finally, we should mention the frequent hesitation pauses – the incoherence of speech, which underlies the troubles in constructing and expanding the minor program – the program of a separate utterance (a simple sentence or a clause, or even a syntagma). This kind of defect of coherent speech has been registered with people suffering from dynamic aphasia (Akhutina, 2002). In dynamic aphasia the psychological system of speech is disturbed, first of all the planning of spontaneous speech (ibid, p. 53). If we are dealing with an adult speaker, he or she suffers from defects of program-

ming a speech utterance, while with a six year old it's only immaturity. For a six-year-old girl (or a boy) with a weak (compared with her/his age norm) regulatory function the generating of a story based on a series of 24 pictures proves to be a challenging task. There were defects of both narrative line and narrative field.

On the whole, Nadya O.'s speech has more characteristics of the expressive style.

Normative group

Let us consider the narrative of Oleg M. The boy's visual-spatial perception is satisfactorily mature (both of the right-hemisphere type and (adjusted to his age) the left-hemisphere type), although smaller details are distorted while reproducing figures by memory. Regulatory functions are inadequate (element-by-element in the trial of dynamic function and simplification of the program during the "sampling" probe).

The boy looked at the doggy, while it was looking at a frog in a jar. Then the frog jumped from the can... hm... the boy got surprised, and the doggy climbed on him.. Then he... pu-... began to put on his clothes..., hm... and the dog put its snout there... in the can. He opened the window. Hm- the dog climbed out there, too. Suddenly the dog fell down. He we... went out, got the doggy, went to the bank of the river and is shouting the frog. And... then he saw a burrow, and... hm... there was an anthill on the top... not an anthill, but... the place, where bees live. Then a bee bites him. Then there... the house, where bees live, fell down and the boy climbed up the tree. Suddenly he fell down and and an owl flew out. And... And the dog... ran away... The boy began to run away from the owl or the bees. Then he began to call the frog and... and the dog. Then he found...someone's... hm... n... No. Then he sat on... hm...I don't know what it is called... with the horns, probably, on a seal, and started riding with the dog. And there was a mountain, a small one, a rock, a small one. He braked harshly. The boy... toppled over. The dog braked and fell down. On the hole, the boy and the dog fell down. Then... they... found the bank clim... ous... found the log clim... and the bank, climbed on it. Then they lied down for a while, then they got up, went ... and found there the frog. And exclaimed: 'Hurrah!!'

« Ěřëü÷čë ñëĩñďlě ĩř ñĩár÷ëó, ëřë ĩĩř ñëĩñďlěř ĩř ë`ãóřëó á áříëó. Ďĩñĩë... ë`ãóřëř áũďďũáíóëř...ý- ěřëü÷čë óáčáčëñ, ř ñĩár÷ëř ĩř ĩlái ĉřělčëř. Ďĩñĩë ĩĩ...ĩ- ñňřë ĩälárñüñ`..., ý- ř ñĩár÷ëř ĉřńóíóëř ñóär... ëĩďäĩ÷ëó á áříĩ÷ëó. Íĩ ĩñëďũë ĩëĩĩ. Ý-ñ-ñ-ĩár÷ëř ñĩć ĩ ñóär áũëlčëř. Ñĩár÷ëř áäďóã óďřëř. Íĩ áũř- ěřëü÷čë áũřlě, äĩñňřë ñĩár÷ëó, ďĩř, ë ĩř áłďlā ďlëč č ëďč÷čñ ë`ãóřëó. Č... ďĩñĩë óáčälě ĩĩ ĩĩďëó, ř...ř áálďďó áũë ëóďř... ĩl ëóďřálëĩčë, ř... ñřë, ääl ď÷, ëũ ććáoñ. Ďĩñĩë lāĩ óëóñčëř ď÷lěř. Ďĩñĩë ñřë... äĩëčë, ñřë, ääl ď÷, ëũ ććáoñ, óďřë, ř... ř ěřëü÷čë ĉřělč ĩř áłďlāĩ. Áäďóã ĩĩ óďřë, č č áũëlñ lěř ñĩár. Ř... ř ñĩár÷ëř... óálć řëř ... Ěřëü÷čë ďlāĺć řë ĩñ ñĩáũ čëč ĩñ ď÷, ë. Ďĩñĩë ñňřë ëďč÷řñü ë`ãóřëó č... č ñĩár÷ëó.

