SOUND EVIDENCE: Assessment and Treatment of SSD in Children

Part I: Analysis and Target Selection

A. Lynn Williams, Ph.D., CCC-SLP
College of Clinical and Rehabilitative Health Sciences
East Tennessee State University

Disclosures

Financial:

- Received honorarium and registration waiver from SHAA
- Receive royalties from Brookes Publishing and EBS Healthcare

Nonfinancial:

- Author of one of the analyses, target selection approaches, and studied interventions
- Copyright holder of the Phonological Intervention Taxonomy
- Some slides used with permission from Williams & Storkel (2022)

Research Team

Learner Objectives: Part I

Make it ACAP!

01 Complete phonological analyses of disordered speech using an error analysis (PVM) and a systemic analysis (SPACS)

02 Compare the descriptive and explanatory power of two phonological analyses of one child's speech

03 Compare and contrast three different target selection approaches for children with SSD

1

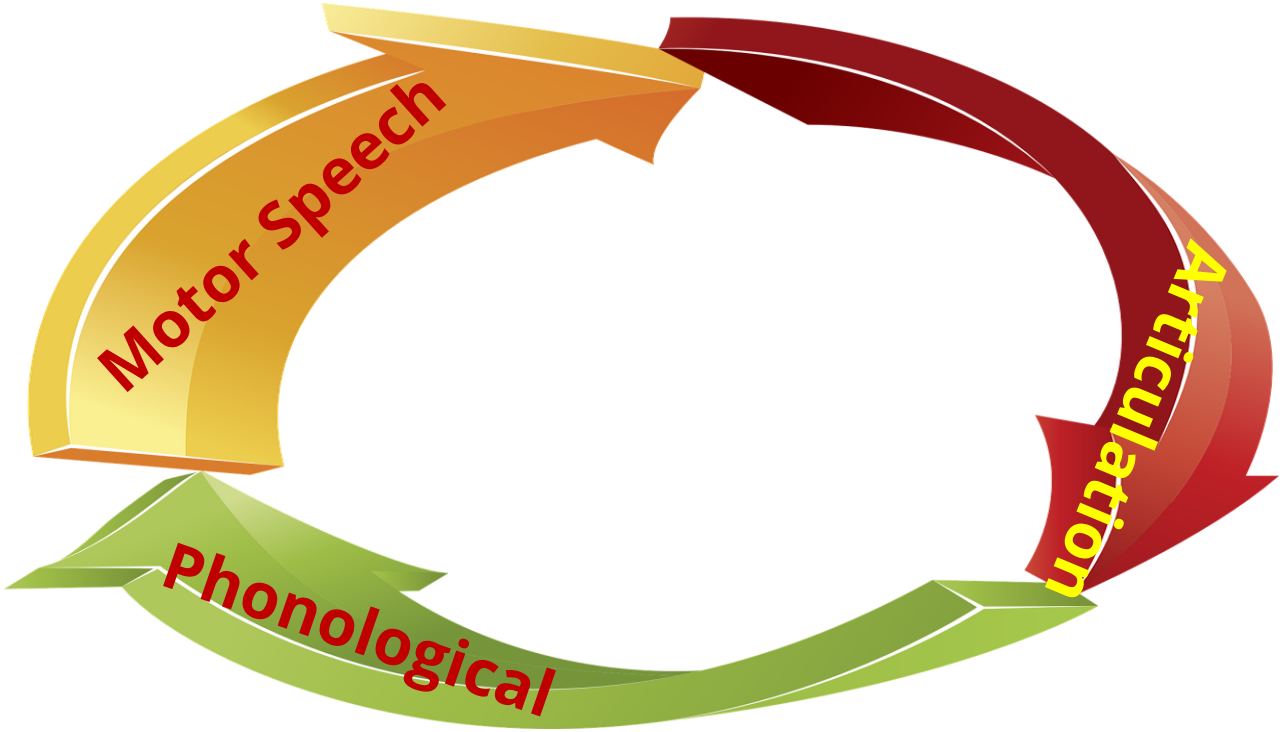
What is the population of children with SSD?

Diversity and Definition of SSD

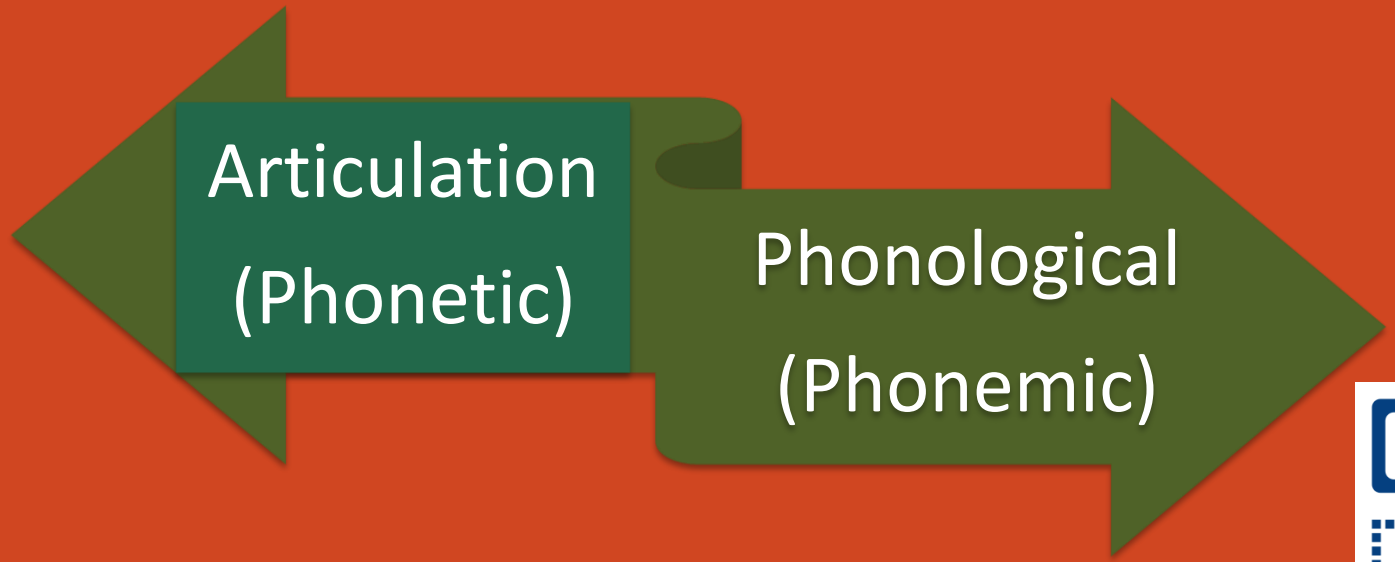
Defining Speech Sound Disorders

- Speech Sound Disorders (SSD) in children is a complex neurodevelopmental disorder that is quite diverse and ranges in both severity and type of disorder (Shriberg, 2010)
    - SSDs include articulatory, phonological, and motor speech disorders and have been identified as one of the most prevalent types of communication impairment among children.
    - Further, SSD can co-occur with other impairments of communication, such as language impairment, literacy difficulties, or fluency

Interaction of Phonetic and Phonemic Factors



SSD: A Spectrum Approach



Ingram, Williams, & Scherer (2018)

Ingram, Williams & Scherer (2018) Chapter

Question 1

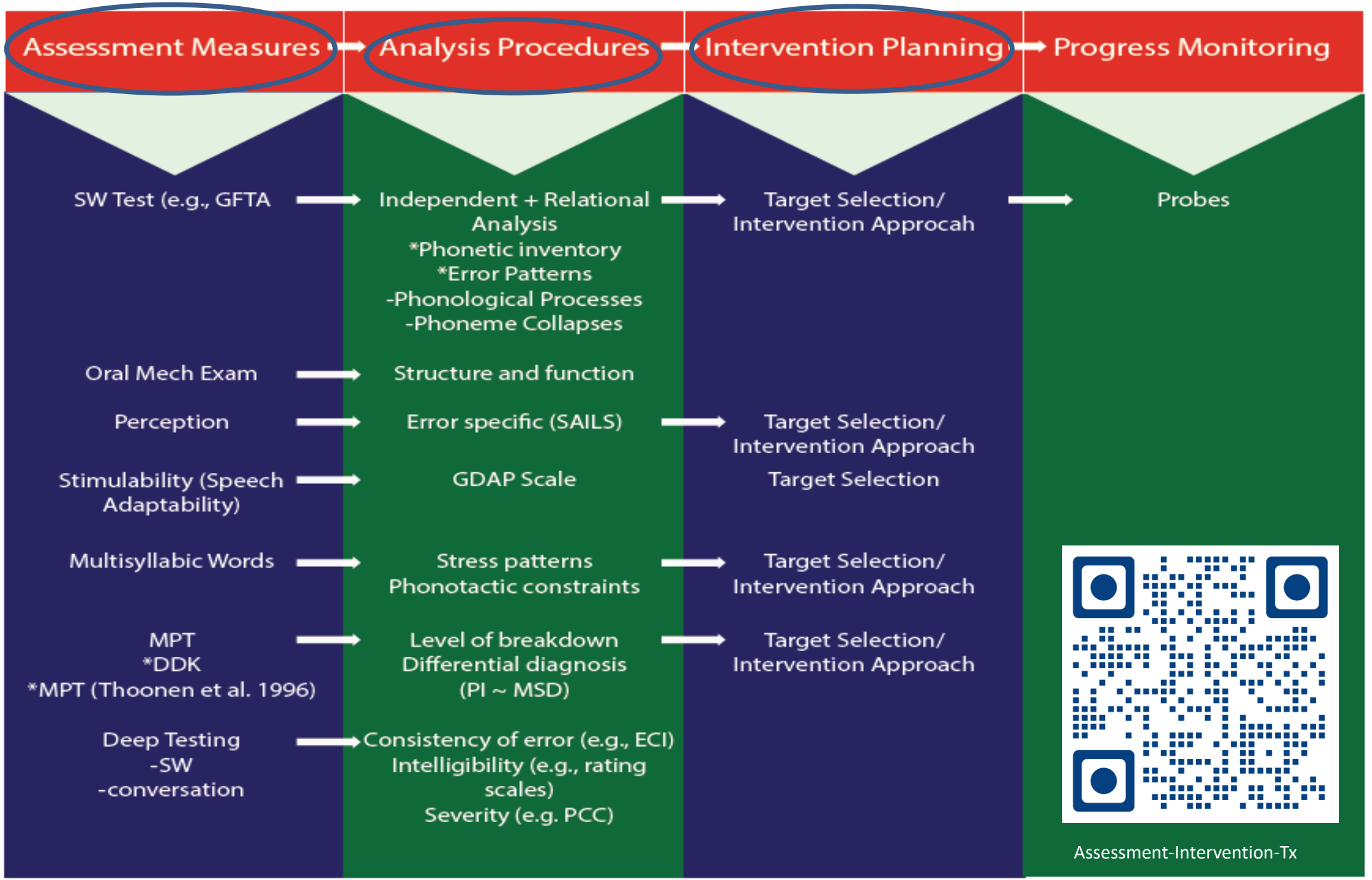
- SSD are:
  a. Phonological
  b. Articulatory
  c. Both

Classification of SSD (Dodd)

Linguistic Profile	Characteristics	Prevalence
Phonological Delay	Phonological rules or processes are evident and are characteristic of younger TD children	47%
Consistent Deviant Phonological Disorder	Presence of both unusual errors and typical errors, which signal the child has impaired understanding of the ambient phonological system	30%
Inconsistent Deviant Phonological Disorder	Exhibit delayed and non-developmental error types and variability of production of single word tokens (≥ 40%)	12%
Articulation Disorder	Unable to produce particular perceptually acceptable phones	11%
Childhood Apraxia of Speech (CAS)	Deviant surface speech production patterns that may sound similar to Incon Dev Phono Dis, but difference is the proposed level of breakdown and symptomatology	<1%

2

Assessment ≠ Analysis



Assessment-Intervention-Tx

Linking Phonological Development to Assessment ★★

Toddlers (18-36 months)		Preschoolers (3-5 years)		School-age (6-11 years)	
First Words Stage		Phonemic Development Stage		Stabilization Stage	
Whole-word strategy	• Age-appropriate vocabulary • Age-appropriate elicitation • Broad-based (not phoneme specific) • **PEEPS or TPT**	**Rule-based strategy**	• Representative sample of consonants in 3-word positions • Sufficient number of exemplars to assess consistency • **Number of standardized artic and/or phono tests**	**Stabilization of variable productions**	• Same as for preschoolers • May need to add **poly-syllable test**
Lexical-phonological link		**"order in disorder"**		**Acquisition of later sounds/ clusters**	
Variability					
Active selection/ avoidance					

Key Take-Away

One assessment does not fit all ages/developmental stages

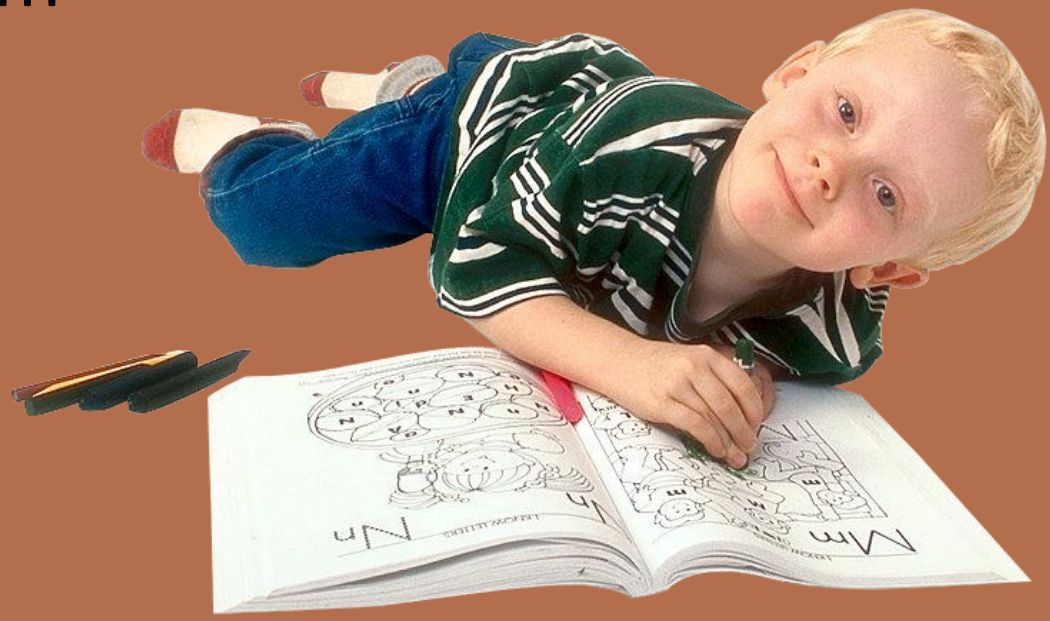
- Select assessments that are appropriate for the age and type of SSD

3

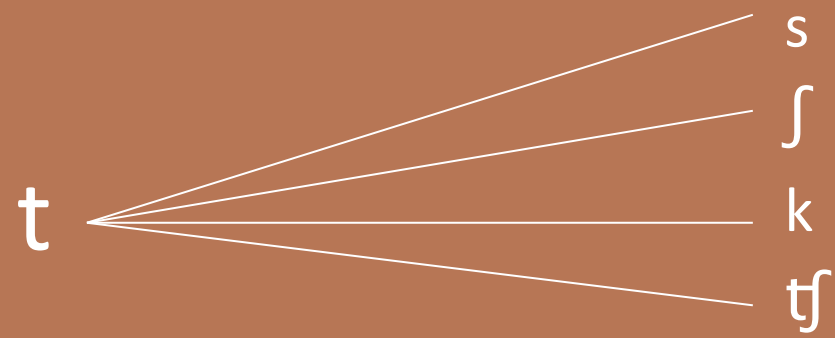
Analysis of SSD

Characteristics of a Phonological Disability

Child's system is smaller than the adult system
One-to-many correspondence between child:
adult systems



