

MENDIVE



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Original article

Activities for the development of phonemic hearing in the prevention of language disorders

Actividades para el desarrollo
del oído fonemático en la
prevención de trastornos del
lenguaje

Atividades para o
desenvolvimento da audição
fonêmica na prevenção de
distúrbios de linguagem

Miladis Fornaris Méndez



<https://orcid.org/0000-0003-4510-6610>

Félix Lázaro Huepp Ramos



<https://orcid.org/0000-0003-2717-1670>

Esteban Hechavarría García



<https://orcid.org/0000-0003-4529-0438>

¹University of Oriente. Department of
Special Education-Speech Therapy.
Santiago de Cuba. Cuba.



mfornaris@uo.edu.cu

²University of the East. "Manuel F. Gran"
Center for Pedagogical Studies. Santiago
de Cuba, Cuba.



felixh@uo.edu.cu

³University of Oriente. Department of
Special Education-Speech Therapy.

Santiago de Cuba. Cuba.



esteban@uo.edu.cu

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ABSTRACT

In the production of language, the verbal motor and auditory-verbal analyzers play a crucial role, which together guarantee the successful generation of language. Within the framework of elements that intervene in this complex process, various neuropsychological factors have been identified, among which is phonemic hearing. The role played by phonemic hearing in the analysis and synthesis of language signs will allow the acquisition of oral and written language, so it is necessary to consider the possibilities of preventing language disorders from its adequate and timely stimulation. The objective of this work is to socialize the results achieved with the elaboration and application of activities for the development of phonemic hearing in children of the fifth year of life. For the execution of the aforementioned study, different research methods were used such as: analysis-synthesis, inductive-deductive, modeling, pedagogical test and pre-experiment, which allowed the design and application of these activities with the objective of developing children's phonemic hearing and preventing language disorders in children in their fifth year of life in the nursery school. The activities were applied systematically within the educational process of the aforementioned year and the existence of progress in the development of phonemic hearing of the children studied was confirmed, since the errors detected in the initial evaluation decreased significantly, which shows the effectiveness of the applied activities.

Keywords: auditory verbal analyzer; verbal motor analyzer; language; phonemic hearing.

RESUMEN

En la producción del lenguaje tienen una crucial participación los analizadores, motor verbal y auditivo verbal, los que en conjunto garantizan la exitosa generación del lenguaje. Dentro de la trama de elementos que intervienen en este complejo proceso han sido identificados diversos factores neuropsicológicos, entre los que se encuentra el oído fonemático. El papel que juega el oído fonemático en el análisis y síntesis de los signos del lenguaje permitirá la adquisición del lenguaje oral y del lenguaje escrito, por lo que se hace necesario considerar las posibilidades de prevenir los trastornos del lenguaje a partir de su adecuada y oportuna estimulación. Es objetivo del presente trabajo socializar los resultados alcanzados con la elaboración y aplicación de actividades para el desarrollo del oído fonemático en niños del quinto año de vida. Para la ejecución del mencionado estudio fueron empleados diferentes métodos de investigación como: análisis-síntesis, inductivo-deductivo, modelación, prueba pedagógica y preexperimento, los que permitieron el diseño y la aplicación de dichas actividades con el objetivo de desarrollar el oído fonemático de los niños y prevenir los trastornos del lenguaje en niños del quinto año de vida del círculo infantil. Las actividades fueron aplicadas de manera sistemática dentro del proceso educativo del referido año y se constató la existencia de avances en el desarrollo del oído fonemático de los niños estudiados, toda vez que disminuyeron significativamente los errores detectados en la evaluación inicial, lo que da cuenta de la efectividad de las actividades aplicadas.

Palabras clave: analizador auditivo verbal; analizador motor verbal; lenguaje; oído fonemático.

