

**CHILDHOOD APRAXIA OF SPEECH
SPECIAL CONSIDERATIONS
FOR TREATMENT OF CHILDREN WITH
AUTISM SPECTRUM DISORDERS**

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**Definition of
Childhood Apraxia of Speech**

"... a neurological childhood (pediatric) speech sound disorder in which the precision and consistency of movements underlying speech are impaired in the absence of neuromuscular deficits (e.g., abnormal reflexes, abnormal tone).

ASHA Ad Hoc Committee on Apraxia of Speech in Children

**Definition of
Childhood Apraxia of Speech**

CAS may occur as a result of known neurological impairment, in association with complex neurobehavioral disorders of known or unknown origin, or as an idiopathic neurogenic speech sound disorder. *The core impairment in planning and/or programming spatiotemporal parameters of movement sequences results in errors in speech sound production and prosody."*

ASHA Ad Hoc Committee on Apraxia of Speech in Children

**Potential Markers for Early
Childhood Apraxia of Speech**

- ❖ Difficulty achieving and maintaining articulatory configurations
- ❖ Presence of vowel distortions
- ❖ Limited consonant and vowel repertoire
- ❖ Use of simple syllable shapes
- ❖ Difficulty completing a movement gesture for phonemes easily produced in a simple context but not in a longer one

Edythe A. Strand, Ph.D., CCC-SLP

**CHARACTERISTICS OF
CHILDHOOD APRAXIA OF SPEECH**

- ❖ Inconsistent vowel and consonant error patterns in conversation
- ❖ Noticeable differences in one or more suprasegmental features (stress, intonation, pitch, rate and loudness)
- ❖ Connected speech more unintelligible than you would expect from examination of phoneme repertoire or single word articulation test
- ❖ Poor diadochokinesis
- ❖ Limited production of complex word shapes

Kathy Jakielski

Characteristics Cont.

- Slow development of speech
- High level of unintelligibility
- Difficulty sequencing phonemes w/in words
- Limited sound vocalization during infancy
- Possible difficulty feeding during infancy
- Difficulty imitating oral (non-speech) movements
- Difficulty correctly producing previously produced word

Various Sources

Characteristics Cont.

- Weakly produced phonemes
- Groping, struggling to speak
- Possible soft palate involvement
- Differences in performance of automatic (overlearned) versus volitional activities
- Persistent or frequent regression (loss of sounds or words)
- Receptive language (typically) exceeds expressive language
- Greater risk of literacy difficulties

Various Sources

Characteristics having greatest promise for **sensitivity** and **specificity** for identification of CAS

- ◆ *Inconsistent errors* in production of consonants and vowels with repeated productions of syllables and words;
- ◆ *Lengthened and disrupted coarticulatory transitions* between sounds and syllables;
- ◆ *Inappropriate prosody*, especially in the realization of lexical or phrasal stress.

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PRODUCT vs. PROCESS

PRODUCT

- Emphasis on learning specific target words, sounds, sequences
- Number of practice opportunities for each target should be high
- Producing the target in a very specific manner is essential

PROCESS

- Emphasis on learning a system or a set of procedures for completing a type of task.
- The quality or manner of moving through the steps of a process has greater importance than practicing a particular skill or task repetitively.
- A wider range of options exists in the process of working toward completion of a final product.

TREATMENT CONSIDERATIONS

- Vowels
- Sequencing
- Approximations
- Facilitating new sounds and words (cues)
- Phrases and sentences

TREATMENT CONSIDERATIONS

- Repeated Practice
- Backward Chaining
- Motivation
- Prosody
- Oral Motor Work

SEQUENCING OF PHONEMES IN WORDS

- **C** (s, ch, m, h, z)
- **CV** (go, bee, me, ma, wa, whoa, bah)
- **VC** (up, on, in, ouch, eat)
- **CV-CV with reduplication** (mama, dada, boo-boo, baba, wawa, bye-bye)
- **CV-CV with same C but varied V** (mommy, daddy, puppy, tato, people, paper, cookie)
- **CV-CV with varied C and V** (pony, table, maybe, cowboy, bunny, dino)

