Deafness in a hearing workplace

Zoe Shergold, **Penny Roy** and **Ros Herman** examine a case study that illustrates the issue of deafness and dyslexia in adulthood

We are a team of SLTs with experience in deafness and an educational psychologist with expertise in dyslexia collaborating on research looking at reading and dyslexia in deaf children (Shergold, 2011).

The joint City University London and University of Bedfordshire research project is collecting data using a range of reading and reading-related measures, such as the York Assessment of Reading for Comprehension (Snowling et al, 2009) and selected subtests from the Phonological Assessment Battery (Frederickson, Frith and Reason, 1997).

Once data collection is complete, we will investigate the distribution of children's scores on the tests, develop deaf norms that professionals can use in future to assess deaf children's reading capabilities and, potentially, identify cases of dyslexia. We are also collecting data using the same measures from a group of hearing children who already have a diagnosis of dyslexia. This group will act as a matched 'control' for comparison with the group of underperforming deaf readers. Depending on the study findings, we intend to carry out future studies in the same area with British Sign Language (BSL) users so that we can develop norms for the wider population of deaf children.

Sarah's case

Sarah (not her real name), who was born profoundly deaf, heard about our project and contacted us about the difficulty she was experiencing in her role as an office administrator. She reported difficulty understanding work emails and consequently being able to reply in the appropriate way. Sarah wondered whether her problem was linked not only to her deafness but to some other underlying cause, such as dyslexia. Many deaf people have difficulty with face-to-face verbal communication and therefore written communication is particularly important in a work environment**.**

Assessing Sarah

We invited Sarah to the Compass Centre at City University London for two assessment sessions. Although she used BSL with some friends, Sarah was a predominantly oral communicator with very intelligible speech and so we conducted the sessions in English.

We tested Sarah on a range of measures developed on a hearing population because there are no literacy tests standardised on deaf people. The test battery included measures of non-verbal intelligence, spelling and vocabulary (Wechsler Adult Intelligence Scale, Wechsler 1994); tests of single word and nonword reading (Wechsler Individual Achievement Test, Wechsler 1992); the extension reading passage (Neale Assessment of Reading Ability, Neale 1999) and phonological awareness subtests (Phonological Assessment Battery, Frederickson, Frith and Reason 1997).

We made sure the tests were accessible by paying close attention to the acoustic environment and seating positions, to maximise the benefit Sarah would gain from her hearing aids. We also provided clear lip patterns, sign and gestural support to clarify the task demands and used our knowledge of deaf speech patterns to guide our scoring – for example, not penalising errors on real and nonword decoding tests, which were related to Sarah's speech patterns rather than her misreading.

Working memory

Sarah presented with an overall average ability on the non-verbal and some of the literacy tasks compared with hearing people of her age. While her ability to read words, nonwords and sentences accurately was average, her ability to answer questions on what she had read was low. Sarah had some difficulty manipulating phonemes but no more than would be expected of a profoundly deaf adult. Her spelling ability was average with errors characteristic of a deaf rather than a dyslexic profile, for example omitting perceptually less salient phonemes such as 's'.

Overall, rather than the results pointing to a dyslexic profile – ie, in the absence of typical dyslexic decoding and spelling difficulties – we suspected Sarah's difficulties might be linked to working memory. Some research has suggested that deaf individuals may be at a disadvantage when compared to hearing peers in this area (Marschark and Mayer, 1998).

To further investigate, we adapted the Automated Working Memory Assessment (Alloway, 2007). Usually, the person being tested would carry out this assessment on a computer. In this instance, a member of the assessment team read the assessment material aloud to provide Sarah with speech reading cues. The results revealed that Sarah found it extremely difficult to hold and manipulate both verbal and visual information. We concluded that underlying working memory difficulties were evident.

Functional therapy

We offered Sarah five therapy sessions at the university clinic. Therapy was highly functional, focusing on ways to circumvent her difficulties in the workplace by developing strategies to support her understanding of work emails.

For each session we produced three mock emails based on a selection of Sarah's actual work emails, using formal 'office' language. We included complex constructions, such as 'your advice would be greatly appreciated'; omitted subjects, for example, 'Spoke to Dave yesterday'; and referents were vague, 'I hope you are able to help with this.' We devised five comprehension questions per email to break down the chunk of text, thereby lightening the load on working memory.

It became apparent that Sarah had specific difficulties in:

- Understanding vocabulary and grammatical constructions.
- Understanding the difference between tenses, for example, 'broke' and 'have broken' and their appropriate use.
- Understanding and using formal style.
- Identifying what a pronoun referred to, particularly 'this' and 'it'.

In many ways, Sarah's difficulties resembled those of a person learning English as an additional language.

As therapy progressed, we provided Sarah with resources that she could take away and use at work. These included a glossary of unfamiliar terms, a list of brainstormed strategies to aid interaction with hearing colleagues, a table of different ways questions might be expressed in emails, and work sheets on past tense and referents.

Self-assessment rating

Sarah completed rating scales before and after therapy to assess the effectiveness of the intervention. Self-assessment rating scales ranged from general confidence ('I feel confident at work') to specific ability ('I am able to understand the emails I receive'). We also included general scales relating to Sarah's employment ('my employers make reasonable adjustments to help me do my job'). Sarah's ratings of her confidence and abilities increased post therapy, whereas her ratings of her workplace remained approximately the same. Three months post therapy we asked Sarah to complete the rating scales again. Her scores showed a positive maintenance of skills and even further progress in some areas. Unfortunately, uncertainty over the security of jobs in Sarah's workplace had resulted in some anxiety.

Clinical implications

Studies of deaf children have identified literacy difficulties (Conrad, 1979; Traxler, 2000) and this can remain an ongoing issue into adulthood. This is largely due to restricted access to first language learning at a young age. Even in adulthood, words and abbreviations that most people learn through repeated exposure (such as 'eg' and 'FYI') can be difficult for deaf people to understand.

Sarah's case highlights the difficulties faced by deaf adults in a hearing workplace. Sarah's high level of oral competency in conversation masked her wider problems understanding the grammar and vocabulary of English. Her colleagues often had high expectations of her ability to understand and respond to emails and did not always make allowances for her deafness.

Deaf-friendly literacy and dyslexia assessments for people such as Sarah are hard to find. We believe there is much to be gained from professionals with different backgrounds and skills working together to develop appropriate test batteries that they can deliver in an accessible way.

This case study highlights the need for support with literacy and English by (at least some) deaf adults, yet very few services offer support beyond school age. Adult literacy courses have much to offer, but staff need a level of deaf awareness and an understanding of the challenges faced by this population in order to best meet their needs. Specialist SLTs who understand the pragmatic and linguistic challenges faced by deaf

people can play an important role in offering support beyond the school years. Intervention needs to focus not only on the specific literacy challenges faced by the individual but also on raising awareness of how these present within the work context.

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