



SPECIFIC

LANGUAGE

impairment

SKILLS

EXPRESSIVE

word

VOCABULARY

FINDING

receptive

The July–August 2014 International Journal of Language and Communication Disorders discusses issues and controversies regarding specific language impairment

(SLI). One of these is the validity of the exclusionary criteria, which for many years has made providing a label for deaf children with additional language and/or speech difficulties problematic.

Deciding on whether a deaf child has an additional or ‘disproportionate’ speech and/or language difficulty is not straightforward and requires much skill and experience on the part of the SLT. The therapist needs to have a very good knowledge of what typical speech and language development they can expect in any given deaf child, as well as knowledge of the various features of SLI, in order to make a differential diagnosis. Table one shows the many factors to consider when deciding what ‘typical’ language development might look like for any particular deaf child.

Research has looked at SLI in deaf children using British Sign Language (BSL) as their first language (Mason et al, 2010; Woll and Morgan, 2012; Herman et al, 2014; Marshall et al, 2014). We know SLI occurs in roughly 6.4% of children learning BSL as a first language, which is a very similar proportion to that of SLI among hearing children (Mason et al, 2010). Mason et al (2010) found the characteristics of SLI in deaf signers were strikingly similar to those found for hearing children with mixed strengths and weaknesses across the different areas of language.

Specific language impairment and deaf children

Lorna Gravenstede and Katherine Clements look at the issue of deaf children with additional speech and language difficulties

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Oral deaf children and SLI

Surprisingly, less is published on deaf children who communicate predominately orally and have disproportionate difficulties with their speech and/or language skills. Clinically, SLTs who work with hearing impaired children are very aware that such children exist. Murphy and Dodd (2010) compared the language

profile of two secondary-age children with severe–profound sensorineural hearing impairment, both of whom had grown up in households where English was the second spoken language. They show strong evidence that the two children present with very different profiles and while one has many features in common with children who have SLI, the other’s profile was more like that of a child for whom English is a second language. Murphy and Dodd argue that for some children, language difficulties are complicated by, rather than caused by, other factors, including hearing impairment and English as a second language. They argue for the need to expand the concept of SLI to include children with other impairments and from different language backgrounds to provide equity of support services and access to the classroom.

Gilbertson and Kamhi (1995) matched 20 mild–moderately hearing–impaired children with hearing controls who had similar receptive vocabulary. They found the performance of half of the deaf children was comparable to that of the controls, but that the other half performed more poorly on their novel word–learning »

Table one: Factors affecting speech and language

- Level of hearing loss and level of amplification provided by hearing aid(s) or cochlear implant(s)
- Consistency with which amplification is worn
- Age of child
- Age at diagnosis and age when hearing aids first fitted
- Other perceptual capabilities, eg frequency and temporal resolution
- Quality of language input – mode of communication; language(s) used?
- Support provided by local professionals and family’s ability to act on this
- Listening environment
- Quality of interaction with caregiver
- Additional difficulties
- Child’s natural aptitude for language learning



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task and suggest half of their sample had a language impairment in addition to their hearing impairment.

Cochlear implants

Hawker et al (2008) compared the performance of six children who had received cochlear implants, but who had disproportionate language problems to those of six children with cochlear implants who were developing more typically. Despite equivalent performance IQs, the two groups performed very differently on a battery of tests used to diagnose SLI in hearing children. They conclude that the language difficulties experienced by some children with cochlear implants are additional to those caused by their deafness and may reflect the same, predominantly inherited basis as SLI.

Within the population of deaf children who are fitted with cochlear implants, research shows expected outcomes in terms of speech and language development (eg, Niparko et al, 2010; Uhler et al, 2011;

Wie, 2010). The evidence demonstrates that the language profile of many children fitted early on with cochlear implants is comparable to that of normally developing hearing children (eg, Ruffin et al, 2013; Lofkvist et al, 2014). However, for some this is not the case and where no other explanation for the child's difficulties exists, these children present with a specific additional difficulty with speech and/or language.

More research required

It is important that more research is carried out into deaf children with additional speech and language difficulties, including the typical profiles of such children as well as the types of intervention most effective for them. Ultimately, this should lead to improved outcomes for these children. ■

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Case study: **Aiden's story**

Early history: Aiden (not his real name) has a profound bilateral sensorineural hearing impairment diagnosed immediately after birth. The cause is genetic (Connexin 26). He has an older brother who is also deaf. Aiden met his motor and play milestones at expected ages and did not have any feeding difficulties.

