SPEECH: ARTICULATION AND PHONOLOGICAL DISORDERS

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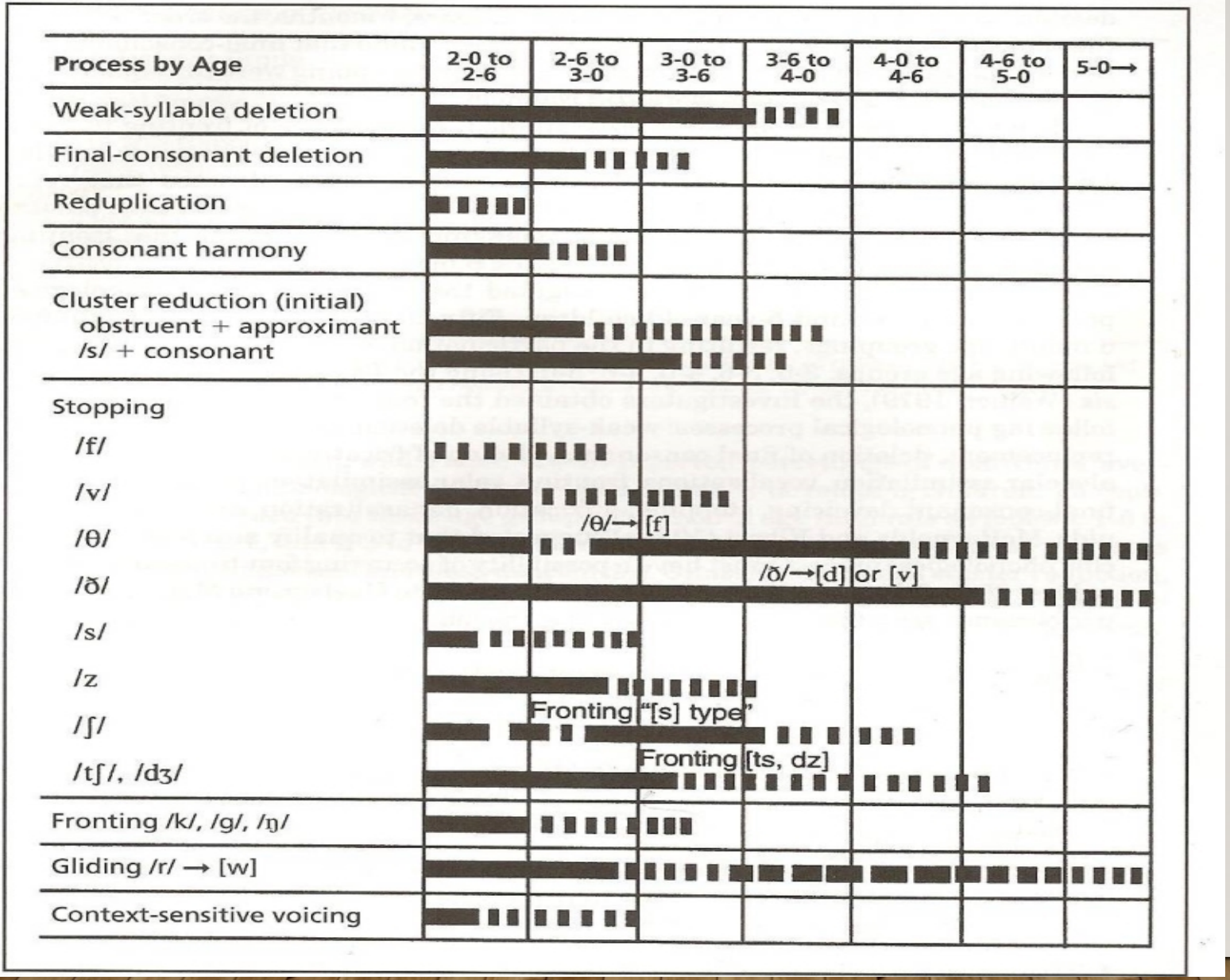
Thinking Developmentally as It Relates to Articulation/Phonology

Why is this important?

Many clinical questions can be answered easily by taking a developmental perspective

ARTICULATION AND PHONOLOGY: THERE IS A DIFFERENCE!

- **Articulation disorder** – the client knows the language has certain sounds but is unable to produce these sounds
  - Trouble with individual sounds and consonant clusters
  - Motor problems; trouble with timing and coordination
- **Phonological disorder** – the client has problems with speech because he lacks a certain knowledge about the language
  - **Trouble with sound classes (e.g. fricatives or bilabials) or linguistic constraints (e.g. final consonants in syllables)**
  - **Speech is usually unintelligible**
  - **More prevalent in younger clients**


Process by Age
2-0 to 2-6
2-6 to 3-0
3-0 to 3-6
3-6 to 4-0
4-0 to 4-6
4-6 to 5-0
5-0→
Weak-syllable deletion
Final-consonant deletion
Reduplication
Consonant harmony
Cluster reduction (initial)
obstruent + approximant
/s/ + consonant
Stopping
/f/
/v/
/θ/
/ð/
/s/
/z
/ʃ/
/tʃ/, /dʒ/
/θ/→ [f]
/ð/→[d] or [v]
Fronting "[s] type"
Fronting [ts, dz]
Fronting /k/, /g/, /ŋ/
Gliding /r/ → [w]
Context-sensitive voicing

Consonant	Prather, Hedrick, and Kern (1975) 50%	90%	Sander (1972) 50%	90%	Smit et al. (1990) 50%	75%
n	< 24	24	< 24	36	< 36	<36
m	< 24	24	< 24	36	< 36	<36
p	< 24	24	< 24	36	< 36	<36
h	< 24	24	< 24	36	< 36	<90
t	< 24	32	24	<48	< 36	<36
k	24	32	24	44	< 36	<36
f	< 24	36	32	48	< 36	42
w	< 24	40	< 24	40	< 36	<36
ŋ	< 24	36	24	>48	< 36	<90
b	24	36	< 24	48	< 36	<36
g	24	36	24	48	< 36	<36
s	24	44	36	>48	42	60
j	28	32	30	48	< 36	42
d	28	36	24	48	< 36	<36
ʍ	28	>48	Not assessed		Not assessed	
l	32	>48	36	>48	42	72
r	32	>48	36	>48	42	72
ʃ	36	>48	42	>48	42	60
tʃ	36	>48	42	>48	42	72
dʒ	36	>48	48	>48	42	54
v	40	>48	48	>48	42	54
z	44	>48	42	>48	48	72
ʒ	44	>48	44	>48	Not assessed	
ð	48	>48	48	>48	54	66
θ	48	>48	48	>48	54	72

The data source for these norms are Prather, Hedrick, and Kern (1975); Sander (1972); and Smit, Hand, Frelinger, Bernthal, and Byrd (1990).

