

## DYNAMIC TREATMENT OF CHILDHOOD APRAXIA OF SPEECH

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## CAS (ASHA, 2007)

- a neurological childhood speech sound disorder
- precision & consistency of movements underlying speech are impaired
- absence of neuromuscular deficits
- core impairment in planning of movement sequences\*\*
- errors in speech sound production
- prosody issues
- Etiology: idiopathic; result of neurological impairment; co-occurring with other disorders
- 1-2% of average SLP caseload (ASHA, 2007)

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## CAS KEY INDICATORS (Strand 2005; ASHA 2007; Davis, Jakielski, & Marquardt 1998)

1. *difficulty achieving & maintaining articulatory configurations*
2. *vowel deviations*
3. *limited V, C, SS repertoires*
4. *difficulty completing movement & sequencing gestures of sounds in a complex linguistic context, even though sounds easily produced in a simple context*

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## SUPRASEGMENTAL FEATURES OF CAS

- *inconsistent productions in repeated productions*
- *problems with coarticulatory transitions between sounds & syllables*
- *inappropriate prosody, especially with stress*
- *voicing errors*
- *poor speech intelligibility*
- *slow improvements in therapy*
- *increased risk of expressive language disorder*

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## NON-SPEECH MOTOR SIGNS OF CAS (DAVIS ET AL, 1998; SHRIBERG ET AL, 1997A)

- oral apraxia (groping/posturing)
- general awkwardness or clumsiness
- impaired volitional oral movements
- mild delays in motor development
- mildly low muscle tone
- hyper- or hyposensitivity in oral cavity area

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## SUSPECTED CHILDHOOD APRAXIA OF SPEECH (sCAS)

- typically very young children (up to age 3 & sometimes 4) who are developing speech and expressive language
- exhibits several key indicators of CAS
- questionable diagnosis of CAS

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**POSSIBLE INFANT & TODDLER EARLY CHARACTERISTICS OF CAS (DAVIS & VELLEMAN, 2000; CASPARI & JAKIELSKI, 2010)**

- lack of strong canonical babbling
- low verbalizations
- uses more gestures & made-up signs
- words emerge, then disappear
- early feeding issues, drooling, oral apraxia
- limited V & C productions; lack variety of V & C
- produces isolated V or C for a “word”; low # of syllable structures
- sound preferences; syllable preferences
- limited intonation
- quiet infant; late cooing; late babbling
- late onset first words

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**CHALLENGES WITH CAS DIAGNOSIS**

- lack diagnostic guidelines
- child does not have enough speech to make judgment--need speech output or attempts
- typical early speech acquisition includes many cas characteristics: omissions, inconsistent productions, emerging C & V
- speech that is highly unintelligible with numerous phonological errors
- uses a significant amount of jargon
- has very low expressive language skills or has other significant delays/other disorders

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**HELPFUL ASSESSMENT INFORMATION FOR TREATMENT**

- imitated or spontaneous speech abilities
- word vs connected speech abilities
- stimulability—amount and type of needed cues
- consistency of productions
- groping, posturing, mouth movements
- V, C, SS inventories
- V & C errors
- PCC and PVC (intelligibility)
- velopharyngeal valve functioning
- language abilities

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**Percentage of Consonants Correct (PCC) (Shriberg & Kwiatkowski, 1982)**

**Calculation:**

$\frac{\text{total number of correct consonants}}{\text{total number of intended consonants}} \times 100 = \text{PCC}$

**Percentages:**

typical development	85%
mild to moderate disorder	65-85%
moderate to severe disorder	50-65%
severe disorder	< 50%

**Exclusions:** unintelligible utterances; vowels, even ‘er’; repetitions (disfluencies)

**Scoring Errors:** deletions; substitutions; voicing errors; distortions (even mild); additions; ‘ng’ in stressed syllables but not unstressed syllables

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**DODD’S 25 WORD TEST FOR CONSISTENCY (DODD, 1995)**