SEQUENCING OF PHONEMES IN WORDS

- **CVC with assimilation** (pop, nine, cake, dad)
- **CVC without assimilation** (pot, home, mine, bike)
- **CV-CV-CV** (banana, potato, tomato, bicycle)
- **CV-CVC** (button, chicken, magic, finish)
- **CVC-CVC** (cupcake, homework, pancake, popcorn)
- **Blends** (spoon, jump, splash, jumps)
- **Multisyllables** (motorcycle, alligator, Cinderella, helicopter, hippopotamus)

Sample Approximation Sequence for the Word Dinosaur

- "dah oh"
- "dah no"
- "di no"
- "di no so"
- "di no saur"

APPROXIMATIONS: WORD SIMPLIFICATION PRACTICE

****Child is able to produce V, C, CV, and VC**

<u>TARGET WORD</u>	<u>APPROXIMATION</u>
WATER	WA
MOMMY	MA
YES	YAH
BALL	BA/BAW
DOG	DA/DAW
MICHAEL	MI
CHEERIOS	OHS

APPROXIMATIONS: WORD SIMPLIFICATION PRACTICE

****Child is able to produce V, C, CV, VC and CV-CV w/reduplication**

<u>TARGET WORD</u>	<u>APPROXIMATION</u>
WATER	WAWA
GRANDMA	NANA
BOTTLE	BABA
BANANA	NANA
PLAYDOUGH	DOUGH
SNOW	NO
BICYCLE	BI

APPROXIMATIONS: WORD SIMPLIFICATION PRACTICE

****Child is able to produce CV, VC and CV-CV w/out reduplication**

<u>TARGET WORD</u>	<u>APPROXIMATION</u>
HELICOPTER	CO-TER
AIRPLANE	PAY OR AIR-PAY
SNOWMAN	NO-MA
ALEXANDER	AL
ELEPHANT	E-FIT
ZEBRA	ZE-BA
BASEBALL	BAY-BAW

FACILITATING NEW WORDS

- ❖ **INDIVIDUAL DIFFERENCES**
- ❖ **GENERALIZATION**
- ❖ **SPECIFIC CUEING TECHNIQUES**
 - ****PROMPT**** (Prompts for restructuring oral muscular phonetic targets)
 - **DTTC** (Dynamic Temporal and Tactile Cueing) – Edythe Strand
 - **Variation of temporal aspects of words**
 - **Choral speaking (simultaneous production)**
 - **Hand cues**
 - **Tapping/clapping out phonemes and syllables**
 - **Blocks or paper/felt squares to denote # of phonemes, syllables or words**
 - **Written letters and words**
 - **Sound names**
 - **Verbal descriptions and specific feedback (knowledge of performance)**
 - **Mouth pictures**
 - **Visual - look at self in mirror or look at therapist's face**
 - **Pictures to denote syllables or phonemes**

PHRASES AND SENTENCES

Sample Carrier Phrase	Corresponding Language Activity
It's a _____	"Feely box"-- place hand inside box, feel what's inside and tell what it is
_____ in/on/up	Animal characters going on a school bus. TV toy characters climb up mountain.
I got a _____	Go Fish game or Memory game -- tell what you got when you turn over a picture.
I found a _____	I Spy -- using a flashlight, find "hidden" toys
Big/little (color word) _____	Make a potato head toy or a jack-o-lantern picture
I have (a) _____ You have (a) _____	Describe clothing or physical characteristics of self and other person
I want (a) _____ I want (a) _____	Tell what piece you need to complete a sticker picture, block structure, or craft project
(number word) _____	Counting books
_____ go	Animals, characters or toy people going down slide
More _____	Bubbles
Do you have a _____?	Go Fish game
Bye-bye _____	Putting toys away

MATERIALS AND ACTIVITIES TO PROMOTE REPEATED PRACTICE

- Echo microphone
- Puzzles
- Sound puzzles
- String beads or Pop beads
- Farm, zoo, ocean, forest animals
- Fisher Price cash register
- Cars, trucks and ramps
- Train track and trains
- Mr. Potato Head
- Mr. Potato Head Pals
- Marble Works
- Books

MATERIALS AND ACTIVITIES TO PROMOTE REPEATED PRACTICE

- Bubbles
- Playdough and accessories
- Wind-up toys
- **Games**
- Toy food
- Puppets with mouths
- Colored blocks, large building blocks
- Markers/crayons/paper/White board
- Stickers/stamps
- Magnetic alphabet letters
- Familiar characters w/accessories
- Dollhouse w/family characters
- Big truck