Ďîñîě îí ířř, ě... ÷üč-ñî đîár...ý... í... Íľň. Ďîñîě îí ñîě íř...ý-ý íř... íľ çířř, ěř ě ľáí çîáóň... ñ đîárěč, ířáľđíí, íř ñřěľí, ě đ'íľóřě ñ ñíár÷ęíé. Ć ääđóä... äüěr äíđr, íľáí ěüřr' ñřęř', ñęřęř ñřęř' ěřěľíüęř'. Íí çrñîđě íçěě đľęěí. Ěřěü÷ěę... đ'íľęóáüđíóěň'. Ñíár÷ęř çrñîđě íçěěř ě óđřěř. Á íá ũľě, ěřěü÷ěę ě ñíár÷ęř óđřěč. Ďîñîě... îíě... ířřěč áľđľă äüěľç... íé... ířřěč áđľáíí äü-... ě áľđľă, äüěľçěč íř íľáí. Ďîñîě îíě ñřě đ'ěľěč řěč-đ'ěľěč řěč, đ'îñîě äñ ñřěč, đ'ěľěč... ě...ě ířřěč ñřě ě'ăóřęó. Ć çřęđě÷řěč: „Óđr!”»

Let us systematize the characteristics of the narrative:

- small defects in lexical choice: *ě óđřáľéíěě* (an anthill), *ä ěěě*, *ääl đ÷ľěü ě ěâóň* (the house, where bees live), *ñ řěľíü* (seal: in Russian words seal and deer sound similar); however, in all these cases the boy corrected himself;
- using colloquial metaphors *ñíár÷ęř çrñîđě íçěěř* (the dog braked);
- attempt to use precise terms *äíđr, íľáí ěüřr' ñřęř', ñęřęř ñřęř' ěřěľíüęř'* (a mountain, a small one, a rock, a small one);
- attempt to interpret and evaluate feelings and thoughts of the heroes *ěřěü÷ěę óäěäěěň'* (the dog got surprised);
- certain uniformity of grammatical structures;
- omission of some details and episodes;
- hesitation pauses for self-correction;
- attempts to interpret the cause-effect relations of the episodes *đ'îñîě äñ ñřěč, đ'ěľěč... ě...ě ířřěč ñřě ě'ăóřęó. Ć çřęđě÷řěč: «Óđr!»* (then they got up, went ... and found there the frog. And exclaimed: 'Hurrah!').

The features of the analytic style predominate in this narrative. Regarding Oleg's frog story one can see small defects of the narrative field.

Successful group

Let us discuss specific peculiarities of the narrative of “successful” storytellers. Let us have a look at the narrative by Dima O. During the neuropsychological tests Dima did not show weakness of the regulatory function. The boy has an adequately mature right-hemisphere strategy of processing visual-spatial information and a satisfactorily mature left-hemisphere strategy. Passing the neuropsychological tests, Dima outperformed the others.

The boy... went out... of his home to the street to go for a walk and found a doggy there... The boy caught the frog and looked at it. The doggy looked at it with him, and then he... fell asleep. The frog jumped out. The boy waked up and had a look at... the frog was not there... and he looked for it everywhere, even in the street. And in the street it... jumped out... when he loo... looked out of the window. It turned out that it was on the window. And then it... then the doggy...fell out of the window... and the boy went through the door... and went out, and it... Then they went for a walk, and the doggy saw... a house of bees. Bees flew out, and the boy with and the doggy got frightened... and ran away, and bees after

them... pursued them ... Then they came up again, then when these bees... flew away... to their home... the boy ran and at the same time... the mole crawled out of the burrow... The boy saw the mole and told it: "Have you seen the frog here?" The mole said: "No, I haven't." Then the mole buried itself in the... burrow... and... crawled away, and the doggy... looked at the tree... And this... There was a house, it wasn't a round one, as usually, it was an oval house of bees... And then... he, the doggy... bees... threw down the house of bees. The bees became angry and pursued the doggy. And at the same time the boy hid on the tree, and then he fell down from there. And the doggy... ran away. It thought that the bees... banged it so terribly.

