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Clinical Exchange

A Letter to the Parent(s) of a Child With Developmental Apraxia of Speech

Part I: Speech Characteristics of the Disorder

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Dear Parent(s):
For some time, you may have had concerns regarding your child's communication skills; he or she seemed to be developing these skills differently than what you expected. Finally, a speech-language pathologist told you that your child's communication difficulties were due to something described as "developmental apraxia of speech," or "DAS." Your reaction was mixed: The problem now had a name, justifying your concerns, but how did the speech-language pathologist make this diagnosis? What *was* this speech problem?

There are a number of observations concerning your child's speech that enter into the diagnostic process. These observations may need to be made over a period of time by both professionals and parents. Speech symptoms that speech-language pathologists consider in making the diagnosis of DAS are listed in Table 1. This list may help you as you read the rest of this letter.

ABSTRACT: Practicing speech-language pathologists frequently ask about the existence of information regarding developmental apraxia of speech (DAS) that they can share with the parents of their clients and patients. Hoping to fill a need, a series of letters, addressed to the parent(s) of a child with DAS, has been written. These letters discuss such issues as the nature and causes of DAS, other problems often associated with the disorder, and the treatment of DAS. This initial letter discusses the characteristics involved in the disorder. Included with this letter is an appendix of publications that may be helpful for both parents and speech-language pathologists.

KEY WORDS: developmental apraxia of speech, speech sound disorder, phoneme sequencing, prosody problems

Some symptoms, or characteristics, of DAS seem to be present even in infancy and become apparent to the speech-language pathologist as the parent describes his or her child's early development. For instance, the parent whose child is later diagnosed with DAS often reports that the child was a quiet baby, who did not make many of the "noises" babies typically make. The parent frequently says that, as a baby, the child did not "coo" or "babble," unlike most babies who seem to "play" with the wide range of sounds that their mouths are capable of making. According to the parent, the child says his or her first word, combines words, and develops speech sounds at much older ages than is usually expected.

When a child develops and uses more speech sounds, the speech-language pathologist is able to make observations or evaluate other symptoms that may lead to a diagnosis of DAS. In the case of severe DAS, the child is often very difficult to understand. This is particularly true for those persons who do not spend time in close contact with the youngster. Apparently in an effort to convey their messages and to communicate with others when oral communication fails, some children with severe DAS use a system of gestures they develop for themselves, sometimes accompanied by a variety of non-speech "noises," to help them communicate. However, it is very important to remember that DAS is not always a "severe" problem; children can also have mild forms of the disorder.

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Table 1. Speech symptoms or characteristics that a child with developmental apraxia of speech may exhibit.

- “Quiet” babies
- Slow, and late development of speech skills (age of first word, combining words, development of speech sounds)
- Development of their own gesture system, often accompanied by non-speech “noises”
- Problems sequencing sounds and syllables correctly in words
  - Reversing sounds or syllables in words
  - Leaving out sounds or syllables in words
  - Adding extra sounds or syllables in words
- Inconsistent performance on speech tasks
  - Sounds or words may “disappear” for a period of time
  - Correct production of a difficult word may occur that cannot be repeated
  - Speech may be “easy” one day, and “hard” to perform on another day
  - Problems producing words with a number of syllables
  - Increase in errors in longer utterances, such as sentences or story-telling
- Increase in errors when a word is repeated, particularly words with a number of syllables
- Problems in using the correct “voicing” for a sound (“p” for “b” and vice versa)
- Problems making the correct vowel used in a word
- Distorted, or incorrectly used, “prosody” (“melody”)
- “Groping” or “silent posturing” of the tongue, lips, or jaw
- Problems with function of the soft palate so that he or she sounds as if he or she is “talking through the nose”

One of the most notable symptoms of DAS is the child’s difficulty in “sequencing” sounds and syllables, or putting sounds and syllables together in correct order. Children with DAS have problems moving from one sound to another, and from one syllable to another. Sometimes this difficulty in correctly sequencing speech efforts is demonstrated by the reversal of sounds or syllables, thus “fish” may be pronounced as *“shif,”* and “mistake” may become “mis*k*ate.” Sometimes sounds or syllables are left out during a child’s speech attempts, and sometimes the child may even add extra sounds or syllables to his or her words, actually complicating the speech task!

