

## **DEVELOPMENTAL APRAXIA OF SPEECH**

Developmental apraxia of speech (DAS) is a childhood communication disorder that involves the difficulty or inability to voluntarily complete the motor movements required for the production of speech. This may involve coordinating and planning the movements of the tongue, lips, jaw, and palate that are necessary for speech intelligibility. DAS is usually more common in boys than girls and occurs in 1 to 10 children per 10,000 cases.

Apraxia of speech can sometimes be confused with a developmental expressive speech/language delay. However, it is important to distinguish between the two. A true developmental expressive language delay occurs when there is a significant gap between a child's strong receptive language abilities and their weaker expressive language abilities which are usually below age expectations. In other words, the child has the ability to understand language but has great difficulty expressing his/her thoughts and ideas. Similarly, children with Apraxia have intact receptive language skills with diminished expressive language abilities. However, children with Apraxia also exhibit many, if not all, of the following characteristics:

- ❖ Difficulty sequencing sounds or syllables correctly in words
- ❖ Limited consonant and vowel inventory
- ❖ Inconsistent performance on speech tasks and in error patterns
- ❖ Errors and inconsistency increase as word length and/or utterance length increases
- ❖ Speech is slow and choppy
- ❖ Groping behaviors may be seen in children (unusual facial movements in attempts to produce a sound or word)
- ❖ Limited imitation skills
- ❖ Production of single words is easier than production of words at the sentence or conversational level

Language problems may also be associated with DAS. Such areas of difficulty can include reduced or inadequate vocabulary skills, incorrect use of syntax, organization and sequencing, and inappropriate use of social language. These difficulties in language can be further connected to academic problems in reading, writing, and spelling.

Although children with DAS have difficulty planning and sequencing motor movements for speech production, oral-motor structure and function is within normal limits. There is no associated weakness of facial and speech muscles with apraxia. If oral motor weakness exists, the weakness may be indicative of dysarthria rather than apraxia.

There has been some recent debate with regards to apraxia and phonology. They are very similar to each other and the debate lies within the diagnosis. Please refer to the following chart for their similarities and differences (Elaine D. Schneider lecture 2004):

PHONONOLGY	APRAXIA
<ol style="list-style-type: none"> <li>1. Linguistic impairment</li> <li>2. Error patterns follow rules (/t/ for /k/ → "tup" for "cup")</li> </ol> <p>*This would be the same error for the entire sound class (all /k/ sounds)*</p> <ol style="list-style-type: none"> <li>3. Vowels are generally intact</li> <li>4. No issues with prosody</li> </ol>	<ol style="list-style-type: none"> <li>1. Motor impairment</li> <li>2. Error patterns do NOT follow rules (/b/ for /k/ → "bup" for "cup")</li> </ol> <p>*These errors can fluctuate within the same sound class*</p> <ol style="list-style-type: none"> <li>3. Vowels are frequently disordered</li> <li>4. High incidence of prosody difficulties</li> </ol>

A speech-language pathologist is a qualified professional who can diagnose and treat children with apraxia. However, it is important to differentiate between language disorders and apraxia to avoid misdiagnosis. Davis and Velleman (2000) noted that the child's speech inventory should be analyzed for limited consonant and vowel inventory, flat or monotone vocal quality, and/or the lack of consistent speech patterns. Further assessment of apraxia can include articulation and phonological performance on standardized tests such as Kaufman Speech Praxis Test (KSPT) for children (Kaufman, 1995). Speech motor functions should also be assessed to address fluency, prosody, and nasality. Non-speech motor functions assess the child's oral structure/function and oral/limb movements. A language assessment should also be completed to assess the child's level of comprehension and expression, in addition to their level of intelligibility of speech in conversation.

Traditional approaches for treatment of apraxia include the training of sound sequencing with multiple repetitions and various types of cues (visual and tactile), developing correct articulatory postures (lip and tongue movements) by using a mirror for imitation and visual feedback, and sensory training to increase oral awareness. Intervention for children with apraxia focuses on improving the planning, sequencing, and coordination of the speech muscles (ASHA, 2006). Treatment for apraxia usually begins with imitation of vowel and consonant combinations. Therapy typically begins with sounds that the child can already produce (usually developmental sounds) and progresses into a treatment hierarchy beginning with imitation of syllables, then increasing to words, phrases, sentences with many repetitions to establish a successful motor plan for speech production. Velleman and Strand suggest beginning with CV (consonant-vowel: BA) word structures for one class of sounds (e.g. bilabials- /b, p, m/) then slowly changing the movement pattern into another class of sounds (e.g. alveolars- /t, d, n, l/). It can be at the discretion of the speech pathologist to proceed from the CV word structure to a CVC word structure for one class of sounds. The main goal of beginning with small word structures and slowly increasing to larger ones is the idea of developing and refining a motor pattern for speech production.

For more information on apraxia, please visit the following websites:  
[www.apraxia-kids.org](http://www.apraxia-kids.org)  
[www.apraxia.org](http://www.apraxia.org)  
[www.professional.asha.org](http://www.professional.asha.org)

Daniela A. Cristofaro, MS,-SLP