RESUMO

Na produção da linguagem, os analisadores, os analisadores verbais motores e auditivos verbais têm uma participação crucial, que juntos garantem o sucesso da geração da linguagem. Dentro da rede de elementos que intervêm neste

complexo processo, vários fatores neuropsicológicos foram identificados, entre os quais está a audição fonêmica. O papel que o ouvido fonêmico desempenha na análise e síntese dos sinais linguísticos permitirá a aquisição da linguagem oral e da linguagem escrita, por isso é necessário considerar as possibilidades de prevenção dos distúrbios de linguagem por meio de um tratamento adequado e oportuno. O objetivo deste trabalho é socializar os resultados alcançados com o desenvolvimento e aplicação de atividades para o desenvolvimento da audição fonêmica em crianças do quinto ano de vida. Para a execução do referido estudo foram utilizados diferentes métodos de pesquisa como: análise-síntese, indutivo-dedutivo, modelagem, teste pedagógico e pré-experimento, o que permitiu o desenho e aplicação das referidas atividades com o objetivo de desenvolver a orelha fonêmica das crianças e prevenir distúrbios de linguagem em crianças do quinto ano de vida na creche. As atividades foram aplicadas de forma sistemática dentro do processo educativo do referido ano e foi confirmada a existência de avanços no desenvolvimento da orelha fonêmica das crianças estudadas, uma vez que os erros detectados na avaliação inicial foram significativamente reduzidos, o que explica a eficácia das atividades aplicadas.

Palavras-chave: analizador auditivo verbal; analizador motor verbal; linguagem; ouvido fonêmico.

INTRODUCTION

Language arises in the work process, as a result of the need that men had to communicate with each other. Its emergence and development made possible the generalization of experience and its application in practice. It is also considered an exclusive capacity of man, which allows him to reach the highest level of knowledge: logical knowledge; without

it, man would differ very little from animals.

Language is a distinctive form of knowledge of objects and phenomena of reality, a reflection of said reality that is fostered by means of the native language and that constitutes, in turn, the main means of communication between human beings; through it, the individual enters into a relationship with his peers, to coordinate mutual actions, exchange ideas and influence each other through a system of material means composed of sounds, their combinations in words and sentences, accompanied by gestures that allow the exchange of ideas to be established.

The process of language formation and development is carried out through social activity, specifically in the child's relationship with adults, through which the imitation of language and the knowledge of objects and phenomena of the surrounding world occur. In this way, it becomes a social fact, both by its origin and by its nature.

Correct language production is one of the main elements that guarantee efficient communication, but this correction implies the harmonious functioning of the entire functional system involved in language production.

In children in the first years of primary education, it is common to find some language disorders, among which dyslalia stand out due to their incidence, many of which are corrected with relative ease. Others require greater dedication to their correction, due to their origins and the implications they may have for learning to read; these are sensory dyslalia, which originate when the phonemic ear is not sufficiently developed.

Due to the characteristics of their age, children in their fifth year of life may mispronounce some sounds, confusing them with others that are acoustically similar. In this sense, parents and educators often do not have all the

necessary tools to care for them, which is why this study was designed and implemented to design and implement activities that promote the development of phonemic hearing and contribute to the prevention of language disorders, especially in written language.

It is known that verbal activity is directed by the brain and is carried out on the basis of a system of conditioned reflexes in whose formation two analyzers participate: the auditory verbal analyzer and the verbal motor analyzer.

The work of the verbal motor analyzer, in the process of verbal emission, includes different moments that start from the motive or idea, then passing through different stages until ending with phonetic or sound production.

The auditory-verbal analyzer is used to receive verbal emissions, as well as to control the verbal emissions themselves. The perception and understanding of language is the responsibility of this analyzer. The process of understanding speech sounds also requires a well-formed physical ear with a well-functioning phonemic ear. The phonemic ear, which has the function of analyzing and synthesizing verbal emissions, is acquired. Its specificity lies in the fact that it performs the analysis and synthesis of verbal signs on the basis of which a word is differentiated, so that it plays a fundamental role in the differentiation of verbal sounds, thus promoting the acquisition and development of oral language and written language, with its reading and writing processes.

Referring to this, Solovieva et al. (2009) point out: "phonemic hearing is acquired from the child's birth within the activity of communication with adults according to the language used. Initially, the baby produces sounds that can be found in all languages of the world; gradually, phonemic hearing is required for the particular language" (p. 6).

