





# Weaving together word-finding therapies for children and adults

**Wendy Best and Susan Ebbels** discuss the links between word-finding difficulties in children and anomia in adults, and provide an update on intervention studies with both populations

ILLUSTRATION BY **Richard Keeling**

**M**any children with developmental language disorder (DLD) have word-finding difficulties (WFD), including an estimated quarter of those attending language support services (Dockrell et al., 1998), while some children have isolated WFD without co-occurring language difficulties (Best, 2005).

WFD (anomia) is also a very common language difficulty in aphasia after stroke and therefore constitutes a major focus for rehabilitation (Nickels, 2002).

## What are WFD?

Core features of WFD in children and adults include an inability to retrieve words that they understand, inconsistency in word retrieval across occasions, difficulty in new word learning, and errors in confrontation naming that are related to the target and which can demonstrate some knowledge of meaning and or phonological/orthographic form.

WFD behaviours such as circumlocution, increased use of gesture, drawing and sky writing also occur in conversation, where they may be used very successfully.

## Types of error

For both children and adults with WFD, the main error types are phonological, semantic or mixed (sharing both meaning

and form with the target). Phonological errors are likely to indicate difficulties with phonological representations, accessing these, or assembling phonology for production. However, semantic errors (eg tiger for lion) could arise for a variety of reasons. These could indicate difficulty with semantic processing or knowledge, but could also indicate difficulty in accessing word forms. This is because, in language production, a range of semantically related words are active and if the phonological representation of the target is less accessible, a word close in meaning to the target may be produced instead.

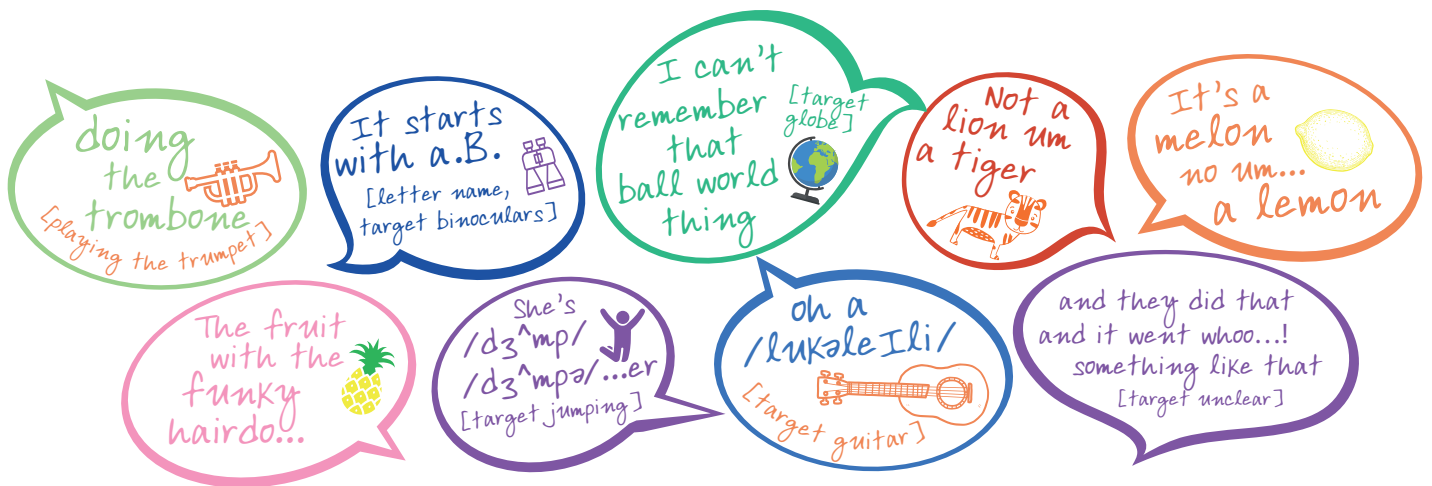
## Interventions with adults

A 2009 meta-analysis of the literature concluded that interventions for anomia can be effective at improving word-finding (Wiseburn and Mahoney 2009). Many studies demonstrate effects that maintain at follow-up assessment, but which are limited to treated items. A widely used treatment for anomia is Semantic Feature Analysis (SFA), an approach in which the semantic features relating to a target word are systematically considered with the aim of activating information to aid word-retrieval (eg Boyle and Coelho, 1995). One reason for the popularity of this approach may be the claim that the effects can generalise to untreated words. However, some recent research calls this into question. Morris, Howard et al. (2015) carried out a pilot randomised control trial (RCT) in which all the adults

participated in both SFA and Repetition in the Presence of the Picture. While both resulted in improved word-finding, neither approach resulted in generalisation to untreated items for the group, suggesting it is important not to assume generalisation is occurring. In contrast to repeating the target word, intervention may focus on providing phonological cues or, in a parallel intervention to SFA, systematically considering the phonological components of a target word (Phonological Components Analysis [PCA], Leonard, Rochon and Laird, 2008). Alternatively, interventions may include both semantic and phonological information, often in a cueing hierarchy aimed at promoting word-retrieval.

