

# Proposal for a speech-language-hearing intervention in a group of children with poor school performance

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## ABSTRACT

**Purpose:** to present and critically discuss a collective care program to address phonological processing skills in children with poor school performance.

**Methods:** an observational study with a non-probability sample of children aged 7 to 10 years with poor school performance, carried out in three stages: (1) development of the group speech-language-hearing intervention program, (2) application of the preliminary proposal to children with poor school performance, and (3), critical analysis of the results and feasibility of the program. The McNemar and Cochran Q tests were used to verify the association between the results before and after group speech-language-hearing intervention, with a p-value of  $\leq 0.05$  being considered statistically significant.

**Results:** the group speech-language-hearing intervention program demonstrated the importance of structural planning, including the preparation, development, and progression of activities to stimulate phonological processing skills and their positive influence on the learning process. It can be used as a therapeutic resource for children with poor school performance, besides the possibilities and challenges of collective care.

**Conclusion:** the proposal demonstrated its applicability to improve phonological processing skills and enhance therapeutic effects in children presented with poor school performance.

**Keywords:** Language; Learning Disabilities; Reading; Dyslexia; Underachievement

A study conducted at the Centro de Atenção Psicossocial Infantojuvenil (CAPSij), Itabirito, Minas Gerais, Brazil.

**Financial support:** Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) – Finance Code 001

**Conflict of interests:** Stela Maris Aguiar Lemos declares she is an editorial board member of *Revista CEFAC* but was not involved in the peer review and editorial decision-making process for this article

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Received on August 11, 2023  
Received in a revised version on November 15, 2023  
Accepted on February 20, 2024



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## INTRODUCTION

Typical school performance is characterized by formal instruction within the standards expected for age and education. Therefore, it is relevant and impacts children's social, personal, cultural, and academic development<sup>1</sup>. Basic education, in Brazil, is a right, ensuring free and accessible enrolment in public schools<sup>1,2</sup>. However, the high number of children with poor school performance has intrigued both health and education professionals, who seek to understand the reasons why they have not adequately developed the skills necessary to follow the pedagogical proposal or perform equivalently to their same-age peers<sup>1-3</sup>.

Poor school performance may be due to individual or intrinsic factors (e.g., neurobiological cognitive and sensory dysfunctions diagnosed as learning disorders) or environmental or extrinsic factors, without any organic involvement (e.g., pedagogical disadvantages, parents'/guardians' low education level, precarious family participation in the educational process, and sociocultural and socio-affective disadvantages, characterizing school difficulties)<sup>1,3,4</sup>.

Both diagnoses are related to phonological processing, a cortical ability responsible for the use of phonological information to process oral and written language<sup>5,6</sup>. Studies<sup>4,5-7</sup> point to a triad of phonological processing skills – rapid automated naming, phonological working memory, and phonological awareness – as a predictor for learning to read and write. Rapid automated naming provides lexical access, that is, the ability to search for phonological information quickly and accurately in long-term memory<sup>4,5</sup>. Phonological working memory is the temporary storage and immediate retrieval of auditory and visual information<sup>6</sup>. And phonological awareness is the ability to segment and manipulate structures that cover the word and subword level, that is, the previous levels for word formation, such as rhymes, alliteration, syllables, and phonemes<sup>4,5-7</sup>.

The literature<sup>8</sup> also interrelates semantic-lexical and phonological processing as fundamental to facilitate learning to read and write. Lexical processing is the ability to recall the greatest number of words in a given time, and semantic processing is the judgment of the meaning relationship between words – i.e., whether or not they belong to the same semantic category<sup>8,9</sup>. The literature<sup>8</sup> points out that the dual-route theory, one of those developed to explain the reading of alphabetic writing, reveals that the sound and meaning of words can be derived through direct visual coding (lexical

route) or phonological coding (non-lexical route)<sup>8</sup>. According to this theory, the type of process used in fluent reading depends on the linguistic characteristics of the written stimuli<sup>8</sup>. High-frequency words, having their orthographic and semantic characteristics and phonological representations stored in the lexicon, are identified through direct visual access (lexical route)<sup>8</sup>. Low-frequency words and nonwords, which by definition do not have lexical entries, are identified through grapheme-phoneme correspondence<sup>8</sup>. The two routes used in reading have their counterparts in spelling, which can therefore be obtained lexically (addressed spelling) or non-lexically (phonetically mediated)<sup>8</sup>. This means that frequency, regularity, and lexicality are important ways of obtaining information about how phonological and lexical strategies manifest themselves in writing as well as in reading<sup>8</sup>.

Hence, each person's vocabulary formation is influenced not only by cognitive maturation but also by academic and socioeconomic level and cultural experiences<sup>9</sup>. A Canadian study<sup>10</sup> using an intervention model analyzed the impact of phonological activities on children with low pedagogical performance in the initial school phase. The results showed that organized and targeted training of phonological processing skills, even if for a brief time, had favorable effects on the phonological skills of children with low school performance when compared to their peers who received only the usual classroom-based literacy instruction.

