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Rhythmic Therapy for Communications Improvement for the Hearing-impaired Children

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Abstract: *The paper presents a set of techniques using the music and rhythm to emphasize or speed up the general individual process of learning and using speech, providing spontaneity and confidence in vocal and verbal expression, improving vocal quality. The paper describes the materials/resources used, the way the activity is carried out, methods of monitoring and evaluation, benefits/advantages of the application of the intervention. The techniques presented target the listening and improving/educating the reaction to sound stimuli, the differentiation of sounds, according to duration, frequency, intensity, the differentiation of verbalized sounds in cases of anacusis, cophosis - profound hearing loss, deafness - over 90 dB, symmetrical, pre- and post-linguistic. The activities are described for participants between 6-14 years old, but the techniques presented are suitable, easily adapted, for any age older than 3 years.*

Key-words: *music and rhythmic therapy, hearing impaired, vocal expression*

1. Introduction

Musical education is an integral part of the general system of teaching children with hearing impairment and has a correctional and compensatory focus.

Correction of disabilities can be boosted with musical-rhythmic activity, aiming at the development of sensory processes, the formation of a reaction to the sound of music. The participation in active music therapy is a mean of education of emotional responsiveness, while hearing-impaired children are in direct connection with the tasks of auditory perception and oral speech, as well as with the development of basic movements. Musical and rhythmic activities aim at shaping the perception of music, voice, rhythm of speech and rhythm of movements.

For such children, the task of developing hearing and voice is assimilated and performed by children on an auditory-visual basis. Deaf teachers and educators who are in the field of view of children support their speech activity during the

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learning period by constant repetition of speech material in the rhythm of music. The development of children's voice is inextricably linked with their musical and auditory impressions from the perception of piano registers. The main methodological technique aimed at developing the ability to change the pitch of the voice consists in teaching children the correlation of their voice manifestations with the registers of the piano keyboard.

1.1. **General description of the activities**

The activities are described for child participants between 6-14 years old, but the techniques presented are suitable, easily adapted, for any age older than 3 years, with the following impairment: anacusis, cophosis- profound hearing loss, deafness- over 90 dB, symmetrical, pre- and post-linguistic.

Area of intervention targets hearing education, emphasizing, or speeding up the overall individual process of learning and using speech, providing spontaneity and confidence in vocal and verbal expression, improving vocal quality. These advances are to be observed in listening and improving/educating the reaction to sound stimuli, in differentiation of sounds, according to duration, frequency, intensity, in differentiation of verbalized sounds.

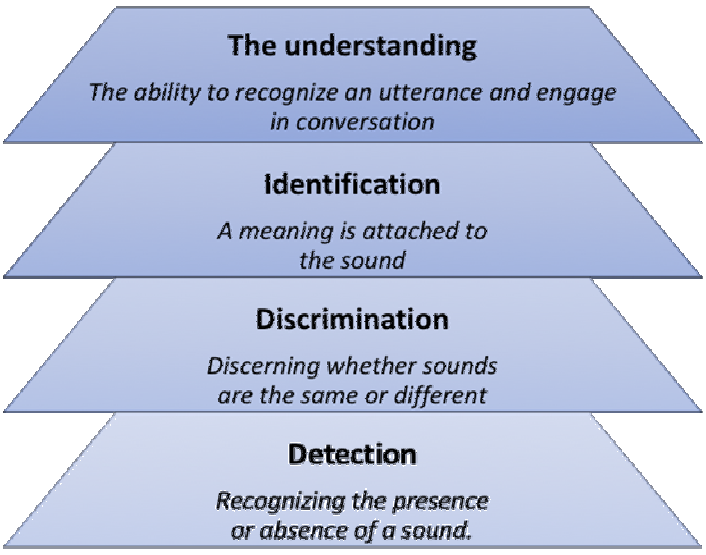

Fig. 1. *The 4 stages in the development of the auditory sense, according to Erber*

The activities were designed considering the hierarchy proposed by Erber (1981), which describes the 4 stages of the development of listening skills. In the detection stage, the child becomes attentive or moves when hearing the music. At the discrimination level, the child discriminates between fast and slow music by shaking a maracas. When identifying, the child identifies the musical instruments by touching them or pointing to the pictures. At the level of understanding, the child can follow and execute commands: start, clap, stop, jump...etc.

1.2. **The general objectives pursued**

The activities were designed with multifold components, for cognitive, psycho-motor and affective planes, in order to display a holistic experience of sound and frequencies perception. They address the cognitive plane by:

- improving communication through multisensory experiences, a tool to access/form mental representations and operate with symbols;
- internalizing the meaning of new words;
- rising awareness of the meaning of "tone of voice";
- educating/enriching the language by proposing/exposing some language models, experimenting with some non-verbal language models, in different contexts;
- Identification and manifestation of appropriate reactions to sensory stimuli in the environment.