When carrying out an analysis of the ontogenetic development of phonemic perception, Martínez Mendoza (2004) points out:

The stages of development of phonemic perception must follow a long development process. In this sense, the stages of development of phonemic perception, of phonemic or phonic hearing, as they are usually called, are the following:

In the early stage, three main phases are known:

1. No differentiation of sounds, or pre-phonemic stage.
2. Discrimination of the most distant phonemes, with no differentiation of the closest ones.
3. Beginning of differentiation of the sounds of the language and its phonemic features (where the child distinguishes between correct and incorrect pronunciation, but his speech is still incorrect) (p. 47).

The pre-phonemic phase presents the characteristics of twittering. From the first month, the child can distinguish the sound corresponding to the human voice from the other sounds he perceives, which means the beginning of the formation of phonemic hearing (one of the determining aspects for the acquisition and development of language). The first reactions to language are caused by the intonation and rhythm of the adult's voice. Children also obtain information from the prosody used by adults. In this way, basic patterns are developed that represent their native language.

At around five months, babies can already distinguish between the stern and affectionate tones of their mother's or close relatives' voices. Children can recognize

changes in voice by the raised pitch, according to the emotional coloring of the language (they cry in response to an angry tone and smile to an affectionate tone) and by the timbre (they can distinguish their mother's voice from the voices of other people).

In the second phase, children find it difficult to distinguish different sounds belonging to the same category, because they perceive them as identical to the prototype.

In the third phase, the child is already ready to differentiate all or almost all sounds and, on this basis, any sound can appear in the pronunciation, but this does not happen because the verbal motor analyzer has not matured sufficiently and lags behind the auditory analyzer. The verbal motor analyzer requires a longer period of maturation (three to four years), which is why it is typical for children to pronounce a word poorly, but to discriminate it audibly well.

Phonemic hearing plays a fundamental role in the differentiation of sounds, in the acquisition and development of oral and written language, and evolves from the perception of environmental sounds and inarticulate sounds to the perception of articulated language. This develops in the process of language evolution, with the different sound activities carried out by the child playing a decisive role in its development.

As has been seen, the development of phonemic hearing is of vital importance; its insufficient development can cause the appearance of disorders such as sensory functional dyslalia and sensory dyslexia and dysgraphia, since the differentiation of acoustically similar sounds is limited.

Torres Vidal (2018), Referring to this topic, he points out that:

In cases where pronunciation alterations occur in the form of sound substitutions, and especially

when these occur inconsistently, greater attention should be paid to the exploration of phonemic hearing in order to determine the quantitative and qualitative characteristics of the development of phonemic perception.

Phonemic deficit is the fundamental cause of reading and writing disorders in the form of dyslexia and dysgraphia in school age (p. 12).

The development of phonemic hearing at an early age makes it possible to prevent language disorders (both oral and written), which is why it is necessary to comply with the desired preventive approach established in the current speech therapy care process in Cuba.

Speech therapy has moved from a medical approach to a preventive approach. However, difficulties are evident in the development of the latter task, because more space is devoted to the correction of language disorders.

Taking into account all the above analysis, the objective of this article is to socialize the results obtained with the application of the activities designed for the development of phonemic hearing and the prevention of language disorders.

MATERIALS AND METHODS

The research was conducted at the "Los Pinos Nuevos" kindergarten in Santiago de Cuba, between January and October 2022. Through the application of different research instruments to children in their fifth year of life, changes were detected in the pronunciation of acoustically similar sounds, such as /t/x/s/, /l/x/r/. In the speech therapy examination, a poor

development of phonemic processes was identified.

In response to the actions designed in the research project "Improvement and institutionalization of Cuban society in response to the country's socioeconomic policy", the need to establish a set of activities to develop phonemic hearing was recognized, which would contribute to the prevention of language disorders.

A population of 20 children was considered, which constitutes the enrollment of the fifth year of life, of which 10 children with difficulties in pronunciation were selected as a sample, which constitutes 50% of the population; a reflection of the fact that it is a problem that should be paid attention to due to its repercussions on the future development of the written language of these minors.

The following methods were used for the research:

- Pedagogical test, which allowed to verify the development of phonemic hearing in children in their fifth year of life. The test consisted of administering different sound stimuli to the children, which had to be recognized, identified and differentiated by them; the combinations of each of these objectives gave rise to the items that constituted the evaluation instrument.
- Analysis and synthesis, used to study the development process of phonemic hearing and to reveal its development, characteristics, peculiarities and paths for its development.
- The inductive deductive method made it possible to make generalizations based on the particularities of the educational process carried out and to specify these particularities at each moment based on the most general aspects.