In their field of work, speech-language-hearing (SLH) pathologists are responsible for assessing phonological skills, auditory-linguistic processing, and the impact that related difficulties have on the academic, family, and sociocultural life of these subjects, actively participating in the therapeutic process<sup>11</sup>. SLH therapy is traditionally individual, as it is based on the curative medical model<sup>11</sup>. However, collective care research has been gradually advancing and demonstrating that it is a possible therapy intervention strategy. It enables the joint construction of knowledge and exchange of experiences between subjects, changing their views and providing new meaning to processes related to their health condition<sup>12,13</sup>. Thus, this study aimed to present and critically discuss a collective care program that addresses phonological processing skills for children presented with poor school performance.

## METHODS

The Research Ethics Committee at the Universidade Federal de Minas Gerais – UFMG, MG, Brazil, approved

the research under evaluation report ETIC 2.172.825 and CAAE 70104517.2.0000.5149. All parents/guardians signed an informed consent form, and the children signed an informed assent form.

This observational study had a non-probabilistic sample of children with poor school performance, aged 7 years to 10 years, 11 months, and 29 days. They underwent an SLH therapy program designed by the researchers, with interventions in groups of four to six children to observe the impact of stimulation on their reading and writing after participating in the phonological processing skill training. It was carried out in three stages: (1) development of the group SLH intervention program; (2) application of the preliminary proposal to children with poor school performance; and (3) critical analysis of the results and feasibility of the program.

## 1. Development of the group SLH intervention program

Firstly, the theoretical framework was outlined<sup>1-32</sup> to define the construct and guiding topics. Then, the phonological processing skills to be covered and their objectives were defined, in addition to the writing and analysis of the initial draft. This included the selection of levels, separating the three phonological processing skills (rapid automated naming, phonological working memory, and phonological awareness) in the chronological and sequential order they would be addressed, and the general objective and content covered at each level. Lastly, a preliminary proposal was written with objectives, content, number of sessions for each level, and distribution of activities in each of the scheduled sessions.

The proposed intervention program was planned to be short so it could be applied to more children with poor school performance. The program's architecture was built in consistent stages that allowed participants to experience linguistic activities in a group compatible with their education level and age.

The groups had four to six children, based on similar symptoms, such as the stage of reading and writing development and the accuracy in recognizing phonemes and phoneme-grapheme correspondence. They also considered the age range and availability of schedules to ensure greater training homogeneity. To better distribute per age group, it was decided to form two groups of children aged 7 to 8 years and two other groups aged 9 to 10 years. The activities

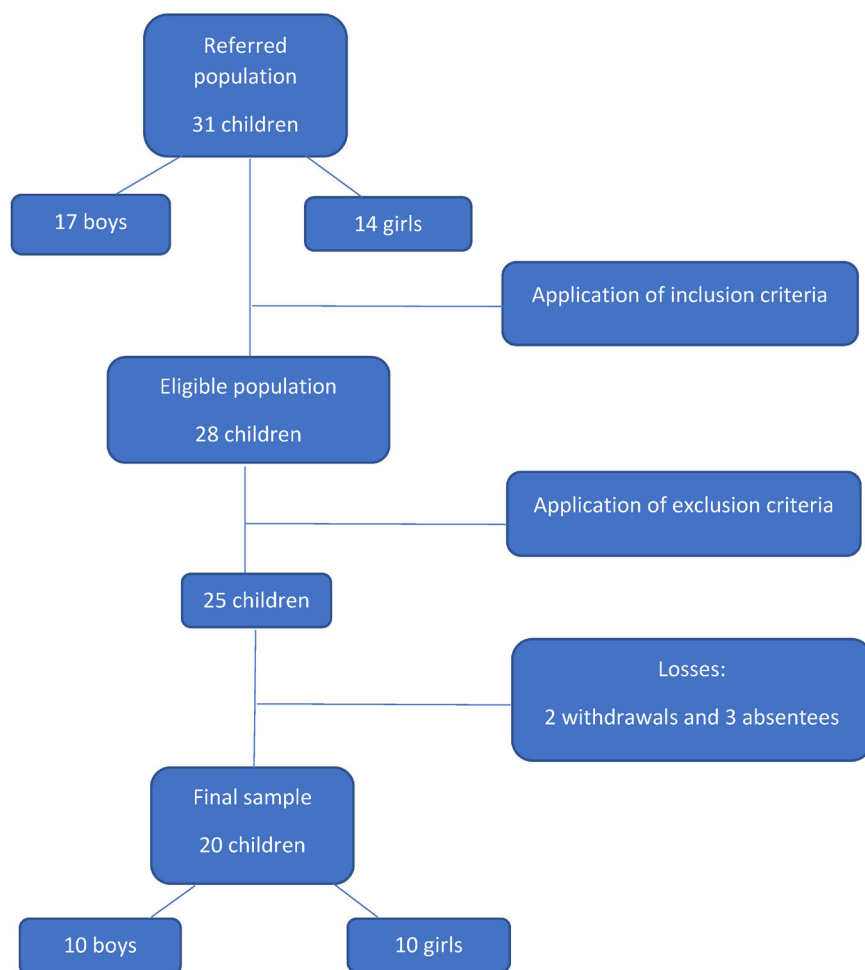
were designed according to development stages and involved semantic-lexical and phonological processing skills. Therefore, although the proposal was the same, the activities were different for each group, according to their age, education level, and situation. The activities were planned to be performed in chronological order, with increasing levels of complexity in all groups, to make them more organized and ensure greater acquisition of the content covered.