STRATEGY QUESTION 1

- A child is referred to you by his preschool teacher. This child, Damien was reportedly assessed by an speech language pathologist who recommended that Damien receive intervention before kindergarten. According to the report from the previous clinician, Damien uses the phonological processes of gliding, consonant cluster reduction, stopping, reduplication, and final consonant deletion. Your assessment confirms the presence of these phonological processes. You would begin treatment by addressing:
  a. final consonant deletion
  b. gliding
  c. consonant cluster reduction
  d. reduplication
  e. stopping

NEW

ANSWER IS D

CLASSIFICATION SCHEMATA OF CONSONANTS (AND VOWELS)

Why is this important?

Knowing where and how phonemes are produced
Helps determine the type of problem or
Characteristics of the client's speech.

PHONETICS – PLEASE REVIEW

CONSONANTS

- P
  - Place
- M
  - Manner
- V
  - Voicing
    - Cognate pairs

VOWELS

- H
  - tongue Height
- A
  - tongue Advancement
- L
  - Lip configuration
- T
  - Tense/lax vocal folds

CONSONANT CLASSIFICATION CHART

- Traditional Classification – categorizes consonants in terms of 3 parameters - *Place,Manner&Voice Approach*
- Distinctive Feature Approach – created by linguists to describe the languages of the world. Each phoneme is described according to a cluster of features that are either present (+) or absent (+) in that phoneme

Consonants of American English

Manner of Production	Place of Production: Bilabial	Labiodental	Interdental	Alveolar	Postalveolar	Palatal	Velar	Glottal
Stop								
Oral	p b			t d			k g	
Nasal	m			n			ŋ	
Fricative		f v	θ ð	s z	ʃ ʒ			
Affricate					tʃ dʒ			
Liquid								
Central				r				
Lateral				l				
Glide	w					j		h

Sound Classes in Addition to Place, Manner, and Voicing

Sound Class	Definition
Approximate	Glides and liquids
Labial	Bilabial and labiodental consonants
Obstruent	Oral stops, fricatives, and affricates
Sibilant	Alveolar and postalveolar fricatives and affricates
Sonorant	Nasals, liquids, and glides
Strident	Labiodental, alveolar, and postalveolar fricatives and affricates

Vowels of American English

Height	Front +Spread	Center-Round	Back +Round
Close	i ɪ	ʊ	u
Close mid	eɪ	ə	oʊ
Open mid	ɛ æ	ʌ	ɔ
Open	a	ɑ	ɒ

[oʊ] = tongue begins as for [o] and moves toward [ʊ]
[aʊ] = tongue begins as for [a] and moves toward [ʊ]
[aɪ] = tongue begins as for [a] and moves toward [ɪ]
[ɚ] = tongue has both [ə]- like and [r]- like qualities