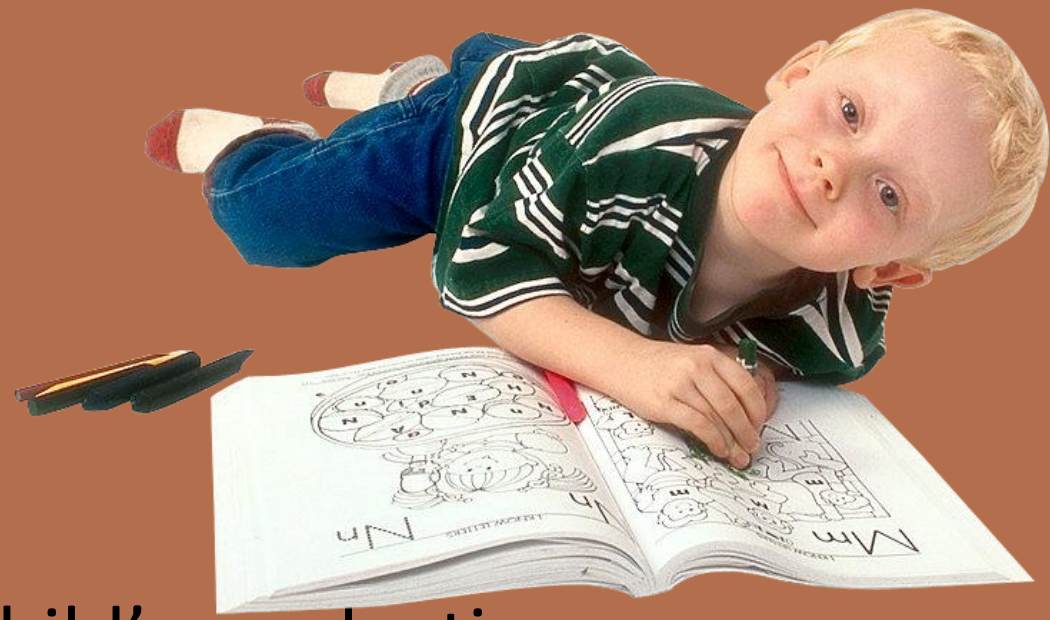
One To Many Correspondence



Characteristics of a Phonological Disability

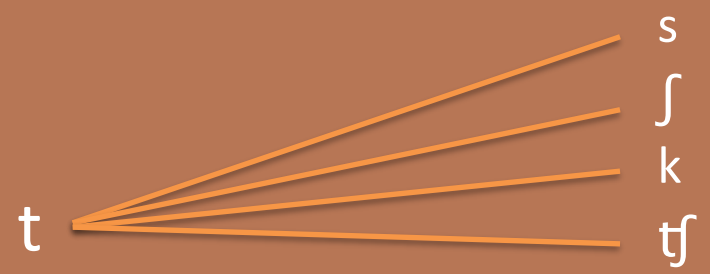
Child's system is smaller than the adult system

One-to-many correspondence
between child:
adult systems



Relationship
between the
phonetic properties
of adult target and child's production

Phonetic Resemblance between Targets and Child's Production



voiceless

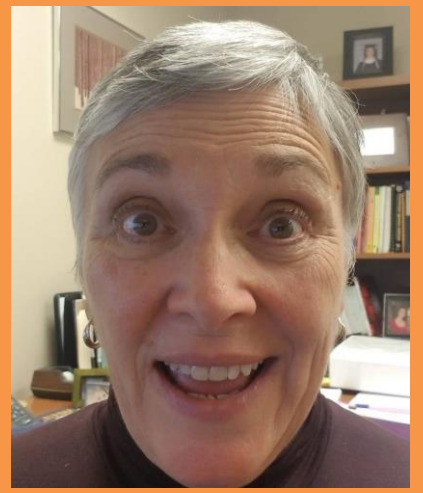
1:4 phoneme collapse

Phonetic Resemblance Between Targets and Child's Production

voiceless obstruents

Question 2

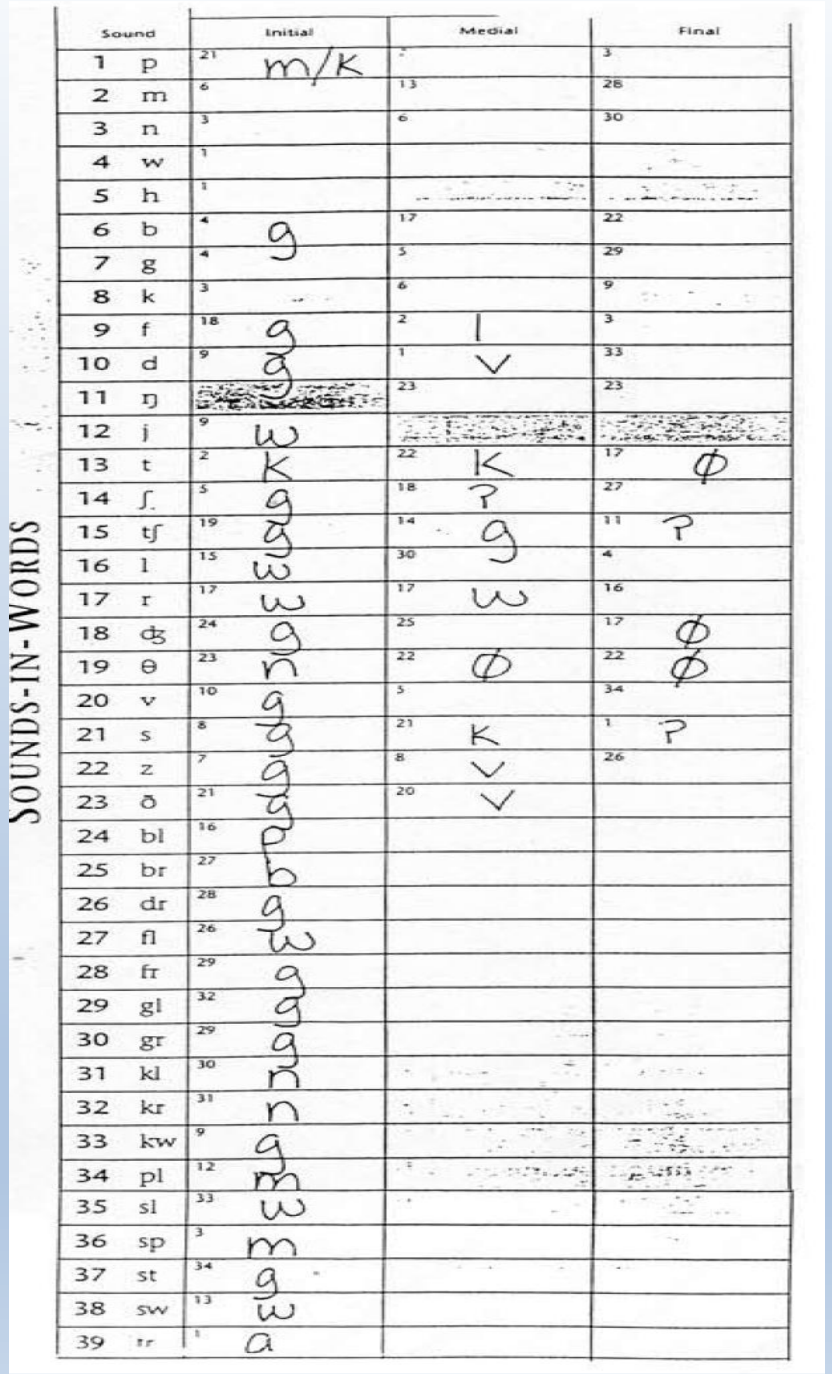
- Which one does not fit in describing phonological impairments?
  a. Logical
  b. Random
  c. Amazing



GFTA-2 Data Set

(Adam, 4;6)

Adam’s GFTA



SOUNDS-IN-WORDS

	Sound	Initial	Medial	Final
1	p	21 m/K		3
2	m	6	13	28
3	n	3	6	30
4	w	1		
5	h	1		
6	b	4	17	22
7	g	4	5	29
8	k	3	6	9
9	f	18	2	3
10	d	9	1	33
11	ŋ		23	23
12	j	9		
13	t	2 K	22 K	17 ϕ
14	ʃ	5	18 ?	27
15	tʃ	19	14	11 ?
16	l	15	30	4
17	r	17	17	16
18	ʤ	24	25	17 ϕ
19	θ	23	22 ϕ	22 ϕ
20	v	10	5	34
21	s	8	21 K	1 ?
22	z	7	8	26
23	ð	21	20	
24	bl	16		
25	br	27		
26	dr	28		
27	fl	26		
28	fr	29		
29	gl	32		
30	gr	29		
31	kl	30		
32	kr	31		
33	kw	9		
34	pl	12		
35	sl	33		
36	sp	3		
37	st	34		
38	sw	13		
39	tr	1 a		

Adam’s GFTA

Place - Voice - Manner
Error Pattern Analysis

Name: _____

Date: _____

Transcriber: _____

30

	m	n	ŋ	p	b	t	d	k	g	θ	ð	f	v	s	z	ʃ	ʒ	h	tʃ	dʒ	l	r	w	j
#__ Prevocalic																								
V__V Intervocalic																								
__# Postvocalic																								
	Nasals			Stops						Fricatives									Affricates		Liquids		Glides	

nasal clusters	/l/ clusters	/r/ clusters	/w/ clusters	/s/ clusters	Phonetic Inventory	P.V.M. Error Patterns
nt·nd·ndʒ·mp	pl·bl·kl·gl fl·sl	pr·br·tr·dr kr·gr·fr· ʃr·θr	tw dw·kw·gw·sw	sm·sn·sp·st·sk		

PVM Analysis Form

Place - Voice - Manner Error Pattern Analysis

Name: _____

Date: _____

Transcriber: _____

30

	m	n	ŋ	p	b	t	d	k	g	θ	ð	f	v	s	z	ʃ	ʒ	h	tʃ	dʒ	l	r	w	j
#_ Prevocalic				m k																				
V_V Intervocalic				l																				
_# Postvocalic				l																				
	Nasals			Stops						Fricatives									Affricates		Liquids		Glides	

nasal clusters	/l/ clusters	/r/ clusters	/w/ clusters	/s/ clusters	Phonetic Inventory	P.V.M. Error Patterns
	p/bl					
nt·nd·ndʒ·mp	pl·bl·kl·gl fl·sl	pr·br·tr·dr kr·gr·fr· ʃr·θr	tw dw·kw·gw·sw	sm·sn·sp·st·sk		

Place - Voice - Manner Error Pattern Analysis

Name: Adam

Date:

Transcriber: Katharine B.

30

	m	n	ŋ	p	b	t	d	k	g	θ	ð	f	v	s	z	ʃ	ʒ	h	tʃ	dʒ	l	r	w	j
#__ Prevocalic	ı	ı		m k	g	k	g	ı	ı	n	g	g	g	g	g	g		ı	g	g	w	w	ı	w
V_V Intervocalic	ı	ı	ı	ı	ı	k	v	ı	ı	ø	v	ı	ı	k	v	ʔ		ı	g		ı	w	ı	
#__ Postvocalic	ı	ı	ı	ı	ı	ø	ı	ı	ı	ø	ı	ı	ı	ʔ	ı	ı			ʔ	ø	ı	ı		
	Nasals			Stops						Fricatives									Affricates		Liquids		Glides	

nasal clusters	/l/ clusters	/r/ clusters	/w/ clusters	/s/ clusters	Phonetic Inventory	P.V.M. Error Patterns
	p/bl w/fl g/gl n/kl m/pl w/θl	b/br g/dr g/fr g/gr g/tr	g/kw w/sw	m/sp		
nt·nd·ndʒ·mp	pl·bl·kl·gl fl·sl	pr·br·tr·dr kr·gr·fr· ʃr·θr	tw dw·kw·gw·sw	sm·sn·sp·st·sk		

Question 3

- What is the predominant error pattern in Adam's speech?

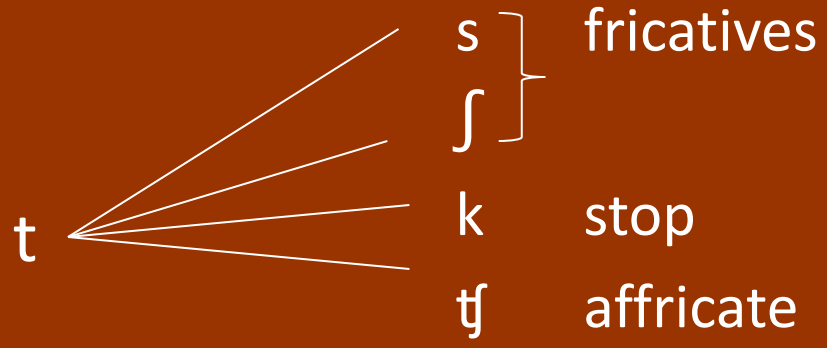
  a. Backing + Stopping + Cluster Reduction
  b. Cluster Reduction and Stopping
  c. Glottal Replacement and Gliding

Question 4

- A PVM Analysis would be appropriate to complete on:

  a. Child with several common errors
  b. Child with distortions
  c. Child with multiple and uncommon errors

Phoneme Collapse

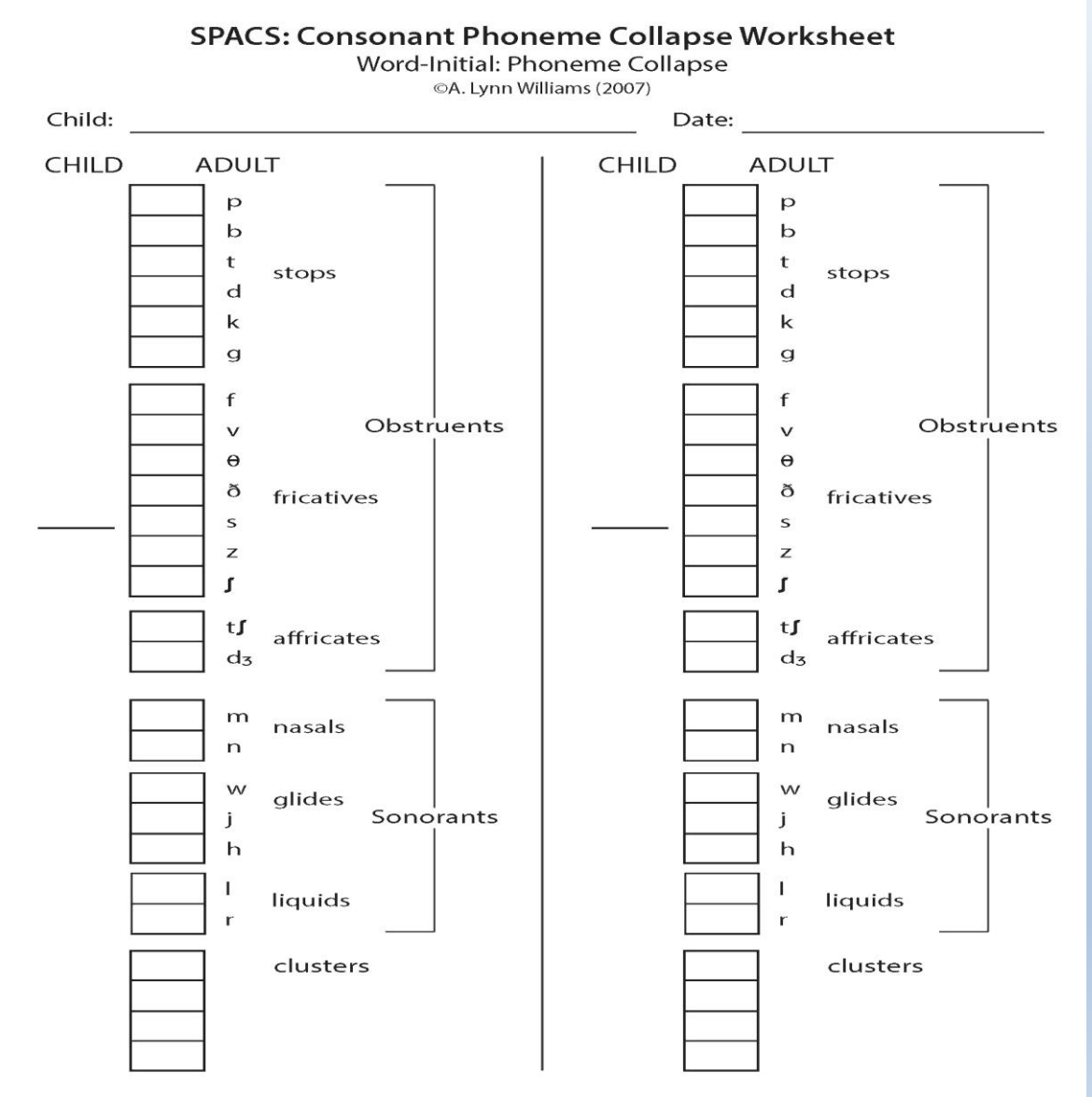


voiceless obstruents

English Consonants Chart

American English Vowels Chart

SPACS: WI Phoneme Collapse



SPACS: Consonant Phoneme Collapse Worksheet

Word-Initial: Phoneme Collapse

©A. Lynn Williams (2007)