- Looks at inconsistencies with productions—get three repetitions of each word (try to get words spontaneously)
- Errors on 40% or more productions considered inconsistent incorrect performance
- Distortions on fricatives, affricates and /r/ not counted

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**DODD’S 25 WORD TEST FOR CONSISTENCY (DODD, 1995)**

- dinosaur
- slippery slide
- shark
- Bert
- thank you
- jump
- birthday cake
- fish
- elephant
- witch
- tongue
- chips
- girl
- teeth
- scissors
- zebra
- umbrella
- five
- vacuum cleaner
- rain
- parrot
- bridge
- kangaroo
- helicopter
- ladybird



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## CONSIDERATIONS FOR THERAPY

- child's age
- severity level
- attentional skills/ cooperation level
- years of therapy, type & intensity of therapy/progress to date
- any co-morbidity
- motivation to communicate
- ability to self-monitor

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## MOTOR LEARNING FOR SPEECH TREATMENT

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## FOCUS OF TREATMENT

- To improve the individual's ability to assemble, retrieve, and execute motor plans for speech (Strand, 2012)
- Focus on MOVEMENT of sounds
- Segmental & Suprasegmental Issues

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## MOTOR PERFORMANCE & LEARNING

- practice facilitates motor performance
- need for experience with motor learning (using skilled action)
- want motor learning to be permanent
- repetitive motor drill is important—want to habituate motor learning

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## MOTOR LEARNING (YORKSTON ET AL., 1999)

“SLP's facilitate the child's ability to develop motor skills for speech----provide modeling, practice, and therefore experience of the movement skills, so learning & retention of motor skills occur.”

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## VELLEMAN & STRAND, 1994

- Automaticity vs. Flexibility
- Appropriate to increase automatic speech (animal sounds, simple words)...yet it does not address “fundamental organizational problem of CAS”
- Drill of specific words/phrases (to become automatic)---is not enough---need to do more for the client
- Increase flexibility....challenge the speech system---gradual, slower, systematically

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### **FLEXIBILITY” (VELLEMAN & STRAND, 1994)**

- Want to teach “syllable structure control & organization within a variety of dynamic linguistic contexts”
- Varied sequences of syllables, words, sentences
- Expand oral motor organizational capability
- Increase ability to handle new speech tasks
- Go to more naturalistic activities after some drill

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### **MORE ON MOTOR ASPECT OF TREATMENT**

- “Practice makes permanent”
- “Must work on speech to improve speech”
- Overall sound system fatigue can be an issue during practice
- Alternate practice with varied patterns....better generalization occurs

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### **SYLLABLE MOVEMENT SEQUENCES**

- movement from one consonant position to varied vowel positions (i.e. me, my, mow, moo, may)
- movement from varied consonant positions to one vowel position (i.e. me, bee, pea, key, see, knee, we, tea, D)
- want to keep moving these shapes....longer and more complex
- use consonant chart and vowel quadrilateral to create syllables

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### **FOUR PRINCIPLES OF MOTOR LEARNING (Gildersleeve-Neumann, 2007)**

1. precursors to motor learning
2. conditions of practice
3. feedback
4. effects of rate

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### **1. PRECURSORS TO MOTOR LEARNING (Caruso & Strand 1999)**

- motivation (i.e. frustration with not being understood; enjoys speaking; desire to communicate)
- focused attention & effort
- ability to follow instructions in therapy
- ability to imitate a model

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### **2. CONDITIONS OF PRACTICE (Caruso & Strand, 1999)**

- vary the length & linguistic complexity of targets
- use of repetitive practice
- mass vs. distributed/variable practice
- random vs. blocked practice
- child as an active participant---knows what to expect in therapy & why he is doing tasks

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### Aggarwal, Mitchell & Van Zelst, 2012: PRINCIPLES OF MOTOR LEARNING THEORY