(Dima hesitated and looked at the experimenter thoughtfully.

The experimenter: *Do you see anybody else in this picture?*

Dima *I see the bees.*

The experimenter: *And who is it?*

Dima: *An owl.)*

... The owl frightened the boy and he... wanted to run after the dog and the owl prepared to attack. And the boy ... fell down. The boy then hid behind the stone, and the owl didn't find him. And then the boy dismounted on the top of the stone and began to call it. And the doggy went far away. And then a moose followed the doggy. And where the doggy ran, there was a slope. The boy ran to the doggy and they both tilted... into the river. And the boy when fell down the doggy fell down on him and they all became dirty, and then they... got out of the water. The boy... it... the boy it... told to get on the bank quickly. Then they... on the log... laid on the log and had a rest. And then, when they had a rest, they saw the frog. And then they caught it, and took it home, and put it in the can... And dog... and then they climbed on this slope.

« Ěřëü÷čę... áũřľë... čę äïēr íř öęcöó d'ĩaöë`ñü č ířř, ě ñřě ñí ář÷ęó... Ě řëü÷čę d'ieērë ě äóřęó č ñéĩñďľë íř íľ, . Ñí ář÷ęř ñíc ľ ñ íčě ñéĩñďľë, ř d'ĩñě íi... óñíöë. Ě äóřęř äũñęř÷čęř. Ě řëü÷čę d'đĩníóëñ`č d'ĩñěĩñďľë, ÷ñí ě äóřęč íľñ ó... č äľčäl d'ĩñěĩñďľë, äřčľ íř öęcöľ. Ř íř öęcöľ íir... äũñęř÷čęř... ěĩäär íi íř... d'ĩñ... äũäë`íöë á íęíí. Íir äũëř á íęíľ, í ěřčũár ľññ. Ř d'ĩñě íir... d'ĩñě ñí ář÷ęř... äũárččëřñü čę íęir... č... ě řëü÷čę d'ĩř, ě á äaldü... č äũřľë, ř íir... Ďĩñě íic d'ĩřčč äöë ñü, ř ñí ář÷ęó óáčäl ěř... äiečę d÷, ě. Ď÷, ěü äũëľñ ľč ě ĩñńóär, ř ě řëü÷čę ñ ñí ář÷ęř é čñd'óärččñü... č d'ialc ř ěč ĩñńóär, ř d÷, ěü ěř íččč... d÷, ěü ěř íččč ěľñ ľč... Ď ĩñ ě ĩč ľú, d'iaĩřčč, d'ĩñě, ěĩäär d÷, ěü ýñ... óëľñ ľč... á äiečę... ě řëü÷čę d'ialc ř ě ěř íččč, ř ěđĩñ á ñí äďľë... äúďieč čę ííďú... Ě řëü÷čę óáčäl ě ěđĩñř č ñęřčř ěó: „Ñü íľ äčäl ěčäl ñü ě äóřęó?“ ěđĩñ ñęřčřë: „Íľñ.“ Ď ĩñ ě ěđĩñ ěřďúëñ`íáďřñíí á íi... á ííďó... č... óďieč, ř ñí ář÷ęř... d'ĩñěĩñďľë íř äľďälí... Ř ýñí, äiečę äũë íľ ěđäëũë, ěřę íáũ÷íí, ř íârëüíúé ó d÷, ě... Ř d'ĩñě... íi, ñí ář÷ęř... d÷, ě... äiečę d÷, ě ñárččëř. Ď÷, ěü đřñł đäččëñü č ěř ñí ář÷ęřé d'ieľñ ľč. Ř ě řëü÷čę á ñí äďľë`ñďđ`ñřëñ` íř

áldlái, č d'îñîë ód'rë îñnóär. R' ní ár=er... óálc r'ër. Íir äöer'ër, ÷ñî ýñ î d'÷, ëü í, ñrë... ñđlñíóëč.

