Ventura County SELPA
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APRAXIA OF SPEECH IN THREE TO FIVE YEAR OLDS

A GUIDE FOR PROFESSIONALS

Definitions:

The term Apraxia of Speech may be used synonymously with Developmental Apraxia of Speech (DAS), Developmental Verbal Dyspraxia (DVD) and Childhood Apraxia of Speech (CAS). Apraxia of Speech is a disorder that affects a child's ability to say and sequence phonemes to produce syllables, words, and sentences. The problem lies with the inability to plan the movements of articulators for the purposes of volitional (on command) speech, thus it is often referred to as a "*motor planning disorder.*" The term *volitional* in the context of Apraxia means that the child has difficulty making speech movements when he/she is *consciously* aware of trying to do so or in instances when he/she is *requested to do so* by others.

Apraxia of Speech may be confused with other disorders such as articulation, dysarthria, oral apraxia and phonological disorders. The chart below describes the differences. These disorders may coexist.

	Muscle weakness and poor coordination	Difficulty with non-speech movements	Consistency of sound errors	Type of sound errors Number of errors increases with length of utterances	"Automatic" vs. "on demand" speech vs. imitated speech	Receptive language skills vs. expressive language skills	Rate, rhythm, stress	Pitch and loudness Voice quality	Poor sequencing of sounds		
Apraxia of Speech	No	See Oral Apraxia	Inconsistent productions	Substitutions, omissions, additions and repetitions, vowel errors	Yes	Automatic speech easier, "on demand" speech more difficult, imitated speech variable	Usually better than expressive	Disrupted, groping/ silent postures may be noted	Typical	Typical	Yes
Articulation Disorder	Possibly	Possibly	Few and consistent errors	Usually substitutions	No	No difference	Usually no difference	Typical	Typical	Typical	No
Dysarthria	Yes	Yes	Imprecise but consistent	Usually distortions	Yes	No difference	Usually no difference	Disrupted in ways related to type of dysarthria	Monotone, variable pitch and loudness	May be hoarse, harsh, hypernasal etc.	No
Oral Apraxia	No	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Severe Phonological Disorders	Yes	No	Consistent errors that can be categorized	Substitutions, omissions, distortions, vowel errors uncommon	No	No difference	Receptive and expressive skills may differ	Typical	Typical	Typical	No

"Need to Know" Terms:

ARTICULATION- In speech, the ability to produce the specific speech sounds of a given language.

FLUENCY- The effortless flow of speech. Fluent and disfluent speech can be distinguished by the presence of extra sounds, the location and frequency of pauses, the rhythmical patterning of speech, intonation and stress, and overall rate. (*Guitar*). *Stuttering* is an example of a lack of fluency.

IMITATION SKILLS- The ability to repeat isolated sounds, syllables, or words, given a model.

INTELLIGIBILITY- The degree of clarity with which the average listener understands one's utterances. By age three, a child's intelligibility should be 80-100% to a familiar listener.

PROSODY- The intonation, inflection and rhythm of speech production.

SPONTANEOUS SPEECH- Speech that occurs without prompting or modeling.

The following characteristics may indicate the need for further assessment:

- The child is difficult to understand, especially by unfamiliar listeners
- The child demonstrates inconsistent speech errors; the errors do not always follow a pattern or they follow an unidentifiable/idiosyncratic pattern
- The child produces a limited number of vowels, many of which sound similar or vowel production is distorted
- The child has consonant voicing errors
- The child uses a limited number of consonant sounds
- The child's errors increase in more complex utterances, such as multi-syllabic words, phrases, and sentences
- The child has difficulty with intonation, stress, rate and rhythm (*prosody*)
- The child can produce a sound in one context or word, but not in another context or word
- The child has difficulty with imitating words
- The child has better intelligibility in automatic, over-learned words and phrases, than in novel utterances (*there is a discrepancy between spontaneous and volitional speech*)
- The child might produce a word or phrase one time, and then be unable to produce it again
- The child might demonstrate groping movements when trying to say words

Assessment for Apraxia of Speech in 3-5 year olds will be conducted by a qualified Speech-Language Pathologist. The assessment may include formal and informal diagnostic procedures, including input from parent(s).

PUBLISHED ASSESSMENTS:

Verbal Motor Production Assessment for Children, *By Deborah Hayden and Paula Square*
(*3–12 years old*) Identifies motor issues that have a negative impact on the development of normal speech motor control and pinpoints where the child begins to experience difficulty. Assesses global motor control, focal oromotor control, sequencing, connected speech-language control, speech characteristics.

Apraxia Profile Kit, By Lori A. Hickman
(*3–13 years old*) Identifies the presence of oral apraxia, diagnoses developmental verbal apraxia, and evaluates oral motor movement/sequence disorders.

Kaufman Speech Praxis Test Kit, *By Nancy R. Kaufman*
(*2-5.11 years old*) Assesses the speech of highly unintelligible children. Helps identify developmental apraxia of speech in children, determine level where child's speech breaks down, and define severity levels using a rating scale.

Preschool Motor Speech Evaluation and Intervention, *By Margaret M. Earnest*
(*18 mos.-6 years old*) Helps differentiate motor-based speech disorders from those of phonology and determines if the speech difficulties are characteristic of oral nonverbal apraxia, dysarthria, developmental verbal dyspraxia, hypersensitivity, differences in tone, and hyposensitivity.

