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# MUSIC AND LANGUAGE IN INTERDISCIPLINARY CONNECTION

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***Abstract.*** *Nowadays speech and language development is actual problem. This research was conducted to find out how music could help in solving this problem and to find out how connected music and language processes are in our brain. Language and music share a lot of similarities in terms of neurology, Music Therapy, communication and psychology and their interactions are successfully used in these sciences. Aim of this research was to gather data and scientific basis for music's ability to improve speech and language. Main findings indicate that this topic has been studied for decades and still hasn't lost its significance. Music can influence language processes, lessen disorders because it is neurologically and psychologically close to our spoken language.*
***Keywords:*** *music, music therapy, language, neurology.*

## Introduction

The question whether music can be used to develop language skills has been occupied scientists and researchers for decades. By now, in the whole world there had been many practical researches on music and language interaction. They try to define detailed similarities and differences in language and music learning, perception and their communicational characteristics.

This is a theoretical research that includes aspects of music therapy, linguistics and neurology and some conclusions acquired during the practical work in Music Therapy. It is based on music therapy findings and researches by Diana Deutsch (2010), Anthony Brandt (2012), Judy Barker (1999) and many other authors.

Goal of this research was to summarize the main discoveries in fields of neurology and neuropsychology, music therapy and linguistics and give an insight in possibilities of music application in stimulating language development and acquisition.

This research first talks about how we learn languages and music, especially in our childhood. Then it looks at which language processes music develops and describes how we perceive music and language. Then article summarizes how


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music helps in music therapy and how a person could benefit from musical training in the context of language and brain development.

Information was gathered by summarizing and analyzing information and data from various practical researches.

The main point is that music and language both are deeply connected in human brain, culture, habits and life itself. One can say – music is an artistic and multicultural language, but language is phonemically orchestrated melody.

## Learning music and language

Every research (Deutch, 2010, 2012; Brandt, Gebrian, & Slevc, 2012; McMullen & Saffran, 2004; Hallam, 2009) confirms that child learns language by its musical characteristics. And any person, also adults cannot master language without any kind of musical hearing (Deutsch, 2010). Especially if they do not have experience in learning foreign language phonemes, human brain at first perceives only the melody and rhythm of language, and then with time learns to differentiate the phonemes.

Sensitivity to musical sounds appears since birth. Newborns excel with ability to differentiate and perceive by hearing phonemes of any language, though it is not connected to ability to perceive their contents and lexical meanings (Brandt, Gebrian, & Slevc, 2012).

Words in the language are always unconsciously foreseen and that attaches deeper meaning to them based on experience. These prognoses give general context in language and music. Ability to prognosticate can be developed by learning musical compositions, songs and musical instrument play (Tillmann, 2012).

Children brain is more plastic than adult brain and functional division in structures and hemispheres does not yet exist (McMullen & Saffran, 2004). Till the age of 36 months the development of music and language is united, but at the age of 3, differences in music and language perception appear and they continue to develop in parallel ways maintaining strong connection (Brandt, Gebrian, & Slevc, 2012).

## Music develops language

Singing to a child is a prerequisite to communication and dialogue. The first 3 years of life are the most significant in developing communication skills (Mervyn, 2012). The basics for communication skills are developed by parent-child communication through singing and expressive talking even when it still seems one-sided. The skills that develop in such case are: attention to faces, speech and objects; listening and responding or conversation skills; ability to

predict what will happen next; imitation; ability to maintain concentration; ability to understand facial expressions, voice tones and other people actions (Perry & Ri, 2005). Barker, from her own experience with her daughter who has Down syndrome, emphasizes that "singing and music composing is vital for children with learning difficulties" (Barker, 1999).

S. Salmon and K. Schumacher (2001) speak about specific influence mechanisms of music as a media, and also mention that the music speaks in language that can be understood even with cognitive restrictions. Newborns can already perceive and differentiate such phenomenon as: intensity, rhythm and form.

## Music and language perception

The music activities especially well develop the ability to perceive emotions in language and use them in speech – fear, anger, joy. Music works on children physically with sound waves and psychologically evoking emotions (Deutsch, 2010). As a result of such interaction the rhythm and tempo of the music improve language fluency and ability to deliberately express oneself in speech.

With the same principle the music can stimulate the reading ability, its speed. Because music can develop ability to decode what is written, improve memory, enrich the active vocabulary and make that intuitive and emotional feel that we all have for the native language (Hallam, 2009; Mervyn, 2012).

Each music component activates different regions of brain, stimulating their simultaneous participation in processes. That improves perception, cognitive and sensomotoric processes and is significant to speech and language development (Harman). They also activate both cerebral hemispheres, especially the Brock and Vernick regions which are vital to processing linguistic information (Lawrence, 2010).

## Music as a great help in therapy

Music therapy has become very active in both – Latvia and Liepaja. In its practice it is often seen that speech and language development problems are coexisting with many illnesses and disorders. Since music therapy is a scientific usage of music with therapeutic aims, it includes also actions for speech development. Music therapist works in multidisciplinary team, often cooperating with speech therapists professionally involving music in developing speech.