(Äčër, đřčäë`áúár` erđñčíeó, eîēláēlññ` č âiđđîñčñlëüíî ñēîñđčñ ír âçđîñēüé: *Íčēīāi íl āčāčrū lū, ír ýñîé erđñčíeł.*

Äčër: *Áčcó, d'÷, ë.*

Äçđîñēüé: *R' ýñî eñî?*

Äčër: *Níár.)*

Ěrëü÷čë níáo čñđóärëñ', č... ôi ñ lë đíálc rñü çr ní árēíé, r' ní ár đđčāîñîáčërnü, r' ërëü÷čë lū, ýñî... ód'rë. Ěrëü÷čë d'îñîë ñđđ` ñrëñ` çr erēlîü, r' ní ár lái íl ír'rër. R' d'îñîë ërëü÷čë ír áldđóřëó erēi` ñēlç, č ññrë í, çárñü. R' ní ár=er ärēl eî-ärēl eî ór'ër. R' d'îñîë ëîñü çr ní ár-r=er é đíálc rë. R' eóär ní ár=er đíálc r'ër, ñrë áüë ñēēií. Ěrëü÷čë đíálc rë e ní ár=er, č iič äāîl ñârēčëčñü... â đl=éó. R' ërëü÷čë eīāär ód'rë, ní ár=er ír ílāi ód'rër, č iič āñl čçërđr'ëčñü, r' d'îñîë... áür'ëč čç āi äü. Ěrëü÷čë... í, ýñî... ërëü÷čë í, ... í, āiāiđčë, ÷ñiá íir đíáüññđl ír áldlā çrāđr'ërnü. Đîñîë iič... ír áđlāií... ēlāëč, č îñāiōiōëč. R' d'îñîë, eīāär iič îñāiōiōëč, iič ë`āōřëó óáčālëč. R' d'îñîë í, äç`ëč, č äiēíé đđčílñëč, â áriéó íđ`ñü đ'îñr'äčëč... R' ní ár=er... č d'îñîë đí ýñîé đl=er íáđr'ñií đí ñēēiíó erđr'áer'ëčñü.»

Let us regard the main characteristics of Dima's narrative:

- small defects in lexical choice *ä iëčë d'÷lë* (house of bees); *ír áldđóřëó erēi` ñēlç* (dismounted on the top of the stone);
- using vernacular lexicon *ñđlñíóñü* (bang);
- using precise terms *çrđüëñ`* (buried himself), *erđr'áer'ëčñü* (clambered)
- single case of agrammatism *íl āiāiđčë* (speak her);
- using parentheses and clarifying expressions *erë íáü÷íî* (as usually), *ñëó÷r'ēií* (occasionally);
- using vernacular grammatical forms *čñđóärëñ` níáo* (Accusative) instead of *ñi áü* (Genitive) (got frightened owl instead of of owl), *ñđđ` ñr'ëñ` ír áldlái* (Accusative) instead of *ír áldlái* (Locative) (got hidden on the tree);
- distortion of the complex sentence structure (*r' eóär ní ár=er đíálc r'ër, ñrë áüë ñēēií* – and where the doggy ran, there was a slope);
- hesitation pauses for self-correction;
- using typical narrative frame (*The boy... found the dog... Then he caught the frog...*);
- he refers rather seldom to cause-effect relations of the episodes.

Overall, the story told by Dima is semantically complete. The boy tries to realize the frame of the narrative, introducing in the beginning and the end the episodes that were not depicted in the pictures: the boy's meeting with the dog in the street, the catching of the frog, putting the frog back into the can. By the end of the recording Dima was visibly tired; in the last third of his story there were some

failures in the realization of the complex sentence program, agrammatism, vernacular and colloquial elements. The tendency to get tired was noticed by using the surveillance camera. The boy's usage of parentheses, which is rather uncommon for expanded narratives of six-year-olds, and his attempts to use precise terms are also noteworthy (*ä îěčę... îârěüíúé* – *the oval house*; *ęđîň çřđúěň* – *the mole buried itself*; *îíč âńĺ ččěřđřěčńü* – *they all became dirty*; *đî ñęěî í ó ęřđráęřěčńü* – *were clambering on the slope*). We consider that the features characteristic of the referential style prevail in Dima O.'s narrative.