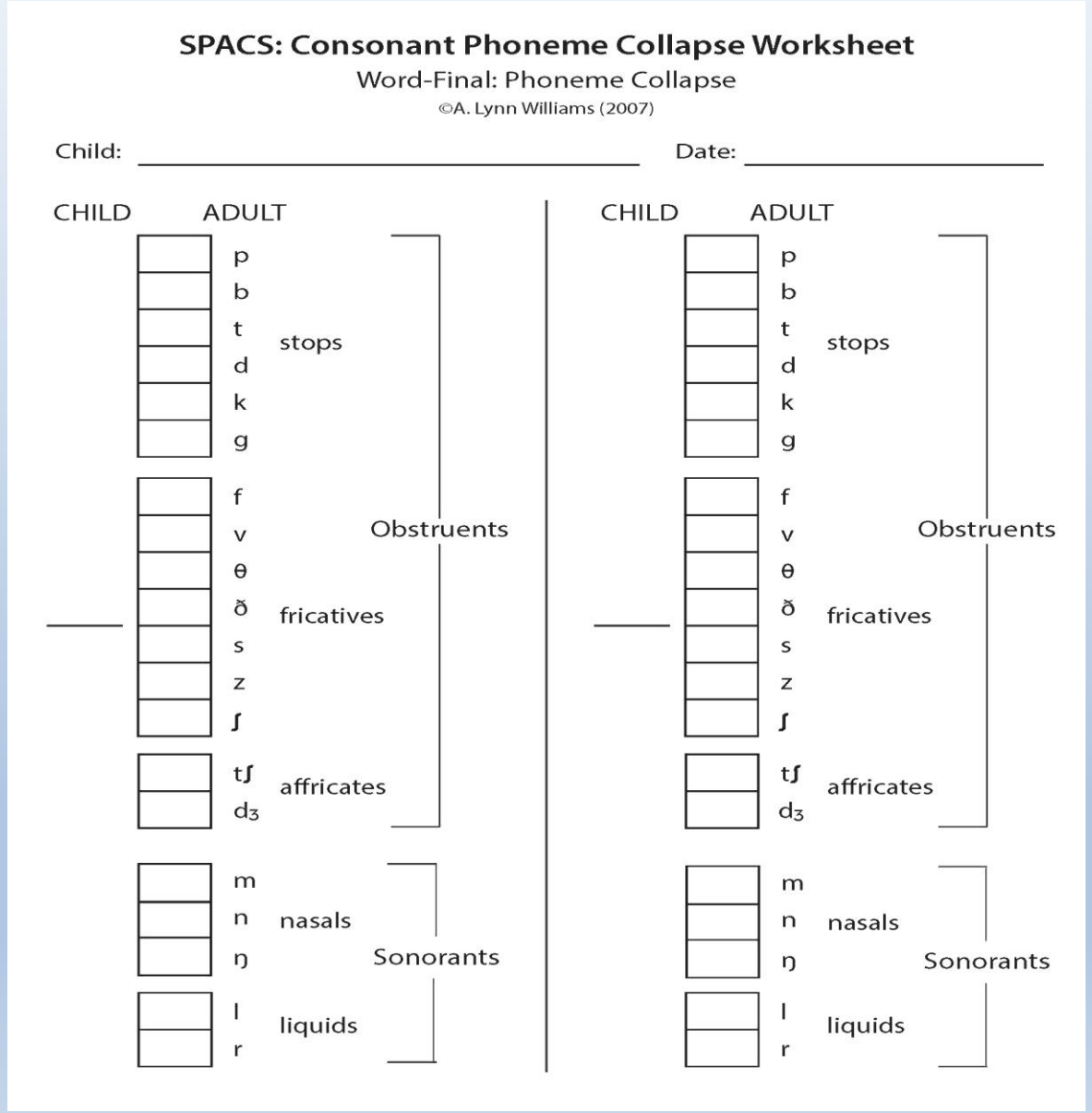
Child: _____ Date: _____

CHILD	ADULT		
	p	stops	Obstruents
	b		
	t		
	d		
	k		
	g		
	f	fricatives	
	v		
	θ		
	ð		
	s		
	z		
	ʃ		
	tʃ	affricates	
	dʒ		
	m	nasals	Sonorants
	n		
	w	glides	
	j		
	h		
	l	liquids	
	r		
		clusters	

CHILD	ADULT		
	p	stops	Obstruents
	b		
	t		
	d		
	k		
	g		
	f	fricatives	
	v		
	θ		
	ð		
	s		
	z		
	ʃ		
	tʃ	affricates	
	dʒ		
	m	nasals	Sonorants
	n		
	w	glides	
	j		
	h		
	l	liquids	
	r		
		clusters	

SPACS WI Phoneme Collapse

SPACS: WF Phoneme Collapse



SPACS: Consonant Phoneme Collapse Worksheet

Word-Final: Phoneme Collapse

Child: _____ Date: _____

CHILD	ADULT		
	p	stops	Obstruents
	b		
	t		
	d		
	k		
	g		
	f	fricatives	
	v		
	θ		
	ð		
	s		
	z		
	ʃ		
	tʃ	affricates	
	dʒ		
	m	nasals	Sonorants
	n		
	ŋ		
	l	liquids	
	r		

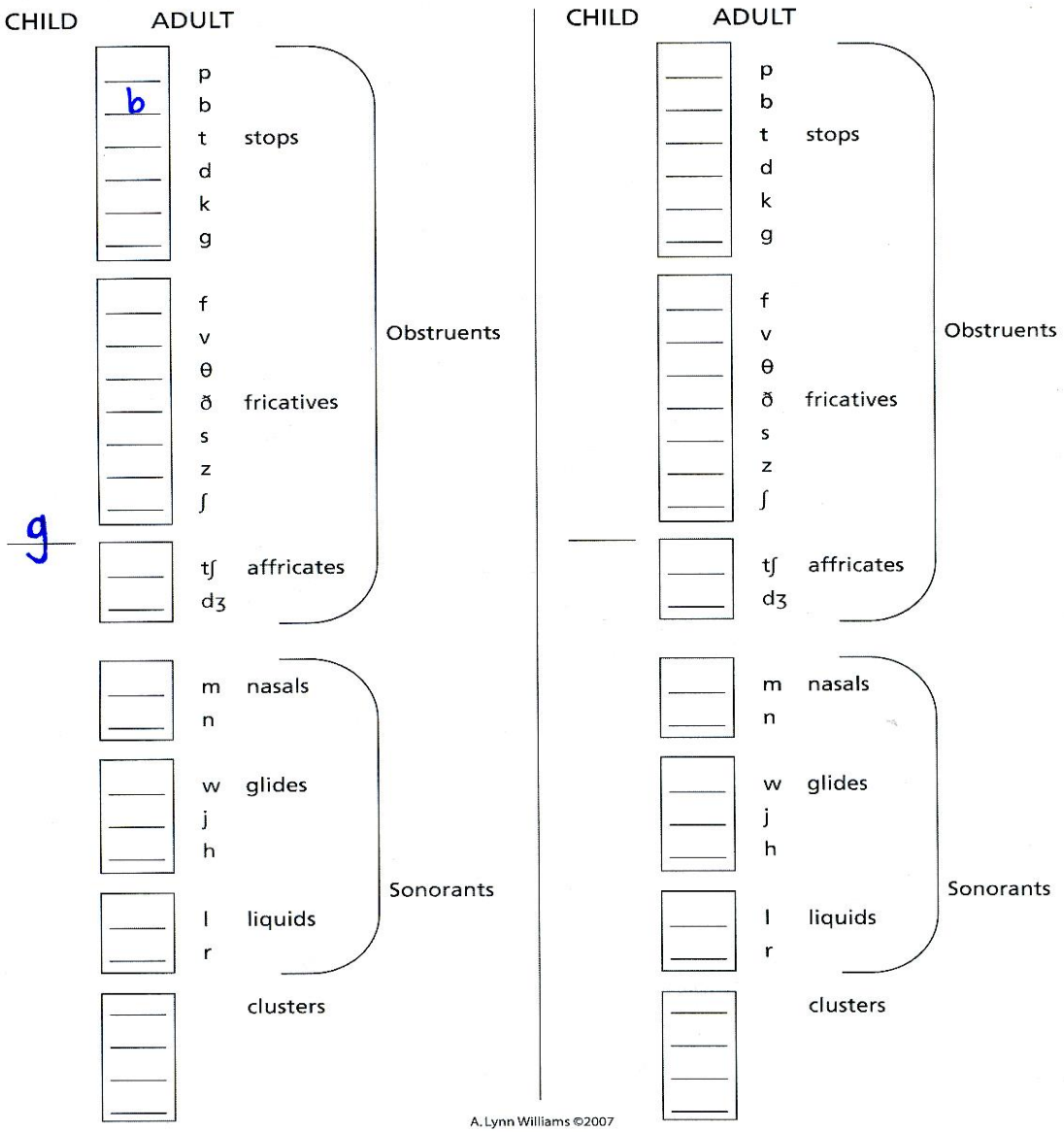
CHILD	ADULT		
	p	stops	Obstruents
	b		
	t		
	d		
	k		
	g		
	f	fricatives	
	v		
	θ		
	ð		
	s		
	z		
	ʃ		
	tʃ	affricates	
	dʒ		
	m	nasals	Sonorants
	n		
	ŋ		
	l	liquids	
	r		

SPACS WF Phoneme Collapse

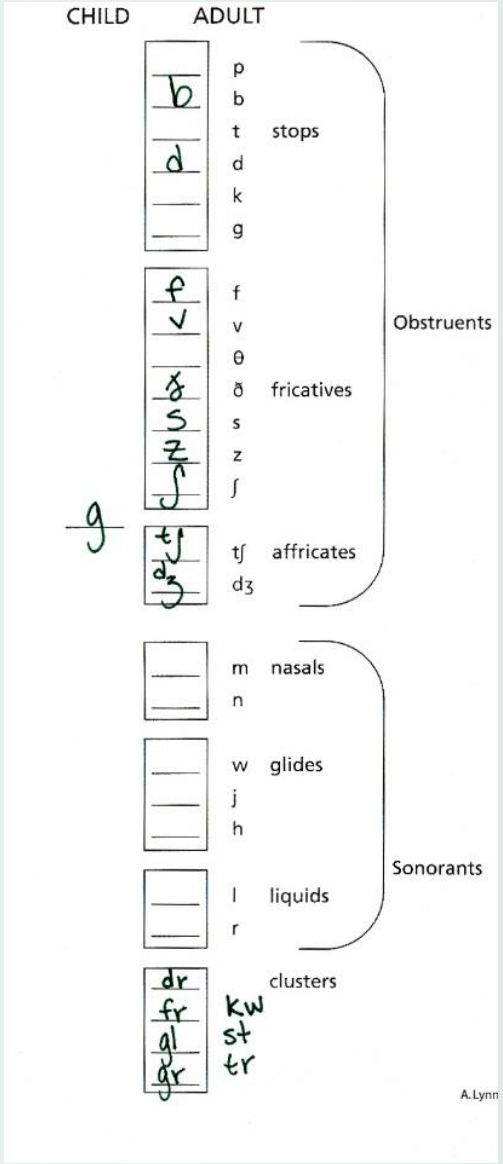
Phoneme Collapse Worksheet

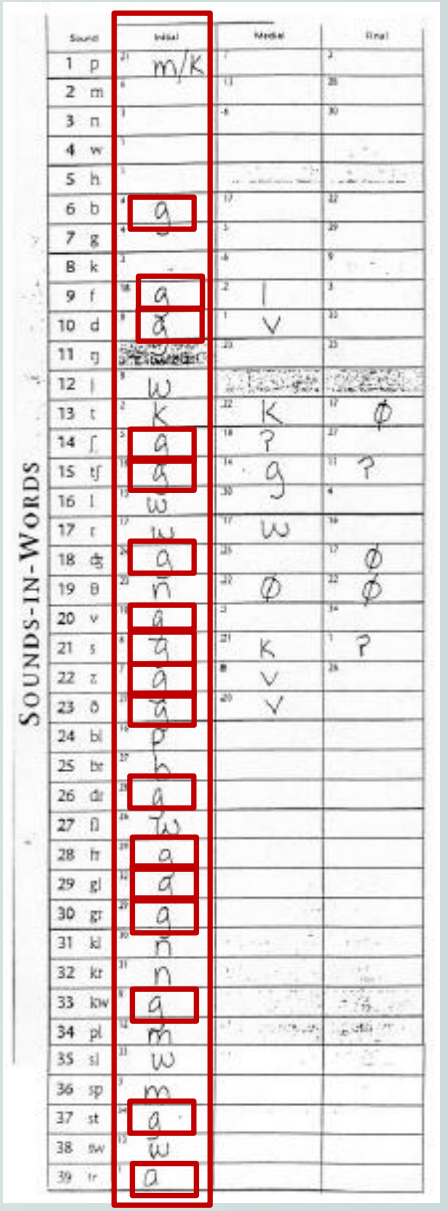
Child: Adam Date: _____

Word-Initial: Phoneme Collapse



Adam (4;6)


CHILD
ADULT
p
b
t
d
k
g
stops
f
v
θ
ð
s
z
ʃ
fricatives
Obstruents
tʃ
dʒ
affricates
m
n
nasals
w
j
h
glides
l
r
liquids
Sonorants
dr
fr
gl
gr
kw
st
tr
clusters
A. Lynn


SOUNDS-IN-WORDS
Initial
Medial
Final

Phoneme Collapse Worksheet

Child: Adam Date: 4-09-07

Word-Initial: Phoneme Collapse

CHILD	ADULT			CHILD	ADULT		
		p				p	
	b	b				b	
		t	stops			t	stops
	d	d				d	
		k				k	
		g				g	
	f	f				f	
	v	v				v	
		θ				θ	
	ð	ð	fricatives			ð	fricatives
	s	s				s	
	z	z				z	
g	ʃ	ʃ		w		ʃ	
	tʃ	tʃ	affricates			tʃ	affricates
	dʒ	dʒ				dʒ	
		m	nasals			m	nasals
		n				n	
		w	glides			w	glides
		j			j	j	
		h				h	
		l	liquids		l	l	liquids
		r			r	r	
	dr	kw	clusters		fl		clusters
	fr	st			sl		
	gl	tr			sw		
	gr						

Obstruents: stops, fricatives, affricates

Sonorants: nasals, glides, liquids

Question 5

- What is the organizing principles for the [g] and [w] WI phoneme collapses?

a. Fricatives
b. Manner
c. Front

What is the organizing principle?

