

Níveis de compreensão de leitura em escolares****

Reading comprehension levels in scholars

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Abstract

Background: important reading performance measurements are related to how and to what extent a child understands a written text. **Aim:** to study the performance of primary school (Ensino Fundamental) students in reading comprehension tasks according to the variables grade and type of school. **Method:** 160 students from the 3rd to the 6th grades were screened and later evaluated based on the retelling and question answering about a given text. **Results:** students of the 5th and 6th grades of private schools presented a better performance on issues related to implicit information when compared to students of public schools. The overall analysis of the educational level revealed, through the retelling task, a better performance of the 6th grade students in terms of the number of present macro propositions and a low performance of the 5th grade students in terms of the achieved comprehension level, in both types of school. When answering text-derived questions, the 4th, 5th and 6th grade students performed better than the 3rd grade students regarding explicit questions. When considering implicit questions, the 4th grade students performed better than all the other grades, in both types of school. These results gave evidence to the influence of the different texts used in each grade. **Conclusion:** the 5th and 6th grades from private schools were the only grades that performed better when compared to public schools in general, regarding answering implicit knowledge questions. All students achieved some level of reading comprehension.

Key Words: Evaluation; Reading; Comprehension.

Resumo

Tema: importantes medidas de desempenho de leitura estão relacionadas com o quanto e como a criança compreende um texto. **Objetivo:** estudar o desempenho de escolares do Ensino Fundamental em tarefas de compreensão de leitura, segundo as variáveis série e rede de ensino. **Método:** 160 escolares de 3ª a 6ª séries do Ensino Fundamental, foram triados e posteriormente avaliados por meio do reconto e respostas a questões sobre o texto. **Resultados:** os escolares da rede particular apresentaram melhor desempenho nas questões relacionadas a informações implícitas do texto nas 5ªs e 6ªs séries quando comparados aos da rede pública. A análise geral do efeito da escolaridade mostrou, na tarefa de reconto, desempenho melhor das 6ªs séries quanto ao número de macroproposições presentes e desempenho pior das 5ªs séries quanto ao nível de compreensão alcançado, em ambas as redes de ensino. Os escolares de 4ª, 5ª e 6ª séries apresentaram melhor desempenho que os de 3ª nas respostas a questões explícitas. A 4ª série apresentou melhor desempenho nas questões implícitas que todas as outras séries, em ambas as redes. Estes resultados evidenciaram a influência dos diferentes textos utilizados em cada série. **Conclusão:** apenas nas 5ªs e 6ªs séries foi verificado melhor desempenho da rede particular em relação à pública, nas respostas a questões de conhecimento implícito. Todos os escolares mostraram ter alcançado algum nível de compreensão de leitura do texto.

Palavras-Chave: Avaliação; Leitura; Compreensão.

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Introduction

Both decoding and comprehension are studied by researchers who investigate reading and its disorders. Comprehension - which stems such from ownership or development of the written code, as from lexical variety and ability of certain cognitive and metacognitive mechanisms - is capable of promoting knowledge acquisition, self-learning and academic success 1-4. The most important measures of reading performance are related to how much and how the child comprehends a text³ and allow identifying procedures and processes that underlie comprehension^{5,6}. Comprehension occurs at different levels such from more superficial to levels that allow the creative use of text information and the answering of questions which answers are not literally written, or still, the identification of problems occurring during reading and the search for manners to solve them (self-regulation) 1,7,8. Reading tests performance differences found among children showed that the development of cognitive processes and language interferes with comprehension⁹.

To date, there is no consensus on the best method to assess reading comprehension because each procedure emphasizes one aspect involved (integration of text information, generation of inferences, monitoring, etc.) 6.

This research proposed to develop a mean of assessing the reading comprehension level of school age children considered good readers. For such, the performance of students of Junior High School in reading comprehension tasks, according to the variables grade and school type - private or public - was investigated.