The group intervention program was developed in the format of workshops so their dynamism would arouse interest and motivation and provide children with the experience of concrete and meaningful situations. Hence, activities and content were planned to be active and reflective for them to acquire, construct, and produce theoretical and practical knowledge.

## 2. Application of the preliminary proposal to children with poor school performance

The proposal was implemented in a nonprobabilistic sample of children aged 7 years to 10 years, 11 months, and 29 days, with poor school performance, no other SLH disorders, referred to specialized outpatient care, properly enrolled in and attending public elementary schools, who signed an informed assent form – which characterized the inclusion criteria for the sample. This age range was chosen because the children would have at least one year of school instruction focused on literacy. Children attending the first year of elementary school at 6 years old would have little formal schooling, hindering their comprehension of the grapheme-phoneme correspondence and possibly compromising the results of the instruments used. Exclusion criteria were defined as follows: children undergoing or having undergone SLH assessment or therapy; with a diagnosis of hearing loss; with evidence or history of cognitive, neurological, or motor changes; and who missed at least 10 scheduled sessions of the activity development plan.

The research was carried out in Itabirito, MG, Brazil, after approved by the Municipal Health Department. Initially, 31 children (17 boys and 14 girls) were referred with complaints of poor school performance. Based on the inclusion and exclusion criteria, 25 of them were eligible for the sample. However, two children withdrew from participating in the intervention stage, and three missed at least 10 intervention program sessions; hence, they were excluded. The final sample had 20 children, 10 males and 10 females (Figure 1).



**Figure 1.** Flowchart of the process of forming the study sample

Initially, their parents/guardians were assessed with two questionnaires, one to characterize the sample (medical history) and the other regarding the Brazilian Economic Classification Criteria (CCEB)<sup>14</sup>, to estimate the families' and individuals' purchasing power. In addition, four instruments were applied in full to assess the participants' phonological processing, reading, and writing skills, namely: Phonological Awareness Sequential Assessment Instrument (CONFIAS)<sup>15</sup> to assess their ability to manipulate speech sounds; the rapid automatized naming (RAN) test<sup>16</sup> to assess the information processing speed; the Reading Processes Assessment Tests (PROLEC)<sup>17</sup> to assess their reading; and the Pinheiro List<sup>18</sup> to assess their writing. Then, the children underwent a group SLH intervention program led by one of the researchers. In the end, the sample children were reassessed with the same instruments as in the initial assessment. Two meetings were necessary to apply the questionnaires and instruments in both the assessment and reassessment, besides the 12

sessions scheduled for group intervention, totaling 16 meetings.

The strategies aimed to ensure increasingly difficult cognitive challenges that favored group work integration and motivation in the therapeutic environment.

At the beginning of each session, the therapist welcomed the group with relaxed activities, explained the dynamics, and proposed objectives contextualized with the participants so they would feel comfortable, enhancing the therapeutic effects of the workshop.

At the end of each session, the participants' records were filled out with the description of the activities and the therapist's observations regarding their performance and behaviors.

The initial assessment, group SLH intervention, and reassessment of study participants were held during the first school semester, finishing before the scheduled school recess.

After collecting the responses to the instruments, they were organized, entered into a database, and

verified. Participants were initially assessed and then reassessed with the help of two external applicators (i.e., two people not involved in the group intervention process) to prevent possible biases that might interfere with the interpretation of the program results.

The McNemar and Cochran Q tests were used to verify the association between the results before and after the group SLH intervention. Those with a p-value  $\leq 0.05$  were considered statistically significant.

### 3. Critical analysis of the results and feasibility of the program

The researcher responsible for conducting the groups completed the children's individual medical records with qualitative information to evaluate the quality of the SLH intervention program and practical aspects of its application and verify possible inconsistencies during all programmed stages.

At the end of each meeting, the therapist recorded observations on how the participants carried out the tasks according to the degree of difficulty, the time taken for each session, the handling of materials, interpersonal relationships, situations of dialogue between children, and the therapist's perceptions of the objective achieved in the proposed activities. Care was taken to keep the environment quiet, and protected from external interruptions, with adequate lighting, ventilation, and equipment to collect data.

## RESULTS

The program consisted of three levels and had 12 weekly sessions lasting approximately 50 minutes. Another two sessions were necessary before and after the intervention to carry out pre- and post-testing and verify the effects of the program, totaling 16 meetings that covered the three phonological processing skills, according to Chart 1, below.

