

Hypersensitivity to Sound: Changes in 5 Williams Syndrome Children

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Children with Williams Syndrome typically enjoy music, however, they can also be sound sensitive. Using a diagnostic test battery called the Diagnostic Evaluation for Therapy Protocol (DETP®), three different types of hearing hypersensitivities can be identified. Once identified, sound therapies can address these hearing hypersensitivities and make dramatic positive change for children with Williams Syndrome. This study reviews the results of 5 children with Williams Syndrome's responses to the DETP and 3 therapies that were administered to address their sensitivities and other learning issues.

Children with Williams Syndrome often have a heightened sensitivity to sound and a remarkable capacity for learning and retaining music. Many have perfect pitch. These skills are related to the auditory sense. Additional characteristics attributed to those with Williams Syndrome that are related to the auditory sense are: limited spatial skills and motor control, fascination with spinning things, feeding disorders especially in infants, difficulty modulation their emotions, short attention spans, and disconnections between their linguistic ability and understanding what was said. This study, while addressing hypersensitivity to sound, also helped with these other characteristics.

The ear is more than a hearing mechanism. Because of its anatomy and physiology, it also encompasses, supports, enhances, or stimulates the following: receptive/expressive language, pragmatic language, oral motor skills, feeding issues, gross and fine motor skills, posture, muscle tone, articulation, emotional connectedness, vestibular imbalances, proprioceptive imbalances, eye-hand coordination, vocal production, singing and musical skills, auditory processing skills, attention, focus, organization, and more.

The DETP®

Over 50 years ago, "The Tomatis Effect", a connection between the voice, the ear, and the brain was acknowledged at the French Academy of Science. From this connection, the field of sound based therapy began. Since then, many sound based therapies have evolved but little has been done to determine what the therapies were accomplishing until Ms. Dorinne S. Davis-Kalugin began researching all of the sound therapies. From this research, a proprietary test battery has been developed called the Diagnostic Evaluation for Therapy Protocol (DETP®). This assessment battery determines when and if a sound based therapy is appropriate for an individual. It measures: hearing function, general sound processing skills, specific auditory processing skills, and the body's ability to maintain positive changes.

Ms. Davis-Kalugin also identified 3 different types of hearing hypersensitivities while constructing this test battery. For children with Williams Syndrome, this test battery is key to determining if their hearing hypersensitivities can be helped, if their spatial skills can be enhanced, if their language skills can be improved, if their vestibular and/or postural issues can change, if their oral motor weaknesses can be improved, if their attention/focus can improve, and more.

The Therapies

Although the DETP® provides an overall protocol for the order in which sound based therapies should be used, for the purpose of this study, only 3 therapies have been included: Berard Auditory Integration Training(AIT), the Tomatis® Method, and BioAcoustics®.

Ms. Davis-Kalugin's research has demonstrated that Dr. Berard's Auditory Integration Training retrains the acoustic reflex muscle in the middle ear. This allows sound to be heard and processed more clearly and precisely in the inner ear and subsequently in the brain. By doing so, one type of hearing hypersensitivity is addressed. A Hearing Sensitivity Audiogram determines if this hearing hypersensitivity is present. The method uses a special device called The Audiokinotron and incorporates filtered/gated music to accomplish its outcome.

The Tomatis Method is more encompassing as it stimulates all of the functions of the ear, including responses which occur via the branching effects of the cranial nerves. This method uses a special device called The Electronic Ear and uses filtered/gated music, bone conduction stimulation, and active voice work. It addresses the other two types of hearing hypersensitivities that Ms. Davis identified. A Listening Test is administered to monitor changes with the program.

Human BioAcoustics is the study of life sounds. It identifies body imbalances through voice spectral analysis, and supports the body using a frequency specific sound listening protocol. It helps the body maintain the positive changes made by the learning/developmental therapies.

The Study and Results

Nine Williams Syndrome children have visited Davis Centers, Inc over the past few years. Five of the 9 children began receiving services by the Fall of 2003. Since the Davis Center assists people with all types of learning/developmental issues make positive change, the five children's files, post therapy, were reviewed to determine what types of changes were evidenced. All 5 children initially reported hearing hypersensitivities.

The initial DETP determined that 4 of the children needed Dr. Berard's Auditory Integration Training. Pre and post Hearing Sensitivity Audiograms demonstrated change with their hearing function, Uncomfortable Listening Levels, and acoustic reflex muscle

response. Changes reported by the parents were: decreased hearing sensitivities, less fear of sound, improved listening skills, improved attention skills, and better ability to follow directions.

Five of the 5 children needed the Tomatis Method. Typically this method is introduced after AIT. However, one of the five did not need AIT and began with the Tomatis Method. Four of the 5 children, demonstrated hypersensitivity with bone conduction stimulation. The other child had a reported hearing loss and responded more effectively with bone conduction. All 5 received individualized Tomatis Method programs. All 5 children post therapy, tested with better bone conduction responses and overall better processing after finishing the basic portion of the method. Their parents reported: decreased vibrational sound hypersensitivity, better ability to follow directions, enhanced musical skills, ability to enjoy live shows and amusement parks, and better ability to tolerate noisy sound situations. With the Tomatis Method, an Abilities Improved form is used to report change after the basic sessions. With this form, the parents reported that Thinking and Learning improved in 100% of the 5 children (5 out of 5), Attention in 100% (5 out of 5), Behavior in 80% (4 out of 5), Intrapersonal Growth (Expressing Self) in 80% (4 out of 5), Musical and Vocal Skills in 80% (4 out of 5), Creativity in 60% (3 out of 5), Interpersonal Growth in 60% (3 out of 5), Listening and Speech Skills in 60% (3 out of 5), Movement and Rhythm in 60% (3 out of 5), Reading, Writing, Spelling in 40% (2 out of 5), Well-Being in 20% (1 out of 5), and Relaxation in 20% (1 out of 5). Some children required extra sessions of the Tomatis Method, but at the end of their overall program, they reported an elimination of their hearing hypersensitivities.

BioAcoustics is typically used after the Tomatis Method. Only one of the 5 children had reached this level by the Fall of 2003. The voiceprint is typically redone every 3 months. At each re-assessment, new issues are addressed with the anticipated outcome of a more vocally coherent voiceprint by the end of one year. This child had only just begun using BioAcoustics at that time. Therefore, the voiceprint is still evolving towards vocal coherence. The parents are reporting better responsiveness to the world in general.

Summary

Five Williams Syndrome children used sound based therapies to address their hearing hypersensitivities. The therapies used, after a Diagnostic Evaluation for Therapy Protocol (DETP), were Dr. Berard's Auditory Integration Training, the Tomatis Method, and BioAcoustics. All 5 children reported an elimination of their hearing hypersensitivities at the end of their overall program of therapies as well as enhanced learning and developmental skills.