Methods

This study was approved by the Research Ethics Committee of UNIFESP (n°0839/06).

Reading comprehension was assessed by examining the oral retelling of the silently read text, and the answers to multiple choice questions. For such, a Protocol of Reading Comprehension Assessment (PRCA) was developed. Four narrative texts¹ were selected from: a study conducted in 2004⁹; textbooks; and the "Tipiti Language Test"¹⁰. Up to six multiple choice questions, with four alternatives each, were elaborated for each text. Three questions concerned explicit propositions and the others assessed the comprehension of implicit text propositions^{9,11}. Five judges, professionals of different areas, mapped the macrostructure of each text, based on the Model of

Textual Comprehension and Production^{12,13}. Each text was then represented by its macropropositions, classified as essential and non-essential, according to the importance and relevance for construction of the global idea and story comprehension. The other propositions were only quantified and not considered for this analysis.

Sample selection

From 185 children listed by their teachers as good readers, 160 (95 girls and 65 boys) who met the following inclusion criteria were selected: parents signature of the consent form; no auditory and visual (not corrected) complaints related to neurological, behavioral or cognitive disorders or to learning disabilities; and lack of school retention. Participants were between eight and 12 years old and were enrolled from 3rd to 6th grade in Public Schools (PuS) or Private Schools (PrS) of the Districts of São Paulo and Santana do Parnaíba. Each grade was represented by 40 students (20 from each school setting - Public and Private). Participants received Language screening (protocol based on the "Bateria de Recepção e Produção da Linguagem Verbal"¹⁴) to ensure the absence of language disorders involved in reading comprehension. They were also evaluated on tasks of decoding 15-17 with the aim of removing from the sample students with low values of speed and accuracy, factors that could also interfere on reading comprehension^{1, 6, 9, 11}.

Procedures

After reading a text indicated to their respective grades, participants were immediately subjected to two tests: a) retelling^{9,11} b) answering to written multiple choice questions about the same story^{2,9,11,18}.

The texts were presented printed on A4 paper (Arial 12 font, 1.5 spacing).

Each child was informed that, after reading, he/she would have to retell the story and answer a few questions about the text. If desired, the child could re-read the text before retelling. The text was removed when the child reported being ready¹⁹.

All retellings were recorded on an mp4 recorder. In a first step of analysis, two retelling profile (RP) that expressed different levels of comprehension were established: Level 1 (absence of one or more than one essential macropropositions); Level 2 (expression pattern with all the essential macropropositions). Each retelling was analyzed once more and, from the RP, ranked according to the comprehension level achieved.

The answers to multiple choice questions were computed according to the correct alternative.

Parents and teachers of children who failed the screening were counseled about the importance of a complete Speech-Language Pathology assessment.

The results were statistically analyzed by different tests (indicated in tables) with the SPSS program (Statistical Package for Social Sciences) version 13.0. The significance level of 5% (0.05) was adopted for the application of all statistical tests.

Results

The initial assessment, which allowed the exclusion of students who showed speed and accuracy values smaller than expected, showed statistical differences with better performance in the 3rd and 4th series of PrS (for speed and accuracy $p < 0001$ *). This performance was similar on 5th and 6th grades of both settings.

The results concerning the different tasks of comprehension assessment showed, by means of general analysis, that only the number of correct

answers of information implicit on the text differentiated children from the two school settings - public and private - with better performance of PrS ($p = 0002$ *).

When data were analyzed according to the grade (Table 1), similarity of responses in all grades of the two settings were observed - except for 5th and 6th of PrS that presented better performance in questions related to information implicit in the text. These results confirmed those found in the overall analysis and identified the grade at which the difference occurred.

Table 2 shows that on the retelling task, the PuS 6th grade presented larger number of macropropositions than 4th and 5th did. On PrS, 6th grade performance was better than 3rd, 4th and 5th. In the same task, according to comprehension level, more PuS students of 3rd and 4th grades reached Level 2 than of those of 5th and 6th. In PrS, the performance of the 5th grade was the poorest one.