Singing in foreign languages is easier than speaking, because word fluency is accented by melodic development and basically singing itself, even unknowingly, asks for more expressive mouth movements and better articulation from both – the child and the therapist that works with him.

Relating to the rhythm, music therapy uses a practical method called "speech motoric mapping" – in which to develop and add syllables that child could articulate fluently and without big difficulties in therapeutic work the musical rhythm syllables are used as a great help.

In musical activities, playing music and speaking music therapy uses hand-mouth neurological connection mechanism, which can be seen, for example, in children with cerebral palsy. In such cases, operating with a hand allows to use possibilities to work with speech mechanisms, for example, vocalizing. Finger motoric in other cases (for example, piano playing, scale and other theme playing) influences speech-language fluency.

Songs with repetitions help in learning words, specific speech sounds and basic elements of language. Because lyric adding to the music divides the words in syllables, emphasizes main consonants and in perception seemingly slows down the speech sounds. Repetitive interaction with songs helps children to feel how are functioning the rules of language and develops prediction ability which is necessary in language perception (Barker, 1999; Mervyn, 2012). Melodic intonation therapy (MIT) uses the same principles about repeated song learning help in developing speech and language skills. MIT is successfully used also for aphasia patients after insult.

Rhythm activities help children with reading problems and dyslexia. Overy (Overy, Nicolson, Fawcett, & Clarke, 2003) researching children with dyslexia, has discovered its connection to rhythmic problems. He has learned how rhythmic activities leave positive and visible influence on phonologic and orthographic skills (Hallam, 2009).

Analysis of the reaction to music and the tasks related to it can help to diagnose language problems and disorders. For example, a child who learns everything very slowly – he will usually forget what the given tasks were. A child with dyslexia most likely will mix up the order of tasks, and so on (Barker, 1999).

Since music almost always triggers a reaction in the listener – as wish to clap along the rhythm or sing along the melody, etc, it is very effective for improving the unconscious speech, language and other similar processes. Nordoff/Robbins active music therapy is based on concept that anyone can react to music; in any one of us "sleeps" the musical child. We should correctly wake this "sleeping child" up and use it as resource for self-healing. Active music therapy's humanistic psychology can be used to activate individual resources and give sense of belonging to a child who usually feels impertinent.

## Interaction of music and language in our brain and development of skills

Equivalent for musical melody in speech is prosody – natural melody of speech, which is different for each language. Music influences perception of

prosody by harmonizing the structures in brain that receives the signals sent from ears and encodes the sounds of language and music (Deutsch, 2010). Learning to differentiate musical tones and rhythmic phrases and their associating with visual symbols develops in better phonemic conscience (Hallam, 2009).

Actively working with music child's attention and listening skills obviously improves (Hallam, 2009; Barker, 1999). Music provides children an effective experience for developing the listening skills. While listening to speech or music human unconsciously processes a lot of information in a great speed. Music enables a better understanding of one's own affects and helps to feel like their author inviting to become automatically active (Salmon & Schumacher, 2001).

Speech and music share neurological processing systems, which is why music can influence language perception. Learning music trains the sound encoding process in brain and improves its performance, and also the ability to perceive fast changing sounds (Hallam, 2009) – tones, phonemes in speech, which influences the perception of linguistic phrases. Hence, actively working in music improves not only attention, but also develops the regions of the left hemisphere and overall brain process speed and precision. (Harman, 2008)

As for physical skills necessary for both – singing and speech, vocal tract functioning and its conscious using can be developed with resonance or synchronization, entrainment (Gorow, 2000). Musical synchronization is a physical feeling in the whole body. For example, while singing or tapping the rhythm together with a good performer, after some time the performance will unify, in other words – synchronize and improve. With voice it can be achieved by vocalizing along the songs or instrumental pieces. Not only when the goal is to actually learn to sing, but also when any musical instrument playing is being learnt. This method influences functions and all the mechanisms of vocal apparatus.

## Conclusions

The interaction between music and language is unquestionably significant in the personal development.

As a result of this correlation:

1. The work of brain speeds up and becomes more efficient than before the involvement of music, which allows to learn new things more quickly and adapt to new circumstances easier and to follow all happenings in nowadays rapid and changing everyday life.
2. More developed hearing and encoding of sounds improves the perception of any language or musical style and lessens the stress in a process of learning foreign languages.

3. Even without any special skills or knowledge in music a person of any age can learn to be more confident in general, more perceptive in both – music and language and more skilled in communication.
4. The memory and all kind of recall skills significantly improves little by little and helps to learn anything that is necessary for surviving in life, presenting own ideas and thoughts and looking for different kind of solutions for any problem.

Playing music has never been only about the music, but also about the connection between it and dance, movements and language. Music that person creates himself becomes understandable, emotionally and psychically closer to that person.

Active work with music unifies all senses, makes the affects audible, respectively, announcements to others hence helping to handle the affect.

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