

A MUSICAL EAR?

A Short Introduction to the Tomatis Listening Therapy

A question that has fascinated, irritated and even been denied a fair hearing at times, is that of the so-called “musical ear”. We have the terminology, and we even have a fair idea of what we mean when we use these two words in combination – so much so that we would probably be able to find a consensus on what we mean. But is there an empirically identifiable definition that we can see on paper? Just what constitutes this enigmatic and ineffable musical ear?

Alfred A. Tomatis

One man that has an answer is Dr. Alfred A. Tomatis. A French Otolaryngology (ENT), specialist and surgeon; he produced his first research results almost half a century ago and yet these disarmingly simple discoveries are not as well known as they should be.

Tomatis was born in Nice in 1919.¹ His father was a renowned bass baritone and this early exposure to classical music was also to be very significant in view of his later research.

Tomatis undertook his medical studies during and just after the Second World War in Paris. He was attracted from the start to Otolaryngology, not least because, ”Very early I became aware of certain difficulties encountered by singers who were my father’s friends, and though I very much wanted to solve their problems, the medicine of that era was slow to find a solution.”²

Initially Tomatis undertook research into occupational deafness in a munitions factory and he made the observation that listening is dependent on psychological factors - intent and will. The results of his later research over a wider range of patients confirmed that vocal and musical deficiency always accompanied an auditory deficiency. In 1957 the French Academy of Science and Medicine formally recognised the “Tomatis Effect”. The “Effect” or “Laws” are as follows:

1. The voice contains only those frequencies that the ear hears.
2. If a defective ear is given the capability of hearing the lost or impaired frequencies correctly, these are instantly and unconsciously restored to the vocal emission.
3. Sufficient auditory stimulation maintained for a determined period of time modifies, by retention, the self-listening faculty of the subject and consequently his phonation.

The Musical Ear – Refer to Fig 1

But what really is a musical ear?

Although his intensive study of the ear had already shown Tomatis the way, it was not until 1963 that his definitive formulation of the “musical ear” was published. In his own words, (see Fig 1), “We systematically examined audiograms of musicians … who loved and were able to reproduce high quality music. From these we defined the average auditory curve profile… This curve has always the same profile, which may be described as follows: a curve ascends between 500 Hz (C above middle C) and 4000 Hz (C four octaves above middle C), with a slope that varies between 6 and 18 dB per octave up to 2000Hz. The curve is regular, without break or scotoma. The greater the slope, the more accentuated are the musical faculties. From 2000 to 4000 Hz we note a dome curve, with a slight drop from 4000 to 6000 Hz. … Anyone with a listening curve such as we have defined is certainly musical. … This typical curve ensures vocal (musical) pitch and quality…”³ Tomatis went on to describe various effects if the listening pattern did not follow this relationship. The important point is that in a musical listening curve there is a progressive relationship of frequencies, one to another – without hop, skip, jump, dip, break or discrepancy. A listening audiogram, unlike a hearing audiogram which shows the register of sound at any decibel, must show a relationship of sounds. A hearing test will not show whether or not one has a musical ear.

Can we make our ears more musical?

Yes we can. At the outset the fundamental difference between hearing and listening must be recognised. Hearing is essentially a passive, indiscriminate response to sound. Listening on the other hand is an active response to the phenomena of sound. Through stress and anxiety, whether emotional or physical we tune out from certain frequencies as a defence mechanism, thus losing our ability to tune in to them again accurately. Tomatis invented a listening device which he christened the “electronic ear”. Essentially it is a training mechanism that gives gymnastic exercise to the muscles of the middle ear. By a course of treatment with the electronic ear, the listening curve can be brought back to a proportional relationship of frequency to frequency, as described above.

Treatment with the electronic listening device is tailored to the requirements of the client. In a course the client will listen to sounds that are gradually filtered until eventually only sounds of 9000 Hz are audible. The sounds are filtered by electronically controlled “gates” of the listening device, which successively relax and stimulate the ear. Following extensive testing, Tomatis observed that of all music, in the therapy Gregorian chant and Mozart produced the most significant and dramatic results.⁴ The reasons for this are clear. Gregorian chant follows the beating of the human heart and breath more closely than any other musical form. Furthermore Gregorian chant produces consistently high frequencies. The music of Mozart too, is particularly rich in these high frequencies. There is also an active stage in the therapy which involves not only listening to filtered music but also reading aloud, chanting and singing. In the case of musicians they are encouraged to play music whilst listening through the electronic ear.

Applications

Singers and musicians both benefit in their professional work. Lovers of music can find new dimensions to their listening, deepening their appreciation of familiar works and having a keener insight into the new. Apart from the advantages of possessing a

more musical ear, allowing music making to be more free and effortless; “I feel I am now just a medium for the music – my personality doesn’t get in the way”, said one pianist. There are many other advantages as well. Because of the proximity of the “eighth pair of cranial nerves, with bundles reaching the anterior part of the medulla, the aperture of the auditory diaphragm will allow the singer and the musician to control his motor functions more exactly, and more particularly where the upper limbs are concerned.”⁵ Similarly, the vagus or tenth pair of cranial nerves are regulated by the tympanic membrane. “This phenomenon indicates the importance of tympanic tension, of which one purpose is to overcome the inhibiting effects of stage-fright … an effect that makes him lose a large part of his inherent abilities.”⁶ What goes for stage-fright may be taken as reducing anxiety levels and reducing stress. With the reduction in anxiety come positive effects, such as an increase in energy levels.

The therapy can also help with occupational deafness e.g, percussionists, rock and pop musicians. There has been a definite improvement in clarity of sound perception for these people – measurable by audio assessment and reported by the clients themselves.

A Case Study – Refer to Fig 2

The subject is female and 25 years old. She reported that she could not sing in tune and wished to gain more tonal control and musical appreciation. Her initial listening audiogram showed closed selectivity above 6000 Hz in both ears. There were two significant dips in the right ear at 750 and 2000 Hz indicating that the subject could not sing in tune. The left ear showed acute sensitivity to sounds at 750 and 2000 Hz and a dip at 1500 Hz, indicative of some difficulty in aural perception.

After the therapy, both ears showed a marked improvement in both the untangling of air (marked in black) and bone conduction (marked in red). The selectivity has opened up and the listening curves have a shape that relates tone to tone. She writes in her own words: “I had been struggling at singing school for the first two terms; mainly with pitch and was close to giving up on music.... However, the results Tomatis listening Therapy produced for me extended far beyond my initial goal.

... my singing voice also improved....I was finally able to hit pitches I had struggled with for 6 months at school; and for the first time I could actually feel where the tone was, experiencing an evident connection with what had before been an uneasy guess or hit and miss attempt.

Assured in my voice, and with a renewed sense of possibility, I decided to take up studying the guitar, an instrument I had never played before. The agility and dexterity and connection that came was remarkable to myself, my teachers and my fellow students.”

- ¹ Tomatis Alfred A. *The Conscious Ear*. Station Hill Press. Barrytown New York 1991.
- ² *ibid.* p.34
- ³ Tomatis Alfred A. *The Ear and Language*. Moulin. Norval 1996. pp83-84
- ⁴ *ibid.* p.150
- ⁵ Madaule P. *Audio Psycho Phonology for Singers and Musicians*. Potchefstroom 1976. p11
- ⁶ Madaule P. *Audio Psycho Phonology for Singers and Musicians*. Potchefstroom 1976. p13

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