**Chart 1.** Proposal of a group speech-language-hearing intervention

Levels	Objective	Content	Number of sessions
LEVEL I: Lexical development	To promote experience in activities to expand the mental lexicon and differentiated vocabulary, seeking to obtain quick and accurate access to information contained in long-term memory, including phonological information.	<ol style="list-style-type: none"> <li>1. Vocabulary expansion</li> <li>2. Lexicon access speed</li> <li>3. Semantic categorization</li> <li>4. Distinction between lexical field and semantic field</li> <li>5. Recognition of words from the same lexical field</li> <li>6. Recognition of words from the same semantic field</li> </ol>	3
LEVEL II: Phonological working memory	To develop skills for temporary storage of phonemic information necessary to encode the correspondence of sounds to letters or groups of letters in words.	<ol style="list-style-type: none"> <li>1. Identification and repetition of low, medium, and high similarity pseudowords</li> <li>2. Identification and repetition of pseudowords of varying length</li> <li>3. Identification and repetition of nonwords formed by high and low probability syllables, with varying length</li> </ol>	3
LEVEL III: Phonological awareness	To promote the ability to consciously identify, isolate, manipulate, combine, and segment the phonological structures of the language that cover the word and subword level, that is, words, rhymes, alliteration, syllables, and phonemes.	<ol style="list-style-type: none"> <li>1. Syntactic awareness (word sequence and marking, identification of identical words)</li> <li>2. Awareness of supra-segmental skills (rhyme and alliteration)</li> <li>3. Syllabic awareness (synthesis, segmentation, exclusion, transposition)</li> <li>4. Phonemic awareness (synthesis, segmentation, deletion, transposition)</li> <li>5. Quantity and association activities of sound similarities and representations in writing through syllabic manipulation.</li> <li>6. Phonemic identity activities (identification of initial and final phonemes) and phonemic awareness activities (phonemes segmentation, analysis, synthesis, manipulation, addition, and deletion).</li> </ol>	6

Source: Developed by the researchers of this study

Next, all the activities that would be carried out in each session were planned, referring to the phonological processing skills covered at each programmed level, as detailed below:

**Level I – Lexical development** – three sessions to encourage expansion of mental lexicon and differentiated vocabulary.

**1<sup>st</sup> session:** playful activity of separating figures belonging to the same semantic category (means of transport, animals, clothing, food, professions, toys and musical instruments, shapes and colors, furniture and utensils) with a timer. The expressive vocabulary test of the model proposed by the child language test – ABFW was used as a parameter to choose the semantic categories<sup>19</sup> due to the many possibilities. However, the material used during the workshop was prepared and adapted by the researcher responsible for conducting the meetings.

**2<sup>nd</sup> session:** use of thematic figures (zoo, sea, department store, children's party, human body, circus) to enumerate items related to the figure presented in a specific time, exploring naming, functions, and bodily expressions that characterize them.

**3<sup>rd</sup> session:** activities involving games and interactive strategies to stimulate oral language, using stories, books, and playful activities, requesting interpretations and personal experiences on different topics (school, home, supermarket, kitchen, and beach).

**Level II – Phonological working memory** – three sessions to develop temporary storage skills for phonemic information.

**4<sup>th</sup> session:** repetition, identification, and manipulation activities, with words and figures from the same semantic group.

**5<sup>th</sup> session:** activities of repeating or echoing increasingly complex phrases and associating figures that represent the phrases mentioned.

**6<sup>th</sup> session:** activities of repeating or echoing low-, medium-, and high-frequency words and pseudowords with varying lengths, and identifying and repeating nonwords with high- and low-probability syllables with varying lengths.

In all activities, children were instructed to repeat a sequence proposed by the mediator, making the necessary associations according to the commands. Initially, these commands were indicated in writing or through pictures; later, they had to repeat, play, or organize them as requested. The sequences were gradually increased to raise the level of complexity.

**Level III – Phonological awareness** – six sessions with strategies for manipulating the phonological structures of the language. The sessions were organized following a chronological order of execution and increasing levels of complexity – i.e., the previous word formation levels, such as the association between oral and written language, rhymes, alliteration, syllables, and phonemes.

**7<sup>th</sup> session:** syntactic awareness; activities involving the association of oral and written language through oral texts and their corresponding graphic representations (nursery rhymes, tongue twisters, short songs), segmenting sentences, checking the length of words, and replacing words and pseudowords with other words.

**8<sup>th</sup> session:** rhyming activities (identifying the same sounds at the end of the word) and alliteration activities (identifying the same sounds at the beginning of the word).

**9<sup>th</sup> session:** activities to develop syllable awareness (syllable identification, word segmentation, syllable addition, and deletion).

**10<sup>th</sup> session:** syllabic awareness activities (word segmentation, syllable addition and deletion, syllabic synthesis, and transposition).

**11<sup>th</sup> session:** phonemic awareness activities (identification of initial and final phonemes, segmentation, manipulation, analysis, and synthesis of phonemes).

**12<sup>th</sup> session:** phonemic awareness activities (word segmentation and phoneme synthesis, addition, deletion, and manipulation).

After defining the program format and the activities that would be carried out in each session, the proposal was applied to the 20 participants in the final sample – i.e., who effectively participated in all stages of this study. Thus, four groups were formed with four to six participants each.

