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THE ABILITY TO MODIFY A STORY AS AN EXPRESSION OF NARRATIVE COMPETENCE*

The presented research pertains to the cognitive domain in research on narration. The main aim was to verify the thesis that there is a relation between the ability to modify a story and cognitive development measured by understanding of the principle of conservation. We present two separate studies. Study 1 included sixty children who belonged to three age groups: six-, nine- and fourteen-year-olds. Children had to create their own version of a well known fairytale (Cinderella story). In study 2a hundred 9-year-olds had to modify a narration based on a story to a picture story they previously had created. The obtained results indicate the tendency to increase in ability to create narration as well as to modify it with age. Results of study 2 suggest that the ability to transform narration might be explained by a skill to conserve: children with a high level of understanding of the principle of conservation differ significantly from children with a lower level in their ability to modify a story.

Introduction

In psychological research on narration one can point to a clear direction of changes: from analyses of syntactic structures of a narration through an analysis of micro and macro structures of an entire story, to analyses of narration as an expression of cognitive skills of the storyteller and his cognitive representation. The first research direction has led to discovery of specific features of narration; it has only yielded data on the kind of syntactic structures being used, and the analyses pertained mostly to written texts. The research has also shown that sentences produced by older students in their written texts become longer and above all the number of subordinate clauses increases (Hunt, 1965, 1970); at the end of primary school, in comparison to their spoken language, students' written language becomes more complex syntactically (Loban, 1976).

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In research on the macro- and micro-structures of narration, the subject of analysis is no longer the created text itself but the act of telling a story in which both the teller and the listener participate. The analysis of the narration is oriented toward the interaction, which is referred to as conversational narration (Polanyi, 1985). Therefore the narration is being shaped not only by the narrator but also by the listener whose questions influence the structuring of the narration (Umicker-Sebeok, 1979). The narrations are described in categories of information schemas consisting of specific structural elements (van Dijk, 1985; Labov & Waletzky, 1966; Bower, 1976) and functions they serve in relation to the speaker and the listener (Güllich & Quasthoff, 1985, among others).

Cognitive science has influenced research on the cognitive aspect of storytelling ability. It is connected with the development of cognitive abilities and, as such, is a kind of cognitive competence. The beginnings of this kind of research should be looked for in works which show that narrative competence requires the ability to differentiate between reality and fiction, which makes one want to uncover relationships between narrative competence and role-play (Galda, 1984). Constructing narration depends on knowledge about the story, on possessing a representation of the narration which, in Stein's opinion (1988), refers to the main character of the story (who is capable of acting intentionally), pursuing a goal (the character's actions have an aim), overcoming obstacles on the way (his actions serve this purpose), and finally reaching the goal. The storyteller activates some general representation of an event, a schema which constitutes an ordered sequence of actions that includes actors, activities and props, all placed in specific sets of circumstances.

When a child constructs a story, she updates the general schema and fills it with content related to a concrete event which she wishes to tell about. Research shows that stories told by six-year-olds already possess a clear composition: they represent a course of events, they include an announcement of an action and a description of the background (Applebee, 1978; Kielar-Turska, 1989; Ligęza, 1995). From this moment until about ten years, clear changes in their narrative competence take place (Kemper, 1984). The changes are related to both general cognitive development which influences the improvement of cognitive patterns including the event schema, gathering knowledge of the world, especially social knowledge and they require knowledge of discourse forms and functions (Stein, 1988).