- Manner (± sonorant)

Mirror Rules

SONORANT	
Obstruent [-sonorant]	Sonorant [+sonorant]
Obstruents and stop clusters → [g]	Sonorants and continuant clusters → [w]

Adam: Comparison of PVM to SPACS

Systemic Approach Independent + Relational Analysis	Phonological Processes Approach Relational "Error" Analysis
2 complementary phoneme collapses •1:18 phoneme collapse of ***obstruents*** and ***stop clusters*** to **[g]** •1:7 phoneme collapse of ***sonorants*** and ***continuant clusters*** to **[w]**	**7 unrelated phonological processes** •Backing •Stopping •Voicing •Deaffrication •Cluster reduction •gliding •Idiosyncratic g/b; w/j
• Holistic	• Fragmented
• Systemic	• Sound-based
• Descriptive analysis	• Error analysis
• Child-based	• Adult-based
• Explanatory + Descriptive	• Descriptive only

Question 6

- A SPACS analysis would be appropriate to complete on all the following EXCEPT:
  a. Child with several common errors
  b. Child with distortions
  c. Child with multiple and uncommon errors
  d. OGK

4

Target Selection

Goals are the driving force behind intervention

Farquharson (2014)

Selecting Targets for Intervention

Target selection is the *link* between assessment and intervention

Is an important variable in treatment efficacy

The therapy goal, rather than the exact treatment approach employed in the therapy session, **may be the instrument of change** (Gierut, 2005; Kamhi, 2006)

Target Selection Options

Phonetic (Articulatory)

Traditional

Early sounds
Stimulable sounds
Most Knowledge

Characteristics of the Sound

Phonemic (Phonological)

Phonological Complexity

Later developing sounds
Non-stimulable sounds
Least Knowledgable

Characteristics of the Sound

Distance Metric

Maximal classification
Maximal distinction

Function of the Sound

Brief Detour about Developmental Norms

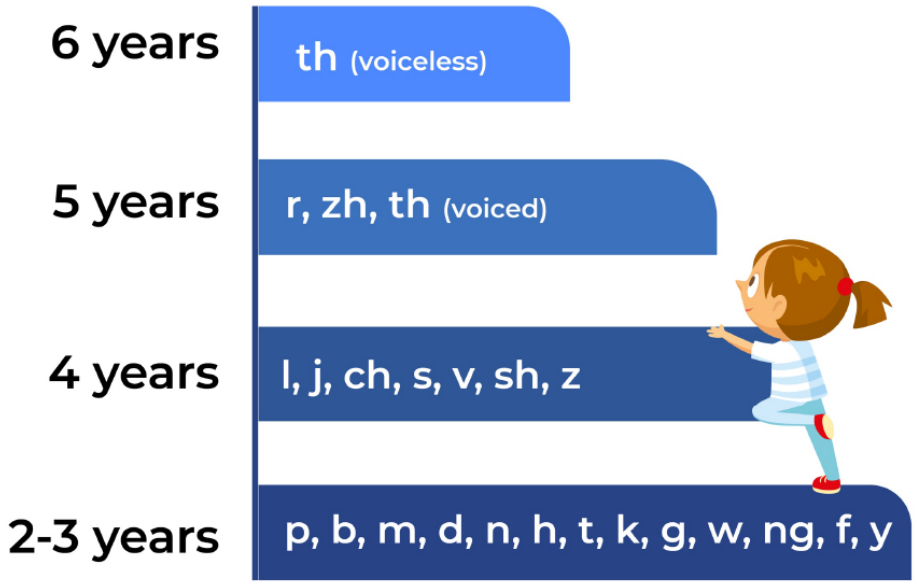
FAREWELL to the Early/Middle/Late 8!! ★

HELLO to the NEW Early (13)/Middle (7)/Late (4)

Early 13	**/b, p, n, m, d, h, w, t, k, g, f, ŋ, j/ (Age 2–3)**
Middle 7	**/v, ʤ, l, ʧ, s, ʃ, z/ (Age 4)**
Late 4	**/ʒ, ɹ, ð, θ/ (Age 5–6)**

Note: ***turn that /r/ upside down!*** *Here's an explanation from Dr. McLeod:* "Although 'r' is often written as /r/ in English textbooks, the International Phonetic Alphabet uses the symbol /ɹ/ to indicate the alveolar approximant 'r' found in English. The consonant /r/ is the trill used in Spanish and many other languages throughout the world."

McLeod & Crowe (2018)

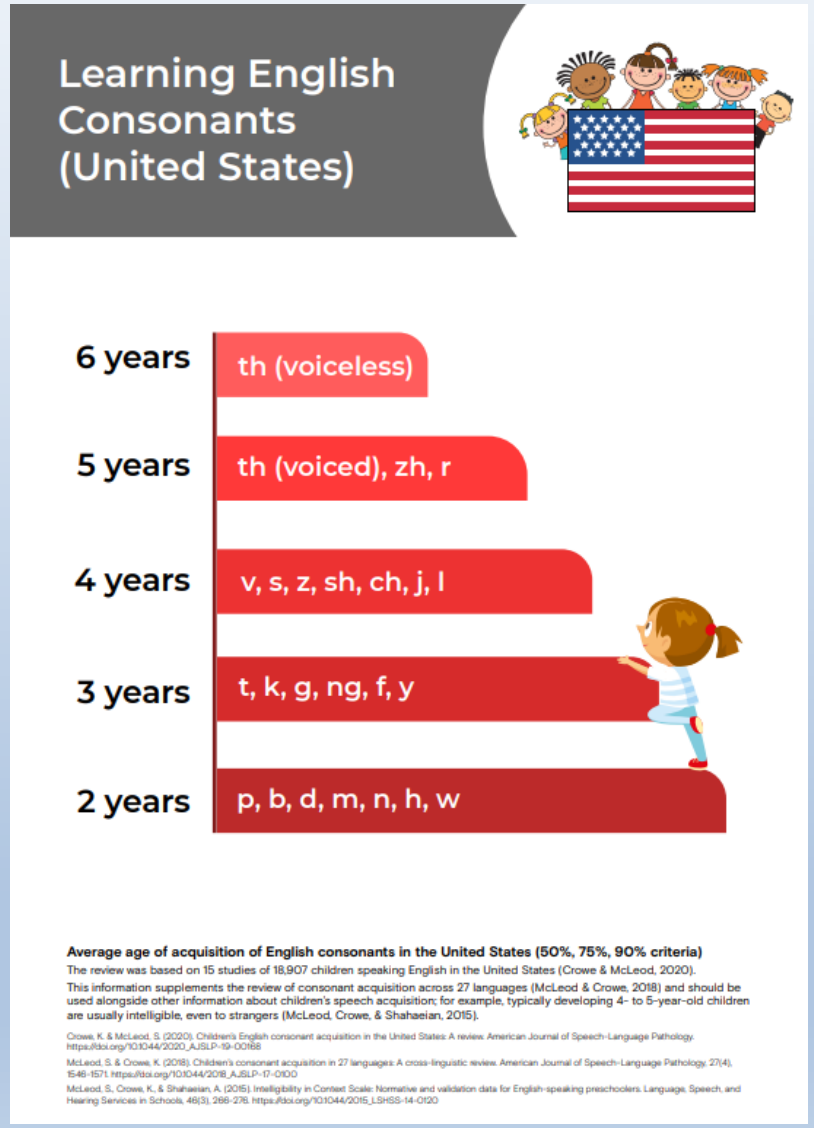


Average age children learn to pronounce English consonants correctly
(Based on 15 English speech acquisition studies compiled by McLeod and Crowe, 2018)

McLeod, S. & Crowe, K. (2018). Children's consonant acquisition in 27 languages: A cross-linguistic review. *American Journal of Speech-Language Pathology*. doi:10.1044/2018_AJSLP-17-0100. Available from: https://ajslp.pubs.asha.org/article.aspx?articleid=2701897

Crowe & McLeod (2020)

US Tree House Chart



Storkel (2019)

PERSPECTIVES SIG 1

Tutorial

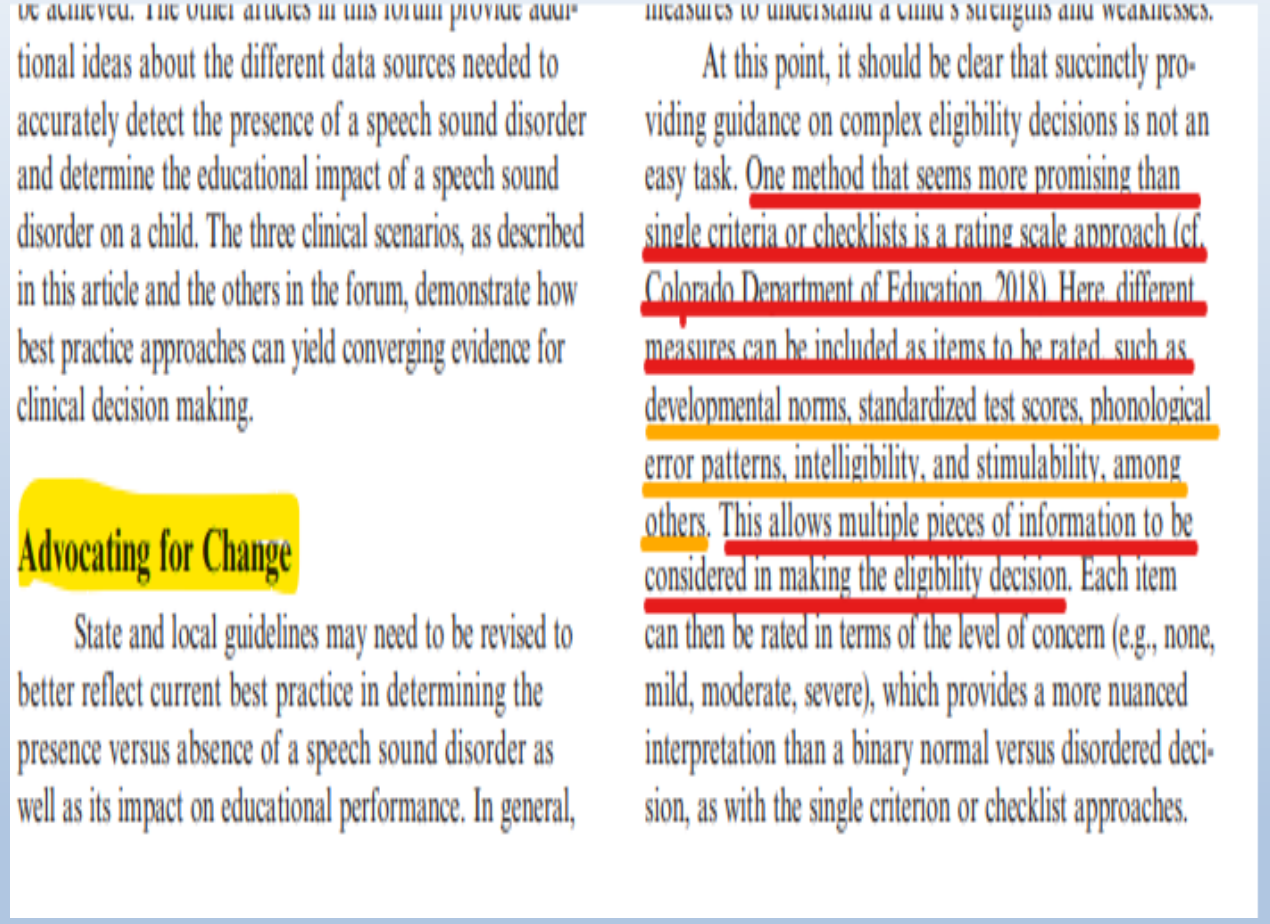
Using Developmental Norms for Speech Sounds as a Means of Determining Treatment Eligibility in Schools

Holly L. Storkel[a]

Purpose: For a child to receive treatment of a speech sound disorder in public schools, the child must demonstrate evidence of an exceptionality in producing speech sounds. One method advocated by some state or local guidelines is to use developmental norms for speech sounds to define impaired speech. However, current practices, as codified in state or local guidelines, may not be encouraging optimal use of this data source. The purpose of this article is to outline best practices in using developmental norms to determine eligibility for speech treatment in school settings.
Method: Three commonly used sets of developmental norms (Sander, 1972; Shriberg, 1993; Smit, Hand, Freilinger, Bernthal, & Bird, 1990) are reviewed to generate best practices in the use of developmental norms to establish eligibility for speech treatment in schools. Three clinical scenarios then are used to illustrate implementation of these best practices.
Results: The review of the normative studies indicates that a strict age cutoff used in isolation is counter to the intended use of developmental norms, representing a conceptualization of normal development that is too narrow. Best practice entails using a richer representation of development, specifically reflecting the range and variability inherent in development. Moreover, diagnosing the presence of a speech sound disorder requires more than just a single measure.
Conclusion: Clinicians may need to advocate for change in state or local guidelines to better align these guidelines with best practices in using speech sound norms to determine eligibility for services in schools.

The Storkel Tutorial

- Storkel (2019) walks through how to use developmental norms appropriately
  - NOT in isolation or as an absolute cut-off value, but as one piece of the puzzle
- Section at end of article on advocating for change



be achieved. The other articles in this forum provide additional ideas about the different data sources needed to accurately detect the presence of a speech sound disorder and determine the educational impact of a speech sound disorder on a child. The three clinical scenarios, as described in this article and the others in the forum, demonstrate how best practice approaches can yield converging evidence for clinical decision making.

Advocating for Change

State and local guidelines may need to be revised to better reflect current best practice in determining the presence versus absence of a speech sound disorder as well as its impact on educational performance. In general,

measures to understand a child's strengths and weaknesses.

At this point, it should be clear that succinctly providing guidance on complex eligibility decisions is not an easy task. One method that seems more promising than single criteria or checklists is a rating scale approach (cf. Colorado Department of Education, 2018). Here, different measures can be included as items to be rated, such as developmental norms, standardized test scores, phonological error patterns, intelligibility, and stimulability, among others. This allows multiple pieces of information to be considered in making the eligibility decision. Each item can then be rated in terms of the level of concern (e.g., none, mild, moderate, severe), which provides a more nuanced interpretation than a binary normal versus disordered decision, as with the single criterion or checklist approaches.

Key Take-Away

- Age-of-acquisition of each speech sound should not be considered as:
  - JUST a single age
  - SHARP cut point

Use age-of-acquisition as a general guide

- Age-of-acquisition needs to be considered with other measures
  - One piece of the puzzle, NOT the entire puzzle

A Third Option for Target Selection

- The distance metric represents a different perspective to target selection that doesn’t rely on the dichotomous characterization of targets as early ~ late; stimulable ~ non-stimulable; known ~ unknown, etc.