PRINCIPLE	ACQUISITION	RETENTION
practice distribution	-mass	-distributed
practice variability	-consistent context	-varied context
practice schedule	-blocked; predictable	-random; unpredictable
feedback type	-performance knowledge	-result knowledge
feedback frequency	-often; immediate	-inconsistent; delayed
rate	-slow	-normal; varied

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### MASS VS. DISTRIBUTED/VARIABLE PRACTICE

- mass practice=quick learning/little generalization
- distributed/variable practice=slower learning/more generalization
- avoid using one utterance too much (mass practice) or too many utterances (difficult for child)
- use smaller sets when targeting functional words/phrases---then increase to larger sets

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### RANDOM VS. BLOCKED PRACTICE

- blocked: one stimuli practiced repeatedly; separate practice
- random: stimuli are mixed through session and practiced a few times (better for motor learning)
- sometimes we start with block practice and move to random practice in therapy

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### 3. SPECIFIC FEEDBACK

- use clear data & facts about performance
- non-judgmental yet descriptive
- provide opportunity to self-correct
- continuous vs. intermittent feedback
- use quick, highly motivating token reinforcement that does not distract
- do comprehension checks
- use auditory feedback (i.e. Language Master; Quick Voice on iPad)

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### ERROR RECOGNITION

- Teach client how to:
  - “recognize & hear” own errors
  - “describe” own errors
  - “feel” own errors
  - “scroll” through possible corrections
  - “correct” own errors

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### PRACTICE ERRORS

- go through the exact steps that a client does when producing the error sound---break it down bit by bit in slow motion
- practice sound in error a few times
- over-exaggeration of error in mirror
- this increases awareness to errors and what is really happening during production
- then.....explain what should really occur in producing the sound

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#### 4. RATE

- slowing the rate may help child get more kinesthetic feedback with movements of articulators
- may help child pay more attention to actual productions & provide time to motor plan
- Easy Speech/Stretchy Speech
- establish faster articulatory movements over time
- want productions to sound natural/automatic

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#### SLOW IT DOWN!

- use 'easy speech' to decrease rate of speech naturally
- extend first word in utterance and words after pauses
- the rest of the utterance will slow down naturally
- use different terminology because these kids constantly hear "slow down" from parents—do not use "slow down"

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#### SPEED IT UP!

- practice difficult words several times
- establish faster articulatory movements over time in varied contexts
- want productions to sound natural
- speed is important—similar to regular conversation
- becomes automatic over time

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#### DYNAMIC TEMPORAL & TACTILE CUEING-DTTC (Strand & Skinder, 1999; Strand 2008)

- uses principles of motor learning—seeks to achieve motor learning
- dynamic, cognitive approach
- use of simultaneous verbal productions
- uses visual stimuli (sound hand signals, written cues )
- uses tactile stimulation-- 'feel' the movement (kinesthetic cues)

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#### DTTC CONTINUED

- uses imitated utterances increasing in length & complexity
- encourages use of functional vocabulary
- decide # of stimuli for each client
- recommends minor physical changes in therapy (moving hands, shifting body)
- intensive drill / eye contact important
- *high level* of success critical
- increase intrinsic motivation

- Strand &amp; Skinder 1999

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#### DTTC STEPS

1. client (ct.) watches & listens to word or phrase
2. ct. simultaneously produces word or phrase **with** the clinician (cl.)
3. cl. models; ct. repeats word or phrase while cl. simultaneously mouths it
4. cl. models word or phrase & provides cues; ct. repeats
5. cl. models word or phrase with no cues; ct. repeats
6. cl. elicits word or phrase from ct. w/o model (i.e. picture cards; ask?; fill-ins)
7. ct. produces word or phrase in less-directed /less-structured situation (i.e. game; book)

-Gildersleeve-Neumann 2007

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## BODY POSITION CHANGES IN THERAPY