Another important characteristic is that speech productions often seem to be very inconsistent. Children with DAS sometimes “lose” sounds or words that seem to “disappear” for periods of time. They may shock those around them by occasionally producing a difficult word with perfect articulation, although they are usually unable to repeat it. Or, the “g” sound may be present one day, but the following day, the “k” or “d” sound may be used instead so that “gate” may be pronounced as “Kate” or “date.” On some days, the child finds speech tasks to be “easy” and few errors may be noted. On the following day, speech is a difficult, frustrating chore for the child, with many errors being made.

This inconsistency may also become apparent when the speech task becomes more difficult, such as when attempts are made to produce longer words such as “popcorn,” “hospital,” “Oklahoma,” or “hippopotamus.” Although the first attempt at saying the word may be correct, or nearly so, requests for repetitions of the word will frequently result in an increase in errors, or different kinds of errors may be produced than were produced in a previous attempt. An example might be the child’s attempts to say the word “buttercup” three times in a row with the following results: (a) “buttercup,” (b) “puddercut,” (c) “buttergup.” In many instances, increasing the length of what the child says will result in more errors and greater inconsistency. It appears that the child’s control of the movements of his or her articulators “breaks down” with the more difficult speech tasks.

Another characteristic of DAS involves problems in the use of a particular feature of the English language. Many speech sounds in English are paired, differing only by whether the sound is “voiced” or “unvoiced.” These pairs of speech sounds are produced by making the same movements with the mouth, but differ only by whether the larynx, or voice box, is “turned on” and vibrates for “voiced” sounds, or is not “turned on” and does not vibrate for “unvoiced” or “voiceless” sounds. For example, “s” does not use voice, whereas “z” does. Children with DAS often seem to have problems “turning the voice box on and off.” Thus, “p” may be produced as a “b” and vice versa. And sometimes this difficulty affects the meaning of what the child is trying to say, such as when “ca*p*” becomes “ca*b*.”

Additionally, you may have noticed that your child does not always use correct vowel sounds. For example, the “ah” (as in “f*a*ther”) vowel is often substituted for the “short a” (as in “*a*dd”). As well, the “long e” (as in “*e*ast”) and the “short i” (as in “*i*ll”) are often used for each other. These errors in making the correct vowels may also contribute to the child’s difficulty in being understood.

Another characteristic that may well be present in the speech of a child with DAS is the distorted, or misused, “melody” of his or her message. This is called “prosody” and involves the use of such aspects of communication as the stress and the inflection of our language. We use prosody to convey emotion and language subtleties, such as sarcasm, as well as information concerning English grammar. For instance, in English, we ask questions by making our pitch become higher at the end of the sentence, but when we are telling information to others, we usually lower our pitch at the end of the sentence. We also use an assortment of high and low pitches, and make changes in how fast or slow we talk to show how we are feeling, such as when we are happy, excited, angry, or frightened. Children with DAS may not use much “melody” in their speech, particularly when they are concentrating very hard on what they are trying to say, or how they are saying it. At other times, you may hear them ask a question with no upward turn of the voice to indicate that they are asking something. Or, the words you hear may indicate an emotion different than the one you infer by the melody of their voice. The child with DAS uses prosody, but often does not use it well or correctly.

Some children with DAS are seen making unusual movements or postures with their tongues, lips, and jaws before or while they attempt to produce a sound or word. This is called “groping” and “silent posturing.” Some children actually manipulate their tongues with their fingers, perhaps in front of a mirror, in an attempt to facilitate speech production. In other words, children with

DAS are trying to help their own efforts to produce a sound or make the first sound of the word they wish to say.

Perhaps your child sounds as if he or she is "talking through the nose" or sounding too nasal. Like the tongue and lips, the soft palate (i.e., the back part of the top of their mouths) also may be affected by DAS. The movement of the soft palate regulates air flow through the nose during speech attempts. It restricts air flow for all English sounds, except the "m," "n," and "ng." However, the movements of the soft palate may not be coordinated with the other articulators, such as a tongue and lips. This inconsistency in movement may result in air going out the nose when it should have gone through the mouth. Excessive nasal air flow, or hypernasality, makes the child's speech difficult to understand.

