

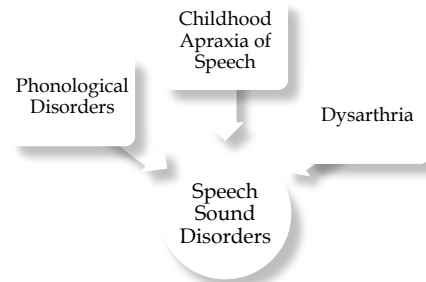
Navigating the Complexity of Apraxia in Children with Multiple Disabilities

ISHA, February, 2010
Jerri Z. Krantz, M.A., CCC-SLP
Cawn-Krantz & Associates

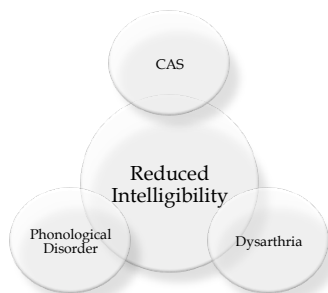
Brady

DEFINITION OF APRAXIA Childhood Apraxia of Speech (CAS)

SPEECH SOUND DISORDERS



SPEECH SOUND DISORDERS Do they share characteristics?



CHILDHOOD APRAXIA OF SPEECH (CAS)

- Childhood Apraxia of Speech (CAS) is a neurological speech sound disorder that involves a child's difficulty planning and/or programming purposeful voluntary movements for speech in the absence of neuromuscular deficits (abnormal tone, abnormal reflexes).

ASHA, 2007

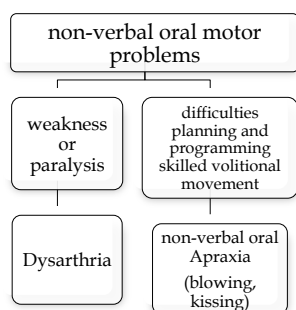
CHARACTERISTICS of CAS

- ❑ No weakness, incoordination or paralysis of speech musculature
- ❑ No difficulty with involuntary motor control; chewing, swallowing
- ❑ Inconsistencies in articulation performance
- ❑ Errors-tendency for omissions in the initial position.
- ❑ Number of errors increases as length of word/phrase increases

CHARACTERISTICS OF CAS CONT...

- ❑ Fewer vowels and less vowel differentiation
- ❑ "On-demand speech" is most difficult to produce; Well rehearsed "automatic speech";
- ❑ Rate, rhythm, and stress are disrupted
- ❑ May have limited inflectional range when speaking
- ❑ Good control of Pitch, Loudness

ORAL MOTOR DEFICIT OR NOT AN ORAL MOTOR DEFICIT?



Emily

CAS Characteristics Early vs. Late Labels?

INFANTS and TODDLERS

- Gaps in consonant or vowel repertoire, little variety
- Marginal babble, without true consonants
- Incomplete syllables
- Has only one movement pattern
- Groping/lack of flexibility
- Limited or stereotyped intonation patterns

OLDER CHILDREN

- Limited consonants and phonetic inventory
- Use of simple syllable shapes
- Frequent omission errors
- Increased errors on longer sequences
- Groping/lack of willingness to imitate
- Variability
- Altered suprasegmental characteristics

Holden

HOLT

APRAXIA

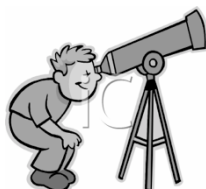
- ▣ A disorder in carrying out or learning complex movements that cannot be accounted for by elementary disturbance of strength, coordination, sensation, comprehension, or attention

(Strub & Black, 1981)

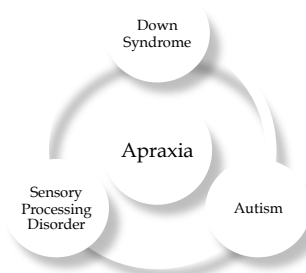
This is what we know...