The descriptive analysis of the participants' performance in the reading, rapid automated naming, phonological awareness, and writing tests before and after intervention showed that most children were impaired at all levels of information processing assessed before the intervention. Their performance can be seen on the four instruments, comparing the positive evolution after participating in the intervention program.

The McNemar and Cochran Q tests verified the association between the results before and after the intervention; those whose p-value was  $\leq 0.05$  were considered statistically significant. There was a statistical significance between RAN colors, letters, and

digits before and after the intervention (Table 1). It is important to highlight that statistical analysis could not be performed for comparison in instruments with more explanatory variables, such as CONFIAS<sup>13</sup> and the Pinheiro List<sup>18</sup>. This was possibly due to the small sample, causing greater dispersion, and making it

impossible to confirm progress between groups. However, after completing the program, the descriptive data indicate that everyone improved in reading, writing, and other aspects assessed regarding phonological processing (Table 1).

**Table 1.** Descriptive analysis of the participants' performance in the reading, rapid automatized naming, phonological awareness, and writing tests before and after the intervention

Variables	Before		After		p-value
	N	%	N	%	
<b>PROLEC</b>					
Normal	3	15.0	8	40.0	0.1451
Difficulty	2	10.0	3	15.0	
Great difficulty	15	75.0	9	45.0	
Total	20	100.0	20	100.0	
<b>RAN Colors</b>					
Adequate	1	5.0	10	50.0	0.0042*
Inadequate	19	95.0	10	50.0	
Total	20	100.0	20	100.0	
<b>RAN Letters</b>					
Adequate	2	10.0	13	65.0	0.0032*
Inadequate	18	90.0	7	35.0	
Total	20	100.0	20	100.0	
<b>RAN Digits</b>					
Adequate	3	15.0	13	65.0	0.0022*
Inadequate	17	85.0	7	35.0	
Total	1 (1.3)	100.0	20	100.0	
<b>RAN Objects</b>					
Adequate	11	55.0	14	70.0	0.2501
Inadequate	9	45.0	6	30.0	
Total	20	100.0	20	100.0	
<b>CONFIAS – syllable/phoneme</b>					
Syllables < 18 and phonemes > 18	1	5.0	0	0.0	-----
Syllables 18-29 and phonemes 6-10	8	40.0	1	5.0	
Syllables 23-32 and phonemes 6-12	3	15.0	1	5.0	
Syllables 27-36 and phonemes 12-18	6	30.0	6	30.0	
Syllables 37-40 and phonemes 15-26	2	10.0	12	60.0	
Total	20	100.0	20	100.0	
<b>PINHEIRO LIST – Writing hypothesis</b>					
Presyllabic	3	15.0	0	0.0	-----
Syllabic	4	20.0	1	5.0	
Syllabic-alphabetic	11	55.0	6	30.0	
Alphabetic	2	10.0	13	65.0	
Total	20	100.0	20	100.0	

<sup>1</sup>Cochran Q test; <sup>2</sup>McNemar test

Captions: N = number of individuals; % = Percentage; PROLEC = reading processes; RAN = lexical access; CONFIAS = phonological awareness;

\* = p-value ≤ 0.05; --- inconclusive analysis

The proposal to develop, execute, present, and critically discuss a group SLH intervention program encountered challenges and favorable aspects, as listed below:

### Favorable aspects

- The activities were planned following increasing levels of complexity to better organize them and enhance the acquisition of the content covered.
- As it is a short-term program, most children could comply with the schedule – 20 out of the 25 children who started the program completed it.
- The more dialogical and interactive format of the workshops provided greater motivation and active participation of children, characterizing them as builders of their knowledge, with the support of a mediator.
- The ability to promote postural changes through motivation and interaction between group members helped them develop greater autonomy, get involved with activities, and cooperate with the other participants.
- Dialogical exchanges with individual contributions to the group – as the group used its previous knowledge to solve challenges – helped them construct learning collectively.
- The group formed for an objective or task common to all participants provided greater ease in conducting and absorbing the content.
- The group facilitates adherence to therapeutic proposals, as members are mutually influenced, helping them reflect on and interpret the proposed collective activities.
- The appreciation of positive and negative feelings gave participants the freedom to express their particularities and a sense of relief when sharing the difficulties presented by the group.
- Frustration decreased and difficulties were accepted, based on disagreements and the need to search for solutions to a common task.
- The location available for the workshops had an appropriate physical structure and diversity of materials, facilitating the scheduled activities.
- The time set for each session can be considered appropriate, as the scheduled tasks could be carried out within the established limit.
- All children improved their phonological processing skills and reading and writing performance after participating in the group intervention process.

### Challenges

- The development of strategies had to be limited to make scheduled activities attractive and meaningful for children.
- There was a need to maintain the group's attention when some members had restless behavior.
- Members' communication/expression may be hampered by individual constraints, caused by unfiltered speech or exposure of children, generating resistance to group participation. However, after pertinent scores from the therapist, an improvement in interrelationships was observed.
- Possible imbalances in the groups due to the absence or abandonment of participants led others to question the reasons for non-attendance.
- Syllabic and phonemic awareness activities raised the most questions for children to understand and execute, requiring constant support and assistance from the therapist.