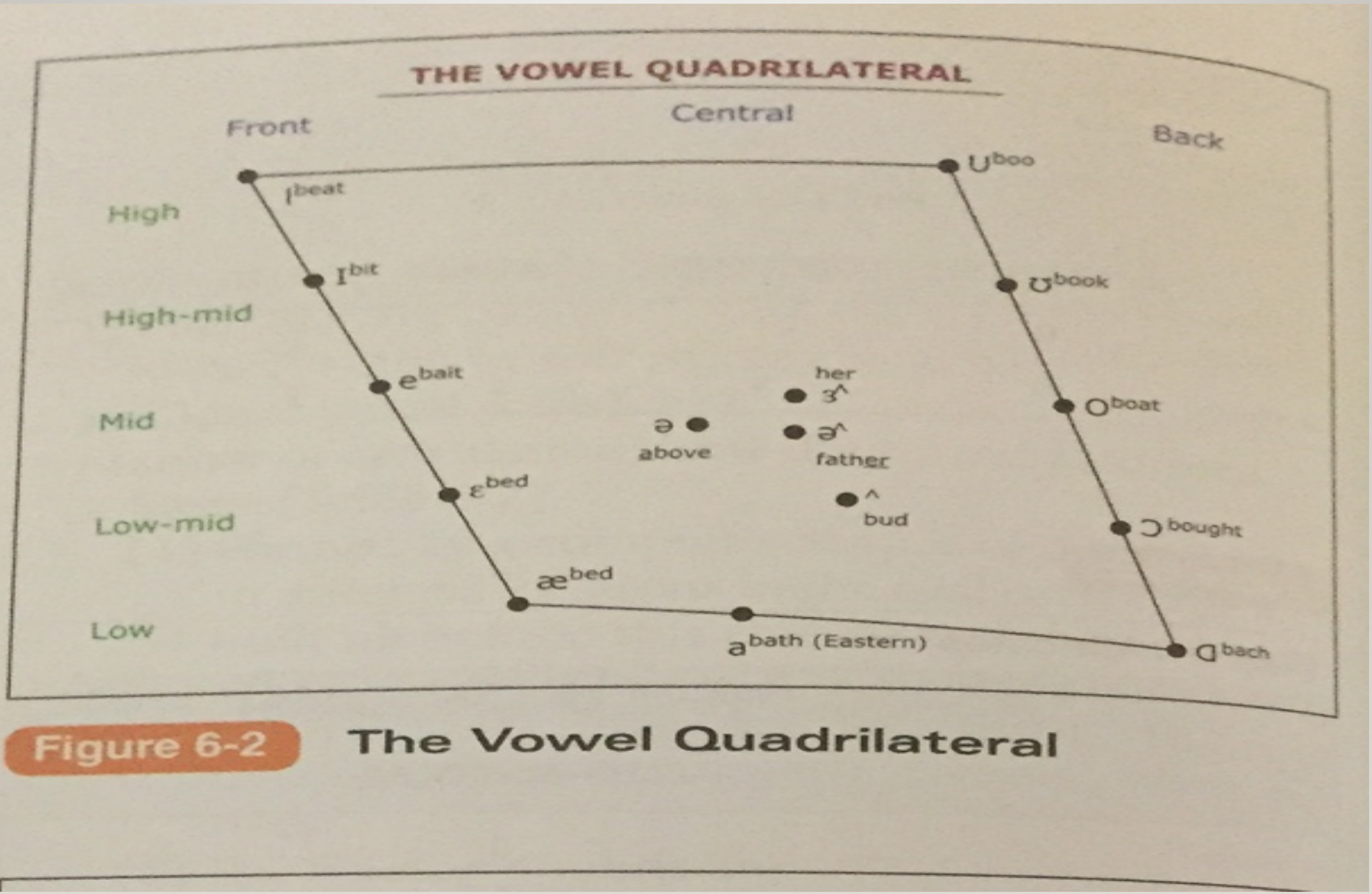


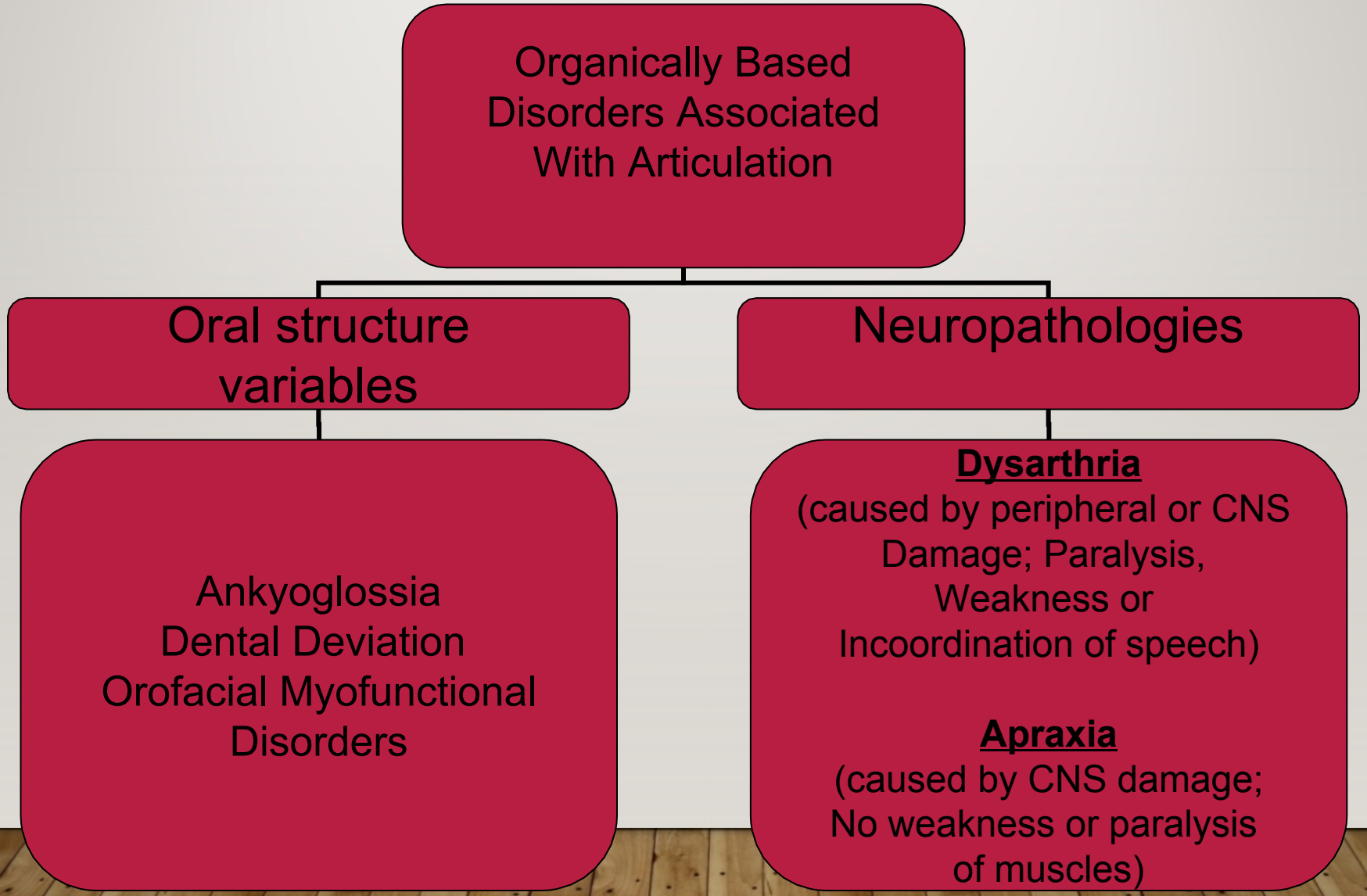
Figure 6-2 The Vowel Quadrilateral

STRATEGY QUESTION 2

- You are working as a clinician in a private clinic. A father brings his son Johnny, age 4 ½ years old, for an evaluation. According to his father, Johnny is "hard to understand and sometimes the kids at preschool make fun of him." The pediatrician has told Johnny's father that Johnny will "outgrow this speech problem on his own," but the father wants to make sure that this advice is correct. Johnny will be starting kindergarten in 6 months, when he turns 5 years of age, and his father wants to be sure that Johnny speaks as intelligibly as possible so that he will not be teased in elementary school. When you evaluate Johnny, you find that he has th/s, t/f, w/r, d/ch, and j/l substitutions. You decide to place him into therapy. You begin therapy by addressing:
  a. th/s substitution
  b. t/f substitution
  c. w/r substition
  d. d/ch substitution
  e. j/l substitution

ANSWER IS "B"

NEW


Organically Based Disorders Associated With Articulation
Oral structure variables
Neuropathologies
Ankyoglossia
Dental Deviation
Orofacial Myofunctional Disorders
Dysarthria
(caused by peripheral or CNS Damage; Paralysis, Weakness or Incoordination of speech)
Apraxia
(caused by CNS damage; No weakness or paralysis of muscles)

