

PHONOLOGICAL-ORTHOGRAPHIC STIMULATION PROGRAM FOR SCHOOLCHILDREN WITH LEARNING DIFFICULTIES

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Abstract

Objectives: This study aimed to develop a phonological-orthographic stimulation program for schoolchildren with learning difficulties from the 3rd to 5th year of Elementary School and compare the performance of schoolchildren in a pre- and post-testing situation in the phonological-orthographic stimulation program. This study will be developed in two phases, phase 1 aims to develop the phonological-orthographic stimulation program based on literature review, in order to verify which studies used stimulation programs with the phonological-orthographic stimulation. In this phase 2, 30 schoolchildren with learning difficulties, both sexes, aged between 8 years and 4 months and 12 years and 3 months participated, who attended 3rd to the 5th year of Elementary School. The schoolchildren were divided into two groups: group I (GI): composed of 15 schoolchildren with learning difficulties submitted to application of the Phonological-Orthographic Stimulation Program, group II (GII): composed by 15 schoolchildren with learning difficulties not submitted to application of the Phonological-Orthographic Stimulation Program. All schoolchildren were submitted in the application Pro-Ortography Assessment in pre- and post- testing situation. The program developed was composed of a module with strategies with oral vowel phonemes and a module with strategies with nasal vowel phonemes. The phonological-orthographic stimulation was ro-Ortography (pre-testing), twelve sessions for applying the developed program and the final three sessions being used for apply to Pro-Ortography (pos-testing). **Results:** It was possible to verify that there was a significant difference in the GI students, submitted to the stimulation program developed in this study, in pre- and post-testing situations. In GII, there was no change in the classification of performance in the Pro-Ortography subtests, nor in the classification of performance according to the semiology of errors, demonstrating the effectiveness of the stimulation program to GI. **Conclusion:** In phase I, it was possible to develop a Phonological-Orthographic Stimulation Program for students with learning difficulties for students in the 3rd to 5th year of Elementary School. In phase II it was possible to verify the effectiveness and applicability of the program developed in phase I and it was possible to conclude that the strategies selected for the stimulation program are effective and can be applied to students from the 3rd to the 5th year of Elementary School I with learning difficulties both in the clinical context and in the educational context, assisting in the teaching-learning process.

Keywords: *Orthographic writing, learning, intervention studies.*

1. Introduction

When inserted in the school environment, the child already dominates the linguistic system in its oral mode, so it is considered that the child already has the skills developed to start the learning process of reading and writing. For the learning process of reading and writing to be effective, it is necessary that the student develop other skills, such as the notion of the phonological aspects of the language. For this, the student needs to develop metalinguistic skills that concerns aspects of language at its phonological, morphological, syntactic and semantic levels. Developing these skills will make the students create awareness of phrases, words, syllables and phonemes as smaller units (Fernández et al., 2010; Capellini, 2004; Queiroga, 2006; Correa, 2007).

For spelling to be effective it is necessary for the student to select the meaning of the word he wants to write (semantic system). Soon after this selection the syntactic system will determine what will be the word and the position of each one within the sentence being built, soon after which the phonological route or the lexical route is triggered, which will allow the student to correctly write the desired word.

At the end, with the mental orthographic representation of the words, the grapheme selection and the motor acts necessary for the realization of each grapheme that will compose the word (Sampaio et al., 2017) occur.

Students who have spelling difficulties need more efficient help regarding the spelling errors found and the reason why they are occurring. It is necessary that the student understands the rules established in spelling and also the skills involved, so that he has a more facilitating writing. Intervention activities are needed that make the students reflect at the time of writing, developing orthographic awareness, so that difficulties and errors can decrease (Zorzi & Ciasca, 2008).

2. Objectives

Develop a program of phonological-orthographic stimulation for students with learning difficulties from the 3rd to the 5th year of Elementary School I in the context of a pandemic.

3. Methods

This study was approved by the Research Ethics Committee of the Faculty of Philosophy and Sciences of the São Paulo State University “Júlio de Mesquita Filho” - FFC/UNESP - Marília-SP, under number 50658521.8.0000.5406.

This study will be developed in two phases, The phase 1 aimed to develop the phonological-orthographic stimulation program based on literature review, in order to verify which studies used stimulation programs with the phonological-orthographic stimulation.

The literature search was performed only in national databases such as Scielo and Google Scholar, using descriptors, intervention studies, handwriting, spelling and keywords, intervention and dysorthography. This criterion was used due to the characteristics of the Portuguese Language Writing System, which is an alphabetic writing system with greater transparency than opacity, making it difficult to use intervention studies with spelling difficulties performed in other countries with more transparent spellings such as Spanish and Italian and profound ones such as English and French.

The Phonological-Orthographic Stimulation Program was designed to be performed in 18 sessions, and the three initial sessions were used for pre-testing, 12 sessions for the application of the program developed and the three final sessions were used for post-testing.