Our research builds into the cognitive domain in research on narration. In this paper, making a transformation of an already created story will serve as the measure of the degree to which the ability of storytelling has been mastered. In other words, it is assumed that the better shaped the schema of a story, the better opportunity it gives to introduce different modifications to the story. Making transformations in the story is, on the one hand, a manifestation of creative activity of a child and, on the other, the child's cognitive abilities. According to Piaget (Piaget & Inhelder, 1970), the manifestation of such an ability during

Table 1. Tested groups in the first study

Sex	6 year olds	9 year olds	14 year olds	Total
Girls	7	13	12	42
Boys	13	7	8	28
Total	20	20	20	60

mid and late childhood lies in the mastery of the principle of conservation. We assume that the better a child understands the principle of conservation, the more easily and skilfully she can introduce modifications in the stories she is creating. On the other hand, lack of the ability to modify the structure and content of a story is probably connected with a low level of understanding the principle of conservation. Referring to Karmiloff-Smith's conception (1995), one can say that making a transformation requires achievement of a level of behavioral mastery in storytelling.

The basic aim of this research is to describe a child's ability to modify stories as a manifestation of mastering narrative competence and to uncover factors which are linked to this ability in a significant way. Two studies helped to achieve this purpose: the first (pilot) study pertained to generating one's own version of a well-known fairytale, and the second to modification of a story created on the basis of a picture story by way of adding a picture.

Study 1. Generating own version of a familiar fairytale

Subjects

The study included sixty children in three age groups: six, nine, and fourteen year olds. The majority of the subjects were girls. Table 1 presents detailed data of the age and sex of the children.

The method and the test

The study was conducted on an individual basis in a school or preschool. The examiner started the meeting with a child by asking the question: 'Do you know the story about Cinderella?' After an introductory casual conversation with the child, the examiner briefly called the content of the tale and then said 'And now, why don't you try to compose your own fairytale titled Cinderella?' The compositions of the youngest children were tape-recorded, while the older ones wrote their stories down by themselves. At the end, the examiner asked the child to give the inspiration for their story ('Where did you get the idea for your fairytale?'). After transcription of the children's recorded and written stories, an analysis was conducted.

Table 2. Indicators of a formal analysis of stories

Age indicators	Words M	Phrases M	M	Episodes M	Fluency indicators	Cause and effect connections between episodes	Dynamics	Completeness	Independence from the original
6 year olds	139.6 min - 22 max - 482	13.5	8.6	9.2	0.63	87 (47.5%)	0.81	3 (15%)	0.17
9 year olds	187.8 min - 98 max - 283	24.9	19.3	18.6	0.77	241 (64.4%)	1.87	11 (55%)	1.85
15 year olds	231.4 min - 127 max - 650	30.7	25.1	20.6	0.81	332 (80.3%)	5.66	15 (75%)	5.66

Results

Development of narration – formal indicators

Before an attempt was made to determine how children change the content of a familiar fairytale, it was checked whether the proposed experimental situation induced them to create stories which from a formal point of view would be close to the ones created at this age.

The following story complexity measures were adopted: 1 – the length expressed in the number of words, phrases and statements; 2 – verbal fluency expressed in the ratio of the statements to the number of phrases; 3 – type of connections between episodes; 4 – degree of dynamics of the story expressed by the ratio of descriptive elements to the elements showing action; 5 – structural completeness; 6 – independence from the original (i.e. from the familiar Cinderella fairytale) (Przetacznik-Gierowska, 1987)¹.

The results confirm a general regularity, i.e. increase with age in the volume of the story expressed by the number of words, phrases, statements, and episodes. The increasing number of words is an expression of one's concepts and readiness for, their use when constructing a story. Many individual differences are noted in this respect, which is shown in the difference between the maximum and minimum numbers of words in a story across age-groups. The smallest individual differentiation in the third year of school seems to be connected with a child's efforts to adapt to the school patterns of constructing different types of texts, inclusive of a narrative.

Also, the fluency of expression improves with age, which reflects the ability to verbalize events. If verbalization is fluent and with no obstacles, then the indicator approaches 1; adolescents achieve such a result. An accumulation of too many phrases in relation to the number of statements, on the other hand, indicates that a child has difficulty with expressing in words the episodes of the event she wants to talk about; such cases were observed in mid-childhood.

