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Language intervention in preschool: an action in promotion of children's health

Atuação fonoaudiológica na pré-escola: uma ação de promoção à saúde da criança

Actuación fonoaudiológica en la pre-escuela: una acción de promoción a la salud del niño

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Abstract

Introduction: Speech therapy in preschool follow-up is also a health promotion action. The development and evolution of children in learning are also linked to awareness and situations that are fundamental to the progress of communication and language. **Objective**: To verify whether oral language stimulation practices promote the development of oral language skills in pre-school children, such as the enhancement of their vocabulary, verbal memory and phonological awareness. **Methods**: experimental study with a control group of children, aged between one and a half year old and four and a half years old. The study was carried out in three stages. The purpose of the first stage was to evaluate children's communication skills through the application of the Behavioral Observation Protocol (PROC). The second phase referred to the implementation of the intervention program with stimulation of oral language in the school environment; the third stage of this study involved the reapplication of the aforementioned PROC. The intervention took place in a group over nine weeks. **Results**: A statistically significant increase of the scores was observed in the second application of the PROC in comparison with that conducted in the first stage of this study ($p < 0.001$). Such an increase cannot be explained by the increase in the age group, which underlines the importance of the intervention performed. **Conclusion**: The findings made in

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this study lead to the conclusion that intervention with oral language stimulation practices in the school environment helps in the communicative and cognitive development of pre-school children.

Keywords: Language Development; Health Promotion; Child Language.

Resumo

Introdução: A atuação fonoaudiológica no acompanhamento pré-escolar constitui-se também em uma ação de promoção de saúde. O desenvolvimento e evolução da criança no aprendizado estão atrelados também à consciência e situações fundamentais para o progresso da comunicação e da linguagem. **Objetivos:** verificar o desenvolvimento das habilidades da linguagem oral, tais como o aumento de vocabulário, memória verbal e consciência fonológica em crianças pré-escolares. **Métodos:** Estudo experimental com realização de um programa de intervenção de linguagem oral e uso de grupo controle. Foram realizadas avaliações da linguagem oral antes e após a intervenção em todos os grupos, por meio da aplicação do Protocolo de Observação Comportamental – PROC. O PROC gera um escore total de 200 pontos distribuídos entre as habilidades de comunicação, compreensão e desenvolvimento cognitivo. Para a estimulação, realizaram-se atividades lúdicas para a ampliação do vocabulário e para estimulação do desenvolvimento da consciência fonológica. A intervenção aconteceu em grupo no período de nove semanas. **Resultados:** Observou-se um aumento estatisticamente significativo da pontuação no segundo período de aplicação do PROC, em relação à primeira aplicação ($p<0,001$), o que representa uma importante ferramenta de promoção da saúde da criança, pois a maior pontuação não se explica apenas pelo aumento da idade, o que nos leva a inferir sobre a importância da intervenção realizada. **Conclusão:** A inserção de práticas de estimulação de linguagem oral no âmbito escolar se configura em uma ação de promoção da saúde e deve ser incentivada no planejamento pedagógico do pré-escolar.

Palavras-chave: Desenvolvimento da linguagem; Promoção da saúde; Linguagem Infantil.

Resumen

Introducción: la terapia del habla en el seguimiento preescolar también es una acción de promoción de la salud. El desarrollo y la evolución de los niños en el aprendizaje también están vinculados a la conciencia y las situaciones que son fundamentales para el progreso de la comunicación y el lenguaje. **Objetivos:** verificar el desarrollo de las habilidades del lenguaje oral, tales como el aumento de vocabulario, memoria verbal y conciencia fonológica en niños preescolares. **Métodos:** Estudio experimental con realización de un programa de intervención de lenguaje oral y uso de grupo control. Se realizaron evaluaciones del lenguaje oral antes y después de la intervención en todos los grupos, a través de la aplicación del Protocolo de Observación Comportamental - PROC. El PROC genera una puntuación total de 200 puntos distribuidos entre las habilidades de comunicación, comprensión y desarrollo cognitivo. Para la estimulación, se realizaron actividades lúdicas para la ampliación del vocabulario y para la estimulación del desarrollo de la conciencia fonológica. La intervención tuvo lugar en un grupo durante un período de nueve semanas. **Resultados:** Se observó un aumento estadísticamente significativo de la puntuación en el segundo período de aplicación del PROC, en relación a la primera aplicación ($p <0,001$), lo que representa una importante herramienta de promoción de la salud del niño, pues la mayor puntuación no se explica sólo por el aumento de la edad, lo que nos lleva a inferir sobre la importancia de la intervención realizada. **Conclusión:** La inserción de prácticas de estimulación de lenguaje oral en el ámbito escolar se configura en una acción de promoción de la salud y debe ser incentivada en la planificación pedagógica del preescolar.

