Sound Therapy and Auditory Processing

The problem

Auditory processing is about how we pay attention to sound – how the brain interprets the sounds we hear. It is defined as the ability to 'hold, sequence and process' auditory information (DEET 1991)

People who have normal hearing actually hear far more than they perceive. For example, we may not perceive the ticking clock or the dripping tap until someone draws our attention to it.

Auditory Processing Disorder (APD) describes the inability to process the meaning of sound. This condition may be present from early childhood, and can lead to a number of difficulties as the child becomes older and starts school, where language and learning demands speed up and become more complex. An auditory processing disorder can also develop in adulthood as a result of stress or other health factors. APD is also known as central auditory processing disorder (CAPD).

Auditory processing is the system that transfers and decodes the sounds we hear into what we understand. It is, in effect, the link between hearing and understanding. The ear and the brain communicate with each other, just like two people having a conversation on the phone. If there is interference on the line such as the signal cutting in and out, a time delay, or a lot of background noise the transmission of the message may be confused. Such interference in our auditory processing will result in slow processing or poor encoding of data. This often leads to frustration, misunderstanding or confusion.

Correct auditory processing requires a number of complex skills. First we must be able to decode auditory signals as they are delivered, then we need to integrate auditory information with other environmental cues, organise this in a meaningful way, screen incoming auditory information to sort the relevant from the irrelevant, and finally to associate sounds with written language.

The way we make use of auditory information involves a complex and interdependent network of hearing, listening, and the brain's processing of information, enabling us to produce appropriate responses. Unless we have these abilities, our relationships, learning and development are all challenged.

How to identify an Auditory Processing Problem

An auditory processing disorder is different to a hearing problem. Sometimes we may wonder if there is a hearing problem when a child or adult has trouble understanding and communicating, but hearing tests as normal. In this case there may well be an auditory processing problem. The person is able to hear the sound perfectly but cannot process the meaning of the sound.

While hearing is a function of the ear, listening is a function of the brain. Auditory processing requires a very high speed of information transfer from the ears to the brain, and between numerous centres in the brain. It also requires a good attention span, a well-functioning memory, and sensitivity to the many subtleties of sound.

From several months before birth, our auditory system is developing in response to sound stimulation. We learn to direct our attention to the sounds most often used in our native language. Our auditory brain pathways are built
specifically to allow us to make sense of spoken sounds around us and ignore those that are probably irrelevant to our language. This explains why learning a second language at a young age is so much easier than attempting it or the first time as a teenager or an adult.

Auditory processing problems are an element of many other learning and developmental disorders, such as ADHD, dyslexia, learning disabilities, dyspraxia, Asperger's syndrome, and speech development problems. It is not unusual for such disorders to be treated for their behavioural symptoms and for the auditory processing difficulties to be ignored. However, when Auditory Processing is improved, a significant difference is usually seen in behaviour and learning abilities.

The indicators of Auditory Processing Disorder
Children (or adults) with APD will display some of the following signs:
- Delayed language development
- Poor listening ability
- Difficulty conversing on the phone
- Difficulty hearing in a noisy room
- Trouble in sequencing the sounds of words
- Difficulty perceiving high frequency sounds: 't', 'f', 's', 'k', 'p', 'th', 'sh'
- Confusion when faced with similar sounds: eg. 'da' and 'ba'
- High distractibility, with short attention span
- Poor speech comprehension, often asking 'What?'
- Misunderstanding and poor memory for oral messages
- Inability to follow directions
- Difficulty in expressing desires, often blaming the other person for not understanding
- Academic problems, particularly in spelling, reading or comprehension
- Difficulty pronouncing complicated words
- Behaviour problems
- Social difficulties.

How Sound Therapy Improves Auditory Processing
Sound Therapy is an essential treatment for auditory processing as it works directly on the stimulation and improvement of the way the brain processes sound.
It is essential to treat an auditory processing problem directly by improving the function of the entire auditory system from the ear to the brain.
Other modalities that may help auditory processing are interventions such as speech therapy or remedial tutoring in reading.

Sound Therapy exposes the ear to specific algorithms of highly filtered sound to strengthen neurological pathways and train the ear to listen more accurately. This has a direct and strengthening effect on the whole auditory system including the middle ear, the inner ear, and the central nervous system.

Research has shown that the best way to improve the function of any sensory system is through its stimulation. The most direct way of stimulating the auditory system is by listening to high frequency, complex music through headphones.

Considerable research has been conducted into what kinds of sounds best fulfill the role of auditory stimulation, and the most groundbreaking discoveries in this area were carried out by Dr Alfred Tomatis in the development of the Sound Therapy Program. Sound Therapy integrates the most recent research, theory and technology with the principles discovered by Dr Tomatis to deliver a program that is portable, affordable, accessible and easy to use.