### DISCUSSION

Individual variations in the learning process are common<sup>4,7</sup>, which may be associated with the particularities of the phonological processing triad (rapid automatized naming, phonological working memory, and phonological awareness). These variations can be more easily observed and analyzed in the initial years of literacy, and the prior development of these skills favors the acquisition of reading and writing, providing greater academic and socio-emotional motivation<sup>4,7</sup>. Studies<sup>20-22</sup> point out that both phonological and orthographic processes are important for learning to read and write since phoneme-grapheme conversion patterns can be learned with increased exposure to the frequency of occurrence and use of targeted stimulation activities<sup>21,22</sup>. Therefore, this study was designed following previous findings<sup>10,20-22</sup>, considering the need for intervention in the first literacy cycle to develop phonological processing skills, essential for learning to read and write, avoiding accumulated delays in later years, maintaining self-esteem, and improving the social image.

Another relevant factor is some health professionals' growing interest in working with collective care, indicating group therapy as privileged spaces that enhance therapeutic processes<sup>11-13,23</sup>. Hence, this study is in line with advances in SLH research, which has raised new questions and needs to deepen, reorganize, and redefine the techniques used at



work<sup>11,12</sup>. Previous studies<sup>10,20-22,24-27</sup> described SLH intervention strategies with models similar to this study and emphasized the need to investigate and integrate, in intervention, aspects related to auditory discrimination training, phonological awareness, processing speed, and phonological working memory. They also demonstrated their applicability to improve children's academic performance.

According to the results, another important observation is that collective care experiences in the format of workshops enabled more dynamic and motivated participation and, consequently, more significant learning. Similar results were observed in previous studies<sup>28,29</sup>, in which the active attitude of children concerning their learning, encouraged by the use of dynamic strategies based on active methodologies, and the positive social relationships established between them and the mediator favored the construction of an environment that enhances performance, besides alleviating the physical and emotional stress. Thus, the proposal developed and described in this study agrees with the literature<sup>20-29</sup>, seeking to build a dynamic group SLH intervention for children with poor academic performance, using strategies to improve phonological processing skills and, consequently, verifying the positive impact on learning to read and write.

Concerning the benefits and difficulties of group practice, studies<sup>11-13,30-32</sup> have pointed out that the options for SLH collective care aim to resolve high demand and speed up care – i.e., more people served in a shorter time. Furthermore, addressing the group approach as a potential in therapy enables preventive and educational interventions.

Data from the literature use different criteria to make up therapeutic groups<sup>11-13,30-32</sup>. Some authors argue that a group must be homogeneous – i.e., its participants must have similar age ranges and symptoms<sup>11-13</sup>. Another alternative for group composition described in the literature<sup>11-13,23</sup> is to opt for heterogeneous groups, whose members have variable characteristics. This composition is more suitable when the topics covered in the group do not have a common schedule and is justified by the varied contribution of each group participant as a factor for better group performance<sup>11-13,23</sup>.

This study adopted a homogeneous group formation – i.e., participants had similar age ranges and symptoms. This format aims to facilitate the therapeutic process by including common and sequential activities for the group, helping them learn the content<sup>11-13,31</sup>. Furthermore, perceiving a dysfunction in others and

sharing anxieties would provide emotional relief for the members, causing a positive behavior change, and resulting in a better prognosis<sup>13,30,31</sup>.

Regardless of the approach, collective care requires organizational principles to form them<sup>12,13,32</sup>. The service must first be planned, clarifying its intended objectives and purposes, which material resources will be essential for its proper functioning, a script of the activities that will be carried out at each meeting, and the intended number of sessions to achieve its goal<sup>13,23,32</sup>. Secondly, it is important to select and divide patients into specific groups according to their needs, taking into account aspects such as compatibility of schedules, periodicity, number of participants, and age range to minimize the effects of unpredictability, inherent to groups<sup>12-13,32</sup>. Another attribute approached in the literature<sup>23</sup> is the duration set for group therapy, whose number of sessions ranges from 8 to 20 when specific well-defined goals have been established. The option for groups with unlimited time is more suitable for open groups, that is, whose participants are allowed to enter at any time and whose topics do not depend on a sequential structure<sup>23</sup>.

Studies<sup>12,31,32</sup> point out that SLH pathologists must focus on the goals for each group care session, with group interaction rules and routines that lead members to organize themselves and achieve their purpose. Moreover, improved listening is important to assign meanings and highlight attitudes, when necessary<sup>12-13,32</sup>.

Hence, the group SLH intervention program demonstrated, in line with the literature<sup>20-29</sup>, the importance of structural planning, including the preparation, development, and progression of activities to stimulate phonological processing skills and their positive influence on the learning process, which can be used as a therapeutic resource for children with poor academic performance, in addition to the possibilities and challenges of group practice.