Organically Based Disorders

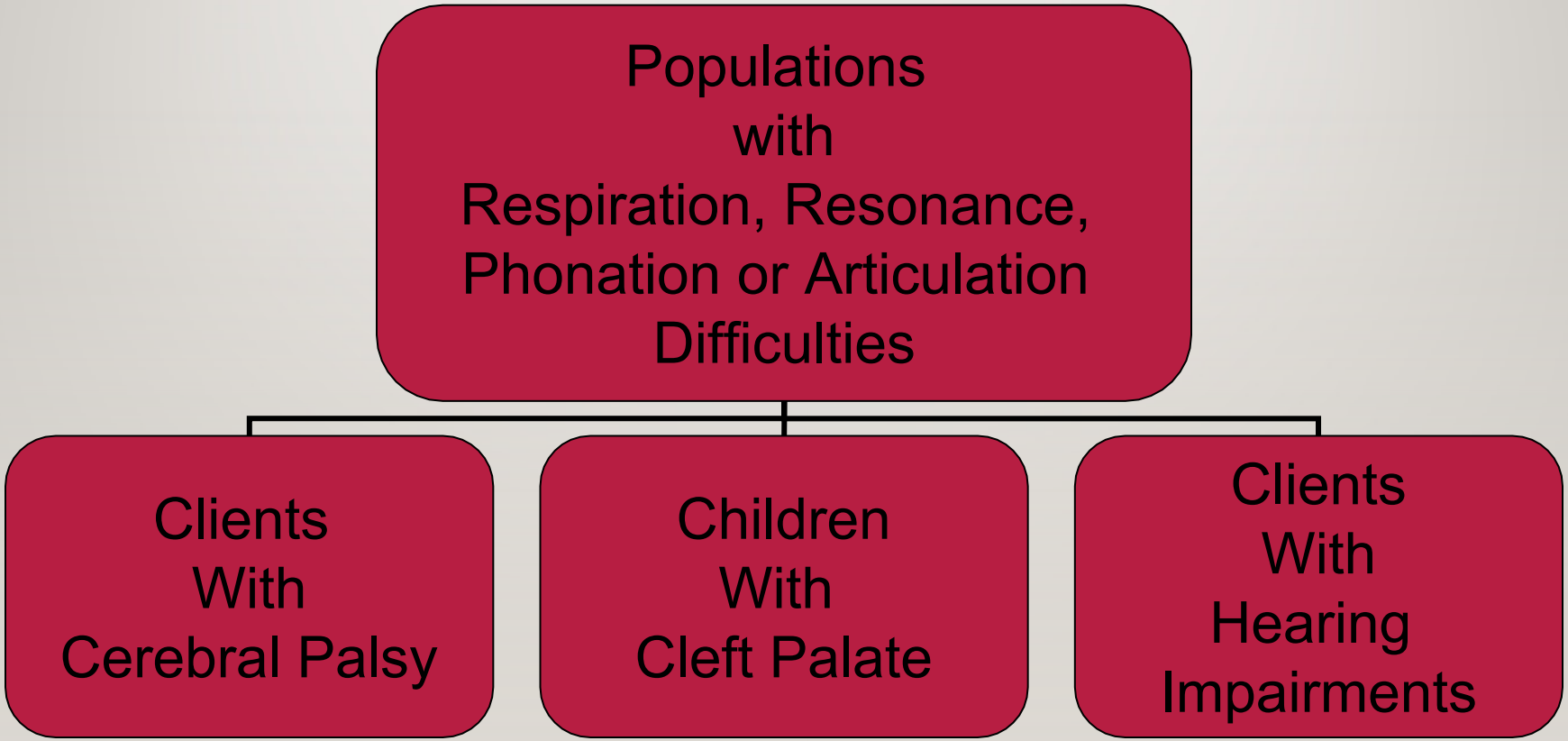
- Hearing loss
- Oral structure variables
  - Ankyloglossia (tongue tie)
    - Research indicates little effect on artic
  - Dental Deviations
    - Children with malocclusions have a misalignment of the mandible and maxilla
  - Orafacial myofunctional disorders (tongue thrust)
    - Causes errors in /s,z/, esh, ezh, / ch/, and /j/
    - Causes errors in tip dental sounds /t, d, l, n/

Organically Based Disorders

- Neuropathologies
  - Dysarthria
    - Common articulatory patterns
      - Voicing errors occur; especially devoicing of voiced sounds
      - Bilabial and velar sounds are easier than:
        - Alveolar fricatives and affricates, labiodentals fricatives, and palatal liquids
      - Stops, glides, and nasals are easier than:
        - Fricatives, affricates, and liquids
      - Treatment is very repetitive and structured; involves increasing muscle tone and strength, increasing range and rate of motion (these affect intelligibility)
      - Treatment involves intensive and systemic drill, modeling, phonetic placement, and emphasis on accuracy
      - Compensatory strategies (prosthetic devices) are often used to assist with communication
- Apraxia

Organically Based Disorders

- Neuropathologies
  - Dysarthria
  - Apraxia
    - Common characteristics:
      - Prolongation of speech sounds
      - Repetition of sounds syllables
      - Most difficulty with consonant clusters followed by fricatives, affricates, stops, and nasals
      - More frequent occurrence of omissions and substitutions
      - Voicing and devoicing errors
      - Difficulty with volitional, oral, non-speech movements
      - Treatment involves extensive drills, stressing sequences of movement involved in speech production, imitation, decreased rate of speech
      - Treatment should be intensive due to slow gains


Populations with Respiration, Resonance, Phonation or Articulation Difficulties
Clients With Cerebral Palsy
Children With Cleft Palate
Clients With Hearing Impairments

Children with Cerebral Palsy

- Degree of neuromotor involvement has a direct bearing on the degree of communicative impairment
  - Various types of dysarthria
- Speech is characterized as jerky, effortful, labored, and irregular
- Monotone or monoloudness
- Slow diadochokinetic syllable rates
- Predominance of omissions over substitutions or distortions.

Children with Cerebral Palsy Cont.

- Difficulty phonating or prolonging sounds
- Significant difficulty with tongue tip sounds
  - Esp. with spastic or rigid CP
- Less articulate speech is connected productions than in single words
- Difficulty of sounds in word-final position
- Phonological processes such as:
  - Cluster reduction, stopping, depalatization, fronting, and gliding

Children with Cleft Palate

- Greater difficulty with voiced sounds than unvoiced sounds
- Difficulty with sounds that require a buildup of *intraoral pressure*
  - Results in weak production of fricatives, affricates, and stops (pressure consonants)
- Substitute nasal sounds for non-nasal sounds; added nasal resonance may be due to *velopharyngeal inadequacy*
- Audible or inaudible nasal emission while producing voiceless sounds
- Distortion of vowel sounds

Children with Cleft Palate Cont.

- May exhibit reduced speech intelligibility depending on the number and type of articulation errors
- May exhibit *compensatory errors*; sound substitutions made in an attempt to remedy inadequate closure of the VP mechanism
  - Substitutions of non- English sounds made with posterior movement of the tongue
  - Substitution of glottal stops for stop consonants
  - Substitution of velar fricatives for velar stops

Speech in Children with Hearing Loss

- Omit final consonants and consonant clusters
- Omit /s/ across word positions
- Omission of initial consonants
- Substitution of voiced for voiceless consonants
- Substitution of nasal for oral consonants
- Distortion of sounds, especially stops and fricatives
- Vowel substitutions

Speech in Children with Hearing Loss Cont.

- Vowel substitutions
- Imprecise production of vowels
- Increased duration of vowels
- Breathiness before production of vowels
- Addition of sounds, especially an intrusive schwa between consonants in blends

EFFECTS OF HEARING LOSS ON ARTICULATION DEVELOPMENT

- **Slight** (16-25 dB HL)- No noticeable difficulty in relatively quiet listening environments
- **Mild** (26-40 dB HL)- Occasional difficulty with voiceless consonants; vowels and voiced consonants generally intact
- **Moderate** (41-70 dB HL)- Some difficulty in consonant production with additional confusion of voiced/voiceless consonants and omission of consonant blends

Effects of Hearing Loss on Articulation Development

- **Severe** (71-90dB HL)- Significant difficulty in consonant production with additional confusion of voiced/voiceless consonants and omission of consonant blends

- **Profound** (91 dB HL or greater)- Global speech production impairment with the addition of neutralization (schwa), substitution, addition, and nasalization of vowels as well as he omission of initial consonants