We need to broaden our focus

We need to consider the **whole** child in our diagnosis and treatment of children with speech and language disorders



Co-Occurring Diagnosis



Symptoms of Childhood Apraxia of Speech in Children with Down Syndrome

- Decreased intelligibility with increased length of utterance
- Inconsistency of speech errors
- Decreased ability to perform voluntary tasks as compared to automatic tasks
- Difficulty sequencing oral movements and speech sounds

(Kumin & Adams, 2000)

APRAXIA in the Child with Down Syndrome cont...

- ▣ Co- occur with oral motor skill difficulty
- ▣ Motor templates needed for speech which are typically developed through vocal play are not being developed?
- ▣ Speech perception (processing) and speech production centers of the brain are not communicating well in individuals with Down Syndrome?
- ▣ Children with Down syndrome who have been given diagnosis of Apraxia begin speaking at a later age, mean age of five years.

KURTIS

Communication Indicators in the child with Autism

- ▣ Impairments in the use of nonverbal behaviors
- ▣ Difficulties with Joint Attention
- ▣ Delay in or lack of spoken language and gestures
- ▣ Lack of communicative vocalizations with consonants prior to 24 months (Wetherby & Woods,2002)
- ▣ Lack of speech or gestures in subset of children with Autism may be related to issues other than social-cognitive abilities (Prizant)

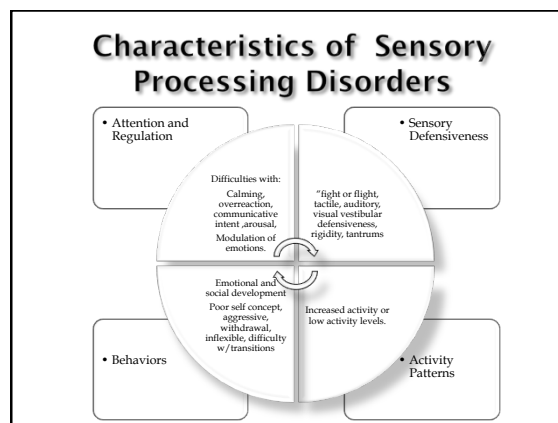
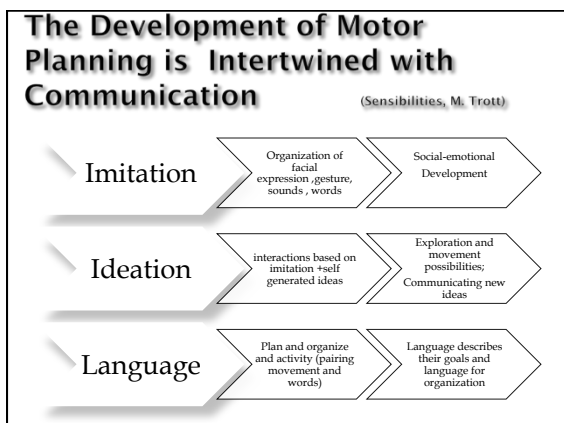
Scott

Mark

SENSORY PROCESSING
DEFINITION

- Sensory experiences include touch, movement, body awareness, sight ,sound and the pull of gravity.
- Sensory processing is the child's ability to process sensory information from the proprioceptive, vestibular, tactile, auditory, visual, gustatory, and olfactory systems in concert with their ability to maintain regulation
- Sensory integration is the ability to effectively perceive (process) , interpret and and react to sensation from the environment
- We are able to sustain regulation by being able to react to sensation appropriately and efficiently

MOTOR PLANNING
ABILITY IS A NATURAL
OUTCOME OF SENSORY
PROCESSING



Apraxia is a Motor Planning Deficit

- ❑ Difficulty initiating play ideas
- ❑ Difficulty sequencing actions
- ❑ Difficulty adapting to novel situations
- ❑ Poor persistence
- ❑ Need for sameness
- ❑ Difficulty generalizing learned behaviors to new situations

Osten, Cawn (2005)

Brady

TREATMENT FOR CHILDREN WITH APRAXIA OF SPEECH

Treatment must depend on:

- ❑ The child's neurological maturity and motor skills to be able to IMITATE and PRODUCE oral motor movements for speech sounds (Velleman, 2003).