- increases practice, attention, simultaneous motor movements, jaw & tongue stability, body & head stability
  - carpet squares/gymnastic cushions
  - walk up & down steps
  - stand/stand with knee on chair
  - sit on therapy-ball, bean bag chair, cushion
  - sit with back against chair
  - feet on floor or on stool

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## TREATMENT FOR YOUNG CHILDREN WITH SCAS OR CAS

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## HELPING CHILDREN BECOME VERBAL— GENERAL THOUGHTS

- improve overall imitation
- imitate the child's vocalizations and reinforce ANY verbalizations
- give meaning to vocalizations (Fish, 2010)
- talk about speech movements a lot (i.e. what the lips and tongue are doing; breathing) (Fish, 2010)
- teach early developing phonemes in simple syllables/words
- target accuracy of vowels
- build on sounds child already has and put into meaningful words

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## IMITATING

### MOVEMENTS w/ OBJECTS

- hiding an object
- dropping, throwing, rolling, pushing an object
- throwing away trash
- opening/closing a door
- turning on/off a light
- cleaning up toys
- putting something in a pocket
- washing hands

### BODY MOVEMENTS

- standing up, sitting down
- clapping
- folding arms
- leaning on palm of hand
- hands behind head
- crossing leg
- stretching arms out
- folding hands
- scratching forehead
- rocking, jumping, crawling, running, walking (add vocalizations)

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## FACIAL IMITATIONS

- sad face with frown & lip movement
- smile face with head movement
- fish face opening & closing mouth
- yucky taste face movement
- surprised face with mouth & eyes wide open
- monster face with opening & closing teeth
- eye blinking

(SEQUENCE TO CHALLENGE)

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## KAZOO PLAY BEFORE VERBALS

- use of a kazoo requires voicing
- blows can be short, long, soft, loud
- humming higher or lower
- starting & stopping blows—vary
- helps with lip rounding

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## VERBAL PLAY

- Vocalizations: cough; yawn; cry; snore; burp; grunt; gag; yell; sneeze; chewing noises; happy sounds; laugh; raspberries; tongue clicks; hiccups; tongue clicks; lip pops
- volume play (soft, whisper, louder voice)
- short & long sound play (lengthen vowels)
- intonation play (low vs. high)
- singing, humming, extending sounds

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## SOUND PLAY

### MODIFIED ANIMAL SOUNDS

- owl (hoo-hoo)
- dog (wooh-wooh)
- cat (me-ow)
- horse (eee; neigh-neigh)
- cow (moo-moo)
- pig (oy-oy)
- sheep (baa-baa)
- duck (waa-waa)
- chicken (baw-baw)
- monkey (oo-oo-ah-ah)

### PLAY WITH VOWELS

- ee—yoo (yucky)
- awww (so cute)
- ow! (that hurts!)
- uh-oh
- oooo
- oh
- ee-i-ee-i-oh
- ahhh (yawn sound)
- oo-ee-oo-ee

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## EARLY SYLLABLE WORK

- reduplications
- syllable/word flip book (CV, CVCV, CVCVCV) with unchanging & changing sounds
- successive approximations
- 2 syllable words ending in “ee”: baby; mommy; daddy; honey; money; happy; Woody; puppy; tummy; sunny; teddy; pony; muddy; bunny; yummy; yucky; penny; cookie; kitty

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## BINARY CHOICES

- hold items up high in one hand
- give child some sort of verbalization to imitate to make request
- realistic because you do not know child’s choice

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## FUNCTIONAL COMMUNICATION

- sometimes the goal of treatment is for communication rather than speech
- functional target words (photos)—list from parents, teachers
- some kids may take a long time to acquire intelligible speech
- use AAC / PECS/ SIGNS in combination with speech
- changes over time

