



Speech therapy program for the promotion of literacy (sppl): effectiveness in reading comprehension in school students

Programa fonoaudiológico de promoção do letramento (pfpl): eficácia na compreensão de leitura em escolares

Programa de promoción del letramento (pfpl): eficacia en la comprensión lectora de los estudiantes

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Abstract

Introduction: The final product expected at the end of formal basic education is mostly satisfactory reading comprehension, necessary for the mediation of learning through written format in other school subjects. However, statistics show that many students leave Basic Education with significant deficits in the comprehension of texts. **Objective:** To investigate the effectiveness of a Speech Therapy Program for the Promotion of Literacy (SPPL) in the improvement of the reading comprehension of children in the 4th year of basic education from a municipal public school of Belo Horizonte. **Material and Method:** The Institution Ethics Committee for Research approved this study. For convenience, two classes of the 4th year of the first basic education cycle were selected. From the selected classes, one attended the Speech Therapy Program for the Promotion of Literacy (SPPL) and its students constituted

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the Case Group. The students from another class constituted the Control Group and, after the end of the study, they received the same intervention as the Case Group. The SPPL contemplated shared reading activities, *Scaffolding* strategies, collective discursive elaboration, besides phonological and orthographic processing tasks. **Results:** The groups showed similar performance at baseline, with a high prevalence of children with difficulties in reading comprehension. After the application of SPPL the performance in reading comprehension of the Case Group children improved significantly, while the performance of the Control Group did not change.

Palavras-chave: Fonoaudiologia; Leitura; Compreensão; Criança

Resumo

Introdução: O produto final esperado ao término do ensino fundamental formal é principalmente a compreensão em leitura satisfatória, necessária para a mediação da aprendizagem por meio do formato escrito em outras disciplinas escolares. Entretanto, estatísticas mostram que muitos dos estudantes concluem o Ensino Fundamental com déficits significativos na compreensão de textos. **Objetivo:** Investigar a eficácia de um Programa Fonoaudiológico de Promoção do Letramento (PFPL) na melhora da compreensão de leitura de crianças do 4º ano do Ensino Fundamental de uma escola da rede pública municipal de Belo Horizonte. **Material e Método:** Foram selecionadas por conveniência duas turmas do 4º ano do primeiro ciclo do Ensino Fundamental uma escola da rede pública municipal de Belo Horizonte. Das turmas selecionadas, uma participou do Programa Fonoaudiológico de Promoção do Letramento (PFPL) e seus alunos constituíram o Grupo Caso, os alunos da outra turma constituíram o Grupo Controle e após o término da pesquisa receberam a mesma intervenção que o grupo caso. O PFPL contemplou atividades de leitura compartilhada, estratégias de *Scaffolding* e para elaboração discursiva coletiva, além de tarefas de processamento fonológico e ortográfico. A compreensão de leitura dos estudantes de ambos os grupos foi avaliada pela sub prova 10 (compreensão de textos) do PROLEC, antes e depois da finalização do programa. **Resultados:** Os grupos apresentaram desempenho semelhante na avaliação inicial, com alta prevalência de crianças com dificuldades na compreensão de leitura. Após a aplicação do PFPL o desempenho em compreensão de leitura das crianças do Grupo Caso melhorou de forma significativa, enquanto que o desempenho das do Grupo Controle não se alterou. **Conclusão:** O PFPL mostrou-se eficaz na melhora da compreensão de leitura de crianças.

