

By Alexander Doman and Dorothy Lockhart Lawrence

Children on the autistic spectrum can have difficulties processing various forms of sensory information. Auditory processing issues are one of the most common sensory processing problems and often include extreme hypersensitivity to sound, pitch discrimination issues, and sequential processing difficulties that impact receptive and expressive language, cognition, and social skills. Because the difficulties lie in the processing, in some cases a child may tune out and even act as if deaf, yet their hearing tests in a normal range.

The vestibulocochlear system informs us of sound, movement and orientation of space. The cochlear portion of the system turns sound or vibration into electrochemical messages that are relayed throughout the central nervous system and is critical to auditory processing. The vestibular portion serves to provide stabilization, influences attention and arousal, posture, movement, thus being critical to sensorimotor integration. It is the integration of our senses that allows us to understand what we are experiencing in our world. So it makes sense that a program that would stimulate and help to integrate the cochlear and vestibular systems might be very helpful for the autistic child.



What is The Listening Program?

While in no way a cure for autism, when used in combination with a therapeutic program tailored to individual needs, The Listening Program (TLP) can be an effective intervention for children on the autistic spectrum. TLP is a music-based sound stimulation program that currently consists of 8 one-hour audio CDs that contain specially processed classical music and nature sounds plus a 112 page guidebook. It is easily used in the home under the guidance of a health, therapeutic, or educational professional who has been trained as an Authorized Provider. The Authorized Provider supplies the program to families, conducts client intakes and pre/post assessments, determines and individualizes the listening schedule, and monitors and consults with families using the program.

Listening sessions are typically fifteen minutes in length, done once or twice a day, five days a week, using high quality stereo headphones. The average program length is eight to sixteen weeks with many people finding it advantageous to repeat the program once or several times to help regulate their auditory system. TLP's modular design lends itself to easy modification for specific purposes. Additional CDs called TLP Specialized CDs allow for further individualization of listening programs.

The most commonly reported benefits from using TLP with a child on the autistic spectrum are in the following areas:

Increasing Engagement

The listening experience can help improve self-image, reduce tactile defensiveness, and lead to a better sense of the body in space. As listeners become more comfortable in their body and surroundings, they may initiate more physical contact, respond better to others, begin to pay more attention and start to make more eye contact. Increased engagement often includes a reduction in aggressive behavior and a desire for more affection.

Emerging Skills

Sound stimulation has commonly shown it can accelerate the rate of progress when used in conjunction with therapeutic, neurodevelopmental, academic, and behavioral programs. When these areas are addressed with individualized programs, improved listening helps facilitate better integration and organization in the sensory and motor systems, leading to a more rapid rate of acquiring skills and desired outcomes.

Auditory Processing

We can only process a sound and understand its meaning if we can hear it well. TLP helps to improve the rate and accuracy of sound perception. As the brain learns to process sound better, improvements are also noted in auditory processing and receptive language. We monitor our communication through listening to ourselves and others. As the ability to perceive improves, better communication skills are often the result.

Reducing Sound Sensitivity

Hypersensitivity to sound can be debilitating for anyone, especially those with additional sensory processing problems. TLP provides sound stimulation that aids the nervous system to better modulate sensory input. With this improved ability, there is often a reduction in abnormal sensory perception, especially with sound. Reducing sound sensitivity allows one to be more comfortable in their environment as they no longer have to constantly protect themselves from unwanted and uncomfortable sounds.



University of Sheffield Research Shows Progress Continues

After Program Use

Dilys Treharne of the Department of Human Communication Sciences at the University of Sheffield conducted a pilot study to investigate the efficacy of TLP when used for clients with auditory processing difficulties. After reassessing the children at the end of the eight week program and then eight weeks later, she wrote in the Winter, 2002 issue of *Speech & Language Therapy in Practice*, "The results were beyond my expectations: all showed an improvement greater than one would expect from maturation."

Of the many improvements noted, Treharne found the greatest change in selective attention, also known as auditory figure-ground. Those with the severest difficulties made the greatest improvement. The most important thing that the study showed was that the improvements made were not only maintained but progress did not stop after the initial eight week program. Even those without other interventions generally continued to make gains for up to 10 months when they usually reached a plateau. At this point many took another course of TLP.

"The Listening Program is now my first step in auditory training," says Treharne, "as it seems to activate listening skills that have been repressed or never developed, thus priming the system for more specifically targeted therapy programs."



Neural Plasticity is the Key

The theoretical basis of any sensory stimulation program must include neural plasticity. Neurons will branch out and establish new synaptic connections when stimulated and research has shown that this occurs throughout our entire lives.

Neuroscientist Lise Elliot says in her book *What's Going On In There?*, "Anyone who has ever studied nerve cells can tell you how plastic they are. The brain itself is literally molded by experience: every sight, sound and thought leaves an imprint on specific neural circuits modifying the way future sights, sounds, and thoughts will be registered. Brain hardware is not fixed, but living, dynamic tissue that is constantly updating itself to meet the sensory, motor, emotional, and intellectual demands at hand."