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## FUNCTIONAL WORDS

- create a photo book of important words and phrases ---label with print
- have parent/teacher help you with word/phrase choices
- think what words would help this child communicate every single day
- Example: Natalie’s Words (age 6; Cerebral Palsy; uses AAC also)
  - Mommy, Daddy, help, night, open, home, no, yeah, you, me, Natalie, hi, bye, potty, eat, drink, go, Elmo, Mitch, 1-10, ABC’s

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## AAC BENEFITS

- immediate means to express wants and needs
- decreases frustration of child
- allows child to “say it” without the caregiver always “translating”
- creates a “verbal” social interaction; opportunity to share experiences & people in his/her life
- pairing of any verbal with use of AAC
- often a “means to an end” (using speech) for children with CAS
- varied: signs, PECS, iPad, tablets, devices

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## TARGET WORDS AND PHRASES

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## SELECTING SPEECH TARGET WORDS

- real words
- power & functional words
- nouns, verbs, descriptors
- # of words?
- length & phonetic context (increase/decrease complexity)
- be very careful of neighboring sounds and syllable structures
- increase varied movement gestures

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## USE PIVOTS & CARRIER PHRASES

my ____	go ____
open ____	I want ____
help ____	I pick ____
no ____	I hide ____
bye ____	Pick up ____
hi ____	Look at ____
more ____	I see ____

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## PIVOTS

### EX. WORD “BOX”

- my box
- open box
- move box
- want box
- no box
- bye box

### OTHER

- blow \_\_\_\_  
– bubble, horn,  
harmonica, balloon,  
candles
- pop, blow, push,  
squeeze  
\_\_\_\_ bubble

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## EXPRESSIVE LANGUAGE

- Many young kids with CAS have expressive language issues.
- Pivots and carrier phrases help them practice speech in increased utterances.
- Use print with a variety of carriers for the child to choose from.
- Use delayed imitation as needed.
- Give an answer and then ask the question  
Clinician: “I hide a spider! What do I hide?”  
Child: “A spider.”

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## CREATING “MINI-BOOKS”

- relate something personal to the child
- index cards with print & pics/ stapled together
- helps with increasing expressive language with speech targets
- i.e. Dad crashed the Yukon in the Ozarks
- i.e. Baby Bear Doesn't Want to Play
- i.e. Miss Kelly is Crazy.
- i.e. My Cat Charlie

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## ORAL MOTOR

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## ORAL-MOTOR TASKS

- use oral-motor tasks to facilitate sounds & sequence sounds
- benefits of working on sequential oral movements if presence of oral apraxia
- use silent posturing to help client
- OM tasks often used with young kids with low skills (not imitating, not sequencing sounds, significant oral sensitivity, feeding & chewing issues, drooling, etc.)

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## ORAL-MOTOR TASKS TO IMPROVE PRODUCTIONS

- lip rounding, spreading, closure
- jaw stability
- tongue-jaw differentiation
- rounding tools, kazoo
- bite blocks (coffee stirrers) use

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## ORAL MOTOR IMITATIONS FOR EVERY CLIENT TO KNOW

- “OPEN MOUTH” (pull down chin; use of tongue depressor; ‘ah’)
- “CLOSE TEETH” (use of tongue depressor or coffee stirrer; visual cues; ‘ssss’)
- “ROUND LIPS” (‘oo’, ‘oh’, or ‘w’; use of round tool –kazoo, horn)
- “CLOSE LIPS” (use of tongue depressor; ‘m’)
- “BITE LIP” (use of tongue depressor; ‘f’)

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## CUES

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## PAUSES BETWEEN SOUNDS

- desynthesis or pausing between two sounds can be effective to begin use of the sound in syllables (i.e. “t—wo” or “br—own” )
- when using pausing, do your best to not use the invasive schwa
- try to eliminate the pausing within the very same session to increase articulatory sequencing and movements
- use head & hand movements to help

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**“OKAY”** (use of hand, visual, auditory, kinesthetic cues throughout; desynthesis; synthesis; **backward buildups; forward chaining**)

J: okay	J: “kay”
C: “uh-t”	C: “k—ay”
J: o--kay	J: “oh...kay”
C: “oh-XXX”	C: “oh...tay”
J: “ay...”	J: “oh...kay”
C: “ay...”	C: “oh--kay”
J: “k”	J: “okay!”
C: “kuh”	C: “okay!”