Dima's story differs from the narrative by Nadya O. first of all because it demonstrated the completeness of realization of a semantic program set by the picture series, his attempts to interpret cause-effect relations and the heroes' internal mood (by using the verbs of speech and internal mood: *ăîâđčńü* – *to speak, to talk*; *ăöěřńü* – *to think*, *čńđ'ôărńüň* – *to get frightened* etc.). The difference between Dima's story and Oleg's narrative lies in syntactical coherence and semantic completeness. The stories of the children from the third group represent the global structure adequately, with omission of one or two episodes (simplification of the narrative field), but without defects of the narrative line. Moreover, the agentivity is clear due to evaluative lexemes interpreting the heroes's feelings, thoughts and motives.

Discussion of the communicative strategies

The variety of communicative behavior of children during recording and video taping can be systematized in three communicative strategies.

The first communicative strategy can be described as a monologue communicative model. Determining the monologue communicative behavior N. Yuryeva noted: "Speech utterance is aimed at developing the situation of activity, at reconstruction of an imaginary situation, at planning activity and its results" (Yuryeva, 1998, p. 57). During generating a narrative a child ignores the possibility to ask for help even when faced with difficulties. He or she aims at an independent generation of a story.

The second communicative strategy, still a monologue, includes elements of obvious dialogue interaction between a child and an adult. Sometimes the child told his or her story and turned to the adult for explanation. He or she wondered about depicted animals, objects, details. The child's remarks are concerned with the topic of the utterance, but not the communicative situation as a whole. In this case, the little story-teller asked some questions: *Ă îň ñóň ÷, -ňî, ' íĺ đřéěó, ÷ňî ýň î ?* (*Well I can't understand here what it is*); *Ýňî ęňî - äĺâî ÷ęř ččě ęřěü÷čę?* (*Who is there? Is there a boy or a girl?*). A little narrator could make a more precise correlation between his or her utterance and depicted events: *Ă îň ýňî âîň ' đřňňęřčřě č âîň ýň î* (*I told about this and that*); *Ýňî óć Í íîâî ĺ?* (*Is it already a new thing?*). The child expected the adult's answers and reactions. All the questions and remarks of the story-teller were determined by the communica-

tive situation of generating a narrative to the wordless book. Thus a little communicator used questions and contact remarks.

The third communicative strategy represented an obvious and direct appeal to the adult. A child treated an adult as a listener and a partner in the process of frog story generating. The little story-teller was oriented towards the natural communication with an adult person, he or she ignored the status of the adult experimenter and expected parents' help, approval, support. The remarks concerned the communicative situation as a whole. He or she commented the recording of his or her story or complexity of the generating narratives: *Ňř-ře, ó írń... î,, óc í äî d'ňîé (ęđńćíęč), írě-ňî íl çřěĺńčě (Well, we... ous, I am up to the fifth (picture in the wordless book) already, I haven't noticed); ×, áú Ňřęî äî dčäóérňü-ňî? (What can I think up?).* These remarks I interpret as egocentric ones, they reflect difficulties in the realization of the narrative semantic program functioning as an external support to the internal semantic program. At least a child produced metacommunicative remarks, asked for approval: *Íó ÷,, ð'ëî õî Ňřęęč ýňč đrńňęřčúâr †? (Well then, am I a bad story-teller?).* There were a wide variety of speech acts represented by different remarks of a child.

The second strategy predominates in our materials. Children from all groups used the monologue strategy with elements of obvious interaction between a child and an adult. Interaction between child and adult aimed at the successful producing of frog stories. Little story-tellers at the age of 6 preferred to contact an adult in the process of generating narratives. Only children from the peripheral group preferred obvious and direct appeal to the adult sometimes, neglecting the official status of the experimenter.

The variety of communicative behaviors of 6-year-old children in the process of recording and videotaping the narrative generating appeared to be a kind of linguistic didactic dialogue discourse. N. Lepsкая characterized this type of discourse as metalinguistic (1997). This type of discourse predominates at the early stage of language acquisition in adult-child dialogues and remains till the school years. Certainly it differs from the natural setting.