Palavras - chave: Fonoaudiologia; leitura; compreensão; criança

Resumen

Introducción: El producto final esperado al término de la escuela primaria es principalmente la comprensión lectora satisfactoria, necesaria para la mediación del aprendizaje a través de la escritura en las otras materias escolares. Sin embargo, las estadísticas muestran que muchos de los estudiantes terminan la escuela primaria con déficits significativos en la comprensión de la lectura. **Objetivo:** Investigar la eficacia del Programa Fonoaudiológico de Promoción de la Alfabetización (PFPA) para mejorar la comprensión lectora de los niños del cuarto grado de la Educación Básica de una escuela del sistema público municipal de Belo Horizonte. **Métodos:** Fueron seleccionadas por conveniencia dos clases del 4º grado de la escuela primaria del sistema público municipal de Belo Horizonte. De las clases seleccionadas, una participó del Programa Fonoaudiológico de Promoción de la Alfabetización (PFPA) y sus estudiantes formaron el Grupo de Caso, los estudiantes del otro grupo formaron el Grupo Control y después de terminado el estudio recibieron la misma intervención que el grupo de caso. El PFPA contempló actividades de lectura compartida, estrategias de *Scaffolding* para elaboración discursiva colectiva, además de tareas de procesamiento fonológico y ortográfico. La comprensión de lectura de los estudiantes de ambos grupos fue evaluada por la subprueba 10 (comprensión de textos) del PROLEC antes y después finalización del programa. **Resultados:** Los grupos presentaron rendimiento similar en la evaluación inicial, con una alta prevalencia de niños con dificultades en la comprensión de la lectura. Después de aplicar el PFPA el rendimiento en la comprensión de la lectura de los niños del Grupo Caso mejoró significativamente, mientras que el rendimiento del grupo de control no cambió. **Conclusión:** El PFPA fue eficaz en la mejora de la comprensión de lectura de los niños.

Palabras clave: Fonoaudiología; Lectura; Comprensión; Niño.

Introduction

The comprehension of the written code and the satisfactory performance in reading involve many complex and interrelated cognitive processes, being strongly influenced by the systematization of school learning and life experiences, as well as appropriation of metalinguistic skills, thus enabling the interaction with literate world⁽¹⁻⁴⁾.

The final product expected at the end of formal basic education is mostly satisfactory reading comprehension, necessary for the mediation of learning through written format in other school subjects. According to Instituto Paulo Montenegro, only one in every four Brazilians fully masters the skills of reading, writing and mathematics. Of the population with complete secondary education, only 35% are classified as fully literate⁽⁵⁾. The data of the last IDEB⁽⁶⁾ (Índice de Desenvolvimento da Educação Básica – Index of Basic Education Development), released in 2011, show that Minas Gerais is 9% above the target for the year^(5,3), being the state score 5.8 out of 10. Although there is a proven growth, it still is necessary to set up projects and programs that maximize school learning to form educated and prepared citizens for the needs of the labor market.

It is known that the simple word recognition and the phonological decoding are not enough for the reading comprehension⁽⁷⁾. It is an act of conscious and active interpretation of the written message. To reach the comprehension, the reader should be able to abstract the text ideas, contextualize and have strategies to enable him/her to use the intra, inter and extratextual elements⁽⁸⁾.

The acquisition and development of the reading come from the action of four interconnected processors, performing parallel and simultaneous processes. These are orthographic, phonological, semantic and contextual processors. The orthographic processor activates the orthographic representations from the visual language input, also enabling the other processors for the analysis of the written material. The phonological processor, once activated, allows the creation of auditory image of each linguistic unit, enabling the decoding of written material. The meanings of words emerge from the semantic processor. In turn, the contextual processor helps in the understanding of what is read by enabling a coherent interpretation⁽⁹⁾.

The actions of these processors, with the aid of metalinguistic skills as storage and access to the sign and meaning of words, the operative memory, the correlation with life experiences and the use of contextual cues enable writing comprehension and satisfactory reading proficiency^(3,7,10,11).

Speech therapy programs aimed to promote such skills in association with the formal reading and writing teaching, may, as promoting education strategies, result in better performance in all school subjects that directly or indirectly depend on reading and writing.

In this sense, the speech and education partnership becomes essential. Currently, programs of speech remediation and literacy, based on the training and learning of metalinguistic skills, have been developed⁽¹²⁻¹⁹⁾, focusing on phonological, ortographic and reading processing activities that report the development of these skills and the consequent change in the field of reading. Such programs have influenced not only the written language but also the spoken language.