Palabras claves: Desarrollo del Lenguaje; Promoción de la Salud; Lenguaje Infantil.

Introduction

Preschool stage is crucial in the education process and requires attention on the need to create essential learning conditions for the development of oral and written language. In this sense, prevention at this stage may represent a reduction in school failure, with emphasis on actions aimed at promoting the global development of children and favoring meaningful learning. Access to the written code requires mastery of the oral language at a understanding and expressive level, as well as being a comprehensive action for children's health care, as it promotes the effective participation in the society in which they live[1]. It should be noted that individual development is subject to the learning opportunities provided by the world in which they are and, in this context, the school is an important place for language acquisition and the work of speech-language pathologists in kindergarten is an important promotional tool for children's health[2].

Given the time spent by the child in this environment and the diversity of experiences and opportunities provided, the school represents an important space for socialization and becomes an essential place for the promotion of child health[3]. By exposing children to situations that are essential to the progress of communication and language, the role of the school in language development is undeniable. It is worth highlighting the teacher's primary role in identifying potential language issues, as the family may be used to the characteristics of children's communication. Therefore, the sharing of knowledge among the different players involved in the learning/literacy process, such as educators, teachers and speech-language pathologists, tends to benefit the child and the school community.

Based on the fact that certain situations and experiences may facilitate and enhance the development and learning, the speech-language pathology practice in the educational context aims to provide adequate and effective conditions for the development of individual potentialities and capacities of children[2,4].

As for the literacy process and language skills, it is noteworthy that learning to read and write implies the use of speech naturally and effectively by the child in the communicative circumstances of everyday life, which should become the object of their conscious attention, thus enabling the development of metalinguistic awareness[5].

As a skill that is not naturally developed, phonological awareness requires the teacher to act as a mediator between children and the phonological components of words, making them aware of these components and adding phonemes of oral words to form written words[6]. Stimulation is believed to be required for the effective cognitive development in every child[7]. Stimulation/intervention plays an important role as strategy for children's health promotion as it benefits child development[8-13].

Comprehensive child health care in the school context needs to address nutritional, food, immunological and epidemiological aspects, in addition to social, behavioral and language issues. Each child should be analyzed according to their socioeconomic and cultural context, as well as their own stage of development[14].

Therefore, this study aimed to verify the development of oral language skills, such as enhancement of their vocabulary, verbal memory and phonological awareness in preschool children in a public school, through oral language stimulation practices in the school context.

Methods

This is an experimental study with an intervention program with preschoolers from a public school and it includes a control group from the same school. Inclusion criteria included children aged one year and six months old to four years and six months old, enrolled in a day care center in Florianópolis, whose parents or guardians agreed to their participation and signed the Free Prior Informed consent - FPIC. On the other hand, exclusion criteria included children with syndromes and/or intellectual deficits. This study was approved by the Research Ethics Committee under the process no. 1.387.627.

In order to conduct the intervention program, the subjects were first divided according to their age: G1 and G2; children aged 1 year and 6 months to 3 years old at the date of the first assessment of the PROC were included in one group (G1), while children aged 3 years and 1 month to 4 years and 6 months old at the assessment date were included in the other group (G2).

Then, the Behavioral Observation Protocol - PROC[15,16] was applied, which consisted of observing the child's general behavior in semi-structured situations, evaluating their communicative and

cognitive development. The PROC results in a total score of 200 points that is divided into the following aspects: 70 points for communication skills; 60 points for oral language understanding; and 70 points for cognitive development aspects. Thus, two groups were defined based on the average score obtained in the PROC: Intervention (IG) - below average (lowest score); and Control (CG) - above average (highest score) - CG.