There are also several successful approaches that rely on orthography. This might entail an internal process of self-cueing from retained initial letter knowledge (Nickels, 1992) or pressing a letter in order to provide a phonological cue to aid word-finding (Bruce and Howard, 1987). We note that orthographic to phonological cues can also be used successfully with children with WFD (see overleaf).

Many studies in the adult field employ experimentally controlled case series designs in order to try to answer the high priority question of which treatments are best suited to which clients in order to optimise the therapy approach offered. However, studies have struggled to find clear and consistent links between level of breakdown, strengths and outcome. For example, in a study by →



van Hees et al (2012), everyone participated in both SFA and PCA. Importantly, and contrary to the author's expectations, those with semantic level difficulties did not benefit from the semantic approach. In this study PCA was beneficial for most (7/8) participants.

A further difficulty with selecting the optimum approach for an individual is that clients can learn to use cue types that did not help their word-retrieval on initial assessment (eg Lorenz and Nickels, 2011).

Finally, the aim of working on anomia is to change word retrieval in everyday conversation. There is evidence for carry-over (eg Best et al., 2011) but this is not a consistent finding (Woolf et al., 2016). Specific work targeted at changing word retrieval in discourse may be required (for example, Herbert et al., 2003). The findings from the recently completed large Big CACTUS study are also relevant here (see [bit.ly/2MRsfNC](http://bit.ly/2MRsfNC)). The results add to the evidence that anomia can be helped by practising word-retrieval tasks, in this case using step-by-step software, and show computer therapy is likely to be cost effective for people with mild and moderate word finding difficulties. The report also highlights the need to work on word retrieval in everyday communication.

### Interventions for children

Intervention studies for children with WFDs are similar to those with adults with anomia in that they focus predominantly on semantics or phonology, while some compare the two. Generally, studies report positive results but vary as regards the degree of generalisation found. Word-webs, widely used in clinical practice, have recently been shown to improve retrieval of treated items in an RCT involving children in mainstream primary schools, when they've been used according to an intervention protocol aligned with that for SFA/PCA (Best et al., 2017).

Studies focusing on semantics have mainly been with children with WFD in the context of wider language difficulties

and have found significant progress in naming of targeted words (Marks & Stokes, 2010; Wilson et al., 2015), or significantly more progress than waiting controls on a standardised test of word-retrieval (Ebbels et al., 2012). In this latter study, the waiting controls also made progress when they too received the intervention, while the original therapy group maintained their progress. Some generalisation has been found to untreated items in the same semantic category (e.g. to other animals, Wilson et al., 2015) or untreated words on a standardised test (Ebbels et al., 2012), but not to discourse (Marks & Stokes, 2010; Ebbels et al., 2012).

Studies focusing on phonology have mainly been with children with more isolated WFDs and have found significant progress in targeted but not control words (McGregor, 1994; German, 2002). Techniques that use orthography to phonological links can aid word retrieval in adults with anomia. This approach has also been used successfully with children (Best, 2005) and this study found some generalisation to discourse.

Studies that have compared semantic versus phonological approaches report conflicting findings. Wright et al (1993) showed participants receiving semantic intervention made more progress than controls, but those receiving phonological intervention did not. However, the groups receiving the semantic versus phonological interventions were not compared directly. In contrast, Wing (1990) found significant progress in children receiving intervention focused on phonology (and perceptual features of objects), but not in children receiving semantic intervention. Again, the performance of the two groups was not directly compared. There are indications that different children respond differently to the two intervention approaches (Bragard et al 2012; Best et al. 2015) but, as with adults, the best way to identify which approach may be optimum for which children is not yet clear.

### Summary

Studies of interventions for children and adults with WFD show many similarities.

Research and practice in one field may precede that in the other, and making links between the findings can be useful. Intervention is generally effective and the effects are maintained. Generalisation to other items has been found in some (but not all) studies using semantic approaches, and some using phonological/orthographic approaches. Carryover to discourse has only been investigated in a few studies, with the limited evidence demonstrating that word-finding therapy can result in changes in discourse in both populations, but specific intervention targeting discourse may be needed. Further research on this important issue is necessary.

It is also not always clear how to identify whether an individual child or adult is likely to benefit more from a phonological or semantic approach. SLTs could use a combination of semantic and phonological approaches, monitor response to intervention, and place greater emphasis on those features of intervention that are most useful to the individual. Given limited evidence regarding carryover to discourse and generalisation to other words, we recommend carryover beyond single words, including to conversation, should be specifically targeted. SLTs should, with clients and their communication partners, select words that are most useful to the adult/child. ■

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### Resources & References

The WORD intervention protocol (semantic and phonological word-webs) is available via the Centre for Speech and Language Intervention research (UCL CSLIR, [www.ucl.ac.uk/pals/speech-language-intervention-research](http://www.ucl.ac.uk/pals/speech-language-intervention-research)).

To see the full list of references visit [bit.ly/2lYmmy3](http://bit.ly/2lYmmy3)