Regarding questions about explicit information, in both school settings, students from 4th, 5th and 6th grades performed significantly better than the ones from 3rd grade. However, for questions involving implicit information, the PuS 4th grade obtained better performance than the others. The 3rd grade also presented better performance than the 5th and 6th did. In PrS, the 4th grade also showed better performance than the others.

TABLE 1. Mean and Median Percentage obtained on reading comprehension evaluation according to grade and school setting - Public or Private.

	Grade		PrS	PuS	t Test (p)
Macropropositions	3rd	Mean	0,8	0,8	0,602
		SD	0,2	0,3	
	4th	Mean	0,7	0,7	0,700
		SD	0,2	0,2	
	5th	Mean	0,7	0,6	0,162
		SD	0,1	0,2	
	6th	Mean	0,9	0,9	0,188
		SD	0,1	0,2	
			Mann-Whitney		
	Grade		PrS	PuS	Test (p)
Explicit Questions	3rd	Median	2,0	2,0	0,341
	4th	Median	3,0	3,0	0,738
	5th	Median	3,0	3,0	0,640
	6th	Median	3,0	3,0	0,429
Implicit Questions	3rd	Median	2,0	2,0	0,461
	4th	Median	3,0	3,0	0,289
	5th	Median	2,0	1,0	0,003 *
	6th	Median	2,5	1,5	0,033 *
Level of	3rd	Median	2,0	2,0	0,652
	4th	Median	2,0	2,0	0,602
	5th	Median	1,0	1,0	0,799
	6th	Median	2,0	1,5	0,183

SD= Standard Deviation.

Discussion

In general data analysis, only answers to implicit questions differentiate the PrS children, who presented better performance than the PuS ones. The other tasks showed that all students, considered good readers, behavior in a similar manner when retelling the story or answering questions of explicit knowledge. The comparative analysis evidenced that the comprehension disparity occurred on the 5th and 6th grades. When analyzing the results across grades, it should be emphasized that, with respect to decoding (speed and accuracy), students of PrS showed better performance on initial grades. This difference, however, was not present on 5th and 6th grades, which showed that, in these grades, students of both educational settings presented similar decoding conditions.

However, further differences were found on the comprehension task in more advanced grades, suggesting that reading learning is an ongoing process and that comprehension obtained by generation of inferences could be achieved later. These results have support in the literature. Studies

also showed that text comprehension is based on different language abilities - from lexical knowledge (low order), such as the efficiency on word recognition and vocabulary knowledge, and knowledge of grammatical structure; to high order text processing as the generation of inferences 2-7,20-22. These abilities develop and achieve different levels according to age, education, reading practice and the stimulation received by the student.

If, on one hand, basic reading skills are related to the recognition of words on the text, on the other one, high-order skills are related to the comprehension of concepts and ideas conveyed. In the learning context, comprehension occurs by identifying the meaning of the text as a whole, not as a series of sentences or individual words. In fact, one of the most consistent findings in the literature about reading is that the construction of coherent representation of text, in memory, is central to the success of comprehension. Coherence reflects the degree of connection between the meanings of text elements and prior reader knowledge 23.

These linear considerations arise from the screening results, which allowed some sort of linguistic homogeneity of the sample selected. However, it should be considered here that the use of a single instrument for the different studied grades may have influenced this result. The possibility of differences in amplitude and depth of vocabulary along the grades should also be noted. In a recent study, researchers reported that the vocabulary amplitude, that is, the size of the mental lexicon, would be more strongly related to the ability of reading comprehension than the richness of knowledge that the individual presents about the word³. The study about the effect of grade advancement on comprehension probably presented some results influenced by the fact that they used different texts for each grade. Furthermore, it was possible to critically examine the influence of text selection on the assessment and make some considerations. On the answers to multiple choice questions with propositions explicit in the text - subjected to short-term memory - students of 4th, 5th and 6th grades obtained performance superior than of the one students from 3rd grade in both educational settings, evidencing that on subsequent grades there was an increase in memory capacity. This result is similar to that obtained in a Brazilian study⁹. On the answers to questions with implicit text aspects, the 4th grades from both settings performed significantly better

TABLE 2. Mean and Median Percentage obtained on reading comprehension evaluation according to grade and school setting - Public or Private.