A Third Option for Target Selection

- Rather, it is based on the *function* a particular sound has within a given child's system
  - Using phoneme collapses that represent compensatory strategies developed by the child to accommodate a limited phonetic inventory, we can use a distance metric to select those targets that will result in the greatest amount of change in the least amount of time

Distance Metric

Williams (2003, 2005)

Select up to 4 different target sounds from one rule set based on two parameters:

Maximal Distinction:

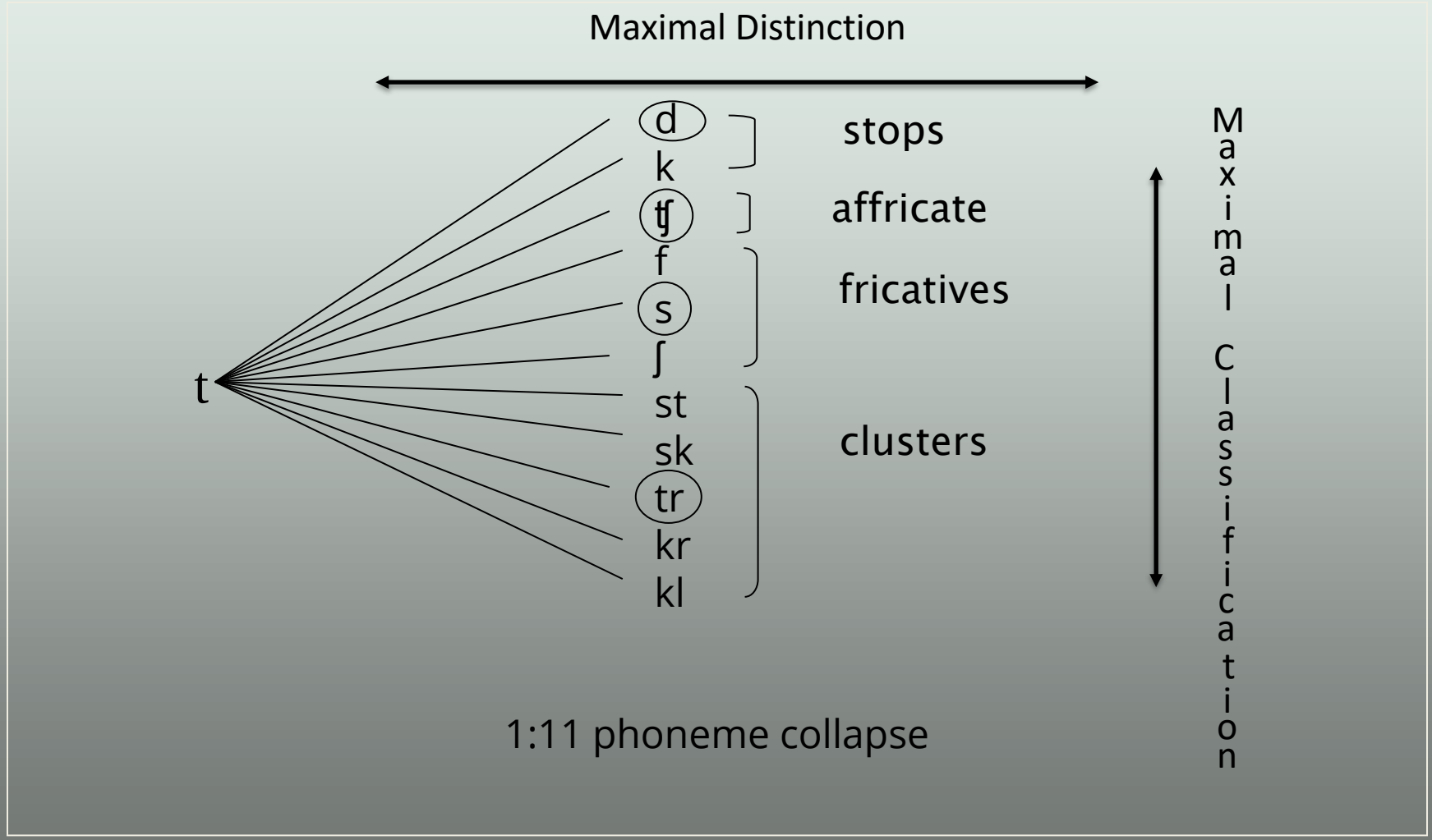
- select targets that are maximally different from child's error in terms of PVM

Maximal Classification:

- select targets from each of the following:

  (a) different manner classes
  (b) different places of production
  (c) different voicing
  (d) different linguistic units

Target Selection Using Distance Metric



Practice Selecting Treatment Targets

h

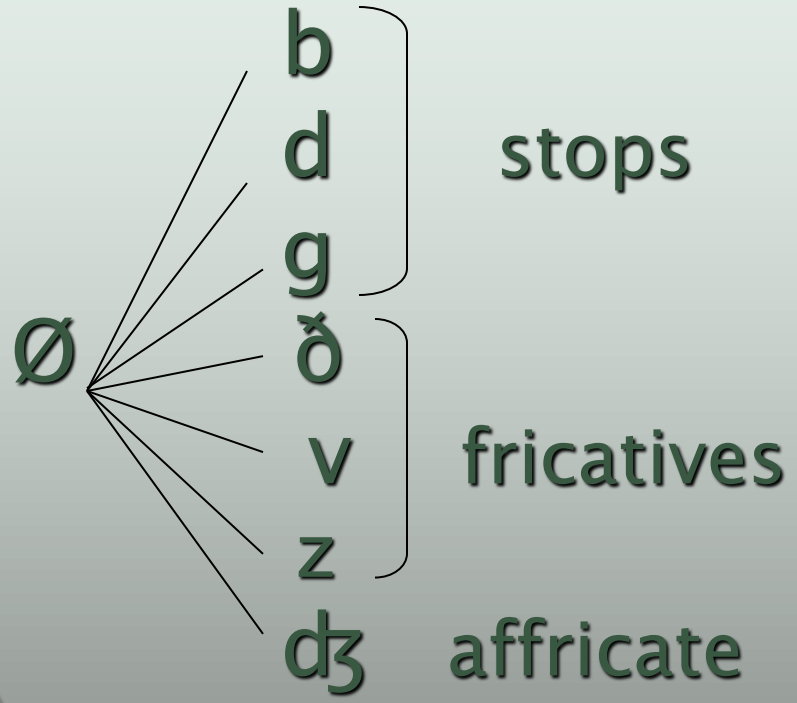
- w — glide
- l — liquid
- f, s, ʃ — fricatives
- sw, sl — clusters

Question 7

- What targets did you select?

a. A glide, a liquid, a fricative and a cluster
b. A glide OR a liquid, a fricative, and a cluster
c. A glide, a liquid, a fricative, NO cluster

Practice Selecting Treatment Targets

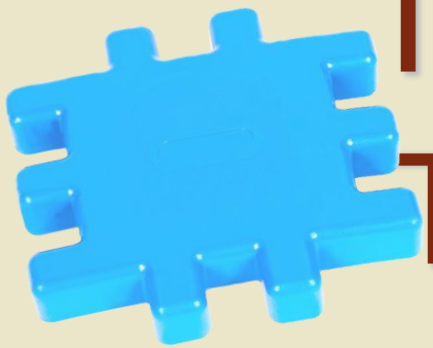


Question 8

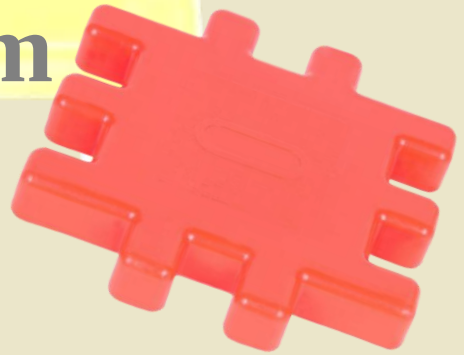
- Which targets did you select?

a. b, v, ʤ
b. d, z, ʤ
c. g, ð, ʤ

Target Selection: The BIG Picture



With the distance metric,
targets are the salient
"corner puzzle pieces"
that help the child
put together the big picture
of the adult sound system



Question 9

- Which 2 target selection approaches are focused on the characteristics of the *sound*?
  a. Traditional and Complexity
  b. Complexity and Distance Metric
  c. Traditional and Distance Metric

SOUND EVIDENCE: Assessment and Treatment of SSD in Children

Part II: Contrastive Phonological Interventions

A. Lynn Williams, Ph.D., CCC-SLP
College of Clinical and Rehabilitative Health Sciences
East Tennessee State University

Disclosures

Financial:

- Received honorarium and registration waiver from SHAA
- Receive royalties from Brookes Publishing and EBS Healthcare

Nonfinancial:

- Author of one of the analyses, target selection approaches, and studied interventions
- Copyright holder of the Phonological Intervention Taxonomy

Research Team

Learner Objectives: Part II

Make it ACAP!

01 Analyze the distinguishing features of the different contrastive approaches according to the four domains of the Phonological Intervention Taxonomy

02 Make a list of the key features of the different contrastive phonological approaches

03 Demonstrate each of the contrastive approaches in role-play with a nearby attendee

Microburst 1: Contrastive Approaches

Contrastive Approaches

Contrast therapy focuses on production using contrasting word pairs instead of individual sounds

- These approaches emphasize sound contrasts necessary to differentiate
- one word from another and includes three different contrastive approaches:

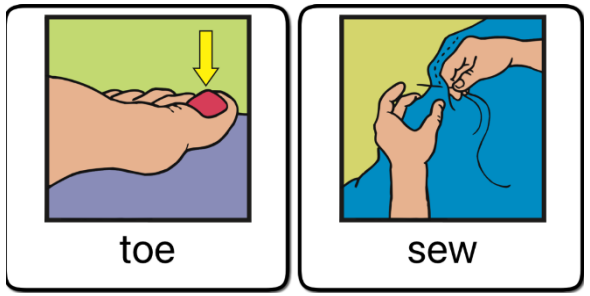
1. Conventional Minimal Pairs
2. Maximal Oppositions
3. Multiple Oppositions

https://www.asha.org/practice-portal/
ASHA Practice Portal – Excellent Resource!!

Comparison of Contrastive Approaches

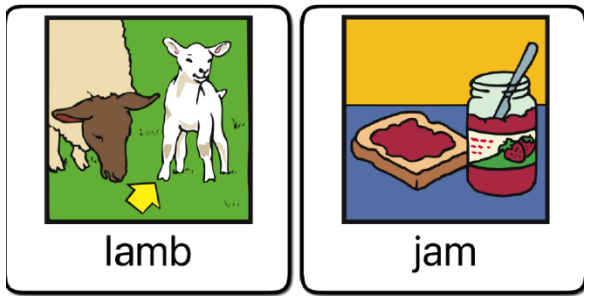
	Minimal Pairs	Multiple Oppositions	Maximal Oppositions
Contrastive Pairs	child's error ~ target sound	child's error ~ target sounds	target sound 1 ~ target sound 2
Contrastive Sounds	[t] ~ **[s]**	[t] ~ **[s, k, tʃ, tɹ]**	**[ɹ]** ~ **[s]**
Example	"two" ~ "**S**ue"	two → **S**ue, **c**oo, **ch**ew, **tr**ue	"**r**ue" ~ "**S**ue"

Examples



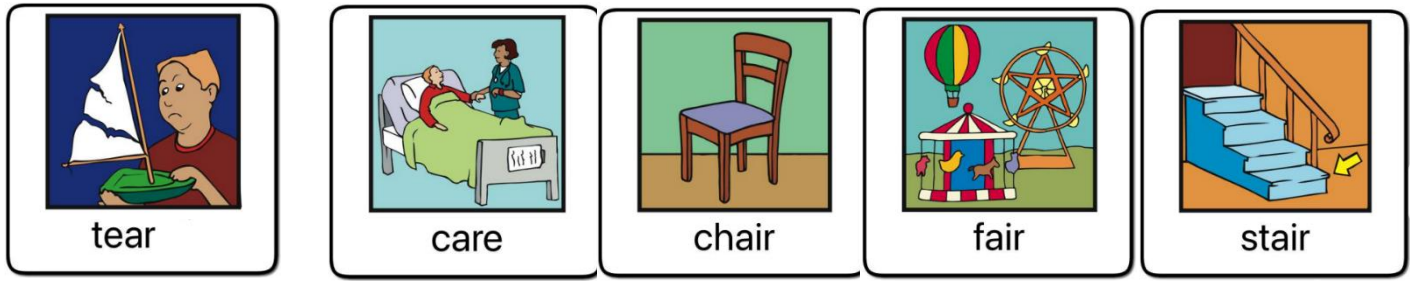
MINIMAL PAIRS THERAPY

includes minimal pair words that are produced as homonyms by the child (one target sound)



MAXIMAL OPPOSITIONS

includes contrasting word pairs that are non-homonymous productions by the child (two target sounds)



MULTIPLE OPPOSITIONS

includes multiple contrasts in rhyming word sets that are produced as homonyms by the child (2–4 target sounds)

Contrastive Intervention Approaches

	Heart of Approach	Goal	Population
MinP	CREATE HOMONYMY to induce phonological learning (semantic confusion)	Teach a class of sounds (e.g., fricatives), or eliminate a phonological process/pattern (e.g., stopping) by teaching 1 or more sounds from a representative sound class or phonological process	Older children with mild SSD characterized by small number of error patterns
MultO	TARGET SELECTION + SYSTEMIC: • a global phoneme collapse as the intervention target, and • the guidance on how to select the specific intervention targets within the collapse • Training ACROSS a rule (collapse)	Teach 2-4 new sounds from a rule set (i.e., phoneme collapse) that represent the frame of learning a child needs to achieve across place, manner, voice, and linguistic unit, which will lead to system-wide restructuring	Any child (generally younger) with moderate- severe SSD characterized by extensive phoneme collapses
MaxO	Guidance on SOUND SELECTION based on 3 features: • # features (maximal ~ minimal) • Type of feature difference (major ~ nonmajor) • # target sounds (two ~ one)	Teach 2 new sounds that represent different aspects of phonological system and highlight the diversity of phonological system through explicit activities that leads to system-wide change	Young children with moderate-severe SSD characterized by multiple errors across multiple sound class

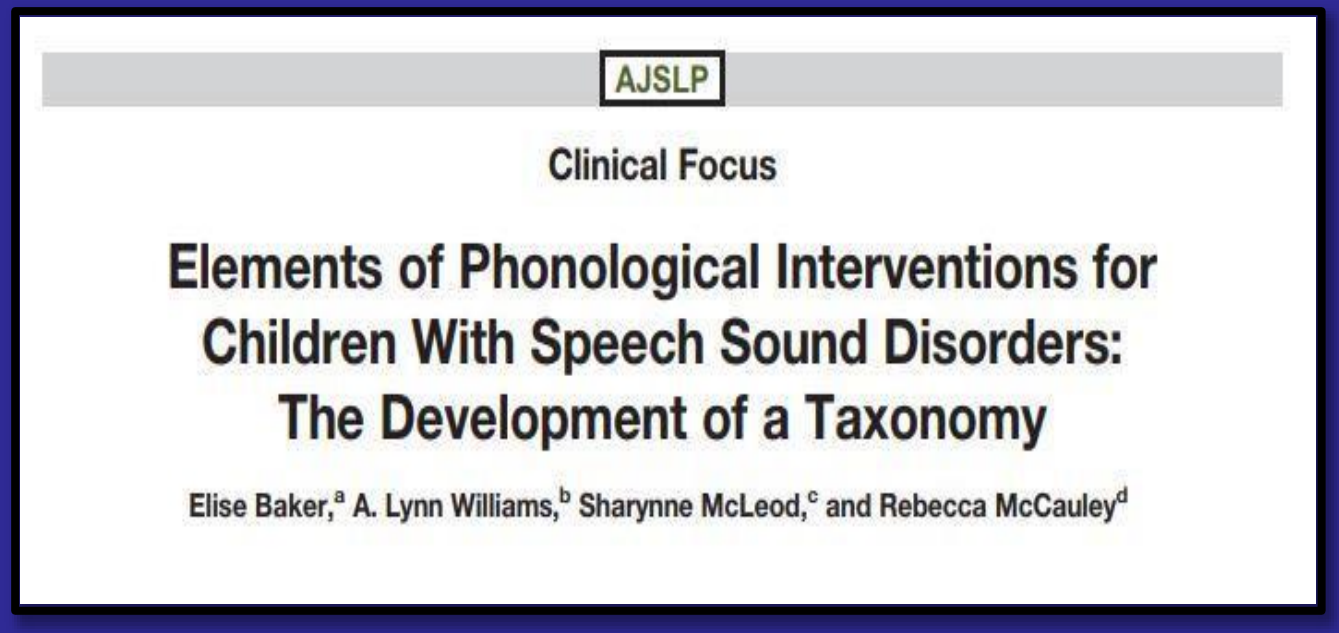
Question 10

- The power of the contrastive approaches is in the contrast.