- Modeling, to design activities for the development of phonemic hearing to prevent language disorders.
- Pre-experiment, which enabled the introduction of the modeled activities into practice.

6. Repeat auditory sequences.
7. Discrimination of one sound among others.
8. Differentiation of words by a sound.
9. Phonetic analysis.

RESULTS

From the application of the pedagogical test to the 10 selected children, the difficulties presented in the different items studied are shown (Table 1).

Table 1- Results of the initial pedagogical test applied to children in their fifth year of life

Children	Discrimination of sounds and phonemes							
	1	2	3	4	5	6	7	8
1	X	X	X	X	X	X	X	X
2		X	X	X	X	X	X	X
3		X	X	X	X	X	X	X
4	X	X	X	X	X	X	X	X
5	X	X	X	X	X	X	X	X
6		X	X	X	X	X	X	X
7	X	X	X	X	X	X	X	X
8		X	X	X	X	X	X	X
9	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X

Items:

1. Identification of human voices (female and male).
2. Identification of sounds of musical instruments (drum, tambourine, cymbals).
3. Identification of the intensity of sounds (loud, weak).
4. Discrimination of sound qualities (low, high).
5. Identify the number of times an instrument is played.

Taking into account the results obtained in the pedagogical test, it was determined that 100% of the children studied, in their fifth year of life, present poor development of phonemic hearing, fundamentally in the areas where the tasks demand a greater effort when linking the work of different analyzers; which is a sign of the level of maturity in the sensorimotor functions that must be achieved in order to obtain an optimal development of phonemic perception.

This means that children must be able to identify, discriminate and differentiate sounds, first from nature, musical instruments and, later, the human voice. This ascending development allows the child to have good auditory differentiation, which is first reflected in their pronunciation and later allows them to differentiate phonemes and make a correct phoneme-grapheme association, which constitutes the basis of reading and writing.

Using the modeling method, a set of activities was designed for the development of phonemic hearing in children and to prevent language disorders that corresponded to the items studied in the initial diagnosis.

The general objective of the activities was to develop the phonemic hearing of children in the fifth year of life.

The specific objectives were:

- Prevent language disorders.
- Stimulate auditory differentiation.

The set of activities consisted of 20 activities designed in accordance with the planned objectives and taking into account the characteristics of the children in terms of age (year of life) and their results in the initial diagnosis carried out.

Activity 1

Title: The voices of my companions.

Objective: to discriminate the voices of classmates, developing their vocabulary.

Methodological guidelines

The children are seated in a circle and one of them is assigned to stand in the middle of the circle. The circle begins to move and one of the children must say a word related to a topic (animals, toys, etc.). The child in the center of the circle must identify the voice of the classmate who said the word (discriminate the voice) and say the generalizing concept related to the selected topic. At the same time, the children's vocabulary is consolidated by using these generalizations.

If the child identifies the partner's voice, they will exchange places and start the game again, otherwise the circle will start moving again and another child will say the word.

This operation will be carried out until all the children have the opportunity to identify the voices of their classmates, which will conclude the activity.

Activity 2

Title: My musical instruments.

Objective: to discriminate sounds of musical instruments, developing vocabulary.

Methodological guidelines

The activity will begin by showing the children various musical instruments. The

child must name them and say the generalizing concept (what they are). Afterwards, each instrument will be played so that the child can hear how it sounds. Then, the child will be placed on his back and the musical instruments will be played. The child must identify which instrument corresponds to the sound he heard.

Finally, a song will be sung using musical instruments.

Activity 3

Title: How sounds sound.

Objective: to discriminate the intensity of sounds.

Methodological guidelines

The activity will begin by singing a song, using musical instruments. Afterwards, the children will be shown the sound of each instrument, and a loud and a quiet sound will be made, and it will be explained to them when a sound is loud and when it is quiet. A ribbon will be placed on the eyes and the instrument will be played at different intensities. The child will have to say which instrument it is and how loud it was heard. This activity can be done with voices, making a sound with a loud and a quiet voice and the child will have to identify the intensity of the sound.