Nevertheless, three spheres develop in the adult-child dialogues: cognitive, linguistic and communicative ones (Kazakovskaya, 2003). The representation of the world in the child's mind becomes more complex and definite, concepts gain new connections and frames combine in new scripts. A child acquires new words and usage rules of his or her native language. At least the communicative competence develops. Communicative competence is often considered as a pragmatic one: it includes knowledge and different abilities providing the processes of verbal utterance production and interpretation in the context (Bialystok, 1993, p. 43). R. Schmidt (1993) suggested paying attention to awareness of the child's speech intention in the different communicative situations. He insisted that a child becomes aware of his or her intention and this awareness varies in different communicative acts with different adult persons (Schmidt, 1993, p. 23).

Probably different extents of child awareness was reflected by different communicative strategies. Children who chose monologue strategy became aware of the distinctive features of the communicative situation with the adult recording their narratives. So they reacted to the probability of testing their abilities and "correctness" of the narrative and tried to fulfil the task independently. Other story-tellers did not interpret the communicative situation as a particular one and appealed for the experimenter's help, approval and support. These children adapted the communicative situation to a usual one. The children with weakness of the regulative function need to adapt to usual adult-child dialogue. Probably a weak regulative function manifested itself in the simplification of the communicative situation.

Statistical verification and interpretation of influence of neuropsychological characteristics on the variety of generating of coherent narrative (by ANOVA)

Let us try to determine the extent of difference in children's narratives depending on the characteristics discovered as a result of the neuropsychological tests: the weakness of perception and processing of visual-spatial information and the weakness of the regulatory function, as well as their combination. Using the one-way analysis of variance we verify statistical certainty of influence of these characteristics on such factors as syntactical complexity ($F(2,2)=7.83, p<0.01$), lexical diversity ($F(2,2)=9.21, p<0.01$), the number of hesitation pauses ($F(2,2)=0.50, p<0.01$), and semantic completeness ($F(2,2)=2.62, p<0.01$).

Based on our material the influence of the three factors was only revealed in respect to combinations of characteristics: the weakness of processing visual-spatial information + the weakness of the regulatory function. The influence of the combination of characteristics has statistical certainty for completeness of narrative, syntactical complexity and lexical diversity.

The resulting characteristic has no substantial influence on the number of hesitation pauses. The number of these pauses must strongly depend on other factors that are not controlled in this research. Multiple hesitations and false starts are characteristics of the speech of children with verbal development disturbances (lexical-syntactic syndrome, Rapin, 1992, p. 23) and SLI. Additionally, hesitations reflect difficulty of internal speech planning. We earlier established that pauses of hesitation related to self-correction occur more often in the narratives of attentive girls (Ovchinnikova, 2000). The level of attention development is in a certain way dependent on the regulatory functions; however, this dependency is not simple. We can't argue that attentive children haven't difficulties in the programming and control of complex activities. However, hesitation pauses occur in the narratives of attentive girls much more rarely and the pauses of self-correction occur much more often. During recording and videotaping narratives, hesitations are probably a natural phenomenon in any child's speech.

Syntactical complexity of the narratives is influenced by immaturity of both hemisphere strategies in visual-spatial information processing. Subordinate sentences occur essentially frequently in narratives of children with strong regulative function (Akhutina 1998; Norbury & Bishop, 2003). They tried to produce subordinate sentences in order to represent cause and effect, consequence, attribution, while children with weak regulative function often express consequence, causality and other relations between events by sequence of simple sentences and lexical markers (particles, conjunctions). The children from the normative group produced complex sentences more frequently than others. They verbalized the consequence of events and connection between actions of different heroes in mainly complex syntactical structures.