Screening Test for Developmental Apraxia of Speech, 2nd Edition, *By Robert W. Blakeley*
(*4–12 years old*) Assesses developmental apraxia of speech.

Children's Speech Intelligibility Measure, *By Kim Wilcox and Sherill Morris*
(*3–10 years old*) Yields intelligibility scores and confidence intervals.

INFORMAL ASSESSMENTS:

As described in **Clinical Management of Motor Speech Disorders in Children**, *by Anthony J. Caruso and Edythe A. Strand*, 1999.

CASE HISTORY- "*Parents and other caretakers can provide valuable information regarding the child's oral motor and speech motor integrity, as well as the presence of additional concomitants of developmental speech disorders (e.g., otitis media with effusion, psychosocial factors, family history of speech disorders).*" (pg. 80)

EXAMINATION OF THE CHILD'S NEUROMUSCULAR STATUS- THE PURPOSE OF THIS EXAM IS NOT TO DIAGNOSE neurologic function, but to gather information that can lead to "*hypotheses or predictions regarding the status of the child's speech motor control system*." (pg. 80)

STRUCTURAL-FUNCTIONAL EXAMINATION- Helps clinician to identify structural deficits or anomalies and if or how these deficits contribute to the speech disorder. "*It also allows the clinician to identify the presence of, or to rule out, an oral apraxia. Finally, this examination allows the clinician to determine if a dysarthria is contributing to the overall communicative disorder*" (pg. 84).

MOTOR SPEECH EXAMINATION- Helps "*provide evidence for the presence ofverbal apraxia (developmental apraxia of speech)*" (pg. 93). For example, the clinician observes movement gestures for particular sounds and sound combinations across different contexts and evaluates diadochokinesis gestures.

DESCRIPTION OF THE SOUND SYSTEM- Clinicians can use published articulation and phonological process tests to help identify the sound system. Often need to supplement these tests with further analyses such as an independent analysis of the child's phonetic inventory, connected speech samples, and consistency of the child's elicited and spontaneous speech productions.

There are no definitive studies on outcomes for children with Apraxia, however, these factors may affect a child's prognosis:

SEVERITY OF APRAXIA- The more severe the Apraxia, the slower the process may be.

OVERALL HEALTH- Children in good general health are more ready for learning than children who are in poorer health (middle ear infections, upper respiratory infections, etc.).

COGNITIVE SKILLS- Children who function in the average to above average range of cognition have a more favorable prognosis than children with cognitive impairment.

ATTENTION- Children who have difficulty focusing often require longer treatment periods than those with average and above average attention skills.

CHILD'S REACTION TO THEIR SPEECH DEFICIT- Children appearing unaware of or unbothered by other people's difficulty understanding them often require longer treatment.

ABILITY TO SELF-MONITOR- Children who hear their own misarticulations and try to edit them tend to make progress more quickly than children who cannot or do not self-correct and rely on others to cue correct productions.

AGE AT WHICH INTERVENTION BEGINS- The younger the child is when treatment begins, the more favorable the long-term prognosis.

FREQUENCY OF PRACTICE- The more opportunities the child has to **practice speech goals**, the more favorable the long term prognosis. Children should be encouraged to practice speech goals in many settings, including home, school and community, as recommended by the Speech-Language Pathologist.

COMORBID DISORDERS- The prognosis may be poorer when there is an accompanying disorder (such as hearing loss, dysarthria, oral apraxia, etc.).

MOTIVATION- A child with a positive approach to therapy activities has a better prognosis than a child who is ambivalent or resistant towards therapy.

PARENT INVOLVEMENT AND SUPPORT- Informed parents can facilitate their child's progress by responding and encouraging their child's communication attempts.

Intervention and Treatment Approaches:

There are various therapy approaches that the clinician may use to treat Apraxia of Speech, but no single approach has been proven to be most effective. The approach should be evidence based, in which ongoing measurement of outcomes dictates treatment. Treatment should be fluid and reflective of the needs of the student, and should be used in collaboration with other interventions in home and classroom. In addressing Apraxia of Speech, the emphasis should be on development of movement patterns leading to clearer speech.

The following approaches may be used in alone or in combination when treating a child with Apraxia of Speech:

- Motor Programming Approach- Motor learning principles are used to help the child acquire skills to accurately, consistently, and automatically make sounds and sequences of sounds
- Cuing techniques, such as visual, gestural or tactile
- Linguistic approaches

For children with severe Apraxia of Speech, the Speech-Language Pathologist strives to achieve the best intelligibility, or "*understandability*" possible, even though there still may be errors in speech, language, and prosody. However, for some children exhibiting severe Apraxia of Speech, oral communication may not be a reasonable goal. In this case, alternative means for the child to express him- or herself should be considered. In addition, for some children alternative means may be used as a temporary tool to augment communication, while more effective speech skills are being developed. These alternative means might include the learning and use of manual communication or "*signing,*" the use of an assistive language notebook with drawn or written words he/she can show his or her communication partners, or the use of an electronic assistive communication device.

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Resources:

- American Speech-Language Hearing Association, **www.asha.org**
- **www.apraxia-kids.org**

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