Nevertheless, despite the children's improved performance from before to after the group intervention, performance in some skills remained below expectations for the age group and education level. In this case, it was necessary to continue the therapeutic process, aiming to adequately develop such aspects of learning to read and write. These results must also be interpreted cautiously, due to the sample size and configuration – i.e., a specific group of children referred to the SLH service of a municipality, making it impossible to generalize the findings. Moreover, as the research lacked a control group and was designed

according to the little time available, it could not control other factors possibly concomitant with the intervention, which may have changed outcomes, making it an important limitation of this study. On the other hand, this does not rule out using this intervention procedure for future guidance and investigations, contributing to the discussion, proposing outpatient intervention strategies, and pointing out the need for more robust epidemiological studies with this population.

## CONCLUSION

This study presented a group SLH intervention program, highlighting forms of therapeutic organization most recommended in the literature to form groups that help meet the intended objectives and purposes. The proposal demonstrated its applicability to improve phonological processing skills and enhance therapeutic effects in children presented with poor school performance, positively influencing academic learning. Although it was developed to be brief and encompassed a specific population, the intervention program can be used as an additional strategy, helping propose and discuss strategies, since the children subjected to the intervention process had positive results in learning to read and write, which further encourages more robust studies.

## ACKNOWLEDGMENTS

Gratitude is extended to the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) for the grant provided for International Postdoctoral Fellowship related to the 2015 Postdoctoral Research announcement – Call I. Process: BEX 7377/14-2.

## REFERENCES

1. Fernandes LM, Leme VBR, Elias LCS, Soares AB. Predictors of academic achievement at the end of middle school: History of repetition, social skills and social support. *Trends Psychol.* 2018;26(1):215-28. <https://doi.org/10.9788/TP2018.1-09En>
2. Siqueira CM, Gurgel-Giannetti J. Mau desempenho escolar: uma visão atual. *Rev Assoc Med Bras.* 2011;57(1):78-87. <https://doi.org/10.1590/S0104-42302011000100021>
3. Lopes SG, Xavier IMDC, Silva ALDS. Rendimento escolar: um estudo comparativo entre alunos da área urbana e da área rural em uma escola pública do Piauí. *Ensaio: aval. pol. públ. educ.* 2020;28(109):962-81. <https://doi.org/10.1590/s0104-40362020002802371>
4. Schoenel ASP, Escarce AG, Araujo LL, Lemos SMA. Influence of phonological processing on poor school performance: Systematic literature review. *CoDAS.* 2020;32(5):1-11. <https://doi.org/10.1590/2317-1782/20192018255 PMID 33174983>
5. Choi D, Hatcher RC, Dulong-Langley S, Liu X, Bray MA, Courville T et al. What do phonological processing errors tell about students' skills in reading, writing, and oral language? *J Psycho Asses.* 2016;35(1-2):24-46. <https://doi.org/10.1177/0734282916669018>
6. Bratsch-Hines M, Vernon-Feagans L, Pedonti S, Varghese C. Differential effects of the targeted reading intervention for students with low phonological awareness and/or vocabulary. *Learn Disabil Q.* 2020;43(4):214-26. <https://doi.org/10.1177/0731948719858683>
7. Philips RR, Abraham SSDMM. An Overview on learning difficulty among school children. *Indian J Public Health Res Dev.* 2020;11(7):884. <https://doi.org/10.37506/ijphrd.v11i7.10188>
8. Moyeda IXG, Ojeda FJR, Velasco AS. Efectos de actividades fonológicas en el vocabulario, las habilidades psicolingüísticas y los procesos lectores de niños de primer grado. *Acta Colomb Psicol.* 2015;18(2):29-40. <https://doi.org/10.14718/ACP.2015.18.2.3>
9. Cáceres-Assenço AM, Ferreira SCA, Santos AC, Befi-Lopes DM. Application of a Brazilian test of expressive vocabulary in European Portuguese children. *CoDAS.* 2018;30(2):e20170113. <https://doi.org/10.1590/2317-1782/20182017113 PMID: 29791612>
10. Hodgins H, Harrison GL. Improving phonological awareness with talking tables in at-risk kindergarten readers. *Res Dev Disabil.* 2021;115(3):103996. <https://doi.org/10.1016/j.ridd.2021.103996>
11. Veis RV, Dassie-Leite AP, Panhoca I, Bagarollo MF. Grupo terapêutico em fonoaudiologia: revisão de literatura. *Rev. CEFAC.* 2012;14(3):544-52. <https://doi.org/10.1590/S1516-18462011005000131>
12. Araújo MLB, Freire RMAC. Atendimento fonoaudiológico em grupo. *Rev. CEFAC.* 2011;13(2):362-8. <https://doi.org/10.1590/S1516-18462011000200019>
13. Trad LA. Bomfim. Grupos focais: conceitos, procedimentos e reflexões baseadas em experiências com o uso da técnica em pesquisas de saúde. *Physis.* 2009;19(3):777-96.
14. ABEP – Associação Brasileira de Empresas de Pesquisa. Critério de Classificação Econômica Brasil – 2019 – [www.abep.org](http://www.abep.org) – [abep@abep.org](mailto:abep@abep.org). Dados com base no Levantamento Sócio Econômico 2019 – IBOPE.
15. Moojen S. CONFIAS Consciência fonológica: instrumento de avaliação sequencial. São Paulo: Casa do Psicólogo, 2003.
16. Denckla MB, Rudel R. Rapid automatized naming of picture objects, colors, letters, and numbers by normal children. *Cortex.* 1974;10(2):186-202.
17. Capellini SA, Oliveira AM, Cuetos F. PROLEC: Provas de avaliação dos processos de leitura. São Paulo: Casa do Psicólogo; 2010.
18. Pinheiro AMV. Reading and spelling development in Brazilian Portuguese. *Read Writ.* 1995;7(1):111-38.
19. Andrade CRF, Béfi-Lopes DM, Fernandes FDM, Wertzner WH. ABFW: Teste de linguagem infantil nas áreas de Fonologia, Vocabulário, Fluência e Pragmática. (2a ed. rev, ampl. e atual.). Barueri (SP): Pró-Fono. 2004; Cap. 2, p. 33-50.
20. Gokula R, Sharma M, Cupples L, Valderrama JT. Comorbidity of auditory processing, attention, and memory in children with word reading difficulties. *Front. Psychol.* 2019;10(2):2383. <https://doi.org/10.3389/fpsyg.2019.02383>
21. De Vos A, Vanderauwera J, Vanvooren S, Vandermosten M, Ghesquière P, Wouters J. The relation between neurofunctional and neurostructural determinants of phonological processing in pre-readers. *Dev Cogn Neurosci.* 2020;46(4):100874. <https://doi.org/10.1016/j.dcn.2020.100874>