The first seven sessions referring to module 1 and the last five sessions referring to module 2. Module 1 consisted of strategies with oral vowel phonemes, and module 2 was composed of strategies with nasal vowel phonemes. All sessions consisted of the following activities: knowledge of the alphabet, grapheme-phoneme correspondence, mental map of vowels and their graphic representations, naming of figures, reading of words, copying, identification of phonemes and instructed dictation.

In this phase 2, 30 schoolchildren with learning difficulties, both sexes, aged between 8 years and 4 months and 12 years and 3 months participated, who attended 3rd to the 5th year of Elementary School. The schoolchildren were divided into two groups:

- Group I (GI): composed of 15 schoolchildren with learning difficulties submitted to application of the Phonological-Orthographic Stimulation Program, sendo 3 escolares do sexo feminino e 12 do sexo masculino.
- Group II (GII): composed by 15 schoolchildren with learning difficulties not submitted to application of the Phonological-Orthographic Stimulation Program, sendo 5 do sexo feminino e 10 do sexo masculino.

All schoolchildren were submitted in the application Pro-Ortography Assessment (BATISTA et al, 2014) in pre- and post- testing situation. The program developed was composed of a module with strategies with oral vowel phonemes and a module with strategies with nasal vowel phonemes. The phonological-orthographic stimulation was Pro-Ortography (pre-testing), twelve sessions for applying the developed program and the final three sessions being used for apply to Pro-Ortography (pos-testing).

Data analysis was performed using the *Statistical Package for Social Sciences, version 25.0*. The test applied was the McNemar test. *The results were statistically analyzed with a significance level of 5% (0.050) and discriminated in the tables with the asterisk in the presence of statistical significance.*

4. Results

Table 1 shows the comparison of the classification of the performance of the Pro-spelling subtest of the GI and GII students in the pre- and post-testing situations.

Table 1. Distribution of the comparison of the classification of school performance of GI and GII in the Pro-spelling subtests by frequency and p-value.

Subtests	Performance rating	Groups					
		I			II		
		Freq.	Perc.	P-value	Freq.	Perc.	P-value
ELA-PRE	Inferior	4	33,30%	0,004*	8	66,70%	> 0,999
	Medium	10	71,40%		4	28,60%	
	Superior	1	25,00%		3	75,00%	
ELA-POST	Inferior	0	0,00%		8	100,00%	
	Medium	5	55,60%		4	44,40%	
	Superior	10	76,90%		3	23,10%	
DRLA-PRÉ	Inferior	6	75,00%	0,001*	2	25,00%	> 0,999
	Medium	7	36,80%		12	63,20%	
	Superior	2	66,70%		1	33,30%	
DRLA-POST	Inferior	1	33,30%		2	66,70%	
	Medium	6	33,30%		12	66,70%	
	Superior	8	88,90%		1	11,10%	
DP-PRE	Inferior	15	50,00%	0,002*	15	50,00%	> 0,999
	Medium	0	0,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	
DP-POST	Inferior	4	21,10%		15	78,90%	
	Medium	9	100,00%		0	0,00%	
	Superior	2	100,00%		0	0,00%	
DPP-PRE	Inferior	15	50,00%	0,005*	15	50,00%	> 0,999
	Medium	0	0,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	
DPP-POST	Inferior	7	31,80%		15	68,20%	
	Medium	8	100,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	
DF-PRÉ	Inferior	12	50,00%	0,003*	12	50,00%	> 0,999
	Medium	3	50,00%		3	50,00%	
	Superior	0	0,00%		0	0,00%	
DF-PÓS	Inferior	5	29,40%		12	70,60%	
	Medium	8	72,70%		3	27,30%	
	Superior	2	100,00%		0	0,00%	
DFR-PRE	Inferior	15	50,00%	0,025*	15	50,00%	> 0,999
	Medium	0	0,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	
DFR-POST	Inferior	10	40,00%		15	60,00%	
	Medium	5	100,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	
EP-PRE	Inferior	15	50,00%	> 0,999	15	50,00%	> 0,999
	Medium	0	0,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	
EP-POST	Inferior	15	50,00%		15	50,00%	
	Medium	0	0,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	
DS-PRE	Inferior	11	42,30%	0,157	15	57,70%	> 0,999
	Medium	4	100,00%		0	0,00%	
	superior	0	0,00%		0	0,00%	
DS-POST	Inferior	9	37,50%		15	62,50%	
	Medium	6	100,00%		0	0,00%	
	superior	0	0,00%		0	0,00%	
MLO-PRÉ	Inferior	15	50,00%	> 0,999	15	50,00%	> 0,999
	Medium	0	0,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	

Subtests	Performance rating	Groups					
		I			II		
		Freq.	Perc.	P-value	Freq.	Perc.	P-value
MLO-POST	Inferior	15	50,00%		15	50,00%	
	Medium	0	0,00%		0	0,00%	
	Superior	0	0,00%		0	0,00%	

Legend: ELA: Writing of the letters of the alphabet; DRLA: Randomized dictation of alphabet letters; DP: Dictation of words; DPP: Dictation of pseudowords; DF: dictation with figures; DFR: Dictation of sentences; EP: Deliberate error; DS: Spelled dictation; MLO: Orthographic lexical memory.