It is important to keep in mind that DAS, like many other communication problems, can have a range of severity. Some children are mildly affected by DAS, whereas others are severely affected. Some children with DAS may have difficulties with very few speech sounds, whereas other children may be severely involved and need the help of alternative or augmentative means of communication to enhance and support their speech attempts. For example, use of a formal sign or manual communication system to facilitate communication might be considered. Communication boards and communication notebooks might also be options for some children with very severe DAS. Other such children might benefit from the help provided by electronic assistive devices in order to communicate with others.

There seems to be a large "cluster" of symptoms, or characteristics, that contribute to the diagnosis of DAS, although there is not agreement among speech-language pathologists as to which specific symptoms are a part of DAS. The presence of some, or many, of these symptoms in the "cluster" helps the speech-language pathologist make the diagnosis of DAS. Of course, remember that any diagnosis will be affected by how severe the problem seems to be to those living and interacting with the child and to those making the diagnosis. We need to keep in mind that every child with DAS is an individual, and the disorder itself, by its nature, is highly individual. Every child is different and every case of DAS is different.

From this letter, you can see that the "cluster" of symptoms your child's speech-language pathologist drew on to make the diagnosis of DAS is quite large. Your child may have shown a large number of these characteristics, or only a few. I hope that these descriptions are helpful to you in understanding what makes up the diagnosis, as well as some of the speech behaviors that your speech-language pathologist will be targeting in your child's therapy programs.

Sincerely,

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APPENDIX

The following references may be helpful to you and to your child's speech-language pathologist in more thoroughly exploring the symptoms of DAS.

Hall, P. K. (1989). The occurrence of developmental apraxia of speech in a mild articulation disorder: A case study. *Journal of Communication Disorders, 22*, 265–276.

This article is a case study of a client who seemed to have a mild articulation disorder, but in whom numerous characteristics of DAS were exhibited over time.

Hall, P. K., Hardy, J. C., & LaVelle, W. E. (1990). A child with signs of developmental apraxia of speech with whom a palatal lift prosthesis was used to manage palatal dysfunction. *Journal of Speech and Hearing Disorders, 55*, 454–460.

This article reports a case study of a client presenting many characteristics of DAS, but who also exhibited palatal dysfunction, which was successfully managed by the construction of a palatal lift prothesis.

Hall, P. K., Jordan, L. S., & Robin, D. A. (1993). Speech characteristics of developmental apraxia of speech. In P. K. Hall, L. S. Jordan, D. A. Robin, *Developmental apraxia of speech: Theory and clinical practice* (pp. 9–48). Austin, TX: PRO-ED.

This chapter discusses the speech characteristics of DAS described in the reviewed literature, provides examples, and suggests assessment procedures.

Jaffe, M. B. (1984). Neurological impairment of speech production: Assessment and treatment. In J. M. Costello (Ed.), *Speech disorders in children* (pp. 157–186). San Diego, CA: College-Hill Press.

This chapter discusses the definition of DAS as a symptom "cluster" and lists the behavioral characteristics of DAS reported up to the time of the book's publication.

Pollock, K. E., & Hall, P. K. (1990). An analysis of the vowel misarticulations of five children with developmental apraxia of speech. *Clinical Linguistics and Phonetics, 4,* 161–178.

The vowel errors made by five children diagnosed with DAS are described. Included is a description of the DAS characteristics presented by each.

Shriberg, L. D., Aram, D. M., & Kwiatkowski, J. (1997). Developmental apraxia of speech: III. A subtype marked by inappropriate stress. *Journal of Speech-Language and Hearing Research, 40,* 313–337.

The results of this study found that inappropriate stress may be a characteristic important to the identification of DAS.

Velleman, S. L., & Strand, K. (1994). Developmental verbal dyspraxia. In J. E. Bernthal & N. W. Bankson (Eds.), *Child phonology: Characteristics, assessment, and intervention with special populations* (pp. 110–139). New York: Thieme Medical.

This chapter reviews the characteristics of DVD and provides an assessment protocol for the disorder.

Yorkston, K. M., Beukelman, D. R., Strand, E. A., & Bell, K. R. (1999). *Management of motor speech disorders in children and adults* (2nd ed., pp 55–59). Austin, TX: PRO-ED.

Speech and behavioral characteristics frequently associated with DAS are listed and discussed.