Lexical diversity of the narratives is strongly influenced by the control factor. Story-tellers with weakness of the visual-spatial information processing from the peripheral group used limited number of different words and they often mistook in their lexical choice. Lexical substitutions were rather typical for their frog stories: *the elk*, *the goat* instead of *the deer*, *the tree* instead of *the log*, etc. The reasons for such lexical substitutions (perceptive-verbal mistakes: Akhutina & Pylajeva, 2003, p. 13) lie in weakness of the left hemisphere strategy in visual and auditory information processing. Lexical poverty is a secondary defect, it reflects problems in communicative experience connected with the weakness of information processing and the regulative function.

The global structure (semantic completeness) of a narrative depends on maturity of both brain hemispheres. Immaturity of the both brain hemispheres in a child essentially influences the realization of the narrative line. The children with weakness of left and right hemisphere strategy in visual-spatial information processing in conjunction with weak regulative function simplified and sometimes distorted the semantic program, and misrepresented the narrative line. They couldn't generate a complete narrative. We should particularly note that distorted narratives with a loss of the central thesis were only found in the narratives of children of the peripheral group.

Speaking about narrative field we need to conclude that it was substantially simplified by children with weakness of both (left and right) hemisphere strategy in visual-spatial information processing in conjunction with weak regulative function. They couldn't generate a complete narrative. However, children from the first group usually lost one or two episodes. Probably the simplification of the narrative field is the peculiarity of narratives of 6-year-old children.

In other words, statistical certainty was found for the difference between the peripheral and normative + successful groups. Within the normative and successful groups, the difference between the children with a weak left-hemisphere strategy of visual-spatial perception and the children with a relatively mature left-hemisphere strategy of visual-spatial perception who did not show weakness of regulatory functions are statistically nonsignificant.

Table 3. Medians of verbal parameters of children's narratives

Group based on the results of the neuropsychological tests	VERBAL PARAMETER	
	Syntactic complexity	Lexical diversity
Peripheral	0.087	0.474
Normative	0.104	0.486
Successful	0.068	0.514

Interpretation of the variety of generating of coherent narrative

The narratives by children of the peripheral group are essentially different from the rest. The Median meanings for two factors (syntactical complexity and lexical diversity), which depend on the combination of the weakness of visual-spatial information processing and weakness of the regulatory function, are represented in Table 3.

The following features were found characteristic for the narratives of authors from the peripheral group: syntactical simplicity (the median of the syntactical complexity coefficient is 0.087); repetition of the same lexemes leading to a relative lexical poverty (the median of Horvath index is 0.474); frequent hesitation pauses; semantic incompleteness. Naturally, all the characteristics listed above do not occur simultaneously in the narrative of every child with a weak capacity of processing visual-spatial information and of the regulatory function.

The differences between the narratives by children of the normative group and those from the successful group who were opposed based on the expressed/unexpressed weakness of the regulatory function, cannot be evaluated as substantial. In our sampling the weakness of the regulatory function possibly occurs noticeably only in a combination with the weakness of perception and the processing of visual-spatial information. It is noteworthy that the following features tend to be characteristic of the narratives by children from the successful group: the highest value of the lexical diversity coefficient (0.514); the simplest syntax (median of the syntax complexity coefficient is 0.068); few hesitations, semantic completeness. One may also note that these characteristics—lexical diversity, attempts to find precise terms—are characteristic of the referential style.

As far as we can consider, "neuropsychologically successful" children producing narratives with the characteristic of the referential style generated complete narratives without defects in the narrative line. The simplification of the narrative field is the peculiarity of narratives of 6-year-old children. However, B. Bokus (2004, p. 393), Richner and Nicopoulou (2001) argued: "Adult oriented and artificial contexts for story production exclude resources and motivations that lead children to generate richer and more sophisticated stories". Thereby artificial contexts (as word-

less books) misrepresent a child's strategy of generating narratives. Possibly the simplification of the narrative field characterize only artificial narratives, generated to pictures or to wordless books. Nevertheless, the same feature of children's narratives coupled with defect in the narrative line was discussed by A. Luria (1979), D. Slobin & R. Berman (1994), C. Peterson & A. McCabe (1983). The latter authors connected defects in narrative structuring with spontaneous associativity of a child under the age of 5. As C. Peterson & A. McCabe argued, restructuring of a child's behavior (including speech behavior) occurs from 5 to 7 years when spontaneous associativity yield to arbitrary planning (1983: 192). By the way, the same interpretation was given by A. Luria to spontaneous monologues of children under the age of 4. Thus the simplification of the narrative field appeared to be a characteristic of children's narratives connected with their age.