Listening to the CDs in The Listening Program literally exercises and tones tiny muscles in the middle ear called the tensor tympani and stapedius muscles. Exercising these two muscles improves their tone, thus making them more responsive to their task of directing the middle ear bones and eardrum. This helps them to amplify soft sounds and protect the inner ear from damaging harsh or loud noise.

TLP was designed to help balance and restore our ability to listen to and process sounds across the full auditory spectrum, from 20 to 20,000 Hz. The brain receives especially rich auditory stimulation, and because of its ability to change with stimulation, its ability to process sound improves.



Creating The Listening Program

TLP was created by Advanced Brain Technologies, LLC (ABT) in 1998. ABT grew out of the National Academy for Child Development, whose extensive and diverse client base, including thousands on the autistic spectrum, served as a testing ground for its development. ABT's objective was to create a program that was easy to use, effective yet mild enough for home use, proven to have lasting results, and inexpensive for families compared to a facility based program.

The Academy and its founder, Robert J. Doman, Jr. had used several other auditory stimulation programs over the course of three decades, and had found them to have varying degrees of effectiveness. Many were beyond reach for families and if home based, often difficult to administer.

So the ABT team decided to develop a complete program of CDs with gradually increasing stimulation as a base for people to process sounds more efficiently. The music was recorded through a special production process that would allow for the development of new techniques to maximize the effectiveness of the program while maintaining an aesthetic that would make the program enjoyable to listen to. Music and instruments were selected that would work best with the required treatments and sometimes new arrangements of the music were written to suit the requirements of the program. Specialized CDs were also created to address more specific issues such as language enhancement and sensory integration. They are used along with the base program and allow for further individualization of TLP.

The design and presentation of The Listening Program were of prime importance so that it would be accessible to any parent or individual. A guidebook providing informative background information, detailed listening schedules, and program support information was created along with a journal for the listener or parent to record their experiences.

A unique design was created for TLP listening sessions. It includes warm-up, exercise, and cool down segments of the music. In this way when a child or adult puts on the headphones, they hear quite normal sounds and music at the beginning and the end. This provides an orienting and grounding experience at the start and end of each listening session. Parents often report that children love to listen and will initiate the listening sessions themselves.



Case Study: Six Year Old Robert and TLP

An Occupational Therapist who is an Authorized Provider of TLP told us about Robert, a six year old boy who had recently been diagnosed with Autistic Spectrum Disorder. Language delays, behavior problems and abnormal social skills had been noted by his parents from around age two. Robert had auditory hypersensitivities, severe expressive and receptive language delays, coupled with echolalia, topic fixations and numerous other difficulties related to auditory processing and sensory integration dysfunction.

"Robert began his personalized Listening Program with the Sensory Integration CD and then continued through the 8 week Base Schedule, ending with the Speech and Language Specialized CD for this first time through the program. Near the end of his third week listening to the Sensory Integration CD his mother tearfully reported to the therapist, 'I feel like I am talking to someone, not to a wall!' More changes began to be evident with his increased physical play and interaction. After week 6, Robert was able to attend school assemblies. Previously the noise and confusion had been too much for him. His reading comprehension was improving and his voice had more inflection.

"With the addition of the Speech and Language CD, both the family and school continued to report improvement in terms of increased spontaneous speech, improved comprehension, and improved social skills. Robert was also starting to develop a sense of humor! After 5 months, Robert's father reported, 'Much improved social interactions. Talks better. Quicker responses to verbal commands. Follows directions better.' Robert's family was thrilled with the progress he had made."

Robert's therapist reported that she was thrilled too. "I have been an OT for 15 years," she wrote, "and have not seen a child progress so rapidly."

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Listening to music is an activity that can be enjoyed by every age group in nearly every circumstance. This makes The Listening Program® a fun and easy program for families to integrate into their daily schedules. The result, helping to normalize responses to sensory input and improving the ability to listen, is often the jump-start children need to function more effectively in all aspects of daily life. We are grateful that it has made a difference in the lives of so many.

While The Listening Program can be an effective intervention for a child on the autistic spectrum, not every child will benefit. Our experience has shown that, unless the physiological areas, including digestive, immune, nutritional, endocrine, and metabolic function are being addressed, the nervous system will not be able to fully support the changes that can come through using music based sound stimulation. Best results are achieved when the physiological issues are addressed and when used in combination with an individualized neurodevelopmental program.



About the Authors:

Alexander Doman was raised in a family of neurodevelopment specialists working with pediatric and adult populations. The third generation of his family in this field, Alex is the former Executive Director of the National Academy for Child Development, a non-profit organization founded by his father Robert J. Doman, Jr. in 1979. His father and grandfather, Robert J. Doman, MD were members of the professional team that developed some of the earliest sensory stimulation programs for children on the autistic spectrum beginning in the late 1960's.

An international trainer and presenter, Alexander is the Founder and President of Advanced Brain Technologies LLC (ABT). ABT is the developer of The Listening Program®, Sound Health®, Music for Babies™, music based programs, and BrainBuilder® software.

Dorothy Lockhart Lawrence is a staff writer and editor for an online newsletter about The Listening Program. She was the program director for a series of music festivals when she met her violinist husband Richard. After they married, her background in French, education, and psychology turned into an ongoing passion for learning more about music and neurology. She has worked in various aspects of the publishing industry for the past 25 years.

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