Most studies that intend to promote literacy and the language skills are geared primarily for the teaching of phonological awareness and the verification of performance in the skills of grapheme-phoneme correspondence, speed, precision and reading accuracy at the expense of the reading comprehension. This article is relevant in this context because of the existing gap in the current studies, regarding the correlation of literacy programs with the reading comprehension.

Thus, the aim of this study was to determine the effectiveness of a literacy promotion program in the reading comprehension improvement of children of the 4th year of Basic Education.

Methodology

This is a prospective case-control study performed with children enrolled in basic education of a municipal public school of Belo Horizonte in the 2012 second semester (Note: In Brazil, the school year starts in February).

The Institution Ethics Committee for Research approved this study, on the Advice nº 0686.0.203.000-11. The people responsible for the children were informed about the voluntary aspects of the research, objectives, its benefits and impacts and they signed the Informed Consent (IC) form. The survey was conducted in a municipal school



of Belo Horizonte after authorization of the school board of directors and the Municipal Department of Education.

For convenience, two classes of the 4th year of the basic education, from the morning shift, were selected, with similar performance on assessments done by the school and they were taught by the same teachers.

From the selected classes, one attended the Speech Therapy Program for the Promotion of Literacy (SPPL) and its 19 students constituted the Case Group. The 16 students from another class constituted the Control Group. For ethical reasons, after the end of the research, the children from the Case Group also attended the SPPL. The inclusion criterion adopted was the signing of the IC form. The adopted exclusion criteria were: presence of peripheral hearing alteration and/or psychomotor development and the participation less than four SPPL meetings.

The study was divided into four stages. The first stage consisted of audiological evaluation and medical history addressed to parents. The audiological evaluations were performed in acoustically treated booth, installed in the school library because of the low level of external noise at this location. It was used properly calibrated audiometer.

The medical histories addressed to the parents were conducted in partnership with basic health care units, through home visits performed by the authors with the help of Community Health Workers. The people responsible for the children or relatives over 18 years old were able to respond the medical history questions. The history had questions about the overall health of the child, landmarks of the psychomotor development, difficulties and monitoring conducted during development and school report.

In the second stage, the students of the groups were submitted to the text comprehension test of the Assessment of Reading Processes - PROLEC⁽²⁰⁾. The assessment test of text comprehension of PROLEC⁽²⁰⁾ consists in the investigation of the child's ability to extract meanings and integrate them into their knowledge from the analysis of the answers to 16 questions, half of them literal and the other half inferential, referring to four small texts, two narrative and two expositive. The test allows the classification of student performance,

according to the number of hits, being: normal (N), little difficulty (D) and great difficulty (DD).

In the third stage, Case Group children participated in the SPPL with the general structure: weekly and alternate activities of shared reading, *Scaffolding* strategies⁽²¹⁾ and collective discursive elaboration, besides phonological and orthographic processing tasks (Table 1). The children were divided into subgroups (average of 5 students per group) and the activities were then conducted at four different moments (1st moment: shared reading of a children's literature classic and informative texts according to the pragmatic content of the school; 2nd moment: use of text interpretation techniques - *Scaffolding*; 3rd moment: phonological or orthographic processing activity; and 4th moment: oral or writing discursive elaboration). Each meeting had an average duration of 50 minutes. The distribution of students in subgroups was previously planned, according to the reading performance in the initial assessment of students through PROLEC. Thus, in the subgroups the students were mixed after being classified as normal performance, little difficulty and great difficulty (Table 1). For the elaboration of SPPL, several discussions were held with the board of directors, pedagogical coordination and Portuguese teachers of the school so that the program could be incorporated into the curriculum of the 4th year and replicated by the teachers. The activities were developed in school classroom in time defined by the pedagogical team, always before the recess (break) so that the dynamics of the school would not be compromised and the participation of children damaged by the post-recess excitement. For each subgroup of children, there was a monitor, graduate student in the course of Speech Therapy. In all meetings, at least one school teacher was present, as well as one of the leaders of this study.

