



One of the greatest challenges facing speech and language therapists is choosing among the many treatment options that are now available. Which one is most appropriate for a child and will produce the most benefit? When talking

about children with an autism spectrum disorder there is no easy answer, as each child is unique and treatment programs need to be individualised. However, in my experience, most children with autism spectrum disorder exhibit some form of auditory processing disorder. Doman (2005) says that, "indeed, auditory processing problems are recognised today as the primary sensory impairment in children diagnosed with an autism spectrum disorder." It therefore makes sense to consider including auditory stimulation as part of a child's treatment plan.

So what might tell us that a child has a difficulty with auditory processing? If they are over-responsive to auditory input, they may feel they are being continually over-powered by sound and try to counteract this by covering their ears or avoiding the sound. Doman (2005) also sets out five areas where individuals with autism spectrum disorder commonly experience difficulties if they have auditory processing dysfunction:

1. Auditory attention – the ability to attend, focus or listen
2. Filtering extraneous sound – being able to 'tune out' irrelevant sounds in order to concentrate
3. Sound discrimination – ranging from basic phoneme discrimination, to being able to distinguish change in voice tone so that they understand the emotional meaning being conveyed in language
4. Temporal processing – perceiving the timing of rapidly changing sounds
5. Auditory sequential memory.

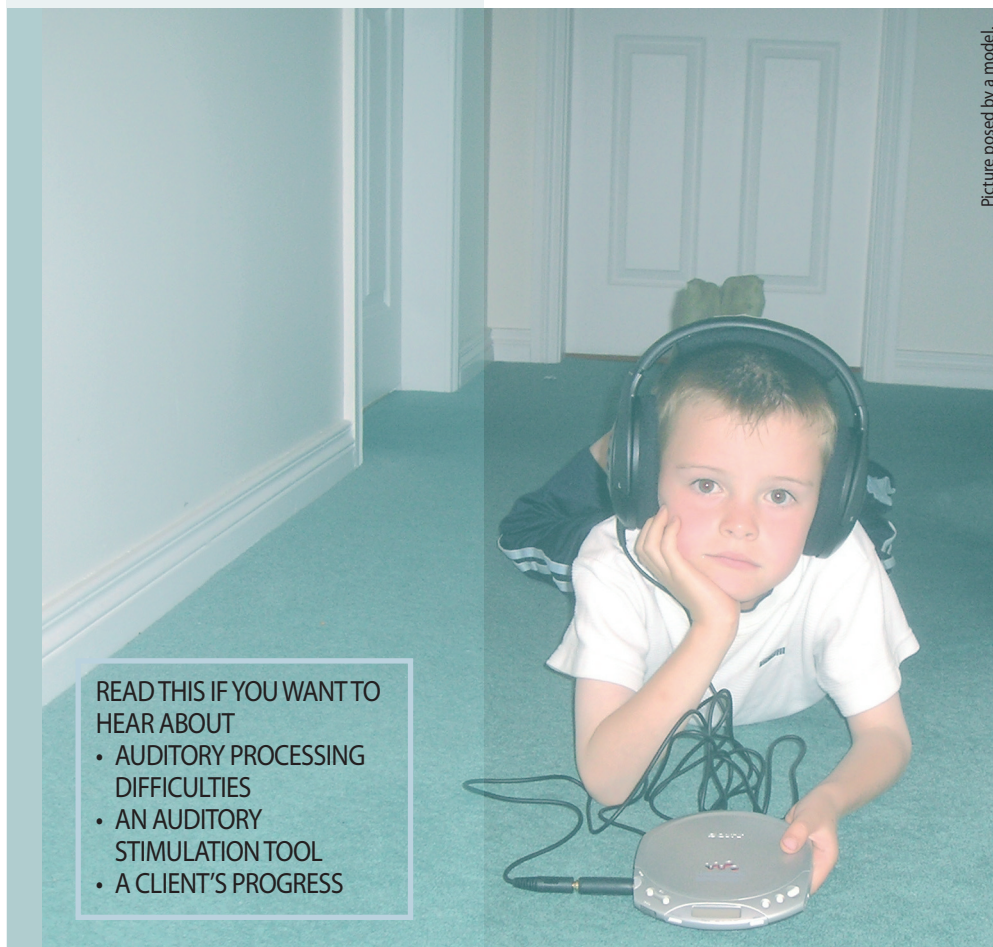
These impairments affect behaviour and communication abilities as well as listening skills.

