

SENTENCE COMPREHENSION AND TEXT COMPREHENSION: CHILDREN'S STRATEGIES

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ABSTRACT

The aim of this paper was to investigate the strategies children use when comprehending sentences vs. texts. 100 preschool girls and boys took part in the experiments. The results reveal a number of strategies the children use when showing age-required performance or when underperforming. Children of this age have better developed strategies for sentences than for texts, and their operations at the highest level seem to be restricted.

INTRODUCTION

The various levels of the speech decoding process are differently involved in a comprehension task and are assumed to be activated according to the actual speech input. Participation of the higher levels (comprehension, associations) depends on the complexity and size of the speech input, i.e. on the semantic and syntactic contents [1]. After the successful analysis of a sentence without any context, comprehension might take place without the activation of the level of associations. However, full comprehension of a text usually involves the operations of the highest level as well. This difference explains the cases of good understanding of sentences when having problems with text comprehension, and the cases of good comprehension of texts when having problems with sentence understanding. The latter appears e.g. in the key-word-strategy phase of first language acquisition when the child's decoding mechanism operates with familiar words to understand longer text-like utterances. This strategy works with the activation of associations where these operations "replace" the actual lexical and

syntactic access the child would have needed [2]. On the contrary, despite acceptable sentence comprehension children sometimes are not able to figure out the text cohesion, to realize the semantic interrelations within sentences and the semantics of these interrelations, i.e. to comprehend the text. From the aspect of speech comprehension, it is obvious that this process can work with or without problems since the output is defined by the necessary levels involved in the operations.

Questions have arisen concerning the comprehension strategies of preschool children since great differences had been found in their performances. A series of experiments has been carried out to answer the following questions: (i) What are the strategies Hungarian preschool children use when understanding sentences and texts? (ii) What are their problems in the comprehension tasks? (iii) How do our results relate to the language acquisition process of Hungarian 6-year-olds?

METHOD AND MATERIAL

For the sake of this experiment an immediate off-line method of the GMP standardized Hungarian test [3] has been chosen. Sentence comprehension was checked by using colour pictures. 10 sentences with various semantic and syntactic structures were created focusing on four criteria. (i) Those word classes, morphological and syntactic structures were selected that appear latest in the Hungarian-speaking children's speech production. (ii) Those semantic and lexical units were preferred that occur in children's speech production at the

examined age relatively rarely. (iii) All sentences should be stored and reproduced easily. (iv) All sentences and the opposite of their semantic content were to be easily represented in a picture. The semantic difference of these pairs of sentences was to be demonstrated by one visual difference in the picture. The size of the sentences were similar taking into consideration the operation of the short-term memory. E.g.: *The girl must give the book to the boy.* (In the picture the boy gives the book to the girl.)

After showing the two pictures (one for the target and another for the opposite sentence) the examiner uttered the target sentence to the child whose task was to choose one of the two pictures appropriate to the utterance heard.

For the text comprehension task, a short story about animals was used that had been recorded by a male voice. The total duration of the story was 1.15 minutes. The speech tempo of the speaker was 10.2 sounds/s on average (i.e. slower than the adults' average). Ten comprehension questions were created concerning the details and the interrelations of the text (wh-questions). The child's task was to listen to the story and to answer the examiner's 10 questions.

100 children were tested individually from three ordinary Hungarian kindergartens with heterogeneous social background. Those 6-year-olds were selected for the experiment who were going to start the school the next school-year. Their ages were between 6,0 and 6,11: 51 girls and 49 boys.

RESULTS

Results show that children's sentence comprehension is better than their text comprehension in all subgroups of the tested 6-year-olds (Fig. 1). This means that the activation of the level of associations seems to be difficult for the majority of children, however, there are

differences in the performances across subgroups in both tests (Tables 1 and 2).

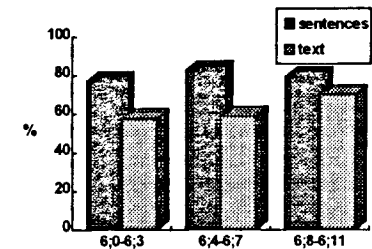


Figure 1. Average values of sentence and text comprehension in the age-subgroups.

Table 1. Data of correct answers of six-year-olds in sentence understanding test.

Ages	Correct sentence comprehension average (%)	range (%)
6,0-6,3	82.38/71.66	50-100/40-100
6,4-6,7	85/80.52	50-100/50-100
6,8-6,11	78/80.71	50-90/50-100
Average	81.79/77.63	(79.71)

Comparisons have been made to the standard value that is minimum 80% correct comprehension of all sentences for this age. According to the average data our preschool children show some backwardness; particularly the youngest boys and the oldest girls. The range of children's correct performance is relatively wide. 70.62% of all children have reached the expected level (their results show 80% or better correct performance in this test). However, almost 30% of all children have performed extremely poorly. Their performance is equal to the sentence comprehension of the normally developed Hungarian-speaking 5-year-olds.