Treatment for CAS

- ▣ Cognitive planning and motor execution are necessary for success of the speech movement.
- ▣ Speech movement is unlike any other motor tasks
- ▣ Speech requires rapid and continuous decision making prior to and during speaking

Perspectives in Treatment for children with Apraxia of Speech

- ▣ Integral stimulation
- ▣ Approaches in which tactile cues as well as gestural cues are used
- ▣ Prosodic cueing methods which emphasize more prosody and incorporate more linguistic components.
- ▣ Combination of the above

INTEGRAL THERAPY METHOD Treatment Program

- ▣ Integral Therapy Method
 - Treatment that requires the child to imitate utterances modeled by the clinician.
 - Attention is focused both on the auditory model as well as the visual attention to the clinician's face

The Kaufman Speech to Language Protocol

- ▣ Easiest way of saying words until they have increased motor-speech coordination
- ▣ Children are taught the "shell of words"
- ▣ Begins with word approximations and systematically refines and reinforces productions toward whole target words and phrases

P.R.O.M.P.T. Treatment Program

- ▣ PROMPT- Prompts for Reconstructing Oral Muscular Phonetic Targets (Haden, 2006).
 - Movement in the context of speech production
 - A tactually grounded, sensori-motor, cognitive-linguistic assessment and treatment approach for speech production disorders
 - PROMPT intends to: 1) provide stabilization and increased sensory feedback to the speech system; 2) a dynamic process of training the system how to accommodate different and continuously varying "states" of each utterance

Keep the following in mind:

- ▣ **Movement is the key to learning**
- ▣ **Speaking is a Sensory and Motor Experience**
- ▣ **Speech does not start from the chin up**

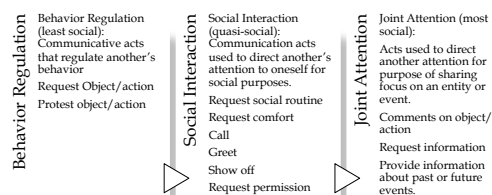
Cawn, SLP(2006)

Communicative intention is a prerequisite

Intent to communicate whether verbally or non-verbally must be present before speech and language intervention can begin

Cognitive, language, social and motor skills are learned through interactive relationships

Communicative Functions that Emerge Before Words



Wetherby/Prizant, 1993

Navigating the Maze of Diagnosis and Treatment of CAS in the Child with Multiple Disabilities



- Physiological
- Processing
- Cognitive
- Motor
- Social Emotional

Individual Differences Guide Our Treatment

- ☐ Intentionality
- ☐ Regulation
- ☐ Non-verbal gestures
- ☐ Neuromuscular integrity
- ☐ Sensory processing
 - sensory-motor
 - auditory processing/language

THE BEGINNING OF THE DX/RX PROCESS

- ☐ Look at individual differences
- ☐ Where does the process start?
 - Affect
 - Joint Attention
 - Non-verbal and pre-linguistic sounds that are communicative
 - Changes in prosody and rhythm
 - Repetition (play, motor movements and verbalization)

CHRISTIAN

Speech and Language Goals

CHRISTIAN

1. Increase a reciprocal flow of interaction using words and gestures.
2. Improve breath support (phonatory control) for connected speech production while supporting postural stability.
3. Increase the complexity of movement patterns in sounds; sequencing of sounds for production of words(CVC sequences, marking syllables)