a. True
b. False

Microburst 2: Phonological Intervention Taxonomy

A Taxonomy for Phonological Intervention



AJSLP

Clinical Focus

Elements of Phonological Interventions for Children With Speech Sound Disorders: The Development of a Taxonomy

Elise Baker,[a] A. Lynn Williams,[b] Sharynne McLeod,[c] and Rebecca McCauley[d]

Baker, E., Williams, A. L., McLeod, S., & McCauley, R. (2018). Elements of Phonological Interventions for Children With Speech Sound Disorders: The Development of a Taxonomy. *American Journal of Speech-Language Pathology*, 1-30. doi:10.1044/2018_AJSLP-17-0127

Baker, Williams, McLeod, & McCauley (2018)

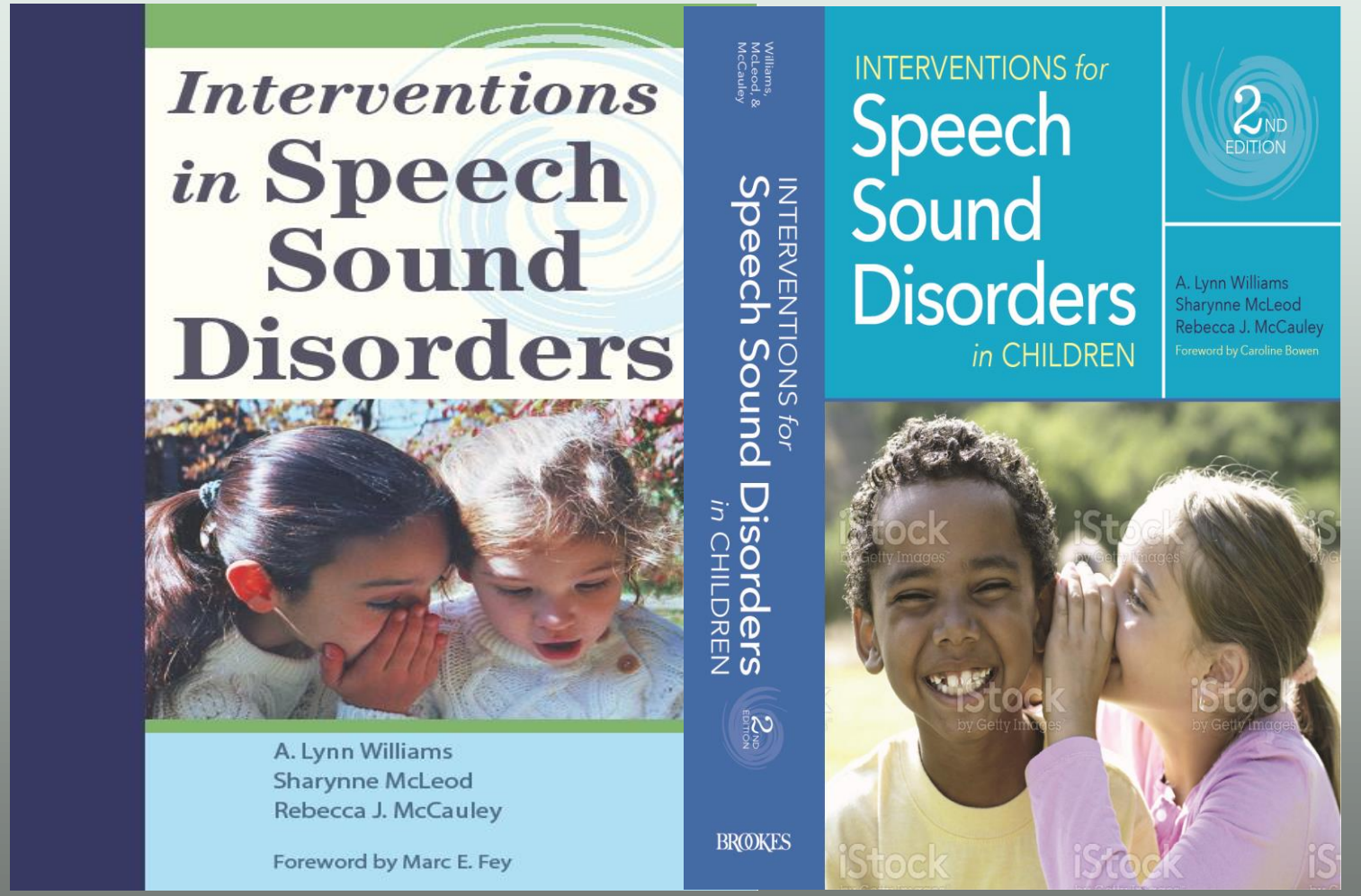
Interventions for Speech Sound Disorders in Children

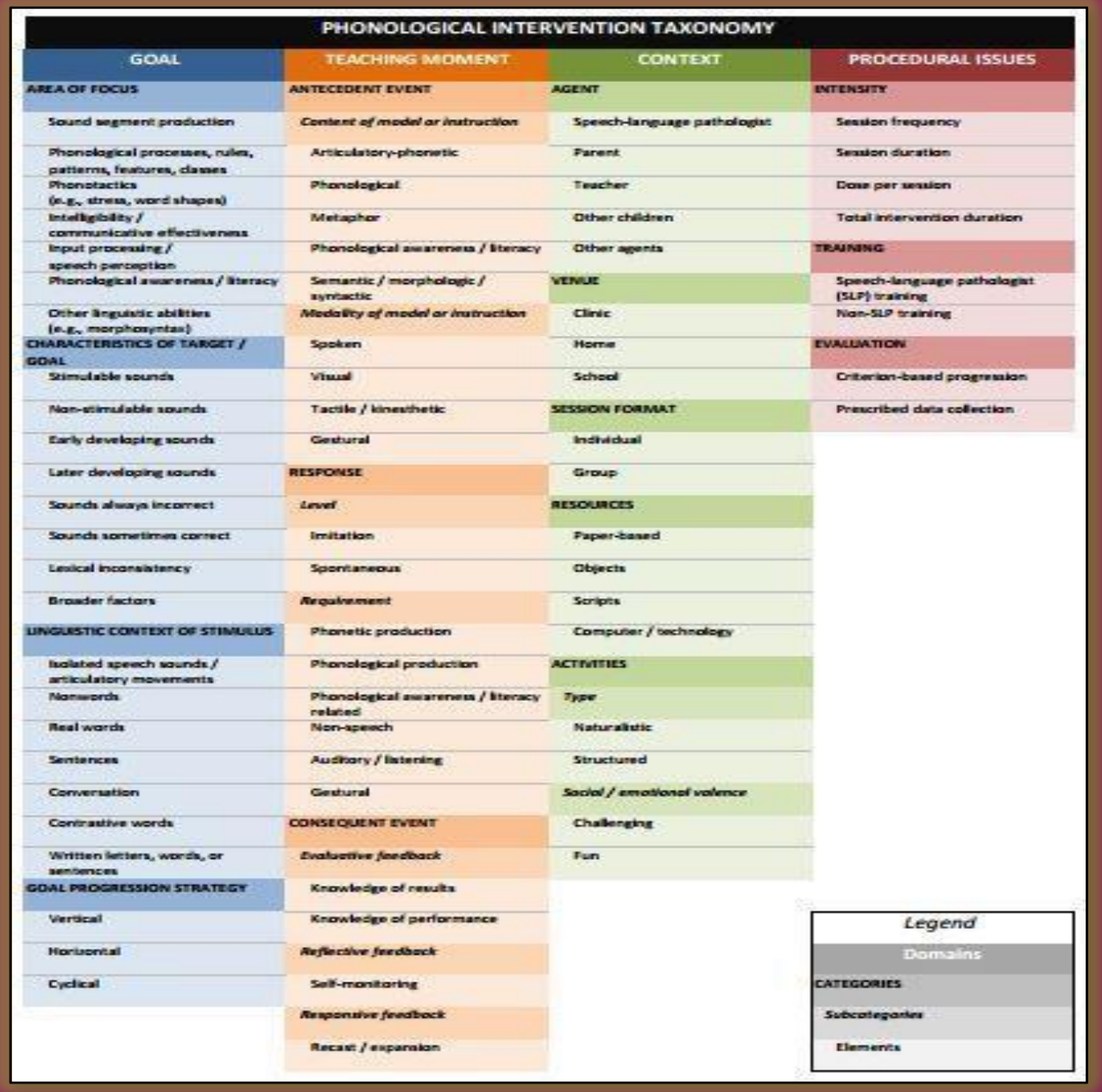
Our Book:

Lynn Williams

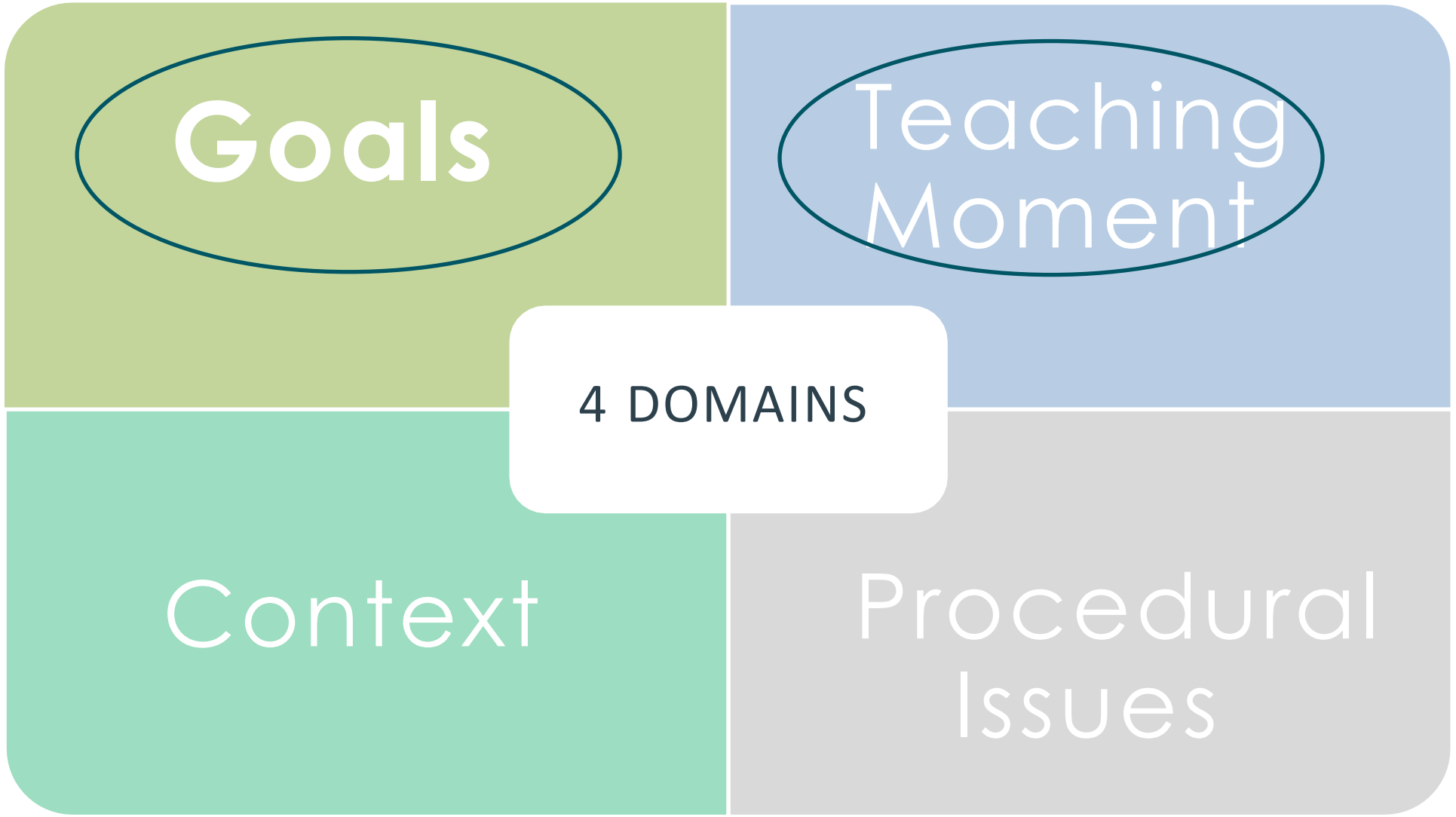
Sharynne McLeod

Rebecca McCauley





Phonological Intervention Taxonomy


Goals
Teaching Moment
4 DOMAINS
Context
Procedural Issues

Microburst 3: Intervention Elements

Conventional MP: Goals

- Select a treatment target (many options)
  - Example: /ɹ/

- Pair the target with the substitute
  - If a child produces [w] for target /ɹ/, target w-r pairs
    - Ring-Wing
    - Child's production (wing-wing) creates homonymy
- Hypothesis: Practicing minimal pairs will help the child “realize” that incorrect production causes communication breakdown

MP: Teaching Moment

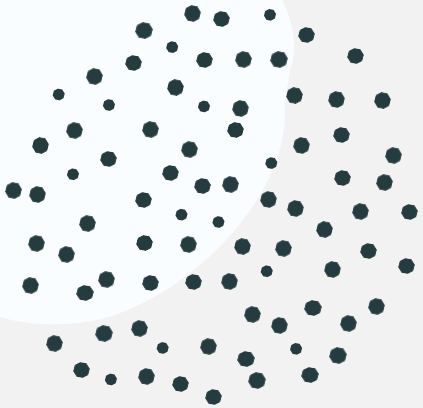
- Play games that create an opportunity for communication breakdown
  - Put out pictures
  - Child instructs SLP to do something with pictures
  - SLP does exactly what child says
    - Child: "Pick up the wing"
    - SLP: "I don't see any pictures of wing"
    - Child: Points to ring
    - SLP: "Oh you meant ***r***ing. I thought you said ***w***ing"
    - Teaching and feedback may vary depending on SLP & child

Minimal Pairs

Learning to contrast
minimal pair words
through drill-play activities

Notes on MP

- Pace: Model – Response – FB (focused and succinct)
- Keep pairs together – BRANCH steps
- Exaggerated models
- Switch order of presentation -- automaticity