22. Silva C. Desempenho em processamento fonológico de escolares na alfabetização. *Cis.* 2022;22(1):50-69. <https://doi.org/10.53660/CONJ-463-504>
23. Ezhumalai S, Muralidhar D, Dhanasekarapandian R, Nikketha BS. Group interventions. *Indian J.Psychiatry.* 2018;60(4):S514. [https://doi.org/10.4103/psychiatry.IndianJPsychiatry\\_42\\_18](https://doi.org/10.4103/psychiatry.IndianJPsychiatry_42_18) PMID: 29540924.
24. De Groot BJ, Van den Bos KP, Minnaert AE. Rapid Naming and Phonemic Awareness in children with or without reading disabilities and/or ADHD. *J Learn Disabil.* 2017;50(2):168-79. <https://doi.org/10.1177/0022219415609186>
25. Powell D, Atkinson L. Unraveling the links between rapid automatized naming (RAN), phonological awareness, and reading. *J Educ Psychol.* 2021;113(4):706-18. <https://doi.org/10.1037/edu0000625>
26. Pfost M, Blatter K, Artelt C, Stanat P, Schneider W. Effects of training phonological awareness on children's reading skills. *J Appl Dev Psychol.* 2019;65(2):101067. <https://doi.org/10.1016/j.appdev.2019.101067>
27. Damasceno ESS, Sacaloski M, Costa MO, Kida ASB, Ávila CRB. Stimulation program in an educational setting for improvement of skills underlying reading. *Audiol., Commun. Res.* 2022;27(1):01-09. <https://doi.org/10.1590/2317-6431-2021-2549>
28. Spink MJ, Menegon VM, Medrado B. Oficinas como estratégia de pesquisa: articulações teórico-metodológicas e aplicações ético-políticas. *Psicol. Soc.* 2014;26(1):32-43. <https://doi.org/10.1590/S0102-71822014000100005>
29. Fernandes WJ. Formação e capacitação continuada do trabalhador da saúde para atuação com grupos. *Vínculo.* 2019;16(1):89-97. <https://doi.org/10.32467/issn.1982-1492v16n1p89-97>
30. Friedman S, Lopes JC, Ribeiro MG. O vínculo no trabalho terapêutico fonoaudiológico com grupos. *Distúrb. Comun.* 2011;23(1):59-70. <https://pesquisa.bvsalud.org/portal/resource/pt/psi-49920>
31. Souza APR, Crestani AH, Vieira CR, Machado FC, Pereira LL. O grupo na fonoaudiologia: origens clínicas e na saúde coletiva. *Rev. CEFAC.* 2011;13(1):140-51. <https://doi.org/10.1590/S1516-18462010005000042>
32. Machado MLCA, Berberian AP, Santana AP. Linguagem escrita e subjetividade: implicações do trabalho grupal. *Rev. CEFAC.* 2009;11(4):713-9. <https://doi.org/10.1590/S1516-18462009000800022>

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DBOB, AGE, SMAL: Investigation; Methodology; Software; Supervision; Validation; Data curation; Writing – Original draft; Writing – Review & editing.

#### **Data sharing statement:**

The authors declare that individual data from de-identified participants (including data dictionaries) will be shared, all data collected from participating individuals will be shared after de-identification, that additional related documents will be available, such as study protocol, statistical analysis plan, informed consent form, clinical study report and analytical code, that the data will be available immediately after publication and without an end date, that the data they can be accessed by anyone, for any purpose and available, indefinitely, upon request to the corresponding author.