Alexander Doman (2005) says, "The primary objective of any auditory stimulation method is to reorganise and normalise the auditory system so that the full spectrum of sound is processed without distortion." Doman is the founder and president of the company Advanced Brain Technologies which has developed a treatment tool called The Listening Program. Following my training as an Authorised Provider in 2004 I did a Certification Exam to qualify me as a Certified Provider.

Logical

The Listening Program® (TLP) is a Music-Based Auditory Stimulation™ method, designed to build the auditory skills a child needs to effectively process sensory information. I was initially very sceptical of the whole concept of using music to aid communication skills, but the course was presented in such a logical fashion that it captured my interest.

Since The Listening Program first became available in 1999, the number of case studies in its Provider maga-



Picture posed by a model.

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- AUDITORY PROCESSING DIFFICULTIES
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Initially sceptical about the value of music-based listening tools in helping children with auditory processing difficulties, *Donna McCollum* was sufficiently impressed by her training in The Listening Program® to try it out with Aodhan, a 7 year old boy with a diagnosis of autism.

zine suggests there has been a rapid increase in its application with children on the autism spectrum. This is due in part to its perceived positive impact on engagement, emergent skills, sensory integration and auditory processing, and reduced sound sensitivity.

The Listening Program consists of an extensive series of high quality audio CDs that integrate specially produced acoustic music, primarily classical, with innovative sound processing techniques. To create a permanent change in the brain, the sensory stimulation must be delivered with sufficient frequency, intensity and duration. This stimulation allows the brain to process sound without distortion,

Listen

so that it can better perform the auditory skills needed to effectively listen, learn and communicate. All music is spectrally analysed to confirm frequency spectrum. The music is listened to through high quality headphones. A minimum of 40-60 hours is recommended for initial gains to be achieved. Standard Listening Schedules and Variations of 20 hour cycles encompass daily (5 days per week, 2 days off) listening of 15-30 minutes over a course of 8-16 weeks. Preparatory listening of 2-10 minutes daily can be done with sensitive listeners prior to beginning a Standard Schedule. The Listening Program can be self-administered under the monitoring and consultation of a trained Authorised Provider.

The Listening Program Classic Kit includes eight CDs, TLP 1 – TLP 8. There are additional Specialised CDs, not part of the kit, that focus on different frequency zones including Sensory Integration (SI) 0 – 750 Hz, Speech and Language (SL) 750 – 4000 Hz, and High Spectrum (HS) 3500 Hz and above. The identification of these frequency zones is attributable to Dr Alfred Tomatis, with each zone corresponding to different areas of human brain and body function. So Zone One (SI) is related to balance, rhythm, coordination, muscle tone, body awareness, sense of direction, laterality and right/left

Figure 1 Assessment scores (NB Two different versions of the CELF used)

A. 6;3 years, CELF-R			B. 7;3 years, CELF-R UK3		
Subtests	Standard Score	Percentile Rank	Subtests	Standard Score	Percentile Rank
Linguistic concepts	6	9	Sentence structure	11	63
Sentence structure	8	25	Concepts and directions	8	25
Oral directions	10	50	Word classes	10	50
RECEPTIVE LANGUAGE SCORE	87	19	RECEPTIVE LANGUAGE SCORE	97	42
Word structure	8	25	Word structure	10	50
Formulated sentences	6	9	Formulated sentences	11	63
Recalling sentences	8	25	Recalling sentences	9	37
EXPRESSIVE LANGUAGE SCORE	82	12	EXPRESSIVE LANGUAGE SCORE	101	53
TOTAL LANGUAGE SCORE	83	13	TOTAL LANGUAGE SCORE	99	47

Figure 2 Assessment using The Listening Program Pre- and Post- Listening Checklists

The following skills went from 'always' to 'rarely':

- oversensitivity to certain sounds
- difficulty in sound discrimination
- confusing similar sounding words
- becomes sleepy when listening to speakers or reading.

The following skills went from 'often' to 'rarely':

- tires easily
- difficulty hearing low male voices
- difficulty hearing high female voices
- sings out of tune
- difficulty relating isolated facts
- stumbles on words.

