

## Treatment of Autistic Children by Sound Therapy

Fatemeh Arghandeh<sup>1</sup>, Mohammad Ghasemi Pirbalouti<sup>2</sup>, Mojgan Rasoulia<sup>3</sup>

<sup>1</sup>PhD student in Educational Psychology, Islamic Azad University of Shahrekord, Iran

<sup>2</sup>PhD in Educational Psychology, assistant professor at Islamic Azad University of Shahrekord, Iran

<sup>3</sup>Master in Educational Psychology, Exceptional Education Department of Isfahan

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### ABSTRACT

Autism is rooted from a Greek term, "Outos", which means oneself. Dr. Connor diagnosed this disorder in 1943. The autism is a growth disorder characterized by the abnormal verbal and communicational behavior. The main cause of this disorder is unknown, and the parents' economic, social, lifestyle and education are not effective in this regard. It is argued that some of the symptoms of autism such as the attention deficit and hypersensitivity and hyposensitivity in autistic individuals are due to their impaired auditory systems and the existence of central auditory processing disorders (Child and Adolescent Psychiatric Association of Iran). The information may not correctly enter into the long-term memory in autistic people after processing the auditory information in hippocampus. As we know, the auditory information processing plays the important and central role in social communications. Various methods of sound therapy are designed to improve the auditory performance in autistic such as the Auditory Integration Training (AIT) technique designed by Guy Berard.

**KEYWORDS:** Autistic children, sound therapy, AIT technique, auditory processing

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### INTRODUCTION

#### Auditory processing disorders in autistic children:

Some of the symptoms of autism such as attention deficit and hypersensitivity or hyposensitivity in autistic people are due to the impairment of auditory system and existence of central auditory processing disorders. Therefore, various methods of sound therapy have been designed to improve the auditory performance in autistic people.

According to one of auditory processing disorders in autistic people, the person hears the speech sounds but is unable to understand the meaning of sounds. For instance, when the individual says the word, "shoe", the autistic person may be able to hear the told sounds, but cannot understand their meanings. Eric Courchesne in 1987 [1] found the noticeable disorders in individual auditory processing according to the brain wave technology P300 at the University of California. P300 waves are associated with the cognitive and perceptual processes and are called as the evidence of long-term memory retrieval [2].

The brain biopsy research by Kemper & Bauman [3] indicates that the hippocampal region in autistic individuals' limbic systems is neurologically incomplete and immature. The hippocampus is responsible for sensory inputs, learning and memory. In autistic individuals, this information may not correctly enter into the long-term memory after processing the auditory information in the hippocampus [4].

The auditory processing disorder in autistic individuals is associated with different characteristics in these people. In most of the cases, the autism is known as a social communication problem, and as we know, the auditory information processing plays the central role in social communication. Other autistic individuals' characteristics which can be associated with his auditory processing disorders are as follows: The anxiety and confusion in social situations and places, neglect, and poor speech skills [5].

#### Auditory processing:

The auditory processing test is done through two procedures. The child repeats words or points for standardized and certain images, which are appropriate to his age and understanding, and then passes the standard auditory measurement process [6].

Some children, who are speech impaired, repeats only what they are told, and thus his hearing is identified by repeating what we tell him [7].

The most essential part of auditory processing, which should be evaluated for every child, is the measurement of ability to recognize the word in normal mood and the comfortable conversation in quiet and noisy places. According to the clinical experience, most of the children (86%) are able to play this role with excellent results and those with limited expressive voice, also have the abilities to perform such this role [8].

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\*Corresponding Author: Fatemeh Arghandeh, PhD student in Educational Psychology, Islamic Azad University of Shahrekord, Iran

**Sound therapy:**

This treatment method has the simplest definition: The use of sound waves to cure diseases. The sound waves can be the powerful forces for good or evil, but these waves are applied in sound treatment method with the intention to help the human body to treat itself.

The sound therapists argue that all body cells and organs are like the heart and all diseases are manifested in fundamental change of frequency or vibration of generated energy of body. This kind of change can appear in cell groups or an organ or the whole body. The sound therapy can turn the vibrations into the normal mode.

**Application of Auditory Integration Training in treatment of autism:**

The AIT method was developed by Guy Berard, the ear, nose and throat specialist, in France. In the early 1960s until the retirement in 1991, he treated more than 8000 patients including the children around the world. It is necessary to listen to the music, which is electrically processed, for ten hours of twenty half-hour sessions over a period of ten to twenty days in AIT[9, 10].

The AIT device receives the recorded input sound from a music source, which is usually a player (CD), and the music is processed and plays by one or both methods.

In the first method, the modulation, which is the main part of AIT, uses the wide-band filters to reduce the volume of a particular frequency range. The starting point and duration of modulated or changed stimulus is randomly specified by AIT machine. In a moment, the volume of frequencies is reduced from 20 HZ to 1000 HZ, and in another moment the volume of frequencies is reduced by 1000 HZ and above.

According to an analogy, the output of sound stereo device for vague sound is quickly changed ranging from treble and bass sound at random intervals. The reduced sounds are variable from 0.250 to 2 seconds. The second method refers to the narrowband filtering in which the AIT music is processed. This reduces the volume of frequency only at specified bandwidth. The narrowband filtering allows reducing the frequencies heard strongly by each person. The filtering participants need to cooperate in correct measurements of audiometry.

The sound volume is usually set based on each participant's degree of comfort which is usually about 60 dBA. In a moment, the sound change is increase up to 80 dBA, and in another moment is reduced by 40 dBA and remains in about 60 dBA in other moments. The growing empirical evidence confirms the original and primary clinical studies; and according to these reports, the Auditory Integration Training (AIT) makes significant progress in most of the autistic children and adolescents[9]. In fact, the reduced sound sensitivity, which is common in people with autism, is certainly the advantage of AIT method [11]. The auditory stimulation by musical sounds causes biochemical and electrical changes in brain and it seems that it only shows a decrease in hearing sensitivity [9].

**Suggestions:**

1. The rapid and early diagnosis of autism is essential at early pre-school ages. The studies indicate that the early diagnosis leads to the increased efficiency of therapeutic strategies.
2. The parents are the major factors in successful treatment. Therefore, the treatment programs should be taught to parents in order to they continue this process at home.
3. Since most of the children with autism usually began to sing instead of speaking, this opportunity can be taken and begun the non-verbal music activities systemically on the speech.
4. The public health rules cannot be applied due to the individual differences in patients with autism because a patient is likely to respond positively to a particular technique, but this technique may be harmful for another patient.
5. The AIT is a therapy for hearing loss, thus the child should be completely evaluated for hearing and this should be done by a therapist who has knowledge in the field of hearing.
6. The pathologists and therapists should achieve their realistic goals about what they expect; in other words, the AIT should be only a part of treatment program.
7. The children, who use the AIT, should become the members of a training program and benefit from other training services.

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