The children were divided into subgroups:

- Control Group 1 (G1-C): which consisted of subjects aged 1 year and 6 months to 3 years old and who achieved the highest score in the PROC assessment;
- Intervention Group 1 (G1-I): which consisted of subjects aged 1 year and 6 months to 3 years old and who achieved the lowest score in the PROC assessment;
- Control Group 2 (G2-C): which consisted of subjects aged 3 years and 1 month to 4 years and 6 months old and who achieved the highest score in the PROC assessment;
- Intervention Group 2 (G2-I): which consisted of subjects aged 3 year and 1 month to 4 years and 6 months old and who achieved the lowest score in the PROC assessment.

The intervention was conducted with the group with the lowest score, IG; while actions, as storytelling, were performed with the control group. The intervention program with children included in the intervention group (IG-1 and IG-2) consisted of 45-minute groups during nine weekly sessions. The children's language level was taken into account when carrying out the program, which contained two levels of task complexity, that is, Level I provided to children from IG-1 (1Y6M - 3Y) and Level 2, which was applied to children from IG-2 (3Y1M - 4Y6M).

The strategies used at Level 1 aimed to develop the following skills: Understanding (receptive vocabulary and simple orders), Vocabulary (familiar and high-frequency words), Phonological awareness (rhymes) and narrative-pragmatic skills (narrative of children's stories and dialogic shift exchanges).

The intervention program strategies analyzed at Level 2 were the same; however, they had a higher degree of complexity: Understanding (complex orders), Vocabulary (semantic categories), Phonological awareness (alliteration and syllabic awareness) and narrative-pragmatic skills (narrative conversational skills of daily facts). The intervention was applied by two students of the speech-language pathology course at UFSC.

After the intervention, the PROC was applied again in the groups (CG1, IG1, CG2 and IG2) in order to observe the progress of the evaluated groups.

After data collection, the data were introduced in Microsoft Office Excel 2007 spreadsheets and statistically analyzed using the STATA 11.0. Data analysis was descriptive, with the characterization of children, and average obtained in the following aspects: communication skills; oral language understanding; cognitive development; and averages obtained at both applications of PROC. In order to verify the age bias, associations between gender and age group were tested with the evaluated aspects, as well as with the application of the PROC, using the Fisher's Exact Test. The Wilcoxon signed-rank test was used to compare changes in scores at both applications before and after the intervention. A significance level of 5% was adopted.

Results

109 children were eligible for the study. Most (57.80%) female, with a mean age of 2.44 (SD=0.85) years.

According to age group, the groups were divided as follows: Group 1 (G1) had 62 (56.88%) children and Group 2 (G2) had 47 (43.12%) children. In turn, the control and intervention groups were prepared based on the overall average score obtained in the PROC, which was equal to 116.59 (SD=41.93) at the first time. Thus, CG-1 and IG-1 groups consisted of 31 (28.44%) children, with a mean age of 2.19 and 1.46, respectively.

Children from both groups participated in the stimulation program for the subsequent reapplication of the PROC. In this last phase (Phase 3), CG-2 consisted of 23 (21.10%) children with a mean age of 3.28 years; while IG-2 had 24 (22.02%) children with a mean age of 3.21 years. It was noticed that the overall average increased to 148.61 (SD=30.88) points and that the scores obtained were higher in all groups (Figure 1).