		GRADE				ANOVA (p)	
		3rd	4th	5th	6th		
PuS	Macropropositions	Mean	0,76	0,72	0,63	0,88	0,004 *
		SD	0,27	0,21	0,19	0,16	
PuS	Explicit Questions	Median	2,00	3,00	3,00	3,00	Kruskal-Wallis (p) 0,001 *
	Implicit Questions	Median	2,00	3,00	1,00	1,50	<0,001 *
	Comprehension level	Median	2,00	2,00	1,00	1,50	<0,001 *
PrS	Macropropositions	Mean	0,79	0,74	0,70	0,94	ANOVA (p) <0,001 *
		SD	0,17	0,20	0,10	0,11	
PrS	Explicit Questions	Median	2,00	3,00	3,00	3,00	Kruskal-Wallis (p) 0,003 *
	Implicit Questions	Median	2,00	3,00	2,00	2,50	<0,001 *
	Comprehension level	Median	2,00	2,00	1,00	2,00	<0,001 *

SD = Standard Deviation

than the other grades. However, if the texts would have been selected for each grade, this result may have been influenced by the easiness of the 4th grade text, once it was also used to assess anterior grades 9.

When the percentage of retold macropropositions was studied, it was noted that the 6th grades of the two settings mentioned a greater number when compared to the other grades. The text selected for this grade was the shortest one which may have influenced the result⁷. This way, one could think that the amount of macropropositions reported after reading had less relation to the level of comprehension than to the memory capacity of the student ²⁴. In fact, even superficially comprehending, the reader might recall, summarize or respond to questions about the read content¹.

Assessment of comprehension by the identification of levels could evidence, at the PuS setting, that the performance of children in 3rd and 4th grades was similar and better than the one in 5th and 6th grades. Furthermore, the analysis of the PrS results showed a poorer performance of the 5th grade in relation to others. These results may suggest a smaller number of resources of the 6th

grade students of PuS in comparison to students from PrS, besides the influence of the selected text for 5th grade on the performance of both settings. It should be noticed that not all participants achieved a complete text comprehension, once Level 2 of comprehension was not always achieved. Once more, the selected text may have influenced the result.

The ability to construct inferences is crucial on the differentiation of individuals on reading comprehension²⁵. Therefore, it would be important for these children to receive a later assessment or to be able to start a program that stimulates the ability to generate inferences.

Finally, it was verified that, even among the 160 students considered good readers and with expected performance in decoding, there were differences in the comprehension achieved, characterized mainly by the task of questions of implicit knowledge, linked to the generation of inferences. However, it should be highlighted that the responses resulted from multiple choice options which may have facilitated the process of cognitive inference, or maybe its non use, because of the fact that the answers were already presented 6,26.

These analyzes showed that some evidences

were more promising than others. Thus, the assessment of comprehension level seemed to be appropriate in a way that it determined more similarities than differences on performances among grades - which was expected given the prior selection of texts. Moreover, it should be considered that this assessment sought to identify the essential macrostructures, that is, the text essence, when achieved by the reader 1.

More studies should be conducted to confirm the results reported here and to assess the clinical applicability of this reading comprehension and its disorders assessment.

Conclusions

Students of all grades, from both educational settings - Public and Private -, considered as good readers by their teachers, showed similar performance on retelling tasks and answers to explicit questions. Only at 5th and 6th grades, an improved performance of PrS, compared to children from PuS in responses to questions of implicit knowledge was verified. All participants achieved some level of text reading comprehension.

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