The activities were designed to address the psycho-motor plane by rising awareness and better knowledge of self-image and one's own body;

The objectives for the affective plan are: openness to play and group activities, developing assertiveness and willingness to contribute, developing a sense of social responsibility, pride, and respect from the social group; openness to socialization, self-awareness, emotional satisfaction, and increased self-esteem.

2. The Activities description

The planning of activities and the monitoring of the child's evolution will be done carefully to ensure that the child's appropriate level is worked on. If the child is bored or uncooperative, it is very possible that the work is being done at an appropriate level, and the activities are adapted accordingly (Darrow, 1989, 61–70). *The evaluations are to be done in collaboration with the psychologist and/or the doctor.*

Each activity is preceded by a thorough information on the children's condition, hearing age, by a comparison of the children's performance in group activities (Gfeller 2015, 173). At the beginning of each activity, there is a small warm-up, (with rhythmic playing and clapping, or rhythmically passing a small toy from one to another, or swinging in a circle, singing a vowel) between the participants and/or between therapist and participant.

At the end of each activity there is a return conclusion from the space created through play, in which it is aimed to return the children to the current state of operation, with the surrounding reality, fixing and harmonizing the information created and transmitted (Ward 2021).

2.1. Activity 1: The rain song

This activity was created according to the principles of the Lowell method (Banducci 1974).

Venue: In the therapy room, with as little background noise as possible

The type of activity: Group. It can also be practiced individually. The participants are children, school age, 6-12 years, with the same type and degree of disability: symmetrical, pre-linguistic cophosis, as close as possible in auditory age, on levels of discrimination - identification

Activity manager: The therapist, informed about the nature and level of disability, the existence of other preconditions, the level of residual hearing, if applicable.

Operational objectives:

- Stimulation of auditory discernment, differentiating and integrating the sounds of different letters, syllabification and pronunciation;
- Free use of intonation and rhythmic principles;
- Matching familiar or unfamiliar words with rhythmic structures.

Materials/resources used:

- Drums - djembe or handmade;
- Computer and Projector with Screen, Speakers, video-audio file projected with the image of rain in nature, with thunder;
- Panel with written text. (Where file editing is possible, the panel is replaced by captures and letter animations directly on the scrolling image);
- Road sign.

The activity content: Theparticipants are seated in a semicircle so that they can see the therapist close enough, the screen, the panel and “hear the speakers”. The entire activity involves direct and close visual, facial contact, even touching.

- They are handed the drums and shown the screen, with a gestural prompt to pay attention to it.

- On the drums, the therapist shows them the 3 touches and beats: on the edge, with fingers in sequence, like raindrops, on the center, beat with one and two palms, for serious sounds and rubbing with the palm, on the entire surface of the drum. The therapist invites children to randomly explore the tool as they wish, within the limits of safety for them, the group and the tool.
- On the panel, three images are represented: raindrops, and the word rain, spelled in syllables, and underneath as a whole word, respectively wind, respectively thunder. The therapist pronounces them clearly, next to each participant, with their hand on their throat, so that they feel the vibration of each sound in the word. The therapist associates each word with the corresponding picture by pointing on the screen while pronouncing it.
- The therapist starts the scrolling of images and sound (launches the video-audio file), adjusts the sound intensity, making sure that it does not disturb the perceptions of the participants with hearing aids or cochlear implants.
- The therapist exemplifies the beats, adapting their sequence to the images on the screen, imitating rain, thunder and wind, saying the respective words loudly and clearly.
- The therapist approaches each participant and asks each one to imitate him, while exemplifying and also saying the phoneme sequences.
- The therapist urges the participants to imitate him in the group and say the phoneme sequences as well, aiming to associate the speech with one of the three beats on the drum.
- The therapist goes through each participant in turn, monitoring the emission of sounds and the association with the beats.
- The session ends by gesturally asking the participants to raise their hands up, shake their fingers and emit the sound Sssssss, lowering the arms outstretched to the sides of the body. This is done 3 times. The therapist explains to each participant, approaching them and allowing them to put their hand on their neck while they make the S sound. Then they perform the ending with the return sequence, as a group.

Ways of monitoring and evaluation: The following will be monitored:

- The ability to track and imitate sound emissions. Broadcast progress.
- The ability to receive and recognize the vibrations of the instrument, at different beats.

Evaluation criteria:

- The level at which the child associates an image with the specific beat and the corresponding sound emission, image-emission, image-beat, beat-emission.

- Benefits/advantages of applying the intervention Establishing an inner pulse, induced by the vibrations of a percussion instrument. It stimulates motor balancing and thought processes in general.
- Stimulating the ability to make correlations and associations.
- Stimulation of the phonatory apparatus.
- Advancement in the ability to reproduce intelligible phonemes as words. Recognizing and reproducing them when reading other people's lips.
- Encouraging non-verbal expression.

Limits or risks of applying the technique: There are no significant risks when applying the technique.