Let us try to relate our results with stylistic differences. We should reiterate that in the narratives by children of the peripheral group features of the expressive style were found, while the narratives by the successful group showed features of the referential style. The narratives by children of the normative group were not dominated by the features of one style.

The lexical diversity of narratives gradually grows from the peripheral to the successful group. The most complex syntax was found in the stories told by the children of the normative group (a median of 0.104). As we earlier pointed out, these are the children with a mature right-hemisphere strategy of perception and processing of visual-spatial information. In this case grammar complication, which is the characteristic of the right-hemisphere holistic style, evidently takes place, sometimes to the detriment of the precision of nomination.

Nevertheless, we should note in particular that no significant correlations between neuropsychological characteristics and the analytic / holistic style were found. We can only speak of a tendency when the features of the expressive style prevail in the narratives by children with weak regulatory functions and the processing of visual-spatial information. Similarly, we should note the tendency, when the features of the referential style prevail in the narratives by "neuropsychologically successful" children.

Conclusion

The weakness of the left hemisphere strategy in the visual-spatial information processing and weak regulatory function are rather typical for children at the age of 6. What is more, many of 6-year-old preschoolers showed difficulties of the right hemisphere strategy in the perception and processing of visual-spatial information. The tests showed that most children combine several characteristics that are due to dependency on the same neuropsychological factor.

The immaturity of the right-hemisphere strategy of processing visual-spatial information coupled with the weakness of the regulatory function thus have a

significant influence on the variety of children's narratives based on a picture series. Owing to the immaturity of the gestalt strategy these children probably find it difficult to grasp and stick to the narrative thread, and still more difficult to realize it adequately by verbal means. That must be the reason why the narratives were only distorted by children with an immature right-hemisphere strategy of perception and processing of visual-spatial information. The most characteristic features of narratives by such children were semantic incompleteness, simple syntax and multiple lexical substitutions.

According to R. Berman & D. Slobin (1994) complete narratives included three essential elements of global structure: the initiating goal or problem that motivates the action of the story, the attempts to achieve the goal, and the overall outcome. By age five 50% of children provided explicit attempts of the boy and his dog to find and return their frog and only 20% gave an adequate conclusion to the story (Berman & Slobin, 1994). The findings of Norbury & Bishop (2003) point to considerable overlap between frog stories of children with different diagnoses and normal children: "Even typically developing children of this age show wide variation in narrative performance, making it difficult to judge the adequacy of individual stories". Variety of narrative development reflects individual differences in the rate of neuropsychological development. The regulative function performs the key role in narrative generating, because it provides hierarchical structuring and semantic programming (global structure). The visual-spatial information processing essentially influences the linearization and agentivity of a narrative.

Communicative behavior of 6-year-old children in the situation of recording their narratives differs from natural communication. The preferable communicative strategy in this situation appears to be a monologue with such dialogic elements, as questions about details and remarks making a more precise correlation between the utterance and the described picture. The children with immature regulatory functions and weak right hemisphere strategy of the visual-spatial information processing adopt an adult experimentator as a partner in the process of story telling, they demonstrate a wide variety of speech acts in communication with an adult experimentator.

The stylistic differences in language acquisition manifest themselves in narratives. As far as one can consider in our material, the holistic style is mainly connected with lexical substitutions. Lexical substitutions reflect difficulties in lexical choice in speech production. Lexical choice is provided by a paradigmatic mechanism. So, in the narratives of "holistic" children, one can see representation of small defects in paradigmatics. "Analytic" children demonstrate a tendency to self correction of lexical substitutions. Self correction is provided by relatively strong regulatory function and an awareness of one's communicative and speech intention. Thus in spite of the lack of the correlation with statistical certainty between an author's results on the neuropsychological tests and

the stylistic features (holistic or analytic) of his or her narrative, a definite dependence of style of language acquisition from the neuropsychological profile was established.

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