The following went from 'sometimes' to 'rarely':

- uses a flat and monotonous voice quality
- difficulty with reading aloud
- poor spelling.

and learn

discrimination. Zone Two (SL), which targets mid and higher frequency sounds, is related to memory, concentration, attention, speech, language and vocal control. Zone Three (HS), which targets higher frequency sounds, is associated with the development of energy, intuition, ideas, creativity and auditory cohesion.

Interrelated and interdependent

The three zones are inextricably linked; the first lays a foundation, the second builds on that foundation and the third is supported by the first and second. This concept lends weight to the view that lower level brain organisation supports higher level functions with all brain organisation being interrelated and interdependent (Ayres, 1979).

Doman & Lockhart Lawrence (2003, p.1) have written about the benefits they have found in using The Listening Program in the treatment of autism, in particular, acknowledging the link between autism and auditory processing:

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.

They continue (p.2):

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

There are four most commonly reported benefits cited by Doman & Lockhart Lawrence (2003). Firstly, the area of increasing engagement is enhanced. Use of The Listening Program can improve self-image, reduce tactile defensiveness and lead to a better sense of the body in space. The autistic child subsequently initiates more physical contact, responds better to others, and increases attention span and eye contact.

Secondly, sound stimulation helps facilitate better integration and organisation in the sensory and motor systems, leading to a faster acquisition of skills. The third benefit is in the improvement of rate and accuracy of sound perception. As the brain develops this skill, it has a direct effect on the development of auditory processing and receptive language skills.

Doman & Lockhart Lawrence also claim that the use of The Listening Program reduces hypersensitivity to sound, as it provides sound stimulation that helps the nervous system to modulate sensory input more efficiently. This often results in a reduction in abnormal sensory perception, especially with sound. The autistic child is thus more comfortable in their environment as they don't have to deal with unwanted sounds any more.

Add to understanding

Conscious that music-based listening approaches are regarded with suspicion by some, I was keen to introduce The Listening Program in a way that would bear scrutiny and add to our understanding of its potential value as one tool for children with auditory processing difficulties. Here, I would like to describe its impact on Aodhan, a 7 year old boy with a diagnosis of autism.

Aodhan was referred to the speech and language service when he was 3 years old. Following assessment, he was offered a place in a joint speech and language / occupational therapy group intervention which he attended for 12 sessions. He presented with severely delayed receptive and expressive language skills, poor social interactional skills, auditory hypersensitivities, together with echolalia and numerous other difficulties related to auditory processing and sensory integration dysfunction.

His occupational therapist was unable to complete a formal standardised assessment at this stage due to Aodhan's highly distractible attention skills. Delayed gross and fine motor skills and visual perceptual skills were identified by clinical observations. Lateral dominance was not established.

Aodhan was subsequently diagnosed as having an autism spectrum disorder when he was 4½ years old, and received a Statement of Special Educational Needs. He attended a second speech and language / occupational therapy group for a further 12 sessions, followed by two blocks of individual therapy.

Whilst excellent progress had been made in all areas of speech and language on formal assessment, two main areas of deficit were identified when Aodhan was 6 years old. Aodhan still found it very difficult to remain focused on a task, particularly if it was auditory in nature. He also

resources

www.whisperphone.com

Learning options

A new Australian book for parents explains the perspective of two trained teachers who believe that good nutrition and a range of approaches such as neuro-developmental therapy, sound therapy and chiropractic can be beneficial for children with a range of difficulties.

Learning Options: choices for struggling students, see www.learningoptions.net.au.

Best treatments

The British Medical Journal offers a free, independent, one-stop health website which includes medical information on more than 120 different conditions. Current evidence on medical research, symptoms, treatments and questions to ask the doctor are covered.

www.besttreatments.co.uk/btuk/home.jsp

Voice mentoring

Vocal Process, a training resource for vocal practitioners, is experimenting with personal mentoring over the internet and telephone for people who cannot easily get to London.

Further information from gunvor@vocalprocess.co.uk

Dyslexia programme

Nessy is a computer learning programme to help with reading, writing and spelling. Specifically developed for children with dyslexia, the programme has found favour more generally in schools in East Renfrewshire and Conwy.

Demo available at www.nessy.co.uk

DDA duties

The Department for Education and Skills has issued guidance on the implementation of the Disability Discrimination Act in schools and early years settings to help them understand their duties and increase access.

www.teachernet.gov.uk/wholeschool/sen

PMLD curriculum

A Children's Trust special school has produced a school curriculum for children and young people with profound and multiple learning difficulties.

