
CHAPTER 6: Developing Literacy Skills in Children with developmental verbal dyspraxia

Learning to read and spell is a complex process, involving both visual and phonological skills, as well as wider language abilities. It is widely recognised that a deficit in phonological processing underlies many cases of specific literacy difficulty (dyslexia) (Cossami and Bryant 1990; Snowling 1996; Stackhouse 1996). Although not all children with early speech impairment go on to have difficulty in acquiring literacy skills, there is increasing evidence that those with severe and persisting speech disorders are at high risk of literacy difficulties (Bird, Bishop and Freeman 1995; Stackhouse, Goulandris and Snowling 2002).

Bird, Bishop and Freeman (1995) investigated the link between speech impairment, phonological awareness and literacy development in a group of 5 -7 year olds with speech impairments. They were able to demonstrate that these children had significantly poorer phonological awareness than controls, and when re-assessed roughly 1 year and 2 years later, also had significantly poorer reading/spelling skills. The pattern of literacy difficulties shown by the speech impaired group showed particular problems with tasks requiring alphabetic encoding/decoding.

Bird, Bishop and Freeman (1995) found that the severity of the speech impairment correlated significantly with literacy outcomes; the only other factor to do so was non-verbal ability. Other studies have found language skills to correlate with subsequent literacy development (Bishop and Adams 1990; Leitao et al 1997). Leitao et al compared groups of speech impaired, language impaired, and a group of children with both speech and language impairment with a normal control group. It was the mixed group that showed the poorest literacy skills. It appears, therefore, that the effect of the phonological processing deficit may be compounded by wider, verbal or non-verbal processing deficits.

Stackhouse and Wells (1997) reported longitudinal studies of several children with developmental verbal dyspraxia (DVD) and severe literacy difficulties. They proposed a model of speech development which could be linked to Frith's (1985) model of literacy development, to explain the link between speech impairment and literacy difficulties. These models will be outlined below, but for a detailed discussion readers are recommended to refer to the original text.

Stages of speech development

Stackhouse and Wells (1997) identified 5 phases in normal speech development, culminating in phonological awareness:

Prelexical phase (0-12 months), when the foundations of articulation are laid through refining of oro-motor skills in feeding, vocalisation, babble and sound play. On the other side, the infant's acute phonetic discrimination is shaped towards phonological recognition of the language he is exposed to.

Whole word phase (12 - 18 months), when phonological representations and motor programs for first words are unsegmented wholes. Words are recognised by the most acoustically salient features of the adult form. The child attempts to reproduce these features in his motor programs within the constraints of his immature output processing.

Systematic simplification phase (18 - 36 months), when “stable correspondences” emerge between the target phonological structure and the child’s production. Stackhouse and Wells suggest that this provides the basis for the child’s gradual segmentation of his phonological representation into a sequence of individual phonemes. This process is not complete until the meta-phonological phase.

Assembly phase (36 - 48 months)

The child at this phase is attempting to “master the phonetic and phonological aspects of complex utterances” (Stackhouse and Wells 1997). These include junction (i.e. the ways in which articulation at word boundaries is modified to allow a smooth transition between words), intonation, complex consonant sequences, and establishing the remaining consonants.

Metaphonological phase (48 - 60 months)

At this phase, children are beginning to demonstrate awareness of, and an ability to manipulate, the internal phonological structure of words, by playing simple rhyme and “I Spy” games. It is these skills which underpin the acquisition of alphabetic (phonic) reading and spelling skills.

Stages of literacy development

Frith’s (1985) model of literacy development maps the integration of visual, then phonological and finally orthographic strategies into the skills of reading and spelling.

Logographic stage

The child’s first attempts at reading involve recognition of a limited set of familiar words, using visual cues only. The size of this “sight vocabulary” will depend on his visual processing and memory skills. No reference is made to sounds at this stage.

Attempted spelling at this stage involves the child trying to reproduce what he remembers of the visual features of the word (e.g. “ce” for come), and tends to be difficult to decipher.

Alphabetic stage

As letter sounds are learned, the child is able to draw upon his knowledge of the phonological structure of words to attempt to segment and spell words by sound (e.g. “cum” for come). He is also able to supplement his sight vocabulary by blending (“sounding out”) unfamiliar words from their letters.

Basic alphabetic skills are taught from Reception Year (4-5 years) in the UK, with many of the vowel digraphs covered by the end of Key Stage 1 (7 years) (National Literacy Strategy 1998). Consolidation of these skills takes place during Key Stage 2 (7-11 years).

Orthographic stage

Once a basic alphabetic strategy is established, the child must learn to recognise (in reading) and reproduce (in spelling) the letter strings and digraphs associated with particular phonemes/phoneme sequences and grammatical morphemes (e.g. “sh”, “ay”, “tion”, “ly”).

However, the relationship between the sounds of a word, in English, and its spelling is complex. The correct spelling choices for particular words must be learned (e.g. "bought", not "baut" or "hort), as well as common irregular spellings, such as "come", "friend" and "beautiful". These skills are taught at Key Stage 2 (7 -11 years).

Phonic and spelling skills, taught at Key Stage 1, are summarised in the National Literacy Strategy, L1/1-10.

The acquisition of literacy skills in children with DVD

Stackhouse and Wells (1997) suggest that, in children with speech disorders, development may be arrested at a particular phase:

- children with motor or structural impairments, or prelingual deafness - at the prelexical phase
- children with dyspraxia - at the whole word phase
- those with phonological disorder/delay - at different points in the systematic phase.

Failure to move through the stages of speech acquisition means that these children will not have developed the stable and accurate phonological representations, and the ability to reflect on and manipulate these, which is required in order to learn alphabetic reading and spelling skills. They may therefore acquire a sight vocabulary with little difficulty, providing their visual skills are satisfactory, but are likely to have considerable difficulty moving beyond this to use letter/sound correspondences to attempt systematic spelling and decoding of unfamiliar words.

Using the NDP to support the development of literacy skills

Top Tips

- Represent sounds with symbol pictures
- Develop systematic speech at each level
- Work with the child's full range of sounds
- Develop awareness of sounds in words during speech work
- Develop segmentation and blending skills alongside speech work
- Link sounds and symbols to letters
- Work with teaching staff where possible

Developing systematic speech

According to the Stackhouse and Wells model, the child must successfully pass through the Systematic Simplification Phase of speech development, in order to move onto the later Metaphonological Phase, when he should develop the ability to reflect on and manipulate sounds in words. For children with severely restricted or disordered speech, therefore, the first priority must be to develop systematic speech. This is not as daunting as it sounds as, for the purposes of literacy development, stable, systematic and accurate articulation is only required at word level, rather than in connected speech.

From clinical experience, the simplest way to bring some order into the chaotic speech of the child with dyspraxia, is to tackle it at each level of complexity (single sounds; CV