It should be stated that it is expressed in complete sentences. Example: The instrument heard was _____ and it was heard loud (low).

Activity 4

Title: Playing with sounds.

Objective: to discriminate qualities of sounds: intensity, tone, duration.

Methodological guidelines

The activity will be carried out in the same way as the previous one, but incorporating

other qualities of sound, so that the children can discriminate between them. Sounds with a low tone, a high tone, long and short. First, it must be determined that the child has mastered these concepts so that he can use them appropriately; that is, a low sound, a high sound, a long sound and a short sound will be demonstrated, and then the discrimination of these will be carried out.

Activity 5

Title: Playing with animals.

Objective: discriminate the sounds produced by different animals.

Methodological guidelines

You will begin by identifying different animals and working with the generalizing concept (what they are), then you will listen to the sound that each animal makes.

What animal is it?

What sound does it make?

When the child has mastered this activity, he/she will be turned on his/her back so that he/she can listen to the sound of an animal and identify which animal it corresponds to. This will be done at various times and the complexity of the activity can be graduated, making sequences of animal sounds, so that the child can choose from a card holder the animals he/she heard and the order in which he/she heard them.

Activity 6

Title: Playing with sounds.

Objective: to associate the sounds produced with the quantity that represents them.

Methodological guidelines

The activity will begin by determining the sound that will be played with; it can be

from instruments, objects, animals or sounds produced by elements of the body (palm of the hands, feet, sounds made with the voice). The children will be given some sticks or another object that allows them to represent the number of times they hear the sound.

We will try with a sound and then we will increase the complexity of the activity.

Associate the knocks with the number. Example: /// (knocks), +++ (or another symbol). Gradually increase the complexity.

Activity 7

Title: Playing with various sounds.

Objective: to reproduce auditory sequences

Methodological guidelines

The child will be told that he must pay attention to the sounds he is going to hear, because he will have to reproduce them. First, small sequences will begin: two claps and a stamp on the floor with the foot. The sequences will be gradually increased, using different musical and body sounds, among others.

Example: /// knock on the table, clap twice, emit two vowels.

Activity 8

Title: Equal sounds.

Objective: discriminate sounds by associating the same sounds.

Methodological guidelines

The activity will begin by listening to a sound (it could be an instrument, a sequence, a melody). Then the child will listen to other sounds, where the pattern sound appears; the child must select which

sound corresponds to the pattern sound (figure 1).



Fig. 1- Pattern sound

Activity 9

Title: My words rhyme.

Objective: recognize words that rhyme.

Methodological guidelines

Children will be given different objects, they will have to identify what they are, pronounce the words and they must look for pairs of words that rhyme, according to a criterion.

They are told that "A rhyme is the repetition of two or more words that end in the same or similar syllables."

For example: love-heat, fire-game, doll-coquette, cat-duck, house-dough, seal-little (table 2)

Table 2- Consonant rhymes

Shout	I repeat, damn, appetite, beautiful, myth
sun	alcohol, sunflower, snail, crucible
star	beautiful, that, maiden, bottle, she

Activity 10

Title: Change of pace.

Objective: to discriminate melodies by their rhythm, associating the corresponding movements.

Methodological orientation

The teacher will play different musical melodies for the child to listen to. He will have to identify melodies with a fast or slow rhythm. When he hears a fast melody he will dance quickly, if he hears a melody with a slow rhythm, he will dance slowly.

This activity can also be done with high and low melody; when it is high he will stand and when it is low he will crouch.

Activity 11

Title: Learning the sounds of the word.

Objective: determine the length of the word.

Methodological orientation

Phonetic analysis: determining the length and quantity of sounds that make up a word. This can be done with the help of materials such as strips, squares, etc.; or when the word is pronounced, the child must separate his hands horizontally until the word stops being pronounced and thus determine if the distance between the hands is long or short.

Activity 12

Title: My first sound.

Objective: determine the first sound in a word.

Methodological guidelines

A word is selected to develop the activity, its meaning, its use and other characteristics are identified. The word is pronounced with emphasis; the child must determine which is the first sound he hears in the word. This activity can also be carried out by determining the last sound. If the child shows potential, the complexity of the sound can be increased by determining the sound that comes after.

