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## Chapter 1: Developmental verbal dyspraxia – a review of the literature

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As Shriberg, Aram and Kwiatkowski (1997) pointed out: "The validity of developmental verbal dyspraxia as a childhood speech disorder is one of the most controversial nosological (classification) issues in speech pathology" (p273). Yet, it is clear that "Dyspraxia" seems to provide clinicians with a category or label for children, whose profiles differ from those with straightforward speech delay, who fail to progress in an expected manner and are in some way a "puzzle".

The term Apraxia or Dyspraxia was first used with reference to adults, who had acquired a problem in programming motor speech output, as a result of brain damage (Broca 1861). Typical characteristics included: observable groping for speech sounds in words, breakdown in production of multisyllabic words, inconsistent and variable production of words and frustration at incorrect speech production.

Almost 100 years later, the term was first applied to the developmental population by Muriel Morley in the 1950s and 1960s, when she identified a "dyspraxic" group of 12 children, aged 4-10 years. She identified the condition as follows: "a defect of articulation which occurs when movements of the muscles used for speech appear normal for involuntary and spontaneous movements....but are inadequate for the complex and rapid movements used for articulation and reproduction of sequences of sounds used in speech" (Morley 1965).

Since this early work, a number of **controversial issues** about dyspraxia have concerned practitioners:

- (a) Does it exist as a distinct disorder?
- (b) What should it be called?
- (c) How should it be defined?
- (d) What is the theoretical understanding of the condition?
- (e) What causes dyspraxia?
- (f) What are the symptoms/characteristics of the condition? i.e. How do we recognise the condition?

To consider each of these individually:

### **(a) Does it exist as a distinct disorder?**

There has been conflicting evidence over the existence of a "dyspraxic subgroup" as distinct from other groups of children with speech disorders. For example the now classic study by Yoss and Darley (1974) distinguished between children with dyspraxia and those with other speech disorders on the basis of neurological ratings (e.g. difficulties with fine motor co-ordination, gait and with diadochokinetic control), volitional control of isolated oral movements and speech errors. However, an attempt to replicate this study by Williams, Ingham and Rosenthal (1981) was unsuccessful. Although the authors suggested a number of plausible explanations for the different findings, it gave support

to Guyette and Diedrich's (1981) conclusion from their literature review: "developmental apraxia of speech is a label in search of a population".

Despite this damning finding, research continued into the condition. Answering Guyette and Diedrich (1981), Minn (1986) reported her findings from a study into children with speech disorders: "although small, there is evidence of such a population" (i.e. of those with dyspraxia).

However, whether or not a distinct dyspraxic subgroup exists remains debatable and some authors have commented on the difficulties in differentiating this group from other groups of speech disordered children e.g. Stackhouse (1993) observed that the differentiation between the subgroups of speech disorders: phonological disorder and developmental verbal dyspraxia, has proved particularly problematic.

In concluding her review of the literature, Stackhouse (1992a) observed that no dyspraxic subgroup had been empirically identified in the speech-disordered population. Ten years later that position remained unchanged (Williams 2002).

## **(b) What should the condition be called?**

Muriel Morley first used the term developmental articulatory dyspraxia (DAD), but other terms are used to describe the same condition. These include:

- Developmental apraxia of speech (DAS)
- Childhood apraxia of Speech (CAS)
- Developmental verbal dyspraxia (DVD)

In general, DAS or CAS are the preferred terms in the American literature, whereas DVD is now the preferred term in the British and Australian literature.

McCabe, Rosenthal and McLeod (1998) suggest that the terminology used reflects the orientation of the authors. Thus, DAS reflects an oro-motor orientation, DVD a linguistic orientation and DAD, a speech motor orientation. To avoid this issue, some authors have elected to use the global term "developmental dyspraxia". However, this term can also lead to confusions as it is often used to describe the co-ordination difficulties of children with generalised or body dyspraxia, but who do not necessarily have speech problems.

*The authors of the Nuffield Dyspraxia Programme used the term developmental articulatory dyspraxia in the first edition, in line with typical UK practice of the time. By the second edition, the term developmental verbal dyspraxia was used instead, reflecting the change of terminology then favoured in the UK. This continues to be our favoured term.*

The components of the term "developmental verbal dyspraxia" were described by Morgan Barry (1994) as follows:

- Developmental – the condition was present before speech onset.
- Verbal – the condition has both speech and language aspects.
- Dyspraxia – a difficulty in achieving purposeful, sequential movements in the absence of muscular paresis.

## **(c) How should the condition be defined?**

Numerous attempts have been made to define developmental dyspraxia, which indicate the author's view of the nature of the disorder. For example:

**Darley, Aronson and Brown** (1975) "Developmental articulatory dyspraxia is defined as a breakdown in the motor planning required to initiate articulatory movements."

**Aram and Glasson** (1979) "Developmental apraxia of speech is not confined to the articulatory or motor control aspects of speech – rather all levels of expressive language are affected including lexical, syntactic and phonemic aspects".

**Byers-Brown and Edwards** (1989) "Developmental dyspraxia is an impairment in the selection, planning and programming of linguistic and of motor schemata for production of language."

**Milloy and Morgan-Barry** (1990) "A difficulty in initiating, in directing and in controlling the speed and duration of movements of articulation, in the absence of muscular paresis".

**Crary** (1993) "Developmental Apraxias of Speech are a group of phonological disorders resulting from disruption of central sensorimotor processes that interfere with motor learning for speech".

**Ripley, Daines and Barrett** (1997) "Developmental verbal dyspraxia is a condition where the child has difficulty in making and co-ordinating the precise movements which are used in the production of spoken language, although there is no damage to muscles or nerves."

*In the first two editions of the Nuffield Dyspraxia Programme, no precise definition of dyspraxia was offered. However, it was described as a "neuromotor difficulty in producing the learned patterns of movement required for speech." This would suggest that the authors considered it to be primarily a neurological deficit, affecting output speech processing. However, the change to using the term developmental verbal dyspraxia, rather than articulatory dyspraxia would suggest a shift towards recognising both motoric and linguistic deficits. Connery (1994) writing about the Nuffield Dyspraxia Programme described dyspraxia as "a disorder in neuromotor control of the speech apparatus with resulting difficulties in communication".*

## **(d) What is the theoretical understanding of the condition?**

The literature has been dominated by two theoretical approaches:

Developmental verbal dyspraxia is a disorder of motor planning/programming (see definitions above: Darley, Aronson and Brown 1975; Milloy and Morgan-Barry 1990 etc).

Developmental verbal dyspraxia is a linguistic/phonological impairment (see definition: Aram and Glasson 1979 and papers by Ekelman and Aram 1983 and Martin 1974).

In more recent years, some authors have recognised that the symptoms presenting in DVD may arise from a combination of the two approaches i.e. the child with developmental verbal dyspraxia has both a motor and linguistic deficit. (See definition by Byers-Brown and Edwards 1989 and Crary 1993). Crary conceptualised DAS as a group of disorders on a motolinguistic continuum, which could embrace both motoric and linguistic deficits. The weighting of these two components for any particular child will vary, depending on their individual profile of difficulties.

*As described above, the approach taken by the authors of the first editions of the Nuffield Dyspraxia Programme would suggest that they viewed articulatory dyspraxia essentially as a motor disorder. By the second edition of the Nuffield Dyspraxia Programme, there was more recognition of the linguistic deficits as part of the condition, developmental*