Anatomy and Physiology

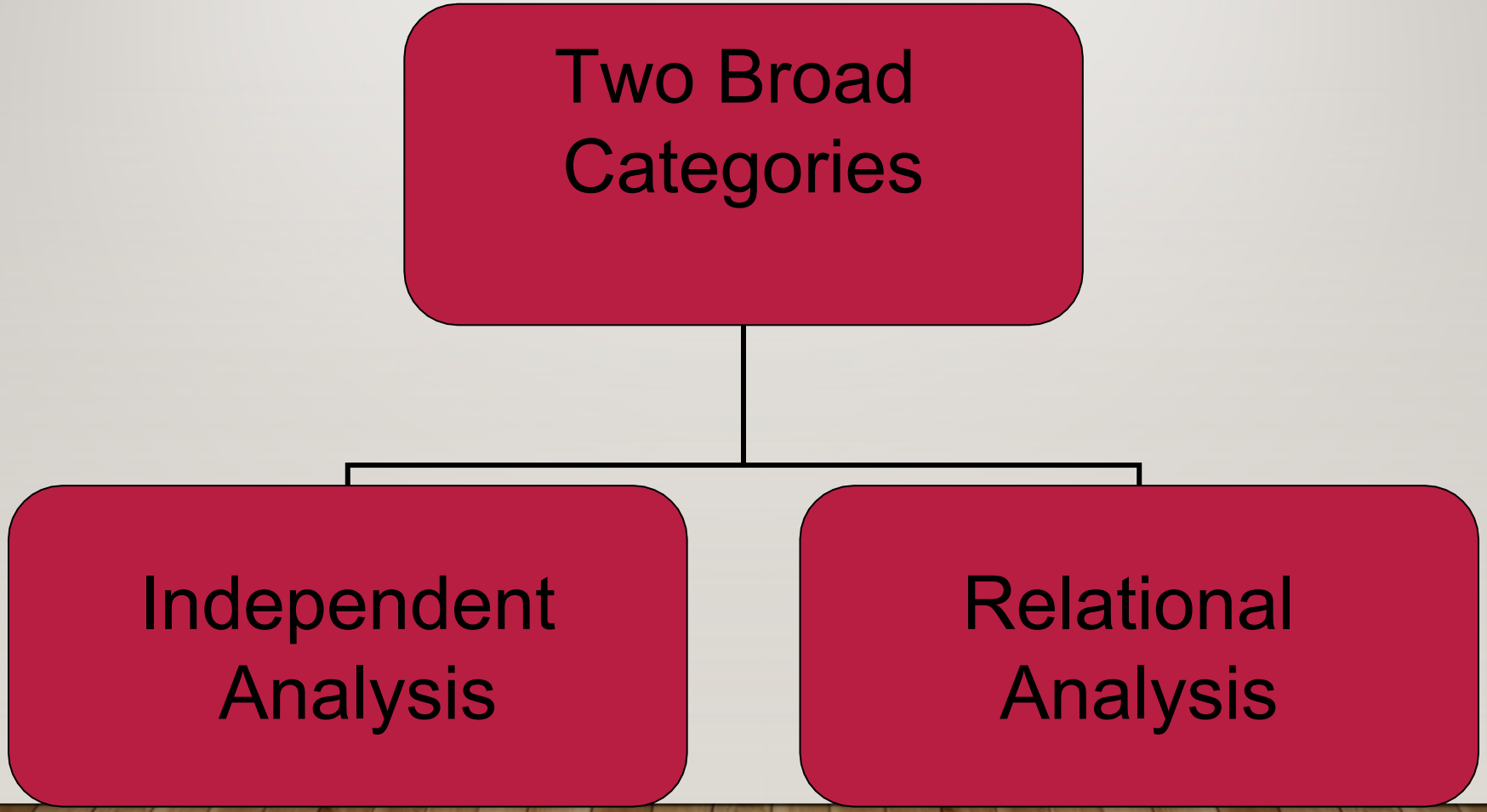
- Respiration
  - Consists of lungs, diaphragm, rib cage, airway, and other structures
  - Inhalation and exhalation are necessary components
- Phonation
  - Air travels upward from the lungs through the airway
  - Vocal fold vibration create phonation
- Resonation
  - Air continues to travel upward past the level of the vocal folds
  - Resonating bodies modify sound produced by another source (e.g. vocal folds, mouth, nasal cavity)
- Articulation
  - Production of speech sounds

Typical Articulation Development and Assessment

Why is this important?

Knowing developmental milestones help determine delay/deviance, type of assessment to administer and course of treatment

SCORING & ANALYZING ASSESSMENT DATA



Discussed in more detail as we go along!

ARTICULATION DEVELOPMENT (0-12 MONTHS)

- Through babbling and vocalizations, infants practice the speech mechanism
- This babbling creates a loop between speech perception and speech production
- The infant learns a stock of sounds that can be used to make their first words.

Babbling creates a loop between speech perception and production.

INFANT DEVELOPMENT: PERCEPTION AND PRODUCTION

- PERCEPTION
- Research methods on infant perception:
  - High Amplitude Sucking
  - Visually Reinforced Head Turn
- Research reveals:
  - 4 – 17 week old infants can discriminate between the various vowels
  - 2-8 month old infants can discriminate between consonant + vowel /a/
  - Infants under 1 year of age are able to distinguish sounds that are not used in their language

INFANT DEVELOPMENT: PERCEPTION AND PRODUCTION

- PRODUCTION
- Structural differences (e.g. immaturity) constrains infant's productions
- Vocalizations divided into two categories:
  - Reflexive vocalizations
    - Automatic responses; burping, crying, coughing and hiccuping
  - Nonreflexive vocalizations
    - Voluntary productions; cooing, babbling and playful screaming

INFANT DEVELOPMENT: STAGES OF INFANT VOCAL DEVELOPMENT

- Stage 1: Phonation Stage (Birth to 1 month)
- Stage 2: Cooing and Gooing Stage (2 – 3 months)
- Stage 3: Exploration – Expansion Stage (4 – 6 months)
- Stage 4: Canonical or Reduplicated Babbling Stage (6 – 8 months)
- Stage 5: Variegated or Nonreduplicated Babbling Stage (8 Months – 1 year)

INFANT DEVELOPMENT: STAGES OF INFANT VOCAL DEVELOPMENT

- Stage 1: Phonation Stage (Birth to 1 month)
  - Crying, fussing, etc.
  - Speech like sounds are rare
  - Vocalizations resembling vowels occur; termed *quasi-resonant nuclei*
- Stage 2: Cooing and Gooing Stage (2 – 3 months)
  - Sounds are similar to back vowels and consonants (velars and uvulars); VC and CV
  - Syllables sequences considered *primitive* because of the irregular timing of the segments

Infant Development: Stages of Infant Vocal Development

- Stage 3: Exploration – Expansion Stage (4 – 6 months)
  - Better control of laryngeal and articulation mechanisms
  - Squeals, growls, raspberries and friction noises
  - Vowels have better resonance; *fully resonant nuclei*
  - Marginal babbling appears
- Stage 4: Canonical or Reduplicated Babbling Stage (6 – 8 months)
  - Adult-like timing for closure and opening
  - Production repertoire may consist of stops, nasals, glides and a few lax vowels
  - [baba], [kaka], [dada] may resemble true word
    - No intention, not real word