The limitations of the technique: relate to the list of only 3 words for the activity. The limitations can also be induced by the different levels of disability or the psycho-mental specifics of each child. The activity can be modelled and developed according to the children's level, to multi-word sets, for different visual and rhythmic associations, including timbral variations, introducing new instruments (gong, cinle, triangle, bongo drums, etc.).

Possible difficulties encountered and mitigation strategies: children, for various reasons, do not respond to indications and gestural prompts or refuse to participate.

The therapist allows the children to explore the instrument for more time, to make sounds different from the demands of the activity. The therapist makes the sound aaaaaa, then links it to the phonemes „ra .....” then makes the sound „iiii” and links it to the next phoneme, if the language has one (as, for example, where the sound succession would be ploa...iiiii....eeee). Tap with your fingertips on the drum, on the child's arms. The therapist shows total acceptance of the children's manifestations, within the limits of safety and comfort for the group and the child, adapting the approach patiently, gradually.

2.2. **Activity 2. Rhythmic patterns in associations**

Inspired by Orff's principles regarding the resources of kinesthesia and the sense of touch in educating children with hearing disabilities (Banducci 1974).

Venue: In the therapy room, as little background noise as possible

The type of activity: individually participant children 3-14 years, discrimination-identification level.

Activity manager: the therapist.

Operational objectives: Matching familiar or unfamiliar words with rhythmic or inflectional structures. Improving speech prosody. Secondary: understanding semantics and sentence structure. This technique can be developed for specific

vocal training, to modify the fundamental frequency and frequency range of speech.

Materials/resources used: A drum, in the therapist's equipment, a table large enough to allow the child to sit at least with the trunk stretched out.

The activity content: The therapist invites the child to explore the drum, to play with it, to beat it, within safety limits. It is important to understand the intensity accepted by the child.

Then invite the child to lie on the table, on his back. As close to the table as possible, or, with the drum even resting on the table, somewhere near the child's feet, the therapist beats a slow rhythm, gesturally inviting the child to follow the rhythm and clap his hands or sway his feet, to the rhythm he feels pulsating through table. The therapist varies the dynamics and intensity of the beats, watching how the child follows the rhythmic suggestion with his clapping.

As a variant or later stage, the child can be placed on the table in a sitting position and invited to indicate the intensity level of the beats with the gradual raising of the palms, vertically on the trunk. The sounds in the piano will be at the level of the basin, those in fortisisssissimo, somewhere, at the level of the head. This stage aims at fixing a rhythm and the convention of indicating intensity and sound inflections.

The therapist puts down the drum and claps his hands on the table, while saying the words of a small quatrain infrequently, clearly, in rhythm. The child (seated) is then invited to imitate with his own clapping, the rhythm of the quatrain, first together with the therapist, then, only observing the facial movements of the therapist, who says the quatrain, this time, without clapping.

The therapist puts one hand of the child on his neck and takes the child by the other hand; speak the quatrain slowly, with inflections, from low to high sounds, accompanying the rising and falling flexions of the hand, while beating the rhythm of the quatrain with the feet. Invite the child to get off the table and imitate him, this time without physical contact, asking him to indicate the pronunciation inflections with up-and-down, undulating hand movements. It is repeated slowly, infrequently, introducing and removing the explicit rhythmic element as needed, leaving the child to produce on his own the phonemes he has “heard” with his tactile and visual senses.

The activity ends either with a rhythmic swing, or with raising the arms and dropping them by the body and making the „Sssss” sound.

Ways of monitoring and evaluation: The following are monitored in the customer file:

- The ability to track and imitate sound emissions. Broadcast progress.
- The ability to receive and follow different rhythms.
- The ability to discern the inflections of a sound emission.

Evaluation criteria:

- The rhythmic level that the child discerns and follows the distinct pulse. The level of pitch variation, in inflectional emissions.
- Benefits/advantages of applying the intervention Establishing an inner pulse, induced by the vibrations of a percussion instrument. It stimulates motor balancing and thought processes in general.
- Stimulating the ability to make correlations and associations.
- Stimulating the phonatory apparatus and developing your own basic tone and intonation.
- Advancement in the ability to reproduce intelligible phonemes as words. Recognizing and reproducing them when reading other people's lips.
- Encouraging expression through vocalization with inflection.

Limits or risks of applying the technique: there are no significant risks.

The limitations refer to the level of simplicity of the rhythmic pattern of the phrase or quatrain. If the subject is agitated or inattentive, the table can be replaced with a clean floor, as warm as possible, without cushions or sound-deadening materials.

The complexity of the rhythmic and flexion level adapts to the child's level.

Possible difficulties encountered and mitigation strategies: The child, for various reasons, does not respond to indications and gestural prompts or refuses to participate. The therapist allows the child to explore the instrument for more time, to make sounds different from the demands of the activity. The therapist shows total acceptance of the children's manifestations, within the limits of safety and comfort for the group and the child, adapting the approach patiently, gradually, simplifying or complicating the rhythmic and flexional model.

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