A formal analysis of narration was also conducted from the point of view of the types of relationships between episodes. It was assumed that the number of cause and effect connections increases with age, marked by the use of proper conjunctions (because, since). Nine- and fifteen-year-olds order the episodes more effectively by taking into consideration motives, causes, the way a character acts until she reaches the goal. The children develop the main plot according to individual episodes which indicates an increased number of cause and effect connections making the story coherent.

Another formal measure of the development of narration is its increase in dynamics. A ratio of dynamic to static stories was calculated. A dynamic story presents a sequence of events connected in time or cause and effect, whereas a

¹ In the pilot study only a quantitative analysis of the results was made.

static story is dominated by descriptions of characters, scenerios, events, and situations. The study showed the highest number of dynamic texts in the oldest group – over five dynamic stories to one static, in the group of nine-year-olds about two dynamic ones, while in the youngest group static stories dominated. Thus, enumerating and describing elements in a story absorbed the attention and activity of the younger children when the older ones focused on the action and how the action evolves.

The dynamics of stories is related to their completeness: the weaker the dynamics, the less frequently the construction of the story includes all elements of the structure. Younger children constructed stories that were rarely structurally complete. The result is in agreement with the data obtained by many researchers, like Umicker-Sebeok (1979) or Stein (1988). The majority of stories composed by the adolescents were characterized by structural completeness.

In the older groups, texts which were independent of the familiar story appeared more often. This is expressed by the proportion of texts that were independent of the context and texts partly or completely dependent. The indicator of a text's independence mounts with age, showing increased ease in filling the schema of a story with content.

To sum up the formal indicators of the development of narration with age children's stories are characterized with higher fluency, dynamics and logic in connecting episodes. Preliminary results are in agreement with data often cited in the literature (Stein & Liwag, 1997), and allow for an analysis of the collected material from the point of view of the text, primarily the scope and direction of transformation in the stories created by the children.

The development of narration – scope and direction of the transformation of stories

In composing a story, a child activates a script which is an ordered sequence of actions in which the characters are involved, and their activities and props placed in specific circumstances. It is assumed that the task of composing one's own fairytale based on a familiar plot forces the child to rearrange the structure and content of the story. Making such a transformation demonstrates the skill to freely use the schema of an event, i.e. the level of mastery of narrative competence.

The stories generated by the tested subjects were grouped into four categories:

- A – the child does not undertake the task to generate her own story based on the given model,
- B – the child undertakes the task, but does not introduce any transformations; she copies the model she knows and which the examiner provided earlier,
- C – The child creates a partially modified story, adds new elements, e.g.: new characters, new situations or new plots.
- D – the child tells a completely modified version of the model.

Table 3. The number of children's stories according the degrees of modifications

Age / Degree of modification	A	B	C	D
6 year olds	1	6	9	4
9 year olds	0	4	14	2
15 year olds	3	0	12	5
Total	4	10	35	11

Copying the familiar story was most often observed in the youngest subjects. In each age group, partial modifications were most frequently made; for instance, a postman appeared and brought an invitation, instead of a ball a disco took place, the shoe was substituted by a sports shoe, and the horse-drawn carriage was substituted with a car of extraordinary make. The source of the modifications the children used were books they knew or, as they said, their own ideas.

Conclusions

The research showed that the mastery of storytelling skills expressed in learning the formal structure of a story as well as the introduction of modifications related to content and form develops gradually in late childhood and adolescence. Clear changes take place between 6 and 9 years, which is confirmed by the known thesis of the transition from mental acts based on images subordinate to the logic of imagination and intuition, to mental acts based on the rules of logic. This is when the introduction of partial modifications while preserving the general structure of a story dominates (e.g., the Cinderella fairy tale becomes a story of girls going to a disco, but the general schema of the event is maintained). When mental acts are dominated by rules, an adolescent can refuse tackling the task to modify familiar structures or can create stories independent of the given model; therefore, on the one hand, a tendency appears to preserve the schemas functioning in a given community (which leads to typicalization of narration), as well as the tendency to mark one's unique "I" in a completely new story (which leads to individualization), on the other.