A Curriculum for Learning focuses on those with a developmental age of up to 12 months, covering sensory cognitive, communication, social, motor and life skills in an integrated 24 hour educational framework.

www.thechildrenstrust.org.uk

Basic skills

The Basic Skills Agency has a new range of resources, 'Raising Expectations', to support practitioners in helping teenage parents and parents-to-be to improve their reading, writing and maths in four different contexts: health matters; parenting; house and home life; and schools, college and work.

The agency also produces 'Talk to Me!' speaking and listening materials for parents and teachers of 4-5 year olds to support the transition from early years to primary school.

www.basic-skills.co.uk

More resources on p.9

still had some abnormal responses to sensory input. To address these two issues I agreed with his parents that we would embark on The Listening Program. I assessed Aodhan using the CELF-R (figure 1, p.5), and completed The Listening Program pre-listening checklist.

Aodhan began his personalised Listening Program with preparatory listening, with the Sensory Integration Classic CD followed by the Sensory Integration Kids CD. He then continued through the 16 weeks (15 minutes twice a day) of the Classic Kit, and continued to complete three cycles of listening. Listening was carried out under the supervision of his mother at home. No other therapy intervention was offered while Aodhan was using The Listening Program. Aodhan was then assessed on the updated CELF-R UK3 (figure 1, p.5), and The Listening Program post-listening checklist was completed.

Aodhan's greatest improvements are his self-regulation skills, his ability to concentrate, and his reduced hypersensitivity to noise.

"He initiates conversation readily, he asks more questions and isn't satisfied readily, he will analyse comments and then asks something more." (Aodhan's parents)

Aodhan's greatest improvements are his self-regulation skills, his ability to concentrate, and his reduced hypersensitivity to noise. Since Aodhan is so receptive to listening, we agreed that he should start using the Level One kit after a four week break. At the time of writing he has nearly completed one cycle of this.

Increased attention

Aodhan has responded extremely well to The Listening Program. In addition to his communication skills development, he has developed in other areas. While participating in The Listening Program he was not involved in any specific activities to improve his motor skills. However, he was formally reassessed by the occupational therapist recently and has been discharged from this service as skills are now developing well. Aodhan's gross and fine motor skills are now more refined, lateral dominance is now established and his visual perceptual skills are above average. The occupational therapist felt that many of these skills improved as a direct result of Aodhan's increased attention.

When completing the Observations Checklist of The Listening Program, Aodhan's parents noted an increase in eye contact, independence, flexibility and sense of

humour. Expressively they were aware of increase in communication, vocabulary, sentence structure and initiating verbal participation (bear in mind Aodhan was not receiving any other speech and language therapy intervention). Aodhan was also less restless, and showed increased sense of rhythm and a decrease in sound sensitivity. An increase in attention and organisational skills has undoubtedly contributed to his overall progress.

Aodhan's dedicated parents feel that he made excellent progress during the year of listening to three cycles of The Listening Program: "He initiates conversation readily, he asks more questions and isn't satisfied readily, he will analyse comments and then asks something more." His mother has been amazed by the difference in his musical awareness: "He will sing along to music on the radio, and not only the melody. He will tap out rhythms and again not the most obvious one." One of the proudest moments for his parents was when Aodhan was given a role in the school Christmas concert.

Although Communicating Quality 3 guidance "does not currently include individuals with an auditory processing disorder" (RCSLT, p.312), it does state that, for people with autism spectrum disorder, speech and language therapy value is "to provide an environment which maximises opportunities for individuals to develop their receptive and expressive communication skills" (p. 267-268). It is clear to me that Aodhan has benefited immensely from The Listening Program and that further work with the program will help maintain his gain and assist with continued positive change.

References

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Resources

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REFLECTIONS

- DO I RECOGNISE AUDITORY PROCESSING ISSUES AND CONSIDER HOW TO ADDRESS THEM?
- DO I OFFER PARENTS AND CARERS A SUFFICIENT LEVEL OF DETAIL TO HELP THEM NOTICE CHANGE?
- DO I MAKE THE MOST OF OPPORTUNITIES TO WORK IN PARTNERSHIP WITH OCCUPATIONAL THERAPISTS?