Games for Repetitive Practice (Purchased)

- Pop-Up Pirate
- Cariboo
- Crocodile Dentist
- Don't Spill the Beans
- Silly Six Pins
- Lego Creator
- Mousetrap
- Animal Buddies
- Barnyard Bingo
- Lucky Ducks
- Milk and Cookies
- Silly Faces
- Colorforms
- Memory Games
- Lotto Games
- Holiday & Seasonal Gameboards

Quick and Simple Speech Games to Promote Multiple Repetitions

- Long Jump
- Hopping game
- Treasure hunt with flashlight
- Double dice roll
- Large number spinner
- Magnet chips under pictures
- Block designs
- Dominoes
- Go fish
- Memory
- Simon Says

Quick and Simple Speech Games to Promote Multiple Repetitions

- Stickers
- Progressive Drawing
- Temporary Tattoos
- Louder/softer
- Get moving
- Art project to take home
- Other "earn it now - build it later" activities
- Puzzle pieces hidden under word cards
- Mailman
- Basketball
- Make me laugh
- Path game shaped like letter sound your targeting

BACKWARD CHAINING

EXAMPLES OF BACKWARD CHAINING

- PONY – “Say ‘knee’”; “Say ‘pony’”
- BANANA – “Say ‘nana’”; “Say ‘banana’”
- ELEPHANT – “Say ‘phant’”; “Say ‘lephant’”; “Say ‘elephant’”
- RHINOCEROS – “Say ‘saros’”; “Say ‘nosarus’”; “Say ‘rhinoceros’”

MOTIVATION

Develops when children:

- know that they are *successful*;
- understand the *power of language*;
- *understand* how the *motor system* will affect their ability to communicate;
- are having *fun*.

STRESS AND INTONATION

STRESS AND INTONATION - Children with apraxia frequently demonstrate inappropriate or rather flat stress patterns when speaking

- Teach exclamations using over exaggeration
- Count and stop
- Emphasize key words which express high levels of emotional content
- Questions vs. declaratives.
- Statement - Questions - Response
- Changing meaning of sentence based on which word is stressed
- Syllable stress

TREATMENT CONSIDERATIONS OF SIGNIFICANCE TO CHILDREN WITH ASD

- Careful selection of vocabulary
- Careful selection of reinforcers
- Use of child-centered versus behavioral approaches
- Carryover of skills learned to other settings
- Successive approximations
- Introduction of manual signs

Vocabulary Selection

Vocabulary should:

- ✓ be highly functional
- ✓ be motorically manageable
- ✓ allow for opportunities for multiple repetitions

Selection of Reinforcers

Reinforcers should:

- ✓ initially - be related to the vocabulary used
- ✓ initially - provide the child opportunities to:
 - obtain a desired object or activity
 - discontinue a less preferred activity
 - establish a desired turn-taking routine
- ✓ later - take on secondary focus

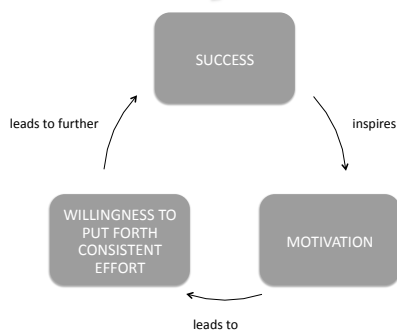
Child Centered vs. Behavioral Approaches

- ✓ Child Centered
 - Focus on process
 - Vocabulary highly flexible
- ✓ Behavioral
 - Focus on product
 - Vocabulary under greater adult control

Carryover

- ✓ Inform individuals working with child of:
 - Vocabulary
 - Acceptable Approximations
 - Beneficial Cues
- ✓ Incorporate target vocabulary into a variety of settings and across a variety of activities
- ✓ Choose vocabulary child may need and is motivated to use
- ✓ Allow for multiple repetitions

Successive Approximations



Sign Language

- ✓ Sign language engages the motor system
- ✓ Helps children develop patterns of communication and interaction
- ✓ Signs should ALWAYS be accompanied by adult saying the intended word:
 - Say word at slower rate
 - Emphasize key phonemic aspects of the word of relevance to the particular child
 - Encourage child to observe your face/mouth producing the word