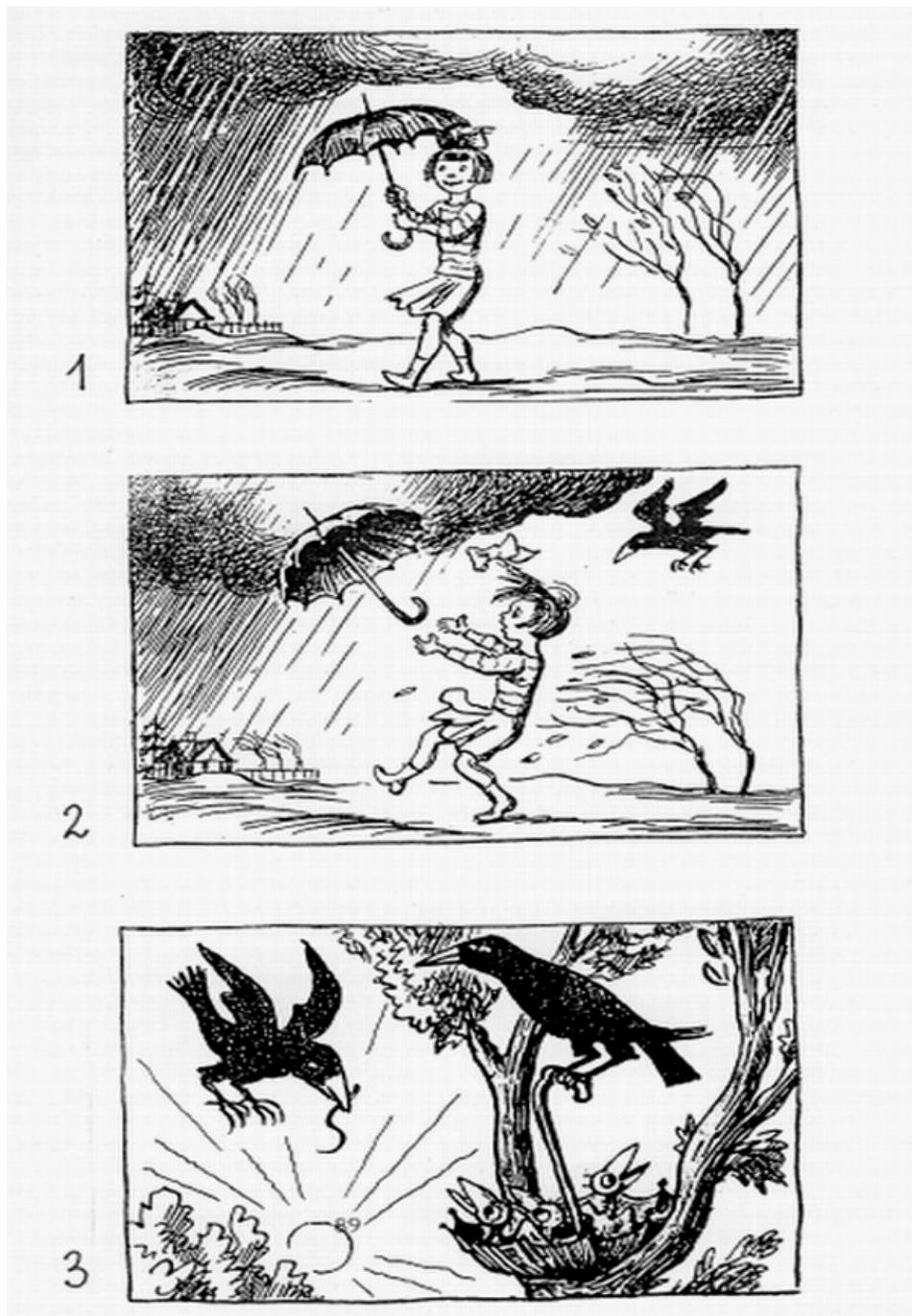
Study 2. Modification of narration created to a picture story

Subjects

The subjects included one hundred nine-year-old students from village schools, 68 girls and 32 boys. The children came from two-parent families where one parent had a trade school education and the other an elementary education or where both parents were educated at the elementary school level.