GOAL: Multiple Oppositions

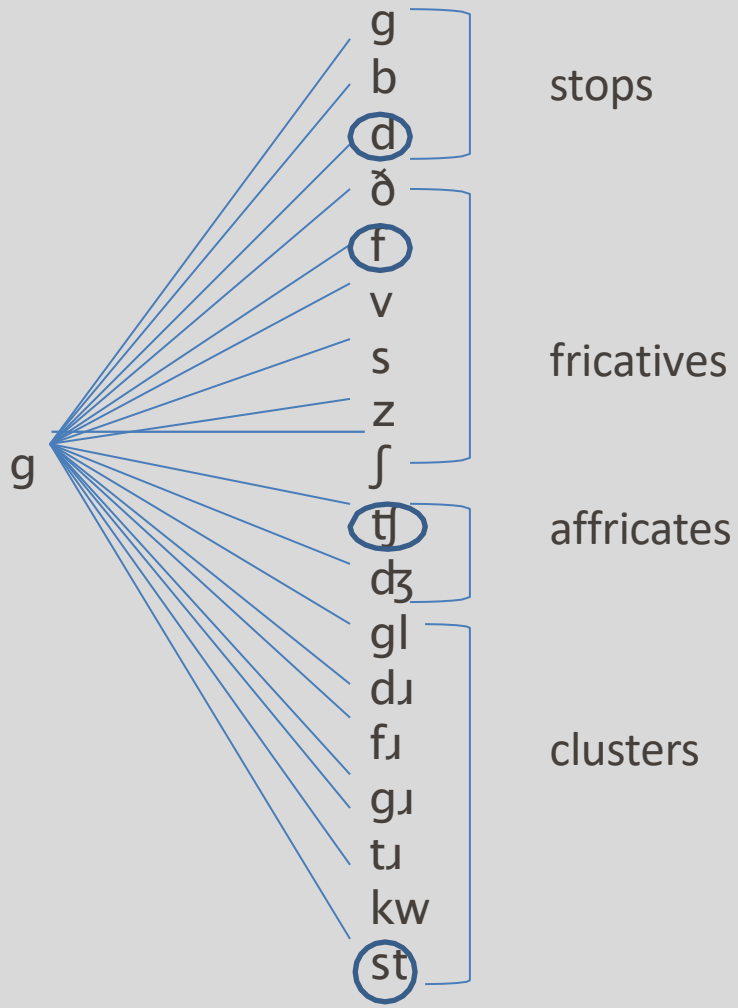
Collapse of Contrast

SPACS: Diagram Phoneme Collapse

Distance Metric

Select 2-4 targets from one rule set (collapse)

Targets Selected for Adam

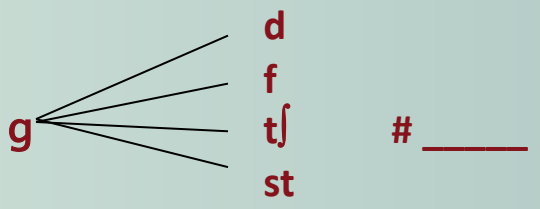


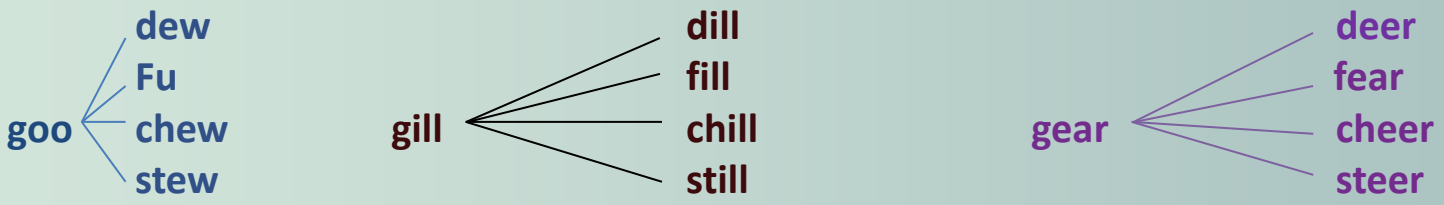
Using the Distance Metric

Designing Treatment for Adam

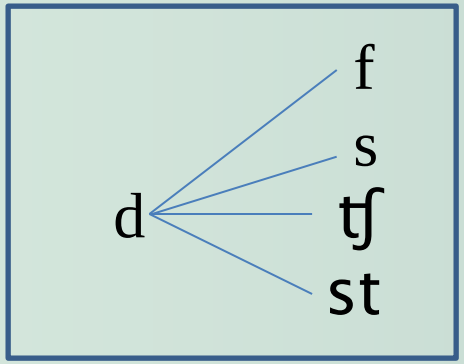
<u>Multiple Oppositions</u>: Contrasts child's error with several target sounds from across an entire rule set.

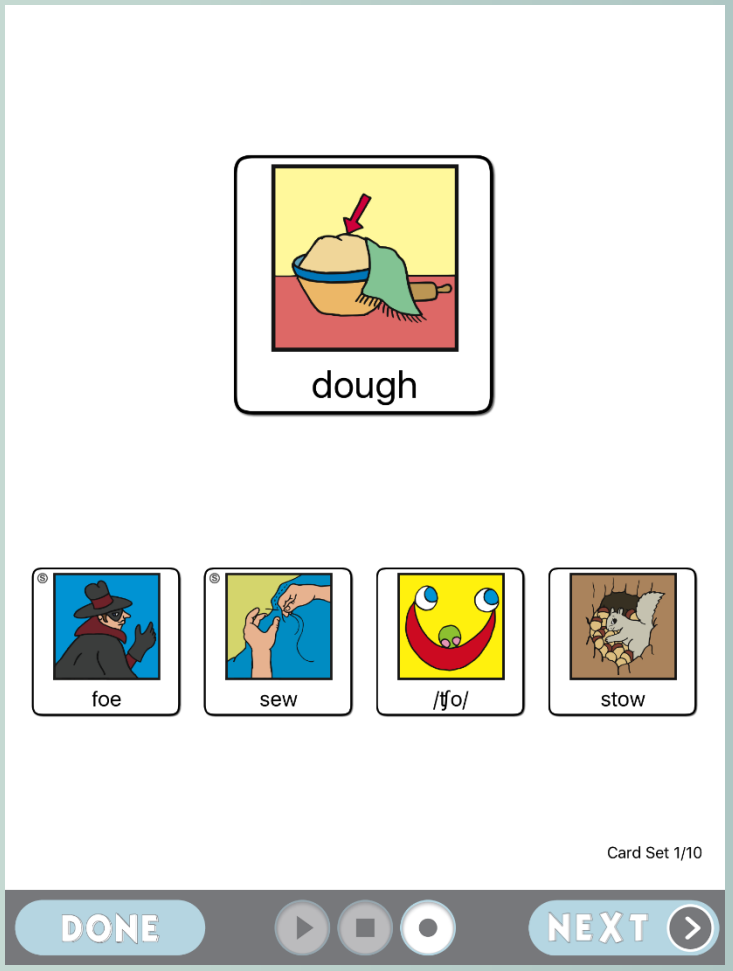
error ~ targets





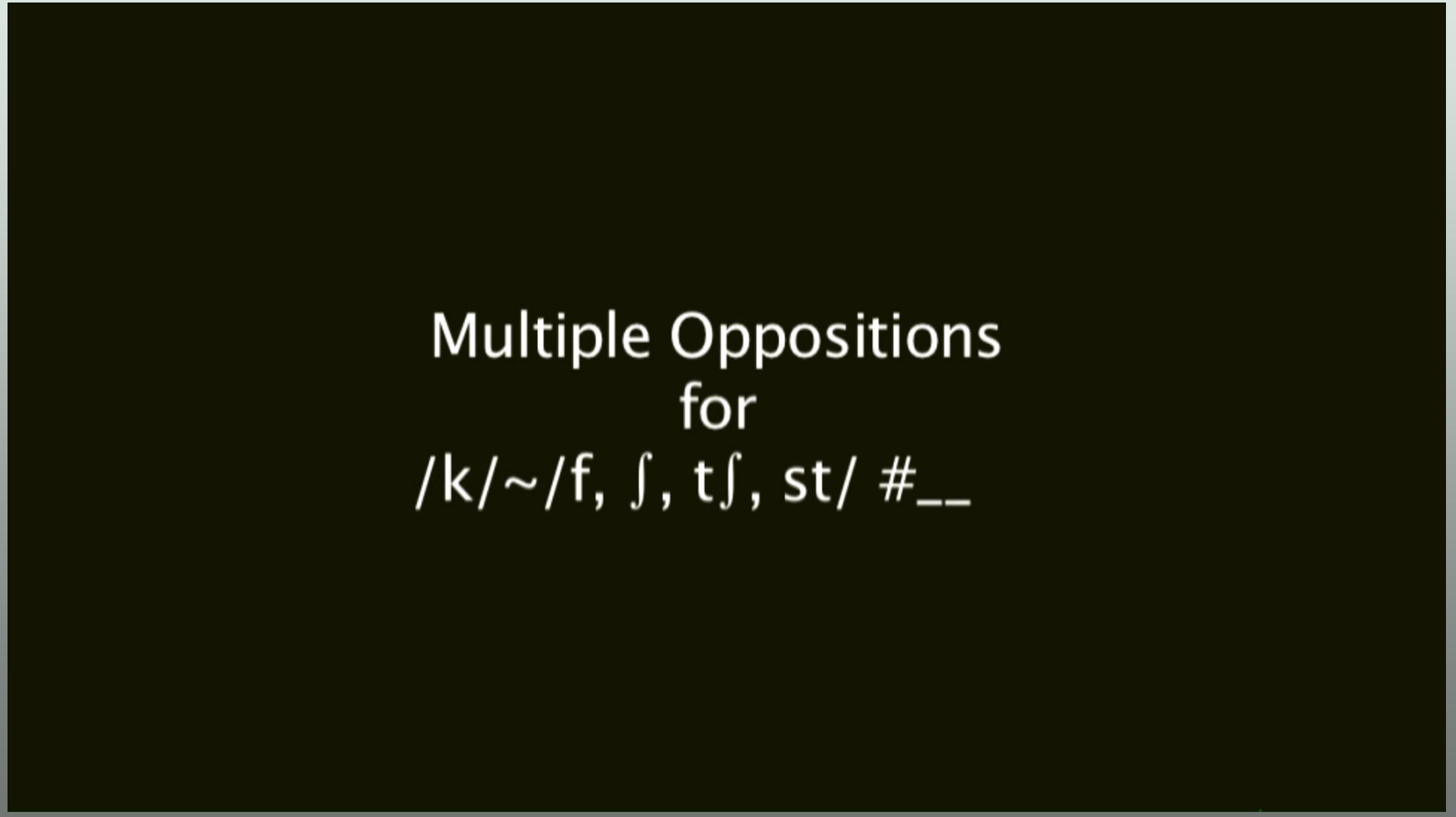
Example of Contrastive Word Pairs: Multiple Oppositions





MO Data Sheet

Multiple Oppositions



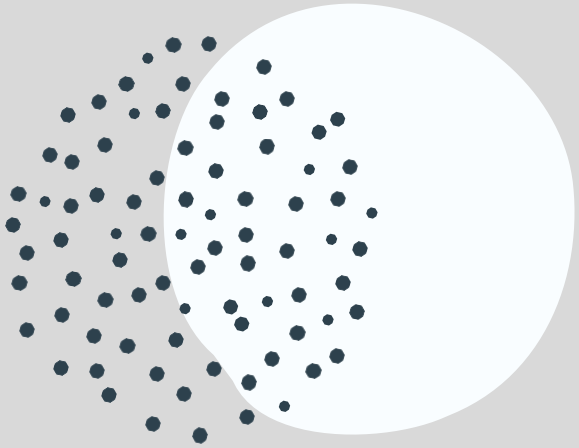
Notes on MO

- Slower models / exaggerated models
- Physical prompts
- Shaping / approximations
- One-to-one contrasts
- VISUAL: imagery important in motor learning
- Seating arrangement

Multiple Oppositions

- **Assumes learning is facilitated by the size and nature of linguistic "chunks" presented to the child *(learning of the whole is greater than the sum of its parts)***
- **Assumes learning is a dynamic interaction between child's unique sound system and intervention**
- **Predicts learning will be generalized across a rule set *(i.e., learning will generalize to obstruents and clusters collapsed to [g] in the 1:17 phoneme collapse)* and result in system-wide restructuring.**

Multiple Oppositions



Assumes learning is facilitated by the **size and nature of linguistic "chunks"** presented to the child *(learning of the whole is greater than the sum of its parts*)

Assumes learning is a **dynamic interaction** between child's unique sound system and intervention

Predicts learning will be generalized across a rule set (i.e., learning will generalize to obstruents and clusters collapsed to [g] in the 1:17 phoneme collapse) and result in system-wide restructuring

MO: Practical Strategies for Implementation

ASSESSMENT/ANALYSIS:

finding "order in disorder"

- Diagram phoneme collapses from SW test, e.g., GFTA-2 to identify major rules

TARGET SELECTION:

increase "frame of learning"

- Choose targets with great phonetic distance
  - Different manner, place, voice, linguistic unit (singletons and clusters)

INTERVENTION:

restructure sound system

- Use Rhyming Dictionary (or SCIP app) to develop contrastive word pairs
- Use clip art or boardmaker (or SCIP app) to get illustrations
- Use MO data sheet (highlight every 2 columns to indicate 1 tx set)
- Begin with 1 child to develop competence
- In small groups, individual session for Phase 1; then group afterwards
- Have tx materials and data sheets organized!