Activity 13

Title: Words change.

Objective: discriminate sounds in words.

Methodological guidelines

Several words that differ in a sound are selected (with their images). A word is pronounced and the child must select from the two images the one that corresponds to the pronounced word.

Example: hair-stick. In this way, changes in the meaning of the word are identified by changes in the sounds that compose it.

Activity 14

Title: Ordering sounds.

Objective: to develop phonemic perception.

Methodological guidelines

The activity will be carried out in the same way as the previous one, but in this case the differentiation of a sound in two words will be developed, by the order of the sounds in them, for example: brown-meadow. The child must select the image that corresponds to the word.

In this case, changes in meaning are identified, given by changes in the order of sounds.

Activity 15

Title: Searching for my sound.

Objective: to discriminate one sound among others.

Methodological guidelines

Select the sound to be worked on, and then emphasize the sound by speaking about its characteristics. Later, different words are pronounced where the sound is or is not

present (this will be done with a perforated screen placed in front of the oral cavity, so that the child does not have visual support). The child, upon hearing the word, must determine whether the sound is present. This can be done by clapping his hands, raising a flag, or in another way that is determined.

It can also be done with the game of chairs, the children, in a circle, walk and when they hear the word that has the sound, they must sit down.

Activity 16

Title: The echo.

Objective: development of phonemic processes.

Methodological guidelines

The teacher will say that we are going to take an imaginary trip to the mountains, where an echo is heard when someone pronounces a word (you can put on a video or audio so that the child knows what an echo is). They are told, "Now we are going to play that you are the echo of the words that I pronounce." The teacher will say the word and the child must say the last syllable of the word.

Example: sound /a/ chair, foot, table, octopus, bow, paaan, sun.

Activity 17

Title: Playing with words and their sounds (word game).

Objective: to develop phonemic processes.

Methodological guidelines

Start by saying a word (first competitor), the next one will say a word that begins with the last sound of the previous word. Example: table-cupboard-bear.

Activity 18

Title: My words.

Objective: to develop the sound analysis of the word.

Methodological guidelines:

A sound will be presented to the child to work on, and its characteristics will be discussed. The child will pronounce the sound. He or she will then be asked to name words with that sound.

You can make the activity more complex by asking him to mention words with the sound in the initial, middle and final positions.

Activity 19

Title: Dividing the words.

Objective: to develop phonemic perception and sound analysis of words.

Methodological guidelines

You will begin by presenting a word and then performing a phonetic analysis. Example: table, is it a long or short word? Ask the child to mention other words that have the same length as this one.

The activity can be made more complex by asking the child to think of words that have the number of syllables according to the number of claps the teacher gives (example: // (two claps), cloth; /// (three claps), suitcase; //// (four claps) butterfly). This activity can be done in the opposite way, that is, say the word and have the child produce the claps according to the number of syllables it has.

The pre-experiment, after the initial application of the pedagogical test, allowed the application of the designed activities at different educational moments of the year of life studied, for a period of five months, during which the children's progress and

setbacks were systematically monitored. This made it possible to correct those errors that were manifested in the children, so that at the end of the year of life the different items could be evaluated by means of the exit pedagogical test, in which the results shown in table number two (table 3) were obtained.

Table 3- Results of the final pedagogical test applied to children in their fifth year of life

	Discrimination of sounds and phonemes		
Children	1	2	3
1		X	
2		X	X
3			
4			
5			
6			
7			
8		X	X
9			
10		X	X X

Items:

1. Voices
2. Sounds of musical instruments
3. Intensity of sounds
4. Qualities of sounds
5. Associate the hits with the number
6. Repeat auditory sequences
7. Differentiation of words by sound
8. Phonetic analysis
9. Discrimination of a sound, among others.

The results obtained show a substantial reduction in errors associated with poor

development of phonemic hearing; however, there are deficiencies in those aspects that are more complex and that depend on more systematic training, which, of course, is carried out in the following year of life as a condition for preparing for incorporation into school activities.

DISCUSSION

It is known that the physiological conditions necessary for the formation and development of phonemic hearing are present at birth, but that if the environment does not provide adequate stimulation for its development, this neuropsychological factor does not develop properly. Therefore, the development of phonemic hearing is a priority for the prevention of language disorders, as it is an indispensable condition for achieving optimal development of both oral and written language. Insufficient progress would make it impossible for both forms of language to develop properly, which could lead to the appearance of language disorders.