To separate the children into groups they were administered a test based on Piaget's principle of conservation. The tests consisted of four parts, each dealing

Figure 1. Pictures used in the second study



with a different aspect of the principle of conservation, i.e., quantity, length, weight, and volume. Group A included 68 children of a high level of understanding of conservation, obtaining $\frac{2}{3}$ of the total possible scores in the proposed 24 items. Group B included 32 students with a poor understanding of conservation, scoring from $\frac{1}{3}$ to $\frac{2}{3}$ of the total possible scores in the test. None of the tested children totally lacked an understanding of the principle of conservation.

The method

The students were asked to tell a short story about „a girl and a bird”, based on two pictures presented to them. The examiner gave the instructions, „Look carefully at these pictures and tell me the full story: how did the story begin and what happened at the end?” The examiner tape-recorded the story and afterward said to the child, „I have one more picture” and, handing the picture to the child, she asked, „What do you think, does it fit the story?” If the child decided it did not fit, he or she was asked to explain this decision. If the child decided that the picture did fit, the examiner asked him or her to tell the story once again, „How would the story be if we added that picture to it? Please tell me the story.”

The results

25 children (37%) from Group A refused to tell a new story and said that this new picture does not fit the story. Thus, in this group we had only 43 stories to analyze. Also, 13 children from Group B refused to change the story and so we had only 19 modified stories. After transcribing the tape-recorded stories, the material was analyzed. Three kinds of analyses were performed: analysis of the scope and direction of modification, analysis of the presence of elements of narrative talk in the modified stories, and analysis of the motivation for refusing to include a new picture.

The analysis of the scope and direction of modification

Semantic units were distinguished in each modified as well as in the original story. Then, the number of omitted, as well as repeated units, after introduction of the third picture, was calculated. The new elements in the modified story were also counted. Based on the above calculation, four possible story categories were distinguished. They are presented in a sequence starting with a complete change of the story, a partial modification of the story, and finally a modification, when the child only adds a new ending to the previously told story. The last category consists of non-significant modifications.

- I. The child tells a completely new story,
- II. The child fully or partially repeats the first story and adds a new ending,
- III. The child only adds a new ending to the original story,
- IV. Other

Table 4. Number of modified stories per distinguished categories: an analysis of the scope and direction of modification

Story categories according to the scope and direction of modification	Number of stories in group A	%	Number of stories in group B	%
I. A completely new story	0	0%	0	0%
II. Retold story + new ending	37	86%	12	64%
III. Only new ending	6	14%	5	26%
IV. Other	0	0%	2	10%
Total	43	100%	19	100%

The results show that in both groups about 60% of the children accepted the new picture and tried to modify the story. As can be seen in Table 4, among 86% of the Group A children and 64% of Group B children had accepted a new element and introduced modifications to the structure as well as to the plot of the previously created story. The precise analysis could reveal the difference in the ways of modifications proposed by group A and group B children. This means that those children who were characterized by a high level of understanding conservation more often modified the stories. In doing so, they most frequently maintained a large part or the whole of the previous story (56% of 43 group A children repeated 2/3 or the whole of the first story and added a new ending). Children with a lower level of understanding of the principle of conservation, like those in Group A, assumed that a new element fits the narration but they behaved differently. If they did modify the story, it was not the 'true' modification as it concerned only 1/3 of the previous story or it was only a new ending without retelling the story (58% of 19 group B children made the modification this way).

Comparing the stories told by Group A and Group B children, it is noted that the children with a lower level of understanding of the principle of conservation more rarely modified their stories, and more frequently simply added something new (in this group the ratio of category III (5) to category II (12) is 1:2.4). The children with a higher level of understanding of the principle of conservation could modify stories not just by adding new elements (in group A the ratio of category III (6) to category II (37) is 1:6). This difference is statistically significant ($\chi^2 = 3.857$ $p < .05$).