Text comprehension was much worse with the tested children; according to the standardized data (GMP). A significant difference ($p < 0.001$) has been found

between the standard value of 6-year-olds' text comprehension (minimum 70% correct answers) and our 6-year-olds' performance (average: 62.3%). For the speech perception process it is supposed that almost 50% of our tested children either (i) are unable to activate the level of associations during comprehension or, (ii) their operations at this level are false and/or ambiguous. 29.92% of all children could answer 5 or less questions correctly while 16.72% of all children performed according to the standard performance of the normally developed Hungarian-speaking 3- and 4-year-olds.

Table 2. Data of correct answers of 6-year-olds in text-comprehension test.

Ages	Correct text comprehension	
	average (%)	range (%)
	girls/boys	girls/boys
6,0-6,3	60/55.5	20-90/10-90
6,4-6,7	52.77/65.2	10-90/30-100
6,8-6,11	71/69.28	40-90/40-100
Average	61.25/63.36 (62.3)	

There are only three sentences where the false answers were relatively frequent: one concerning a semantic unit, another one concerning morphological homonyms with diverse semantics and the third one concerning a syntactic structure. There have been false answers in 25% of all responses for the sentence: *The mouse has almost reached the cheese*. Here, the ambiguous interpretation of the word meaning 'almost' is the reason for the false responses. For the second case 44% of all answers were incorrect which had been caused by the homonymous morphological structure of the dative suffix *-nak* 'to' and that marking the subject of the verb 'must' (cf. the sentence in English: *The girl must give the book to the boy*). For the third sentence, *Before drinking, the bear had eaten something*, 61% of all responses were incorrect.

Analysis of children's text comprehension shows that there were only 4 questions answered correctly in 70% or more. All of them concerned the details of the heard text. 50% or more of all answers were false for the two following questions. Both of them concerned details presented at the very beginning of the story. The answers for these questions with the majority of children show the unnecessary activation of the level of associations. Instead of the right answers the children tried to give a structurally adequate but semantically inappropriate answer.

INTERRELATIONS OF SENTENCE COMPREHENSION AND TEXT COMPREHENSION

There can be a very clear explanation for the equal performance of children in both tests independently of the correctness of their interpretation. The ambiguous and/or false or, the unambiguous and good operations at various levels of the decoding process lead to an equality of performance: the child either comprehends speech (both sentences and texts) without any problem in semantics and in syntactic relations or, the child fails because of distorted working of his processes. The interesting questions in this latter case are: which are these operations and how much are they distorted?

There were children who showed different performance depending on the speech input. Two different types have been found: (i) the child's performance meets the age requirements in sentence comprehension but not in text comprehension, and (ii) the child's performance meets the age requirements in text comprehension but not in sentence comprehension.

12 out of 100 children's were found to perform better in text comprehension than in sentence comprehension. These children are able to use and activate the

necessary associations immediately before completing the lexical access since their operations here are ambiguous. This performance can be understood as a transformation of the former 'key-word-strategy' at a higher cognitive level. The essential difference is that the original key-word-strategy functioned within an age-characteristic decoding mechanism where total lack of certain semantic and syntactic knowledge was substituted by the comprehension of interrelations of key words. However, at the age of 6 there is an ambiguous knowledge concerning certain semantic and syntactic units and this uncertainty is substituted by an attempt to comprehend the interrelations of supposedly comprehended items within a text. Those children, whose sentence comprehension was good, succeeded (this is our 12 children) but those children whose sentence comprehension was below the age-requirements were unable to use this strategy (17 children).

31 children performed well in the sentence comprehension task while they underperformed in the text comprehension task. What strategy could these children use? It can be claimed that the speech decoding process of these children operates well up to the level of associations. It means that they are able to be successful with lexical access, and they are able to identify both the semantic and syntactic interrelations across a small number of words. However, they are unable to find the connections among certain items of a longer speech input, a text. For the reason of that two possibilities suggest themselves. (i) Their speech perception processes work slowly because each level needs too much information to operate and this time consuming working does not allow the mechanism to operate at the highest level as well. (ii) The level of associations with these children may be unmaturing, i.e. the operations are similar to those of children

of younger ages. It is likely that both explanations are correct in the sense that there are children of whom (i) and others of whom (ii) is characteristic.

DISCUSSION

1. Our results have confirmed that (i) there is a significant difference between sentence and text comp-rehension of the tested 6-year-olds ($p < 0.001$), and (ii) that sentence comp-rehension is better than text comp-rehension. Children's decoding strategies at the tested age are better for sentences than for texts.

2. No significant difference has been found either among the age-subgroups' performances or between girls and boys. There is one exception: there are 11 boys out of those 17 children who underperformed in both tests.

3. Comparing our data to the standard values shows that 17% of all children are risk children for learning to read and write [4].

4. Various strategies have been found for solving the sentence and text comprehension tasks involving partly or completely the necessary levels of the decoding process. The strategy the child is supposed to use has also been supported by the correctness difference in the two types of tests used.

REFERENCES

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