

Music to My Ears: The Listening Centre in Toronto

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In a world that has spent years treating the symptoms of issues related to learning and wellbeing using medication. It is refreshing to be part of a practice that uses the most non-invasive forms of intervention such as music, and voice to deal with the root of the problem. The Listening Centre uses music as a form of sound stimulation to help people attune their ears which allows them to go from hearing to actively listening. Poor listening is part of the underlying cause of an array of challenges including learning disabilities, social & behavior issues, developmental delays, ADHD. Moreover, listening training has helped the vestibular and kinesthetics of children simply learning to ride a bike as well as professional skiers improve their skill as they have enhanced body awareness in space, movement control, and increased attention span and concentration skills which inevitably leads to better performance.

Tomatis Listening Training

As early as 3 weeks of gestation, the human inner ear is one of the first sensory modalities to develop (2). While it is known that the ear is the apparatus of hearing (cochlear system) as well as awareness of body movement (vestibular system), it is less known that the ear is also connected with the vagus nerve, which sends signals to some of the major organs of the body (7). Given this influence of the ear on the body and thereby many aspects of life, The Listening Centre uses a technique that Dr. Tomatis, a French ENT specialist, had started developing in the early 1950's, and which continues to evolve today.

One of the focuses of Tomatis' study was the effect of music on the body and nervous system. He

found that the combined energizing and relaxing qualities of listening to some of Mozart's compositions have a positive impact on self-regulation (1,4,5,8). Also, describes the calming and soothing effects of being immersed in the slow modulation of Gregorian chants.

Tomatis explained that sacred chants allow listeners to synchronize their breathing with the deep respiration of unstressed singers (3,4,5,10). In his early practice, Dr. Tomatis, the son of an opera singer, worked with singers to improve or correct the quality of their voice. By doing so, he discovered that one's vocal quality is directly influenced by the way one hears. The formulation that the "larynx can only emit what the ear hears" was described by the French Academy of science and medicine as "The Tomatis

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Academy of science and medicine as “The Tomatis Effect (3,8,10).

Based on this information, Dr. Tomatis started developing a system of audio-vocal feedback, which used filters and amplification to improve the way the singer/speaker perceives their own voice. He later added an ear-training mechanism to obtain long-term improvements. The result was an audio device dubbed as the “Electronic Ear”. The 3 major components of the Electronic Ear are: the high-pass filters, the electronic gate and the balance (3,6,10).

High- Pass Filters

A series of high pass filters allow modification of the music by progressively emphasizing sound perception towards the higher frequency of the auditory spectrum. The expanded use of the full spectrum that we have available permits us to properly discriminate between tone and facilitates auditory processing. This is critical for developing and enriching the listening function (4).

The Electronic Gate

Tomatis describes the two muscles of the inner ear, not only for their protective role from unwelcome sounds as it is usually described but also for their ability to help us attune to the auditory signals we want to receive. In other words, they are the “attuning” or “listening muscles” (4).

The electronic gate stimulates the middle ear muscles by alternately bringing the music from the background to the foreground, emphasizing low and high frequencies respectively. This low-high switch causes the muscles to tense and relax, thus providing the listening training effect (3,4).

Additionally, the gate mechanism is equipped with a delay which permits the lengthening or shortening of the temporal processing time – the rate at which we process auditory information– to facilitate auditory processing. While the two approaches have

different methodologies, this aspect of the listening training work has the same goal as the well-known technique called Fast Forward, developed by one of the pioneers of neuroplasticity, Michael Merzenich, and Paula Tallal (7).

Balance

Given that the ear-brain connection is more than 60% cross lateral (9), the balance function attenuates the volume on the left ear to shift the emphasis to the right ear. This leads to a strengthening of the language center located on the left hemisphere of the brain (1,3,10). At the output of The Electronic Ear, the client receives the sounds via headphones. In addition to the normal headsets, which transmit sound through air conduction, a transducer allows bone conduction perception as well.

The Program

The sound program is based on the use of sound (music and voice) to reproduce the milestones of listening and language development from prenatal life up to the development of written language. It is composed of two general phases: the receptive and expressive phase. Each phase consists of 15 days of listening for 2 hours per day with a 4 to 6-week break in between the phases. During the receptive part of the program, clients are welcome to relax, play (for the children), draw, and write while listening to music. During the expressive phrase, clients work on their audio-vocal feedback loop by singing, talking or reading through a microphone and receiving the sounds of their voice modified by the Electronic Ear via headphones.