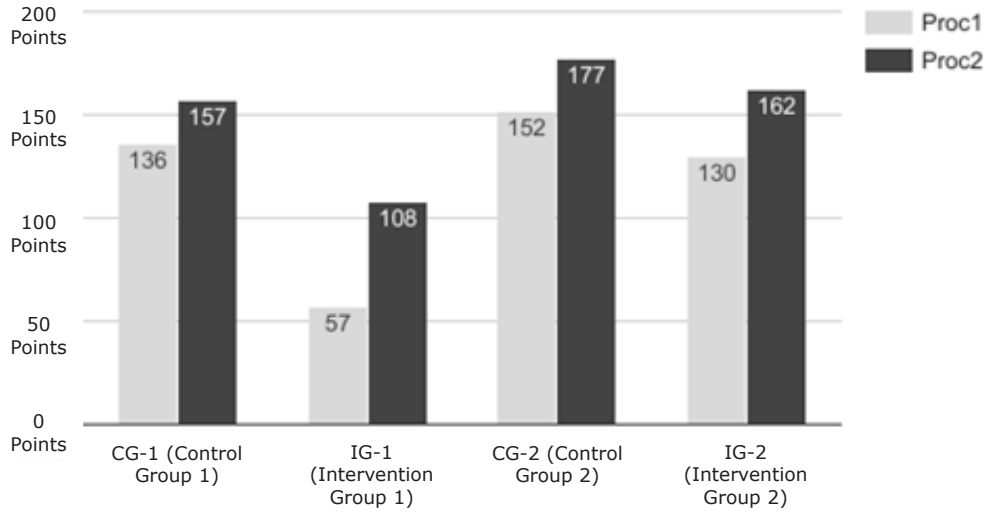

Figure 1. Distribution of the means of the groups (control and intervention) in the two moments of the evaluation. Florianópolis, 2017.

Aspect A1 (Communication Skills): Communication (expressive) skills in the first application of PROC (PROC1) obtained an average score of 48.33 (SD=19.51) points. Based on the average score, it was found that 66.97% of participants were above average (Table 1). There was an association between increasing age and increased score in A1 ($p<0.001$) at the first PROC application.

On the other hand, in the second application of PROC (PROC2), after the intervention, it was noticed that 26.61% of the children reached between 61 and 70 points, emphasizing that 70 points was the maximum score in this aspect. In addition, the average score obtained by the children increased to 61.71 (SD=10.34) points, which is 59.63% above the average (Table 1). There was no association between increasing age and increased scores in A1 ($p=0.701$).

Table 1. Distribution of children's scores in the three language domains in two moments of PROC (1 and 2). Florianópolis, 2017.

Points	ASPECT 1 COMMUNICATION SKILLS		ASPECT 2 UNDERSTANDING		ASPECT 3 COGNITIVE DEVELOPMENTE	
	PROC1	PROC2	PROC1	PROC2	PROC1	PROC2
Average Score	48.33	61.71	34.31	42.11	34.04	44.80
Standard deviation	19.51	10.35	7.50	6.54	18.31	16.67
Max-Min values	1-64	21-72	0-40	20-50	1-67	6-66
0 to 19 points	14.68%	-	2.75%	-	25.69%	14.00%
20 to 39 points	9.17%	5.50%	43.12%	9.17%	24.77%	20.00%
40 to 49 points	11.01%	6.42%	54.13%	58.72%	31.19%	17.00%
50 to 59 points	24.77%	23.85%	-	32.11%	16.51%	40.00%
60 points	13.76%	-	-	-	-	1.00%
61 to 70 points	26.61%	64.22%	-	-	1.83%	8.00%

With respect to aspect A2 (Understanding): Oral language understanding, in the first application of PROC (PROC1) it was found that 54.13% of children achieved 40 points, while 60 points was the maximum score in this aspect. However, the average score obtained by the children was 33.31 (SD=7.49) points. Based on the average score, 54.13% of the children were above average

(Table 1). There was an association between increasing age and increased scores in A2 (p=0.001).

As for A2, it was noticed in the second application of PROC (PROC2) that 58.72% of children reached 40 points and 32.11% reached 50 points. The average score obtained by the children increased to 42.11 (SD=6.53) points, and 32.11% of participants were above the average (Table 1). There was no association between increasing age and increased scores in A2 (p=0.105).

As for the aspect A3 (Cognitive Development): As for the Cognitive Development aspects in PROC1, it was noticed that 16.51% of children reached between 50 and 59 points, with 70 points as the maximum score in this aspect (A3). The average score obtained by the children was 34.04 (SD=18.31) points. Based on the average score, 59.63% of the children were above average (Table 1). There was an association between increasing age and increased scores in A3 (p=0.001).

It was noticed in the second application of PROC (PROC2) that 40% of children reached 50 to 59 points. In addition, the average score reached 44.80 (SD=16.67) points and 64.22% of children were above average. There was no association between increasing age and increased scores in A3 (p=0.702).

There was also an association between females and the best performance in the A3 - Cognitive Development (p=0.008). The same was not observed in other aspects: A1 – Communication Skills (0.572) and A2 – Oral Language Understanding (p=0.749).