With the application of the McNemar test, it was possible to verify that there was a significant difference in the students of the GI, submitted to the stimulation program elaborated in this study, in pre and testing, showing that the students of this group changed the classification of performance from lower to middle, from medium to higher in the subtests ELA (Writing of the letters of the alphabet),

DRLA (Randomized dictation of the letters of the alphabet) and DP (Dictation of words). There was also a decrease in the number of students with lower performance in the DPP (Dictation of pseudowords), DF (Dictation with figures) and DFR (Dictation of sentences) tests.

5. Discussion

From the results obtained in this study, we can consider that the strategies developed in the phonological-orthographic stimulation program for students with learning difficulties showed applicability and that is, after the elaboration of the stimulation program and its application in the students with learning difficulties of the pilot study, it can be verified that the elaborated program can be applied in students who present difficulties in the phonological-orthographic relationship. Although the national literature did not reveal a significant number of studies with orthographic stimulation/intervention, the studies analyzed for the elaboration of the program described in this study indicated the lack of studies with emphasis on vowels. It is necessary that the student understands the phonological relationship of vowels with their graphic representation, because all of them have more than one representation, and to prevent errors in the writing of vowels occur, these possibilities need to be stimulated. In addition, vowels in alphabetical spelling are important for syllable formation and differentiation in word meanings (Meireles & Correa, 2005).

6. Conclusion

From the bibliographic survey and the information collected and analyzed in phase 1 of this study, it was possible to elaborate a Phonological Stimulation Program Orthographic for schoolchildren with learning difficulties for schoolchildren from 3rd to 5th year of Elementary School I in a pandemic context.

In phase 2 it was possible to verify the effectiveness and applicability of the programme developed in phase I and, it was possible to conclude that the strategies selected for the stimulation program are effective and can be applied in students from 3. to assisting in the teaching learning process.

References

- Capellini, S. A. (2004). Distúrbios de Aprendizagem versus dislexia. In L. P. Ferreira, D. M. Befi-Lopes, & S. C. O. Limongi (Orgs.). Tratado de fonoaudiologia (pp. 862-876). Editora Roca.
- Capellini, S. A., Butarelli, A. P. K., & Germano, G. D. (2010). Dificuldades de aprendizagem da escrita em escolares de 1ª a 4ª séries do ensino público. *Revista Educação em Questão*, 37(23).
- Correa, J., Maclean, M., Meireles, E., Lopes, T., & Glockling, D. (2007). Using spelling skills in Brazilian Portuguese and English. *Journal of Portuguese Linguistics*, 6(2), 61-82. <https://doi.org/10.5334/jpl.140>
- Fernández, A. Y. et al. (2010). Avaliação e intervenção da disortografia baseada na semiologia dos erros: revisão da literatura. *Revista Cefac*, 12(3). <https://doi.org/10.1590/S1516-18462010005000056>
- Meireles, E., & Correa, J. (2005). Regras contextuais e morfossintáticas na aquisição da ortografia da língua portuguesa por criança. *Psicologia: Teoria e Pesquisa*, 21(1). <https://doi.org/10.1590/S0102-37722005000100011>
- Queiroga, B. A. M., Lins, M. B., & Pereira, M. A. (2006). Conhecimento morfossintático e ortografia em crianças do ensino fundamental. *Psicologia: Teoria e Pesquisa*, 22(1). <https://doi.org/10.1590/S0102-37722006000100012>

- Sampaio, M. N., Ygual-Fernández, A., Cervera-Mérida, J. F., & Capellini, S. A. (2013). *Programa de Intervenção com as Dificuldades Ortográficas: proposta de um modelo clínico e educacional*. São José dos Campos: Pulso Editorial.
- Sampaio, M. N. et al. (2017). Spelling performance of public and private school students: A comparative study. *Estudos de Psicologia (Campinas)*, 34(03). <https://doi.org/10.1590/1982-02752017000300008>
- Santos, M. J., & Barrera, S. D. (2017). Impacto do treino em habilidades de consciência fonológica na escrita de pré-escolares. *Psicologia Escolar e Educacional*, 21(1). <https://doi.org/10.1590/2175-3539201702111080>
- Silva, C., & Capellini, S. A. (2019). Indicadores cognitivo-linguístico em escolares com transtorno fonológico de risco para a dislexia. *Distúrbios da Comunicação*, 31(3), 428-436. <https://doi.org/10.23925/2176-2724.2019v31i3p428-436>
- Zorzi, J. L., & Ciasca, S. M. (2008). Caracterização dos erros ortográficos em crianças com transtornos de aprendizagem. *Revista Cefac*, 10(3). <https://doi.org/10.1590/S1516-18462008000300007>