Pinango and Vega (2018) point out, in relation to ear stimulation, that "If an early stimulation process of auditory perception is achieved as a basis for language development, influences would also be gained in the subsequent education of these boys and girls, facilitating the acquisition of basic knowledge" (p. 5).

The importance of optimal development of phonemic hearing for the correct development of oral language has been highlighted by several researchers. Among them, Labrada Batchelor et al. (2021), who point out that "the clear pronunciation of each sound, as well as the mastery of language, are formed in girls and boys little by little, not only through imitation, but also through developed phonemic hearing" (p. 2).

The results obtained in the pedagogical test, applied to the children in the sample, demonstrate the role of phonemic hearing in language acquisition, which has been pointed out by Calzadilla González et al. (2023), when they state that:

When this work of distinguishing essential signs is altered, phonemic hearing is disturbed. This difficulty is characterized by imprecision in identifying isolated sounds, their sequential arrangement in a word and frequency of appearance. This is largely the cause of the appearance of functional dyslalias with a phonological basis, the so-called phonological disorders and dyslexia and dysgraphia (p. 20).

On the other hand, Feld (2014), when reviewing the importance of phonemic hearing in reading, refers that "reading usually begins as a childhood learning process, mediated by various components of higher psychological functions, particularly, the successive and simultaneous acquisition of phonemic stereotypes" (p. 71).

And further he points on:

It is based on three units made up of phonemic stereotypes and verbal motor stereotypes (articulation of language) and verbal stereotypes (semantic organization of language). These concepts have their origin in the neurophysiological basis of brain organization, allowing us to understand how important the participation of phonological awareness can be in terms of the physiological and pedagogical learning of reading and writing (p. 78).

Modeled activities enable systematic monitoring of the development of phonemic hearing, following its evolutionary path from the perception of

environmental sounds, inarticulate sounds to the perception and differentiation of articulate language sounds. The conscious organization of activities for working with children in early childhood has been pointed out by authors such as Bonilla Sánchez et al. (2019), who point out that "the positive effects of the application of the game program revealed better performance of preschoolers in tasks that assess the functional level of neuropsychological factors: kinesthetic, kinetic, spatial analysis and synthesis, phonemic hearing, and regulation and control" (p. 305).

Referring to phonemic analysis activities and their importance in achieving the development of phonemic hearing, González Reyes et al. (2019) state: "phonemic analysis is an important aspect that prepares schoolchildren for learning to read and write, it influences the development of phonemic hearing by distinguishing the sounds of the language and their correct pronunciation" (p. 10).

Phonetic analysis facilitates the decomposition of the sounds that make up a word, the succession of these in the same, the integration of these, the analysis of each sound. This contributes to the development of phonemic hearing, the formation of the ability to pronounce and the association of sound-letter.

By proposing a program of activities for the phonological development of children Sito Justiano and Vargas Quispe (2019), they start by analyzing cases of children with dyslexia and emphasize that:

Children with dyslexia, as well as those who have difficulties with speaking in general, show a low development of discrimination and phonological awareness; taking into account that after the noises, the appearance of the phonemes and their articulation require skills,

acuity in the development of the phonemic ear, which allows them to identify the sound structures of our language (p. 14).

The organization of various activities to ensure the development of phonemic hearing has also been referenced by researchers when studying the role of artistic activities as a tool for the prevention and correction of learning disorders, among which dyslexia caused by insufficient development of phonemic hearing appear; these activities have allowed a reduction in the number of errors in activities that involve phonemic hearing (Trujillo Dávila et al., 2017).

The empirical evidence found in the study and its comparison with the approaches made by other researchers on the subject allow us to conclude that the planning and organization of activities for the development of phonemic hearing in children constitutes a way to stimulate this important neuropsychological factor, which directly affects the quality of pronunciation of children in the fifth year of life and which will subsequently result in efficient learning of reading and writing.

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The authors declare that they have no conflicts of interest of any kind.

Authors' contribution:

The authors participated in the design and writing of the work, and analysis of the documents.

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