Infant Development: Stages of Infant Vocal Development

- <u>Stage 5:</u> Variegated or Nonreduplicated Babbling Stage (8 Months to 1 year)
  - Intonation patterns take on adult-like quality
  - Vowel and consonant repertoire increases
  - [madaga], [putika], and [tikadi]
- Sound classes produced:
  - Oral stops
  - Nasals
  - Glides
  - Occasionally a single fricative

ARTICULATION DEVELOPMENT (TODDLERS 12 – 24 MONTHS)

- Overlap of a few weeks to several months in the use of babbled and meaningful productions
- Protowords – babbling like sounds used meaningfully and consistently; absent of recognizable adult model
  - AKA – phonetically consistent forms, vocables, and quasi-words
- Sound classes produced:
  - Oral stops
  - Nasals
  - Glides
  - Occasionally a single fricative

Look at This Question :

Reduplicated babbling typically is well established by _____?

a. 7 months

b. 2 months

c. 18 months

d. 12 months

e. none of the above

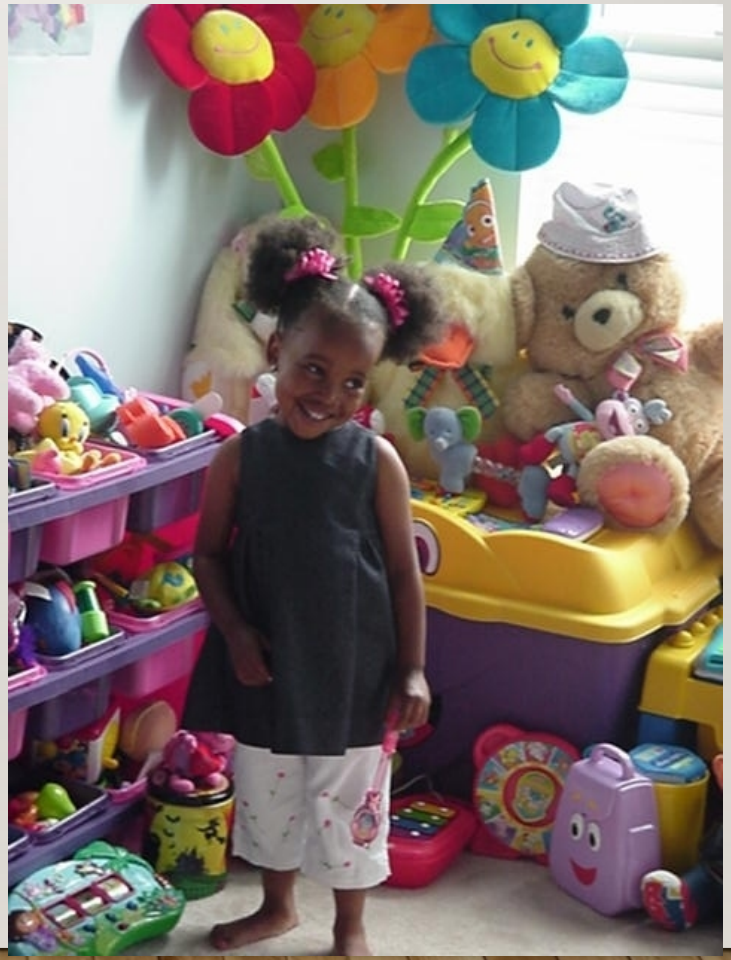
The answer is A

ASSESSING TODDLERS ARTICULATION SKILLS

- Produces so few sounds correctly
- **Independent analysis**
- Describe their capacity
- SLP uses phonetic inventory analysis
  - Show sounds the child produces
  - Not looking at correct production

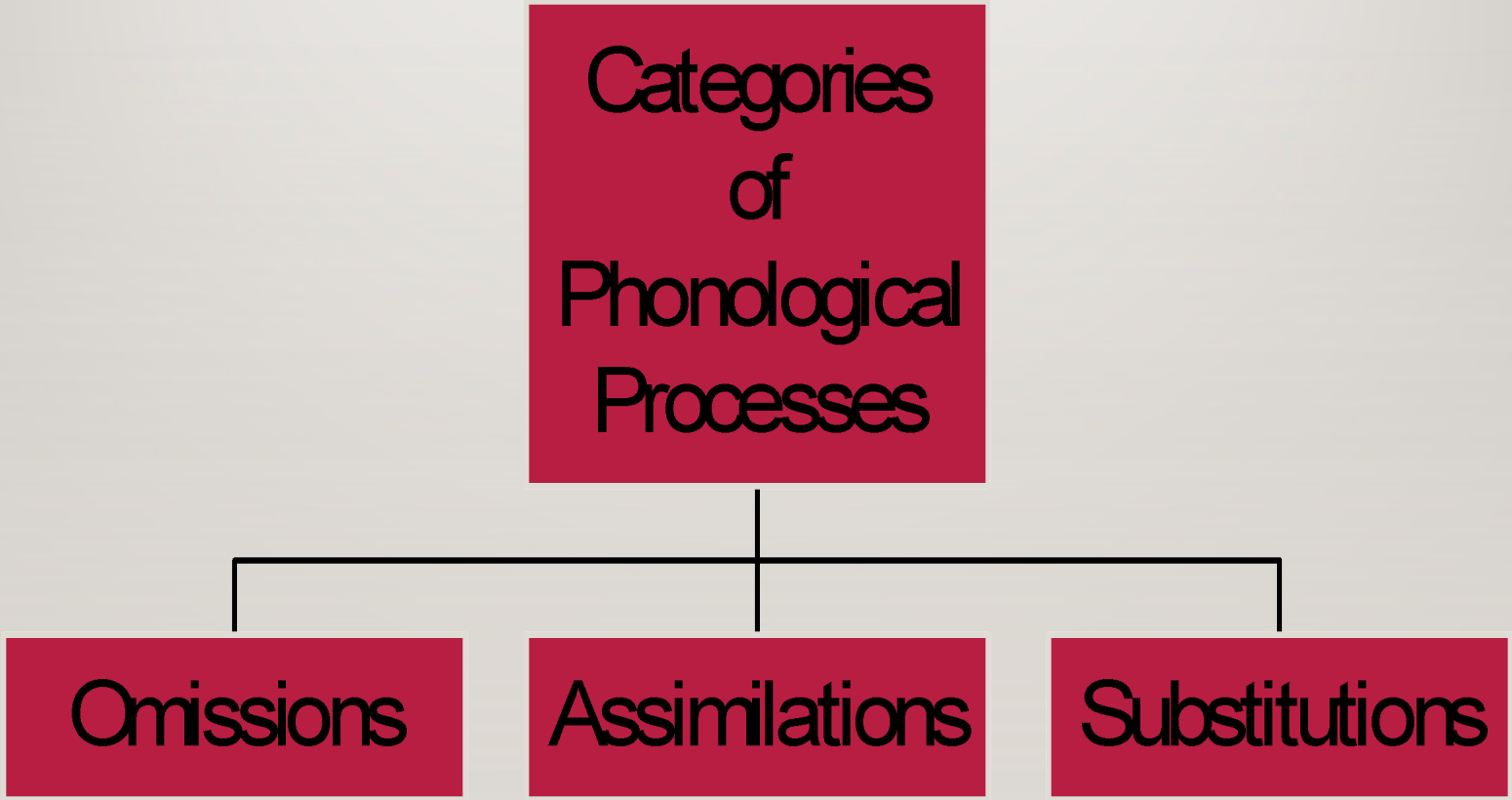
THE TODDLER BECOMES A PRESCHOOLER PRESCHOOL YEARS (2 – 5 YEARS OLD)