Aiding: Aiden was fitted with two hearing aids when he was a few weeks old and wore these consistently. He was fitted with a cochlear implant at age two and went on to wear this consistently.

Communication mode: The first language of Aiden's family is English, but they had just begun to use some key signs alongside their speech when Aiden was born to help his older brother. He attended a primary school with a specialist unit for hearing impaired children with a total communication philosophy. When he left the unit, he was using spoken English, sometimes backed up with key signs. Aiden moved to a specialist secondary school for the deaf with an oral communication philosophy.

Communication history: Aiden was excessively slow to develop his expressive spoken language and SLTs who worked with him at primary school raised concerns regarding this. Shortly after he began secondary school, his mother reflected she had always felt there was something wrong with his ability to communicate. Not only did he struggle with his spoken language skills, but also his use of signs to support English was not as clear as his brother's. Aiden's mother felt he sometimes struggled to find the sign he needed. Aiden was formally diagnosed with additional language difficulties after he arrived at secondary school.

Communication profile at secondary school:

- Receptive language was significantly delayed, but relatively stronger than expressive skills.
- Expressive language skills measured as being at the 0.1st percentile on the formulated sentences sub-test of the CELF-4 (Semel, Wiig Secord, 2013). Aiden had difficulties with grammar and made word order errors. Examples of his sentences included, "If the boy ran bus would caught" and "Never cross when the light traffic change".

- Aiden had a significantly delayed receptive vocabulary, but a much weaker expressive vocabulary, indicative of word finding difficulties.
- Aiden's speech sound system contained many errors and yet his aided audiogram showed that he had access across the speech spectrum. Errors included some normal developmental errors, such as reduction of consonant blends, and errors with vowel sounds (eg, saying 'bath' as 'born').
- Aiden had difficulty with the production of multisyllabic words. This seemed to be a difficulty with storage/retrieval of the sound patterns, because he was able to imitate words he could not produce accurately and had normal diadochokinetic rates.

Non-verbal skills: Assessment by an educational psychologist, using the WISC-IV (Wechsler, 2004) showed that Aiden's non-verbal or performance skills were at the 73rd percentile; but his verbal skills were at the 2nd percentile. The educational psychologist also found Aiden's auditory memory skills were very weak.

Diagnosis of a language disorder: Aiden was diagnosed and aided early, and had a history of a high level of good input from teachers of the deaf and SLTs, in addition to a very supportive family. His aided thresholds and speech discrimination skills were good. He would therefore be expected to develop spoken language naturally following the fitting of his cochlear implant. This did not happen and he needed a lot of structured input to make the gains that he did. His language disorder pervaded both his spoken and written English, and his use of signs.

Therapy strategies and progress: Throughout his secondary education, Aiden worked on a specially devised, intensive speech and language therapy programme with the focus on developing strategies for word finding,

auditory memory skills, his understanding of grammar and the structure of English. He was placed in a language enrichment class with other peers who had similar needs. This meant he had access to a teaching assistant (TA) throughout the school day and received support with his homework in the evening. He also benefitted from having speech and language therapy input each week in two of his English lessons. Here, the class followed a programme focusing on the development of English word order, sentence structure, grammar and vocabulary by following a language colour coding approach in years 7 and 8. In years 9 and 10, the focus was primarily on developing inference skills, comprehension and exam vocabulary. Aiden developed his ability to read fluently by taking part in reading programmes, such as the accelerated reader and peer reading programmes, where he would practise reading aloud to staff or 6th form.

Aiden had individual therapy twice a week and his TA attended one of these sessions each week to carry over the targets in class. The TA encouraged Aiden to use the word retrieval strategies he had learned and



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helped him practise multi-syllabic words relevant to the lessons. Although progress remained slow, Aiden's motivation to improve his speech and language continued throughout secondary school.

One of the most crucial parts of the therapy was that of explaining his language disorder. Aiden found having the diagnosis a relief. He became involved in supporting other pupils with additional language difficulties and researched strategies himself to help him with his weak memory skills. Importantly, Aiden was able to inform others of his strengths and weaknesses, and had strategies in place to help him communicate to the best of his ability in daily tasks.



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