



Auditory Processing Disorder in Children



Introduction and a case history

Increasing interest in the notion of Auditory Processing Disorder (APD) has stimulated a surge in research into the nature, assessment and management of this complex disorder.

T is a bright boy but his APD meant he was underachieving at school. He complained that he couldn't hear the teacher because of background noise and that she spoke too fast so he didn't have time to think. He found it hard to sound out and put together parts of words and had problems with sequencing his ideas. These problems were reflected in his reading, spelling and creative writing. Once his problems were recognised and managed appropriately, he was able to show his true potential and his self-esteem improved.

What is an Auditory Processing Disorder?

APD refers to difficulty with listening and processing what we hear. This has an impact on everyday life and may include difficulties understanding both speech and environmental sounds.

The processing of sound by the ear and nerve pathways between the ear and the brain is highly complex. Recent research shows that the brain can influence the way incoming sounds are processed. So it's a two way process and it all happens very quickly.

Other factors can also affect the way we process sound such as our language ability, memory and attention. This is because even a simple task like following the instructions of a teacher requires that all these different abilities work together. As a result APD often co-occurs with other childhood developmental delays such as language, attention and memory difficulties, as well as dyslexia and autism. APD is thus a complex disorder and is different in each child.





There are 3 types of APD:

Developmental APD	This is where difficulties with APD are noted already in childhood and do not appear to arise from a particular cause. These children have normal hearing on routine hearing tests but difficulty listening and processing sound. Some of these individuals may retain their APD into adulthood
Acquired APD	This is seen more often in adults and is linked to ageing or a known event, such as a stroke, blow to the head or infection
Secondary APD	This is where APD occurs together with, or as a result of a hearing loss

What are the key difficulties associated with APD?

- **Listening in noisy and reverberant environments**
- **Difficulty localising and 'tracking' moving sounds**
- **Understanding speech when the signal is degraded in some way (e.g. when spoken in an accent, or heard on a mobile telephone)**
- **Poor listening skills**
- **'Mishearing' auditory information**
- **Taking longer to respond to and process auditory information**

Additionally, in children there may also be reports of:

- Delayed auditory milestones in early childhood, (e.g. difficulty learning songs and nursery rhymes)
- Difficulty with auditory memory and multiple auditory commands
- Speech and language delay or disorder
- Difficulties with academic progress, especially concerning reading and spelling





How is APD identified and assessed?

There are a number of checklists (questionnaires) that may be completed by parents for initial identification of listening problems. In the clinic, the first step is a detailed case history followed by routine hearing tests. These will ensure that the child does not have a hearing loss. Further tests of auditory processing can then be done by an Audiologist, and should include both speech and non-speech stimuli. A speech and language screen and further assessment from a Speech and Language Therapist may be advised and should include an analysis of spoken and written language. Teachers of the Deaf or Educational Audiologists are able to provide an assessment of the educational setting and make appropriate recommendations, which may in some cases include the fitting of an assistive listening device and/or assessment for an Educational Health Care Plan (EHCP). An Educational Psychologist can provide assessment for dyslexia and further cognitive testing and make recommendations for the educational setting and further support. Children with the acquired or secondary types of APD also need to be managed by a medical doctor.

Management

Following assessment, an individualised management plan will be drawn up and may include:

- Strategies for developing better listening skills
- Strategies for improving the listening environment at school and home
- Strategies for the teacher/speaker (e.g. slow down rate of speech, use succinct sentences with pauses between sentences, and ask child to repeat what they have heard)
- Trial and/or fitting of an Assistive Listening Device (also known as Remote Microphone or FM). This wireless system consists of a very small microphone worn by the teacher and a small device worn on the ear of the child. It helps to cut out background noise and reverberation regardless of where the teacher is positioned in the classroom.
- Auditory training, using programmes or computer-based software
- Compensatory strategies like inner rehearsal (e.g. repeating instructions to yourself using your 'inner voice' to reinforce what was heard)
- Building self-esteem and developing an understanding of what APD is
- Management of any co-occurring difficulties such as dyslexia, autism or impairments in memory, language and attention

For further information visit the APD page on the British Society of Audiology website <http://www.thebsa.org.uk/bsa-groups/group-apdi/> or contact the British Society of Audiology directly on the details below.