- Is able to produce numerous sounds
- Has difficulty with entire classes of sounds such as:
  - Glides
  - Velars
- Uses phonological processes such as:
  - Reduplication
  - Final Consonant Deletion
  - Cluster Reduction



ARTICULATION ASSESSMENT PRESCHOOL YEARS (2 – 5 YEARS OLD)

- **Relational analysis**
  - Comparison to the adult model
- **Phonological Process analysis**
  - A relational analysis that describes the sound class errors
    - *Assessment of Phonological Processes – Revised (APP-R)* by Hodson
    - *Khan-Lewis Phonological Analysis, Second Edition (KLPA-2)* by Khan and Lewis (2002)
    - *Bankson Bernthal Test of Phonology (BBTOP)* by Bankson and Bernthal (1990)


Categories of Phonological Processes
Omissions
Assimilations
Substitutions

Categories of Phonological Processes

- Whole word processes
  - Assimilation – results from modification of one phoneme to match the characteristics of a neighboring phoneme
  - Reduction – involves consonant or syllable deletion
  - Unstressed syllable deletion
    - Reduction process
  - Final consonant deletion
    - Reduction
  - Reduplication
    - Assimilatory
  - Consonant harmony
    - Assimilatory
  - Consonant cluster simplification
    - Reduction
- Segment change processes
  - Changes in specific segments or segment types occur regardless of syllable or word position
  - Velar fronting
  - Backing
  - Stopping
  - Gliding

Make a mental note…

- There are numerous ways of classifying phonological process
  - Omissions
    - Syllable reduction
    - Consonant cluster reduction
  - Assimilations
    - Nasal
    - Labial
    - Velar
  - Substitutions
    - Epenthesis
    - Stopping
    - Backing
    - Gliding

ARTICULATION ASSESSMENT CONT. PRESCHOOL YEARS (2 – 5 YEARS OLD)

- Transcribe the entire word due to assimilations
- Use both standardized and nonstandardized assessments
- Compare to developmental age norms
- Compare to relative frequency of consonants
    - Think about the Wheel of Fortune

ARTICULATION ASSESSMENT CONT. PRESCHOOL YEARS (2 – 5 YEARS OLD)

- Intelligibility analysis of speech
  - How understandable is the child?
  - *Preschool Speech Intelligibility Measure (Wilcox & Morris, 1999)*
- Severity analysis of speech
  - How disordered or deviant is the speech?
  - Percent Consonant Correct (PCC) (Shriberg & Kwiatkowski, 1982)
- Dialect comparison
- Analysis of better ability
  - Determines if the child has production capacity
    - **Stimulability
      - Refers to the child's ability to imitate the clinician's model. Researchers disagree about the prognostic value of stimulability.
    - Key words and key environments

THE PRESCHOOLER BECOMES A SCHOOL AGE CHILD

ARTICULATION ASSESSMENT SCHOOL AGE CHILDREN

- Less motivation to transcribe entire word
- Standardized tests
- Intelligibility analysis
- Severity analysis
- Dialect analysis
- Production Capacity
  - Phonetic Placement and Shaping

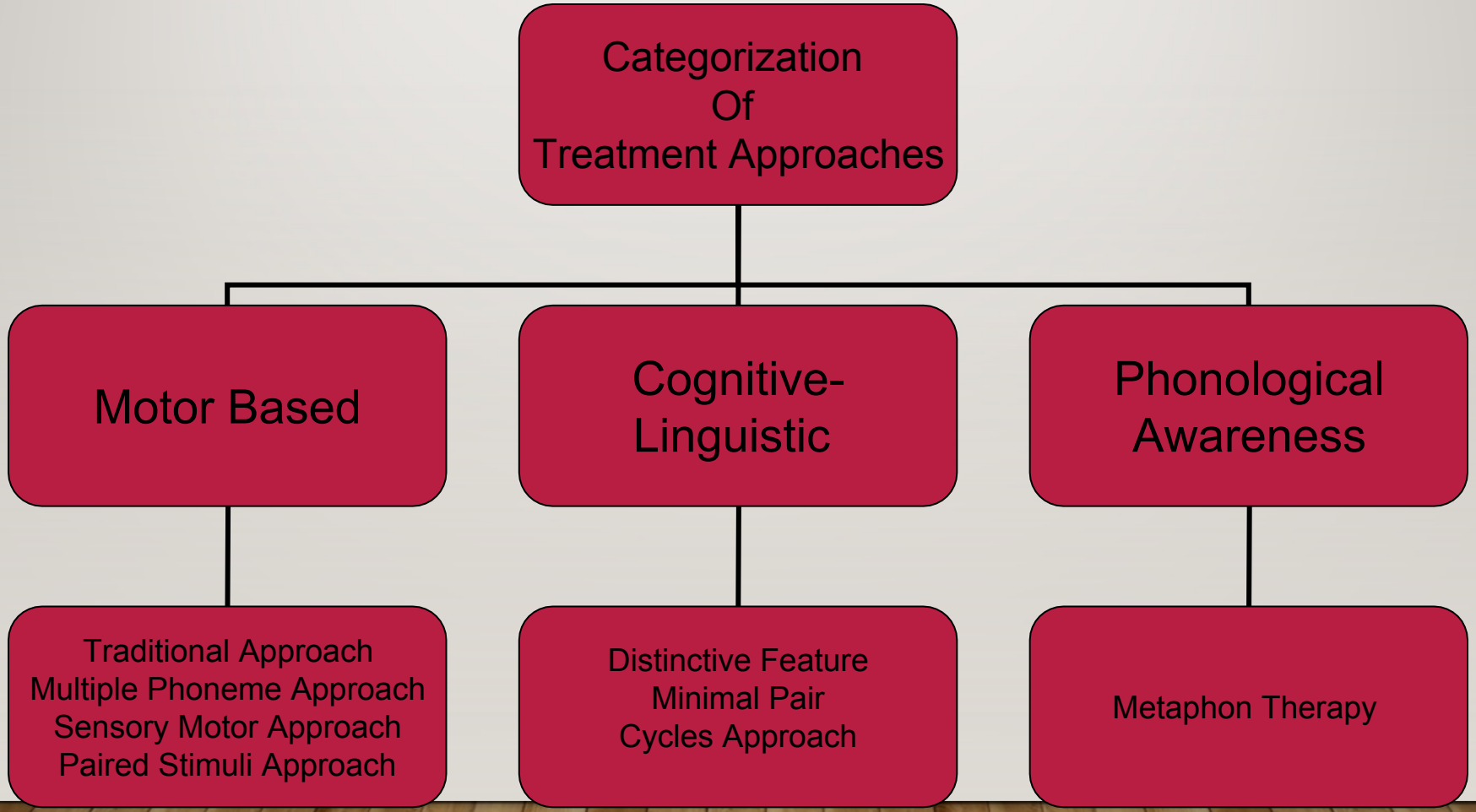
Treatment Approaches and Techniques

Why is this important?