Board 1. General structure of the meetings of the Speech Therapy Program for the Promotion of Literacy (SPPL)

	1st Moment	2nd Moment	3rd Moment
1st Meeting	Shared reading of a children's literature classic	AScaffolding activity involving scheme of characters, places and actions.	Rhyming activities and syllabic and phonemic alliteration.
2nd Meeting	Shared reading of a children's literature classic.	Scaffolding activity involving the elaboration of questions from interrogative Pronouns.	Grapheme-phoneme and phoneme-grapheme association activity.
3rd Meeting	Shared reading of a children's literature classic.	Scaffolding activity involving the elaboration of questions about the story read.	Analysis and synthesis phonemic activity
4th Meeting	Shared reading of informative texts according to the pragmatic content of the school	Scaffolding activity involving discussions and comments relevant to the proposed theme.	Adding and subtracting activity of grapheme and syllables
5th Meeting	Shared reading of a children's literature classic.	Atividade de Scaffolding envolvendo a identificação das distintas partes do texto.	Fast naming and memory activity.
6th Meeting	Shared reading of a children's literature classic.	Scaffolding activity involving the individual and free reflection on the subject.	Activity of word tonicity stimulation.
7th Meeting	Shared reading of informative texts according to the pragmatic content of the school	Scaffolding activity involving comments from parts of the text.	Phonemic transposition activity.
8th Meeting	Shared reading of a children's literature classic.	Scaffolding activity involving the trial of attitudes observed in the characters of the story.	Track activity with the summary of all the themes worked over the eight meetings.

The fourth and final stage of the study was the reassess of the Case Group and the Control Group in reading comprehension through PROLEC test⁽²⁰⁾ at the end of the 8 meetings. The children were reassessed and performance was classified again: normal (N), little difficulty (D) and great difficulty (DD).

After finishing the data collection for the survey, the Case Group children were also submitted to SPPL. The results of the study were presented to the school community at the last meeting of parents of the year, which took place in December, through oral presentation.

To verify the effectiveness of SPPL in the groups it was used the nonparametric Wilcoxon test and the Chi-square test with the help of IBM SPSS Statistics 19.0 software. The adopted significance level was 5%. The statistically significant values were marked with an asterisk.

Results

The results were analyzed according to the distribution of the performance frequency and the total score on the reading comprehension test.

The groups showed homogeneity concerning the distribution by gender, with a predominance of boys in both groups. The Case Group showed 65% of boys and 35% girls. The Control Group presented its respective distribution of 62% and 38%.

The average age of the Case Group was 9.19 years (+0.54) and in the Control Group it was 9.19 years (+ -1.56765).

Before applying the SPPL, the performance classification in the evaluation of text comprehension of the groups was similar (Table 1), with high prevalence of children with difficulties.

Table 1. Classification of performance in the comprehension task of prolec in the initial and final evaluations per group

		Case		Control		Test t	Value p
		N	%	N	%		
Initial Evaluation	Normal	10	52,6	7	43,8	0,55	0,75
	Little Difficulty	3	15,8	2	12,5		
Final Evaluation	Great Difficulty	6	31,6	7	43,8	6,10	0,04*
	Normal	15	88,2	8	53,3		
	Little Difficulty	2	11,8	5	33,3		
	Great Difficulty	0	0	2	13,3		

Chi-square test; $p < 0,05$

Table 2 shows the results of intra-group comparison in the pre and post SPPL moments. It can be observed improvement in performance

of the Case Group and the maintenance of the performance of the Control Group.