**(repeated correct several times to build motor memory)**

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## # of Trials

- what matters most are accurate productions rather than the number of times practiced
- move from words, phrases, sentences as each level becomes mastered—avoid spending too much time at one level
- Imitation vs. spontaneous trials matter
- shoot for 100 correct trials in 30 minutes

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## CONSONANT HAND CUES (modified Strode & Chamberlain 1994)

- p—b (pop hand near lips)
- t—d (tap above top lip)
- k—g (touch back of throat area)
- m (close thumb to fingers near mouth and slide to the right)
- n (touch right side of nose)
- w (make circle motion around your puckered lips)
- h (move open hand back & forth in front of lips with palm facing lips)
- s—z (two open hands with palms facing out up near chin moving back and forth in short motions)
- f—v (place four fingers on top of thumb near side of mouth)
- sh—zh (place pointer finger near lips like when you say “shhhh”)
- ch—j (closed fist facing out near side of mouth with one pushing motion)
- l (pointer finger flipping up and out near upper lip)
- y (open thumb and pointer finger placed right below chin with other fingers curled under)

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## VOWEL GESTURES (Turtles) (Strode & Chamberlain 1994)

- “ee” & “eh”— point arms straight out from sides of body
- “oh” & “ah”— join rounded arms/hands above head
- “l” & “ih”— raise right arm straight up above head with pointer finger pointing up
- “oo” & “uh”— place both arms in front of body with open hands
- “ay” & short “a”— place both arms in front of body with open hands
- no gestures for ‘ow, oy’ or “ou” (should)

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## DON'T FORGET THESE CUES

- visual (your mouth; mirror; pictures; words; written, oral posturing cues without voice and with voice; holding cards up near your mouth)
- auditory (explanation; imitation; discrimination)
- tactile (stimulate for placement; manipulating lips and jaw; touch cues)
- practice words silently with motor movements only (first with speech, second without)

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## CUE CARD REMINDERS

- label index cards with key reminder words/pics
- lay card(s) on table in front of client
- allows for direct yet indirect reminders to the client---during practice (especially reading & conversation)---point to card or tap on card

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## ORTHOGRAPHIC CUES

- use print to help client pronounce words
- show print for backward buildups
- examples: important names of family members & client's own name  
 "Etienne" -- A—D---N  
 "Kenya" -- "yuh" -- "N-yuh" -- "k" ---"k—N—yuh"

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## MULTISYLLABIC WORDS

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## MULTISYLLABIC WORDS

- work on segmenting—visual/tactile cues (look at phonemic awareness literature)
- tap out each syllable or word, pace board; blocks, clicker
- use forward or backward chaining
- materials for targeting multisyllabic words (i.e. Smit, 2004)
- most common multisyllabic words (Google)

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## SEGMENTING EXAMPLES

- "ELLA---MEN----TREE" (ELEMENTARY)
- "FUH---TAH---GRUH---FEE"  
(PHOTOGRAPHY)
- "JIM---NA----STICKS" (GYMNASTICS)
- "BASS---KIT---BALL" (BASKETBALL)
- "M—T" (EMPTY)

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## ACTIVITIES

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## TOKEN REINFORCEMENT IDEAS

- blowing little puff balls off table through coffee stirrer
- Connect Four
- Little Cars through a wrapping paper roll
- stickers/stamps on cards
- puzzle / stacker pieces
- Pirate Game with mini swords
- Blokus pieces
- wind-up toys
- Hex bugs
- Uno Moo
- Little Tikes Animals & Haystacks
- Squishies
- plastic golf balls
- tokens & cups
- dry erase board marks to erase
- DOT –TO-DOT art with dotters