KURTIS

Kurtis' Goals

1. To facilitate shared attention and expand reciprocal interactions
2. Improve postural support for speech production
3. To demonstrate speech motor control in on a single plane of movement for use in functional communication.
4. Sustain clear phonation with symmetrical jaw movement for 3-5 seconds.
5. Sustain airflow without phonation for 3-5 seconds starting from neutral jaw position.
6. Demonstrate beginning jaw gradation changes with voicing
7. Integrate mandibular and labial-facial movements with jaw gradation (/b, m, a,/) for the production of functional CV and VC syllables'.
8. Produce CV and VC syllables integrating bilabial movements with jaw gradation adding devoiced sounds

**Scott
10 YEARS, 8 MONTHS**

Scott

Speech and Language Goals (Scott)

- ▣ To demonstrate speech motor control integrating three planes of movement (vertical, horizontal, and lateral) for use in communication within structured/ unstructured activities.
- ▣ Demonstrate control of manner and timing for phrases that contain prosodic meaning
- ▣ Comprehends location and temporal relationships such as behind, in back of, in front of, before and after in a variety of different contexts. (Receptive language goal)

Goals and Objectives

- ▣ Flexibility on the part of the therapist
- ▣ Changes in the therapy situation can cause changes in performance
- ▣ System fatigue -therapy should be augmented by routines; group activities and contextual rhythmic, multimodal or other types of support
- ▣ Sequencing ability in the area of play-children with speech motor planning challenges may show parallel difficulties in planning sequenced hierarchical play routines. Pair play with sounds.
- ▣ Coordinating therapy or co-treatment.

Using the relationship in the face of regulatory challenges

HOLDEN

Holden came to us at 3 years, 3 months of age

- Speech characteristics
 - Limited syllable shape repertoire
 - Preference for using /d/ rather than velar and bilabial consonants
 - Omission of medial and final consonants
 - Marked final consonants with /s/ or /l/
 - Vowel distortions
- Language characteristics
 - Extremely limited MLU
 - Delayed syntax development
 - Word-retrieval difficulties
- Other individual differences
 - Limited ideation around play (immature play)
 - Limited gestural system
 - Separation difficulties- especially in the face of tasks he perceived as difficult

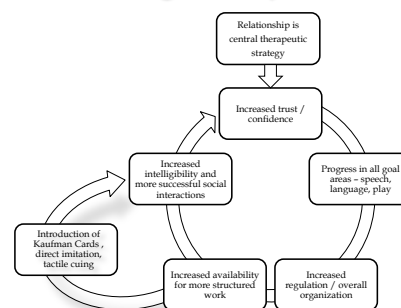
Holden: "Baby Goes to Jail" 3 years

Using the relationship in the face of regulatory challenges

- Therapy goals :
 - Speech (medial and final consonants, articulatory transitions, expanding syllable-shape repertoire)
 - Language -increase MLU, add grammatical markers, increase vocabulary
 - Ideation/Play (initially play was "hide and find" type interaction and simple "monster" themes)
- Individual Differences guided the therapy process
 - Separation difficulties, anxiety around speech, regulation difficulties
- Relationship developed around communicative interactions in less structured tasks. Integrated more structured tasks as H. became available.

Holden

Using the relationship in the face of regulatory challenges



Treatment for CAS should involve...

- A variety of speech tasks, in a variety of settings
- Helping the child FOCUS ,working when attention can be maximized
- Development of intentionality and joint attention.
- Providing early success so that the child develops trust, safety, motivation, and increased intention around the reciprocal interaction using communication.

Websites

- Cawn/Krantz & Associates Developmental Therapies
 - www.cawn-krantz.com
- Apraxia Kids
 - www.apraxia-kids.org
- American Speech and Hearing Association
 - www.asha.org
- DIR/Floortime
 - www.floortimefoundation.org
- The Interdisciplinary Council on Developmental and Learning Disorders
 - www.icdl.com
- The Prompt Institute
 - www.promptinstitute.com
- Libby Kumin
 - <http://www.ds-health.com/speech.htm>
- Kaufman Speech Praxis Information & Materials
 - www.kidspeech.com
- References provided upon request