Table 2. Descriptive analysis of age and total score variables in the reading comprehension task per groups, pre and post speech therapy program for the promotion of literacy

Grup		Mean	S.D.	Minimum	Median	Maximum	Value p
G1	Pre	10,75	2,76	7	10	15	0,007*
	Post	13,33	2,30	9	14	16	
G2	Pre	10,33	3,93	0	10,50	16	0,57
	Post	9,25	4,65	0	8,50	16	

Wilcoxon test; $p < 0,05$.

It must be highlighted the loss of three students in the period between the initial and final assessments due to class changes and school dropout, resulting in the passage from 19 to 17 children in the Case Group and from 16 to 15 in the Control Group.

Discussion

Given the importance of reading comprehension for success in school and social practices, the present study sought to verify the effectiveness of a speech therapy program for the promotion of literacy in the skill of reading comprehension of the students involved. The elaborated program was based on the promotion of language skills necessary for development and practice of the reading (common tasks to school activities) carried out, however, explicitly and consciously^(15,22).

It was found that initially the groups did not differ in the performance of the text comprehension test (Table 1). In the post SPPL comparison there was significant difference between the groups with better performance for the Case Group.

As for the school students of the control group, although the statistical analysis does not indicate statistically significant improvement after the interval in which the Control Group participated

in the SPPL (Table 2), there was reduction in the number of students classified as performance: little difficulty and great difficulty (Table 1). It is believed that the qualitative improvement also observed in the Control Group occurred as a result of formal school education. The developments in this group may also result from the sum of student learning throughout the school year, since the SPPL occurred between the months of (September and October), the period corresponding to the end school year.

The analysis of the results comparing the means of the total score in the intragroups pre and post SPPL revealed statistically significant values when comparing the text comprehension tests for the Case Group (Table 2). The results show significant values for the two proposal analyzes, showing that intervention programs, even though less extensive, are able to enhance the language skills of the students. Regarding the number and duration of required meetings for a satisfactory response to the intervention⁽¹⁷⁾, Lovett's⁽¹²⁾ study reported that interventions, even in the short term, encourage positive changes in reading performance. The SPPL, though has a time considered low (average 50 minutes) compared to other studies, was efficient in the aspects of reading comprehension of the students in the Case Group.

Programs of promotion and stimulation of literacy and phonological skills are needed and should be encouraged as it was observed in this study that the children not subjected to the program, but still inserted in the formal education, maintained a test performance not suitable to their school term.

The short period of stimulation and the number of children participating in the program may have restricted the study gains. However, when the results achieved in the Case Group are related to the performance of children in the Control Group at the end of SPPL, there lies the question of the restructuring need of the offered pedagogical program.

The reading comprehension is not easily measured by a single test, because it involves different cognitive and language skills⁽²⁾. Based on recent research⁽²⁴⁾, one opted for the use of the Assessment of Reading Processes-PROLEC since this was suitable to the establishment of the reading profile of Brazilian students of public and private education.

The strategies adopted to promote reading comprehension were the use of shared reading, dramatization, discussions and *Scaffolding*⁽²¹⁾, resources that contribute to the representation and construction of mental images, emotional or rational reactions to the read text. Aloud and shared reading experiences are also efficient to develop skills prior to language development and reading comprehension⁽²⁵⁾ as well as the ability to make inferences, memory skills and knowledge of the world⁽⁷⁾. Considering such strategies in light of the results and reports of other similar experiences, it may be noted that the methodologies of interventions have proven to be effective in students identified with learning difficulties even after the course of the first school years in the absence of similar programs and strategies⁽¹⁴⁾.

Conclusion

Based on the results of this study, the students of the Case Group showed better performance in the comprehension of texts of PROLEC test when compared to students of Control Group, which indicates that students who participated in the meetings of the Speech Therapy Program for the Promotion of Literacy developed better the comprehension reading skill.

Thus, it is expected that programs like SPPL are developed by academics and professionals of speech therapy in public and private schools in order to maximize the school learning and prevent the learning disorders that could advance in a subsequent form.

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