The results were also analyzed according to the child's gender. This is presented in Table 5.

Among the 40 girls and 32 boys who participated in the research and tried to modify their stories after adding the third picture, relatively more girls than boys were

Table 5. Number of children's stories per distinguished categories according to gender

Categories	A		B	
	Girls	Boys	Girls	Boys
I	0	0	0	0
II	24 (90%)	13 (81%)	9 (69%)	3 (50%)
III	3 (10%)	3 (19%)	2 (15,5%)	3 (50%)
IV	0	0	2 (15.5%)	0
Total	27 (100%)	16 (100%)	13 (100%)	6 (100%)
	43	19		

in Group A (higher level of understanding of conservation). Girls more frequently than boys introduced alterations to their stories in Group A. A greater tendency to modify their stories was also observed among Group B girls. It could be preliminarily assumed that modifications of a created story are more expected in girls' than in boys' groups, although the observed differences were not statistically significant.

In analyzing the elements of narrative talk in the modified stories, it was observed that Group A stories included more elements describing the course of events and more descriptions of the plot's background referring to the place and time of events. Group B children, on the other hand, tended to use descriptions of objects' and characters' features, to foretell the course of actions and to describe characters' reflections and psychological needs in their modified stories. Furthermore, it should be emphasized that Group A stories consisted of a description of events. This suggests that children with a higher level of understanding of conservation modified their stories to a greater degree and more willingly introduced new events into the plot. For instance, in her first story Paulina said that a girl came from home very upset and wet without her umbrella. When asked to include the third picture in her story, she said, *One day a girl was walking under an umbrella. It was raining but later the wind started to blow and tore her umbrella out of her hands. A raven was flying by and it caught the umbrella. Later it flew to its baby birds and made a nest for them.*

In their modified stories, Group B children, more than those in Group A, focused on the static elements, such as characters' features and reflections, or foretelling. Krzysio's story serves as an example:

Because it stopped raining here and the sun came out. One of the birds sat on a stick and the other brought food for the little birds in the basket because they were hungry and otherwise they would die. And there were leaves on the tree and the grass was already growing.

Table 6. Justifications for refusing to include the new picture (numbers and percentages)

Group	1	2	3B	3E	3Ch	3O	3Total	4B	4E	4Ch	4O	4Total	Other	TOTAL
A	5 (8%)	2 (3%)	14 (22%)	5 (8%)	7 (11%)	1 (2%)	27 (43%)	9 (14%)	8 (13%)	9 (14%)	1 (2%)	27 (43%)	2 (3%)	63 (100%)
B	5 (18%)	1 (4%)	6 (22%)	0	2 (8%)	0	8 (30%)	7 (26%)	1 (4%)	5 (18%)	0	13 (48%)	0	27 (100%)

² Each child could give more than one justification.

Analysis of motivation for refusing to include a new picture

Since about 40% of examined children from both groups refused to modify the previously told story (exactly 38 children of 100), we decided it would be worthwhile to analyze the motivation behind such decisions. The children were always asked to provide a reason for not wanting to include the third picture in the story. Four compound categories were distinguished among children's justifications:

1. Lack of justification – the child did not provide an explanation for the decision,
2. Dissimilarity of the third picture to the original two,
3. Lack of certain elements present in the first and/or second picture. The following missing elements were distinguished: 3B – background elements, 3E – events, 3C – characters, 3O – objects,
4. Appearance of some new elements in the third picture: 4B - background elements, 4E – events, 4C – characters, 4O – objects.

Table 6 presents the data obtained in the above analysis³.