There was a statistically significant association between increasing age and increased scores in all aspects of PROC1. However, the same was not noticed in PROC 2. Thus, it is suggested that the increase in the PROC2 score cannot be explained by the increasing age, highlighting the importance of the intervention conducted.

When compared to the first application (p<0.001) of the PROC, there was a statistically significant increase in the score in the second application. When analyzing the differences in the scores according to the group: control and intervention groups, an increase in the scores was found in the second application, both for the control group (p<0.001) and for the intervention group (p<0.001). Thus, it can be inferred that there was no difference between the groups and it was not possible to infer that the intervention was responsible for the increase in the scores in the intervention group.

Discussion

There was an increase in the average score between the application of PROC 1 and PROC2 in all aspects evaluated; and there was no association between the increasing age and the increased scores at the second evaluation (PROC 2), which suggests the importance of the intervention program in the highest scores obtained by the children. It is known that the natural development of the child may impact the increase noticed in the score, as the first three years of life are essential for child development, being characterized by the acquisition of new functions and skills and brain plasticity. These aspects become major advances in the motor, cognitive and social areas, such as language acquisition and mastery, which are essential for a child's overall development and learning[7]. Nevertheless, these results indicate the relevance of these actions to promote children's health.

The school environment contributes to the advancement in oral language skills, as in addition to the socialization encouraged by the contact with their peers, the actors involved in this learning scenario are expected to contribute to the acquisition of knowledge and stimulation of children's language[8]. This report further reinforces the importance of the speech-language pathologist in the school environment, developing actions of promotion, improvement, and prevention of disorders in partnership with the educators, optimizing the teaching and learning process[15,16,17].

Aside from the cognitive aspects, there was no statistically significant difference regarding gender. This finding is in line with another study that noted that the improvement in the use of verbs in the early language acquisition phase is not affected by the gender, and it also highlights that the communicative environment has a significant influence on language development[18].

Another relevant aspect is the relationship between the PROC score and the child's age, since it was noticed that the older the child, the higher the PROC score. This aspect can also be observed in another study that highlighted the increase of the score in aspect A1 (Communication Skills) being related to the increasing age of the child[19]. The same study also reinforces that, although no statistically

significant difference was found between the age groups compared, the three-year-old, children had a higher score when compared to the two-year-olds.

It was not possible to infer that the increase in averages in the PROC 2 analysis was due to the activities performed during the intervention sessions. However, it is noteworthy that the reading of children's stories is an important activity that promotes the development of socio-cognitive skills, social information processing and understanding of mental states[8].

Another study[20] reports that by listening and telling stories, children learn to create conversations including questions and answers, and develop the ability to argue. Thus, storytelling and retelling help in the development of memory and attention and facilitates the acquisition of grammatical constructions.

In addition, there were activities also during intervention sessions that included rhyme and alliteration, aiming to stimulate the development of phonological awareness. Phonological awareness is essential due to the fact that it enables the development of oral language, communication, reading and writing[21]. Therefore, a deficit in the organization and mental representation of speech sounds would lead to changes in the processes of perception, analysis and conscious manipulation of syllables, which could result in difficulties in the acquisition of the written code. Creating favorable environments for the development of communication skills may be seen as a tool to promote child health[22].

There is a study, which is in line with the statement above, that describes that rhyme, an important component of syllabic awareness, is implicitly included in the school environment since preschool - with the use of songs, nursery rhymes - but when it comes to explicit activities, activities including rhyme are initiated after alliteration activities. The empowerment of the players that are involved in the learning process of children through the practice of health education enables the detection/identification of aspects of human communication based on the local reality of those involved, contributing to individual and collective solutions. The speech-language pathologist work in early childhood education should include the training of educators for the development of health promotion and prevention actions in speech-language pathology that should be incorporated into the pedagogical planning, as a way to provide autonomy in educational practices, strengthening the bond and creating and supportive environments[22].

Conclusion

It can be concluded that intervention programs in the school environment can be an important partner in the promotion of the communicative and cognitive development of preschool children. The inclusion of the speech-language pathologist in the school environment should involve the promotion of practices that encourage effective language benefits for preschool children, as well as the counseling of teachers and guidance on pedagogical organization as a way to promote child health, early diagnosis and development of collective actions aimed at quality of life for the school community.

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