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## CONNECTED SPEECH TASKS

- family photos
- sequencing cards
- describe routines
- wordless picture books
- retell
- How to.....
- "I wonder..." statements
- treasure box
- role play
- reading
- rainbow passage
- counting
- describing tasks



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## TALKING OPPORTUNITIES

### WORDLESS PICTURE BOOKS

- *Carl Goes Shopping* (Day)
- *Goodnight Gorilla* (Rathman)
- *Do You Want to be my Friend?* (Carle)
- *A Boy, Dog, & Frog* (Mayer)
- *Snowman* (Briggs)
- *Harold & the Purple Crayon* (Johnson)
- *I Went Walking* (Williams)
- *Rain* (Spier)



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### GAMES

- Hedbanz
- Password
- Enchanted Forest
- Guess Who
- barrier games
- The Question Box
- roleplaying
- Madlibs
- walkie talkies
- internet topics

## VOWELS

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## STRATEGIES FOR TEACHING VOWELS

- indirect or direct approach?
- want accurate vowels--not approximations
- order of teaching vowels – individualize
- increase volume
- unison speaking
- visual cues for mouth posturing (i.e. mirror)
- phonetic placement (i.e. lips rounding, jaw dropping)
- specific lip rounding tasks/tools with rounded vowels (i.e. end of horns, kazoo, rounding tools)

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## STRATEGIES FOR TEACHING VOWELS

- use of bite block (coffee stirrer) when teaching to stabilize jaw
- jaw grading movements necessary for vowels
- vary instruction as needed (auditory cues)—especially to facilitate correct vowel
- exaggerate movements & sounds (to an extent)
- choose best facilitating contexts to achieve vowels (i.e. high front consonants with high front vowel)
- provide immediate auditory feedback--older kids (i.e. *Language Master*)

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## USE OF CONTRASTS

- provide auditory feedback to make judgments about words and their meanings as related to correct vs. incorrect vowels
- Minimal Pairing (minimal differences)
  - sound substituted and the target sound
  - one known vowel & one unknown vowel
  - two unknown vowels

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## VOWEL THERAPY SUGGESTIONS

- have child fill-in for vowel sounds in songs
- important to practice vowels with consonants as tongue movements vary for isolated vowels (initially this may not be possible)
- try backward buildups--"vowel buildups" (i.e. "ah/ahm/ahmy/mommy" or "oo/two")

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## VOWEL THERAPY SUGGESTIONS

- use carrier phrases with targeted vowel(s) in the phrase (i.e. "I caught the \_\_\_\_\_", "bye \_\_\_\_\_")
- when child is older, use diagrams / models of articulators to help explain placement & production of vowels
- use orthographic cues to help identify correct vowel productions

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## CAS & THE OLDER CHILD

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## CAS & THE OLDER CHILD

### Residual Errors

- vowel errors
- multisyllabic word errors
- connected speech issues
- consonant errors ('r, th's', lisps)
- lack of carryover & self-monitoring
- prosody issues (rate, intonation, stress)

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## CAS & THE OLDER CHILD

- **burnt out** from therapy--discuss
- social issues, self-esteem issues
- needs intrinsic motivators
- become a team—stay committed
- give the child some 'power' and 'control' of his own sessions (within reason)
- benefits of small groups
- use meaningful practice (i.e. names of MLB teams, lyrics to songs, etc.)