Group B children, twice as frequently than Group A children, did not give a justification for their refusal to include the new picture in their original stories. These children more often justified their refusal by pointing to new elements in the added picture (48% of all justifications). Such reasoning occurred in Group A also frequently (43%), but Group B children usually turned their attention to new elements of the background and new characters while their Group A peers often observed new events. Comparing the new picture with the previous one, Group A children more frequently than Group B children focused their attention on the lack of repetition of some elements. However, in both groups background was the element most often commented on. It should be emphasized that while Group A pupils included in their justifications the appearance of new elements to the same degree as the lack of elements from the previous pictures, Group B more frequently cited new elements than the lacking ones.

Conclusions

Our results indicate a clear relation between the level of mental development measured by understanding the principle of conservation and that of narrative competence expressed in the ability to modify one's own stories. Modification of a story is evidenced, first of all, in a change in the description of the course of events. Modifications made by children of a higher level of mental development concern the plot, while those made by their peers with a lower level of mental development refer more often to descriptive elements. The presented interpretation should be treated as preliminary since the collected data have not been statistically verified.

³ Small number of results in categories could not serve for a statistical analysis.

Our data may be interpreted in categories of mental process variations. According to Piaget's theory of development, all kinds of transitions require constant elements of reference, perception of connections between states and transformations, perception of events from various points of view, perception of simple relations among objects (adding, dividing, multiplying). Such mental activities serve as a base for modifying stories.

The research revealed a difference between the groups of higher and lower level of mental development in their justifications for refusing to modify stories. Group B children more frequently lacked justifications, in line with the general thesis about lower communicative competence of these children. Statements made by Group B children were more often stimulated by acts of perception (appearance of new elements) than by the effect of mental processes (comparisons of elements in pictures).

Moreover, as it turned out, girls revealed a higher level of intellectual development, and proved to be more efficient in story modification. This result supports the known thesis of faster and more efficient speech development in girls while also serving as evidence of post-androgenic conceptions indicating higher plasticity of behavior as compared with boys (Gilligan, 1982).

It appears that the ability to modify stories reveals a high level of narrative competence, just as the capacity to modify in various abilities displays higher level of their mastery. This statement touches upon the explanation in Karmiloff-Smith's (1995) theory of the development of representation. When we learn something, storytelling for example, we start from acquiring particular elements of the activity, then we go to linking elements in sequences, and exercising these linkages we acquire behavioral mastery. This level becomes the base to introduce transformations into the basic structure of elements and to gain plasticity in performance. The whole process of re-description, as Karmiloff-Smith puts it, is a process of improvement of the states of stability in order to extract the information and use it for other goals.

Summary

Our research has shown that the assumptions made on the ability to modify already generated stories as an indicator of mastering narrative competence were justified. The tests showed that with age the skill of constructing stories improves, which is expressed by the increased volume of the text. We noted both increased fluency, which indicates an improving skill to verbalize familiar or generated events, and an increase in coherence of the stories, which is expressed in a larger number of cause and effect connections. The stories are more frequently characterized by a structural completeness as related to the dynamics of the story. Finally, the stories are created with more ease in filling the model with other content.

The results show that developmental changes in the scope of narrative competence markedly exceed the period of late childhood and include the period of adolescence, and their intensity is the highest at the transition from mid to late childhood. Therefore, it can be assumed that the changes which occur in competence are connected with the quality of cognitive processes which in late childhood take the character of free choice, regularity and strategic planning, whereas achievement of consistency in different aspects (quantity, mass, weight, volume) are conducive to making free transformations.

This assumption is confirmed by the results of Study 2 which point to the connection between an already generated story and the mastery of the principle of conservation: higher level of mastery of conservation is connected with a more frequent taking up of a task of modifying the story, introducing changes in the sequence of events, thus with changes of a dynamic character. It is also related to the ability to justify the refusal of modification which is usually based on a comparative analysis of previously provided and new elements.

We seek an explanation of the obtained results both in Piaget's theory, indicating the direction of developmental changes related to making modifications due to the mastery of the principle of conservation, as well as in Karmiloff-Smith's conception, showing changes in the representation as the re-descriptions of representations. In this way, our research on narration builds into the research on cognitive representation.

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