Knowing a variety of treatment approaches help provide individualized efficacious therapy

TREATMENT CONSIDERATIONS

- Most clinicians use a *multimodal approach* to treatment
  - Visual, auditory and kinesthetic
- Clinicians must decide between *training deep* or *training broad*
  - Deep – involves one or several sounds being treated intensively
  - Broad – treating several sounds simultaneously; practice is limited; child receives practice on a wide (broad) range of sounds
- The concept of *communication potency* looks at how functional words are within a child's communication environment


Categorization
Of
Treatment Approaches
Motor Based
Cognitive-
Linguistic
Phonological
Awareness
Traditional Approach
Multiple Phoneme Approach
Sensory Motor Approach
Paired Stimuli Approach
Distinctive Feature
Minimal Pair
Cycles Approach
Metaphon Therapy

UNDERLYING PRINCIPLES TO TREATMENT APPROACHES

- Motor Based Approach
  - **General Principle**: articulation errors are viewed as resulting from motor difficulties and faulty perceptual skills
    - Describes errors in terms of substitutions, distortions and omissions
    - Focuses on individual sounds
- Cognitive-Linguistic Approach
  - **General Principle:** primary goal is to establish phonological rules in a client's repertoire
    - Focuses on relationship between individual sounds
- Phonological Awareness Approach
  - **General Principle:** primary goal is to heighten the client's awareness and ability to manipulate and think about the structure of language and sounds
    - Focuses on increasing awareness of the sound structure of language; describing them as long vs short; front vs back

MOTOR BASED APPROACHES

- Traditional Approach (Van Riper)
  - Focused on phonetic placement, auditory discrimination/perceptual training and drill-like repetition
- Sensory Motor Approach (McDonald)
  - Advocates administering a deep test to determine difficulties/strengths with various phonetic environments
  - Principles of coarticulation are important
- Multiple Phoneme Approach
- Paired Stimuli Approach

MOTOR BASED APPROACHES

- Traditional Approach (Van Riper)
- Sensory Motor Approach (McDonald)
- Multiple Phoneme Approach
  - Emphasizes that all errors should be targeted in all sessions
  - Appropriate for children with six or more errors
- Paired Stimuli Approach
  - Based on operant reinforcement contingencies
  - Identified *key word* is used to teach the production of sounds in other contexts

COGNITIVE LINGUISTIC APPROACHES

- Distinctive Features
  - Assumes that teaching a feature in the context of a few sounds will result in generalization production
    - Across that class of sounds
- Minimal Pair Contrast Approach
  - Uses pairs of words that differ by only one feature
  - Word pairs are used so the child learns *semantic* as well as *motoric* differences between the phonemes
- Phonological Process Approach
  - Cycles Approach (Hodson & Paden)
    - Designed to treat children with multiple misarticulations and highly unintelligible speech
    - Error patterns are targeted for remediation based on stimulability, intelligibility and percentage of occurrence (40% or greater)

Phonological Awareness Approach

- Metaphon Therapy
  - Grew out of the dissatisfaction of the minimal pair approach
  - Based on metalinguistic skills
  - It focuses on feature differences between sounds to help children develop an awareness that sounds can be classified by characteristics such as place (front-back), duration (long-short) and others.

TREATMENT TECHNIQUES

- Preschoolers
  - Facilitative techniques
  - Indirect instruction
    - Because of their immature attention and cognitive abilities
- School Age
  - Direct instruction
    - Phonetic placement
    - Shaping
    - Useful for later acquiring, difficult sounds like /s,l, r/

Adults who Speak English as a Foreign Language (EFL)

Why is this important?

The U.S. is continually evolving and the SLP may be called upon to provide accent training.

Adults who Speak EFL

- Principles of Assessment
  - The client's first language may impact English so greatly that their intelligibility is reduced.
  - These clients may wish to enhance their communication in English
  - Assessment procedures:
    - Make a high quality recording of the client's conversational speech and transcribe the recording thoroughly. Determine PCC and PVC.
    - Have unfamiliar listener rate the percent of intelligible words.
    - List the client's speech sound errors completely, using a phonemic inventory for both consonants and vowels.
    - Determine client's speaking rate.
    - Assess word-level and sentence level stress and prosody.
    - Perform an oral peripheral examination.
  - Administer an instrument such as the Proficiency in Oral English Communication: An Assessment of Accented Speech (Sikorski, 1997)

Adults who Speak EFL

- Principles of Accent Training
  1. The term accent training is the preferred term
  2. Determine the factors which contribute most to reduced intelligibility.
     - E.g. – if the client's speaking voice is too soft, target increasing the volume.
  3. Select vowels and consonants the client rarely produces correctly in English and that contribute to reduced intelligibility.
     - E.g. – many Asian clients may have difficulty with the /r/ phoneme
  4. Use culturally sensitive training activities
  5. Encourage client to listen to English tv, radio or both
  6. Treatment should be multimodal; use visual cues, tactile cues and auditory cues.
     - The use of a VisiPitch is helpful because of the visual and auditory feedback.

STRATEGY QUESTION 3

- *The question posed relates to working with an English as a Foreign Language Client (client's name--Dr. Kim Lee)…The answer choices are:*

a. give Dr. Lee standardized language and articulation tests in English because it is clear that Dr. Lee has a communication disorder that needs to be remediated, and these tests will spotlight Dr. Lee's weaknesses.

b. tell Dr. Lee that her accent makes her special, and that no accent training is necessary because Dr. Lee's accent is "a unique and beautiful part of who you are."

c. tell Dr. Lee that you will assess her English intelligibility using an accent assessment instrument as well as analysis of a conversational sample; if she would like to participate in elective accent training to become more intelligible, such training is available to her.

d. tell Dr. Lee to listen to more English tv and radio, and come back in 6 months if her {student} evaluations have not improved.

e. tell Dr. Lee that she has a communication disorder in both Korean and English, and that she will need intensive therapy to remediate this disorder.

MUCH SUCCESS TO YOU!

DURING YOUR DOWN TIME, SIMPLY MEMORIZING THE CONSONANT/VOWEL CLASSIFICATIONS AND THE PHONOLOGICAL PROCESS TERMS WILL PROVE VERY BENEFICIAL. TRUST ME!