A Better Quality of Life

The founder and one of the clinicians of The Listening Centre, Paul Madaule, has dedicated close to 50 years of his life to this work after the life changing impact the program had for him. Paul was an 18-

year-old with dyslexia who had failed 3 grades, was feeling lost and frustrated until he had met Dr. Tomatis and was introduced to the listening training (5). Upon completion of the program, Paul obtained his degree in psychology, learned three languages, and became an ambassador for the technique, teaching it around the world before opening a Centre in Canada (1,5). The results we have seen over the years are undeniable as people find they are better able to reach their true potential.

There have been many other success stories like that of Paul's whereby the listening training's impact on eye tracking allows for decoding to become an automatic process so that reading doesn't feel like a struggle and becomes a pleasure. As one former client Ryan points out, *"After 2 of the 3 separate sessions I was noticing an incredible difference in my spelling, reading and writing"*(12). Similarly, the parents of 10 year-old Kate describe the improvement they saw in their daughter *"she is now reading at just below her grade average, she is in grade 5 and reads books at a grade level when it's for enjoyment, in class she still requires some help with the decoding, but her comprehension is above grade level. She picks up a book for enjoyment now, just to read, not because she has to"* (13).

For children with autism, what our clinician Paul Madaule describes as "an extreme form of not listening" (17), the listening training adds that extra communicative element in the true essence of the words so that they are able to relate to others as opposed to a rote memorized conversation. This can be translated in being more affectionate, and better eye contact (looking at you as opposed to through you). It also manifests as seeking others out which to a family makes a world of difference as they finally see that the child is "here, present, with us" and no longer feels like they are tuning out the rest of the world (1,5,17).

While many parents start the program in

hopes of improving their children's educational or social communication goals, it is all too common to see how pleased they are at the gains their child has made in performing better in physical activities and sports. After all, the listening training targets six components essential to physical performance: focus and attention, coordination, motivation, regulation, and self-awareness.

Results include children spontaneously riding a bike after years of not being successful and overcoming other coordination related issues, as was pointed out by then 5 year-old Kira's mother *"her bilateral coordination as functional movements such as zipping up, and skipping became easier for her to do"* (14). The mother of Carl who pointed out, *"the ability of his body to listen to his brain"* (15) referring to her son's movements related to swimming. In relation to baseball, one mother commented on her son as *"going out of his comfort zone and trying new things such as dancing, attempting new sports"* and that he *"hit a Homerun at camp today...He couldn't even play the game or connect with the ball last year!"* (15).

Beyond sports, Candace's story, a 20 year old with a mild case of cerebral palsy in the lower limbs, is featured on the website with her improvement in body movement related to dance in the words of her dance teacher. *"Since Candace has returned from The Listening Centre I immediately noticed that when I placed my hand on her body to make a correction that it felt considerably warmer and when I had her remove her socks the skin around her Achilles tendon was pinker and much warmer indicating better blood flow to her extremities. I also noticed more flaccidity in her muscles especially in the lower limbs and this has facilitated much more ease of movement and more speed in the execution of the steps"* (16). Also in the realm of dancing, one mother recently shared via Facebook her son's ability to do a new dance movement popular among youngsters "The Floss", which

he hadn't been able to achieve as it requires quite a bit of coordination and rhythmic comprehension.

The timing for when the changes as the effect of the listening training program are observed vary as different people need different amounts of sound stimulation. For some children and adults, the changes are reported during the program, while for others it's during the break between parts of the program or after completion of both intensives.

Overall, greater focus and attention span as well as the feeling of being more settled together with increased confidence in one's abilities have an influence on many aspects of the quality of life such as carrying a conversation, forming meaningful relationships, learning or, simply, smelling the roses. Those who work at the Listening Centre truly believe that each child and adult that walk through the door are unique human beings who just need the extra tools to enrich their existing capacities.

Conclusion

There is a holistic approach to our work at the center in which the outcome of the program depends on factors beyond just listening to the music. The counseling provided by the Listening Consultants to families, the therapists engaging with children, and the homely environment all come together to allow clients to reach their full potential. As with many alternative methods, it is a shame that this simple non-invasive and harmless technique cannot be used in a more mainstream environment, such as schools, and remains in the private sector. Thanks to Dr. Norman Doidge's insightful book on neuroplasticity "The Brain's Way of Healing", and the documentary on "The Nature of Things", work such as ours at The Listening Centre along with other approaches aimed at neuroplasticity have garnered global attention. By bearing witness to the magic that our work does in the lives of people from all over the world, the goal

would be to see this technique be more readily available to those who could truly benefit.

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Author Disclosures

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