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## IMPROVING SPEECH

- help the client to be correct the first time (by the amount of cuing you provide)
- use “fix it” (self-monitor) cue card with tool box and tools drawn on it
- make sure client is sitting up in chair to improve posture for speech
- make sure client is speaking loud enough

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## INCREASING AUTOMATICITY OF SPEECH

- consider # of trials within therapy sessions
- target words & phrases that carry more value
- teach new sounds in words in various contexts (i.e. singing, reading, phrases in games, unison talking, rote speaking, character play, etc.)
- should be less work, more enjoyable, and less demanding for the child

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## TAKING THE LISTENER INTO ACCOUNT

- have client ask himself, “Does the listener understand me?”
- teach clients how to watch facial expressions
- teach client what to do if someone doesn’t understand what he is saying

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## SOUND WORK

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## USE OF PHONETIC PLACEMENT

- teach phonetic *placement* & *manner*
- child needs visual attention
- describe actions to the child---use pictures or models of the speech mechanism if necessary

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## SOUND MODIFICATIONS

- may need to modify sound/word productions initially (i.e. /n/ and /l/)
- several modifications for common target sounds (Bauman-Waengler, 2012)
- sometimes we have to gradually achieve child’s ‘best’ sound
- your goal is always to reach correct and accurate sound productions, if possible

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## THERAPY WITH COGNATE PAIRS

- p/b, k/g, t/d, f/v, s/z, sh/zh, ch/J, th's
- voiced vs. voiceless sound
- compare sound pairs
- minimal pairing
- whispered productions

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## Experiment for Best Sound

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• tongue tension</li> <li>• open mouth</li> <li>• lip rounding</li> <li>• using voice</li> <li>• closed teeth</li> <li>• shortened sound</li> </ul> | <ul style="list-style-type: none"> <li>• tongue relaxing</li> <li>• closed mouth</li> <li>• lip retraction</li> <li>• whispering</li> <li>• open teeth</li> <li>• lengthened sound</li> </ul> |
|--|---|

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## WHAT HELPS THIS CLIENT?

- sometimes we need to “adjust” in order to reach best sound production
  - try out the range of possibilities:  
(in-between)
- ←-X-----X-----X-----X-----X--→
- examples: tension to relaxation;  
closed teeth to open teeth

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## CLIENT CAN'T ACHIEVE SOUND

- attempt to achieve the sound during every session using:
  - attempt variety of techniques
  - try varied target syllables or words (neighboring sounds varied)
  - slight variations of jaw, tongue, lip posturing and movements

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## Quote on Self-Monitoring

“Practice in self-monitoring is critical to building internal targets that will serve the child reliably in connected, spontaneous speech. Therefore it should be an integral part of therapy, starting at the syllable level through connected speech.”

(Peterson-Falzone et al., 2006)

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## SELF-MONITORING

- *explicitly* teach children with CAS how to self-monitor
- use foils (purposeful errors) & model self-corrections by talking yourself through it & letting the child observe this happening
- help child initiate repairs
- talk to child of how all of us monitor our delivery *constantly* & check for errors--we interrupt ourselves & make self-corrections
- SLP feedback & cues matter when teaching child to self-monitor

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## SUPRASEGMENTALS

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## CAS SUPRASEGMENTAL ISSUES

- \*excessive or equal stress in two or more syllable words, sentences & connected speech
- \*lack of prosodic variation/ intonation
- \*lack of 'naturalness' in connected speech
- \*inappropriate pausing
- \*inappropriate loudness levels
- \*poor rhythm, timing & rate

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## Prosody Imitation

- pitch/intonation (low, high, monotone)
- rising/falling intonation
- stress (syllable play)
- volume (whisper, soft, loud)
- rhythm/pausing
- tempo (fast, slow)
- duration (lengthen vowels)

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## THERAPY FOR STRESS & INTONATION

- use print to 'see' the stress (i.e. TABLE; geOGRAPHY); try all syllables for fun to 'hear' the differences (i.e. MACaroni; maCAroni; macaROni; macarONI)
- use print to show phrase & sentence stress (i.e. I did it!; i DID it!; I did IT!)
- guessing game to identify stress in words (move from more exaggerated to more natural)
- work on prosody/stress in asking & answering ?'s
- unison reading
- use 'dialogue' or 'character' based readings
- use short plays with small groups of kids

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