

Listening is Not Hearing-
Alfred Tomatis' *Audio-Psycho-Phonology*

Just because a hearing test is normal, doesn't mean listening is intact.

Alfred Tomatis, a French physician and ENT from the Nicoise region of France, did seminal research in the 1950's involving listening and the brain. He found the voice reproduces only the sounds the ear hears ("The Tomatis Effect"/ Sorbonne 1957), that one can re-train the ear by stimulating the muscles of the middle ear, right ear dominance is essential for language development and learning (autism spectrum and learning disorders) with faster neuronal pathways to left hemispheric language centers, higher frequencies charge the brain's cortex giving us energy, lower frequencies stimulate the vestibular system and are felt by the body, hearing is primarily through bone conduction not through the ossicles, and sound affects our emotions. The ear regulates alertness and attention and coordination of posture and movement and is much more than an organ of hearing.

Listening. It is attuning to and interpreting sound information with our whole body. *Our ability to focus, switch our attention, ignore background noise, and modulate the intensity of our incoming perceptions all contribute to good listening.* This system is also *important in regulating our anxiety.* If an adult or child is overwhelmed by stimuli they can't organize perception. They may withdraw, get argumentative, or poorly regulate their affect and behavior (easily frustrated, especially with an internal perception of not being successful), and poor coordination of their body or poor sense of their body in space. The auditory and vestibular functions are central in the complex integration of *all* sensory modalities and uses the Three Integrators, — Vestibular, Eye and Cochlear systems, and with the cerebellar system integrates all of the sensory information coming into us, coordinating it with motor movements of the body and eyes.

Listening is active. Hearing is passive.

Treating factory workers and opera singers, Dr. Tomatis developed a method to stimulate the interconnections between the ear and the nervous system delivered through headphones and specialized machines. This method, *Audio-Psycho-Phonology*, uses filtered music specific for the frequencies found deficient in the person's Hearing Evaluation. A program of listening is developed to re-train the ear and

the development of listening from the fetal stage through birth and the development of language.

Since listening begins in utero when the fetus becomes aware of the sounds and frequencies in the fluids of the mother's body and her voice, *APP* engages this developmental listening process filtering the mother's recorded voice, reproducing how sound is heard in utero and deepening the effect of the listening re-training.

To conclude, the body of research begun by Dr. Tomatis grows to this day, showing improvement in auditory processing skills, social engagement, cognition, memory, depression, and possible affects on levels of dopamine. A good summary article is "An Historical Commentary on the Physiological Effects of Music: Tomatis, Mozart and Neuropsychology" by Billie Thompson, Ph.D. and Susan Andrews, P.D. 2001.

Hajime and Fukui and Kumiko Toyoshima's research, 2008 states:

"We propose that listening to music facilitates the neurogenesis, the regeneration and repair of cerebral nerves by adjusting the secretion of steroid hormones, ultimately leading to cerebral plasticity. Music affects levels of such steroids as cortisol (C), testosterone (T) and estrogen (E), and we believe that music also affects the receptor genes related to these substances, and related proteins. "In the prevention of Alzheimer's disease and dementia, hormone replacement therapy has been shown to be effective, but at the same time, side effects have been documented, and the clinical application of hormone replacement therapy is facing a serious challenge. Conversely, music is noninvasive, and its existence is universal and mundane. Thus, if music can be used in medical care, the application of such a safe and inexpensive therapeutic option is limitless."

Audio-Psycho-Phonology has been found helpful with Learning Disorders, ADD/ADHD, Autism Spectrum Disorders, Anxiety Disorders, Depression, Dyslexia, Memory, Vocal Re-Education of Singers, Foreign Language Learning, Parkinson's Disease, and early Dementia. Audio-Psycho-Phonology continues Dr. Tomatis' research at Mozart Brain Lab in Sint Truiden, Belgium.