Question 11

- Multiple Oppositions enlarges the frame of learning a child needs to achieve.

a. True
b. False

MaxO: Goals
What makes sounds "very different?“ (Storkel, 2022)

- Type of Feature Difference: Major Class
  - Group large classes of sounds together
  - Obstruents vs. sonorants
    - the feature [sonorant]
      - contrast an obstruent (stop, fricative or affricate)
      - with a sonorant (nasal, liquid, or glides

obstruent	stops						fricatives							affricates	
	p	b	t	d	k	g	f	v	θ	ð	s	z	ʃ	ʧ	ʤ

sonorant	nasals			liquids		glides		
	m	n	ŋ	l	r	w	j	h

MaxO: Number of Targets + Minimal vs Maximal Differences

Most Change

(**BEST:** produces the most phonological change

Intermediate

Least Change

(Not as Good)

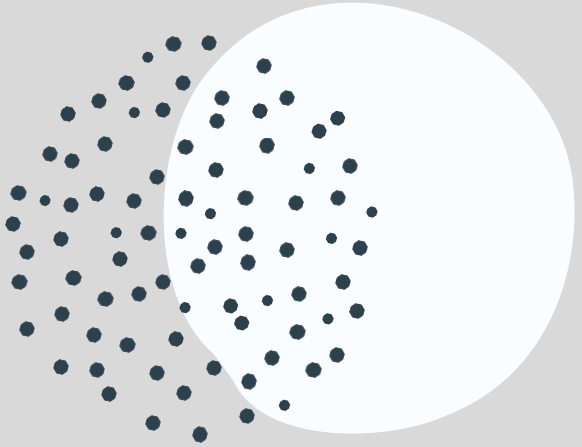
2 Unknown Targets/Major Class Distinction/Many Features (4-10)

2 Unknown Targets/Non-major Class Distinction/Many Features (4-10)

1 Unknown Target/Major Class Distinction/Many Features (4-10)

1 Unknown Target/Non-major Class Distinction/Many Features (4-10)

Maximal Oppositions



Teach two maximally different sounds to illustrate the wide range of features available in the language	Highlight this "phonological diversity" through explicit phonological activities (I.e., sorting and matching)	Learn 2 sounds but also gain broader insights into phonology that will trigger broad, system-wide change

MaxO: Goals Words or Nonwords

See open access tutorial for more on nonword approach
https://doi.org/10.1044/2021_LSHSS-21-00105

Paired word/nonword spreadsheet

Comparison of Contrastive Approaches Across 4 Domains of the Phonological Intervention Taxonomy

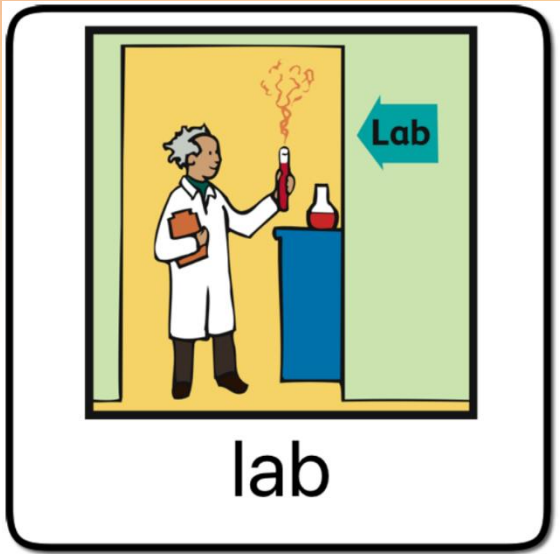
PHONOLOGICAL INTERVENTION TAXONOMY

GOAL	TEACHING MOMENT	CONTEXT	PROCEDURAL ISSUES
AREA OF FOCUS	**ANTECEDENT EVENT**	**AGENT**	**INTENSITY**
Sound segment production	*Content of model or instruction*	Speech-language pathologist	Session frequency
Phonological processes, rules, patterns, features, classes	Articulatory-phonetic	Parent	Session duration
Phonotactics (e.g., stress, word shapes)	Phonological	Teacher	Dose per session
Intelligibility / communicative effectiveness	Metaphor	Other children	Total intervention duration
Input processing / speech perception	Phonological awareness / literacy	Other agents	**TRAINING**
Phonological awareness / literacy	Semantic / morphologic / syntactic	**VENUE**	Speech-language pathologist (SLP) training
Other linguistic abilities (e.g., morphosyntax)	*Modality of model or instruction*	Clinic	Non-SLP training
CHARACTERISTICS OF TARGET / GOAL	Spoken	Home	**EVALUATION**
Stimulable sounds	Visual	School	Criterion-based progression
Non-stimulable sounds	Tactile / kinesthetic	**SESSION FORMAT**	Prescribed data collection
Early developing sounds	Gestural	Individual	
Later developing sounds	**RESPONSE**	Group	
Sounds always incorrect	*Level*	**RESOURCES**	
Sounds sometimes correct	Imitation	Paper-based	
Lexical inconsistency	Spontaneous	Objects	
Broader factors	*Requirement*	Scripts	
LINGUISTIC CONTEXT OF STIMULUS	Phonetic production	Computer / technology	
Isolated speech sounds / articulatory movements	Phonological production	**ACTIVITIES**	
Nonwords	Phonological awareness / literacy related	*Type*	
Real words	Non-speech	Naturalistic	
Sentences	Auditory / listening	Structured	
Conversation	Gestural	*Social / emotional valence*	
Contrastive words	**CONSEQUENT EVENT**	Challenging	
Written letters, words, or sentences	*Evaluative feedback*	Fun	
GOAL PROGRESSION STRATEGY	Knowledge of results		
Vertical	Knowledge of performance		
Horizontal	*Reflective feedback*		
Cyclical	Self-monitoring		
	Responsive feedback		
	Recast / expansion		

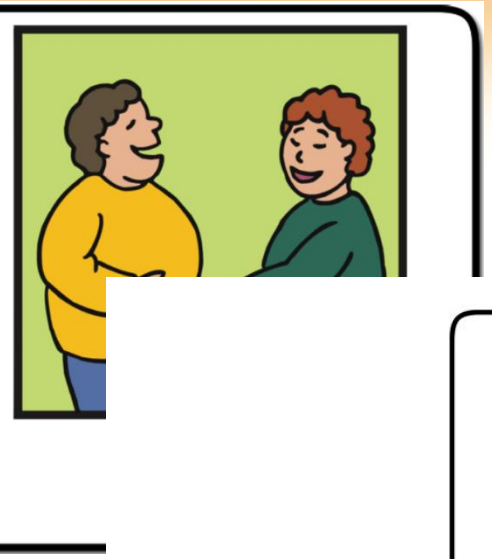
Legend
Domains
CATEGORIES
Subcategories
Elements

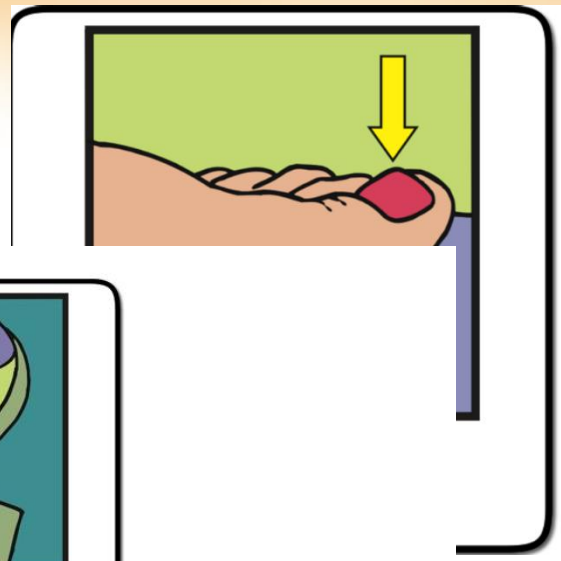
	Minimal Pairs	Multiple Oppositions	Maximal Oppositions
		GOAL	
Contrastive Pairs	Child's error ~ target sound	Child's error ~ target sounds	Target Sound ~ Target Sound
Contrastive Sounds	[t] ~ [s]	[t] ~ [s, k, ʧ, tɹ]	[ɹ] ~ [s]
Example Word Pairs	two ~ Sue	two → Sue, coo, chew, true	rod ~ sod - OR – [ɹib] ~ [sib]
		TEACHING MOMENT	
Cues	Multiple cues to highlight the phonemic contrast to signal a difference in meaning (e.g., request for clarification)	Multiple cues (slower model, physical prompt, shadow) to highlight the phonemic contrasts that signals a difference in meaning and enlarges the frame of learning	Multiple cues to highlight salience of contrast to facilitate learnability
Generalization	To other sounds affected by phonological error pattern (e.g., stopping)	System-wide change to other sounds and clusters in the phoneme collapse (and mirror rule)	System-wide change to less complex untrained sounds
		CONTEXT	
Intervention Agent	Generally SLP, but also parent or teacher	Generally SLP, but also parent (Sugden et al., 2020)	SLP
Session	Individual or small group	Individual or small group	Individual
Social Valence	Challenging	Challenging	Challenging
		PROCEDURAL ISSUES	
Intensity	100 trials 2-3x/week for 30-60 min	100 trials 2x/week for 30-45 min	100 Trials/session 1-3x/week for 30-60 min
Probes	Target + related sounds	Target sound in 10 untrained words + conversational sample Monitor phoneme collapse	Production and Stimulability Probes of singleton and clusters of implicationally related sounds

They look similar, but WHICH one is WHICH?



lab





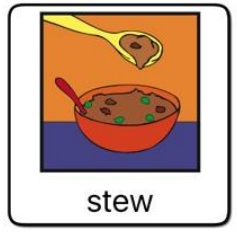

sew


two


coo

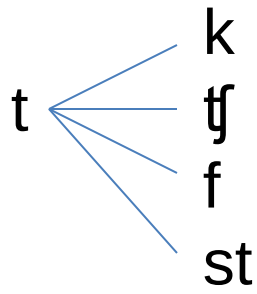

shoe


chew


stew

Role-Play/Demonstration

1. **Fishbowl (Lynn and Volunteer)**
   a. **Multiple Oppositions**
      - Collapses obstruents and clusters to [t]

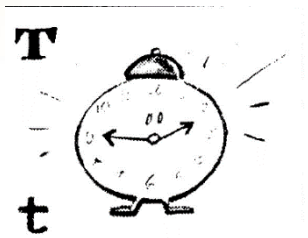


      - Moderate-severe SSD
      - Some stimulability, but never produces the target sounds in any context

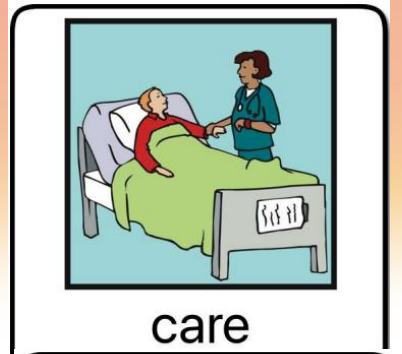
2. **TEACHING MOMENT**
   - **Model – Response (IMIT) – Feedback**
     - ***Cues, prompts used***

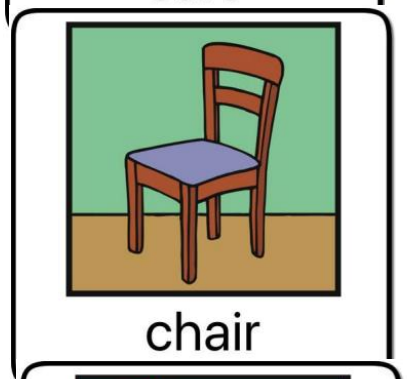
Demonstrate each of the contrastive approaches in role-play with a nearby attendee

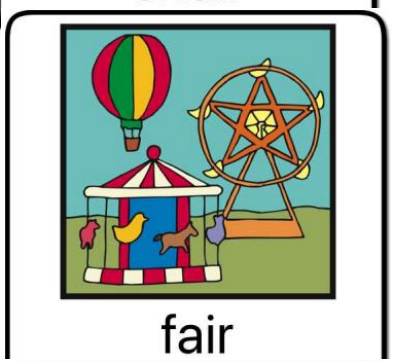
Learning Outcome 3
The learner will…

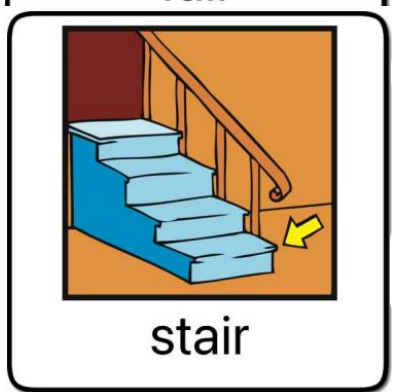

T
t


tear

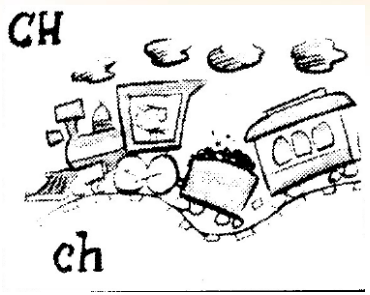

care

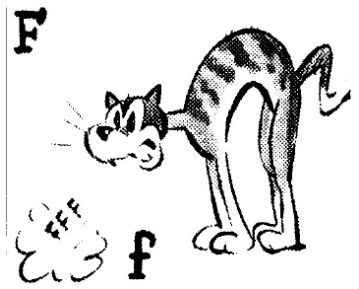

chair

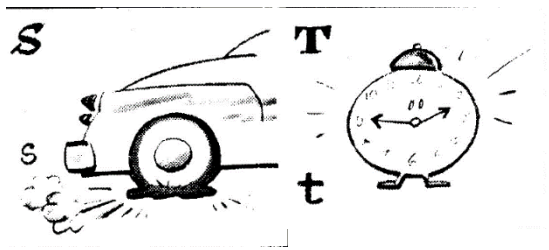

fair


stair

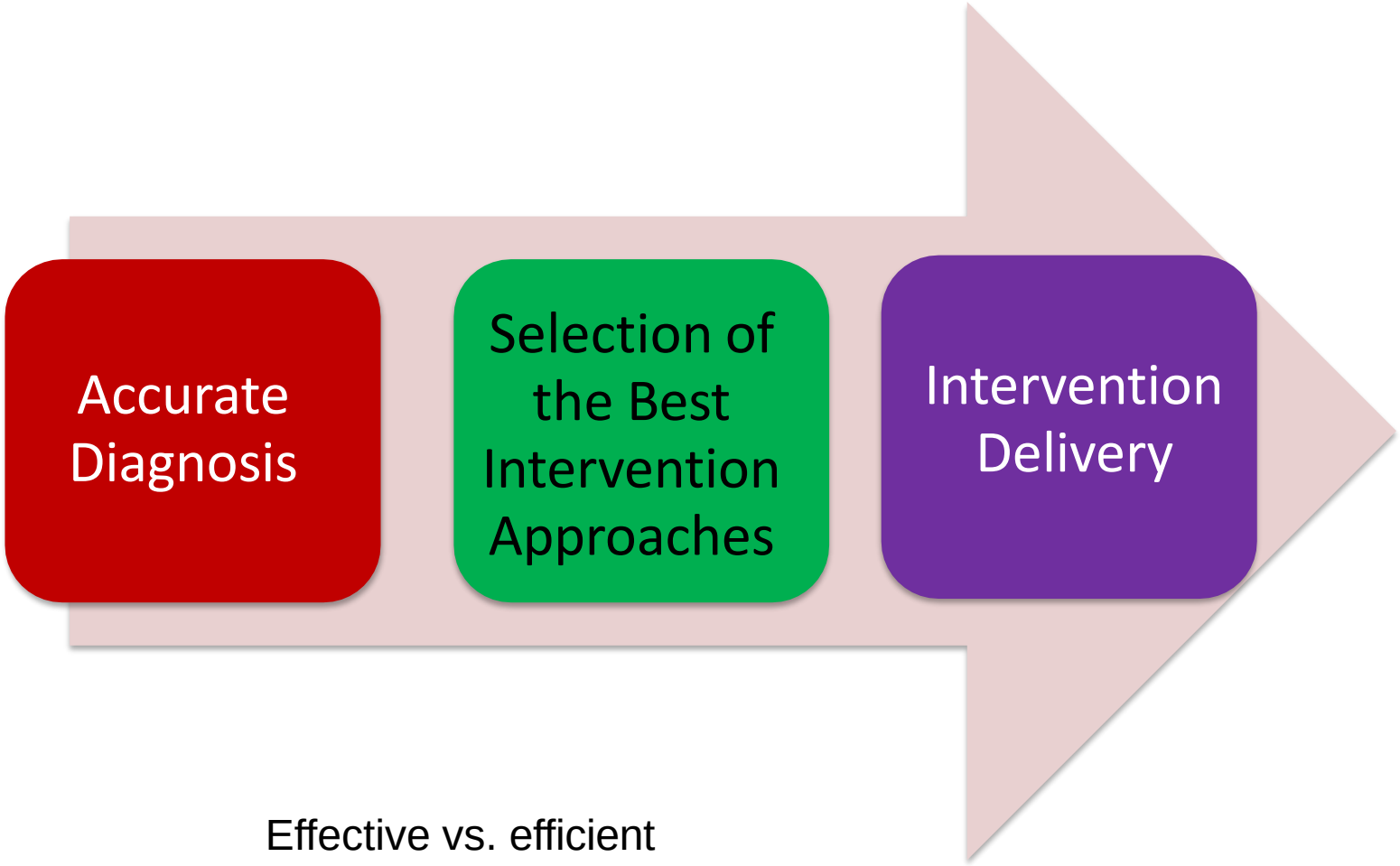

K
k


CH
ch

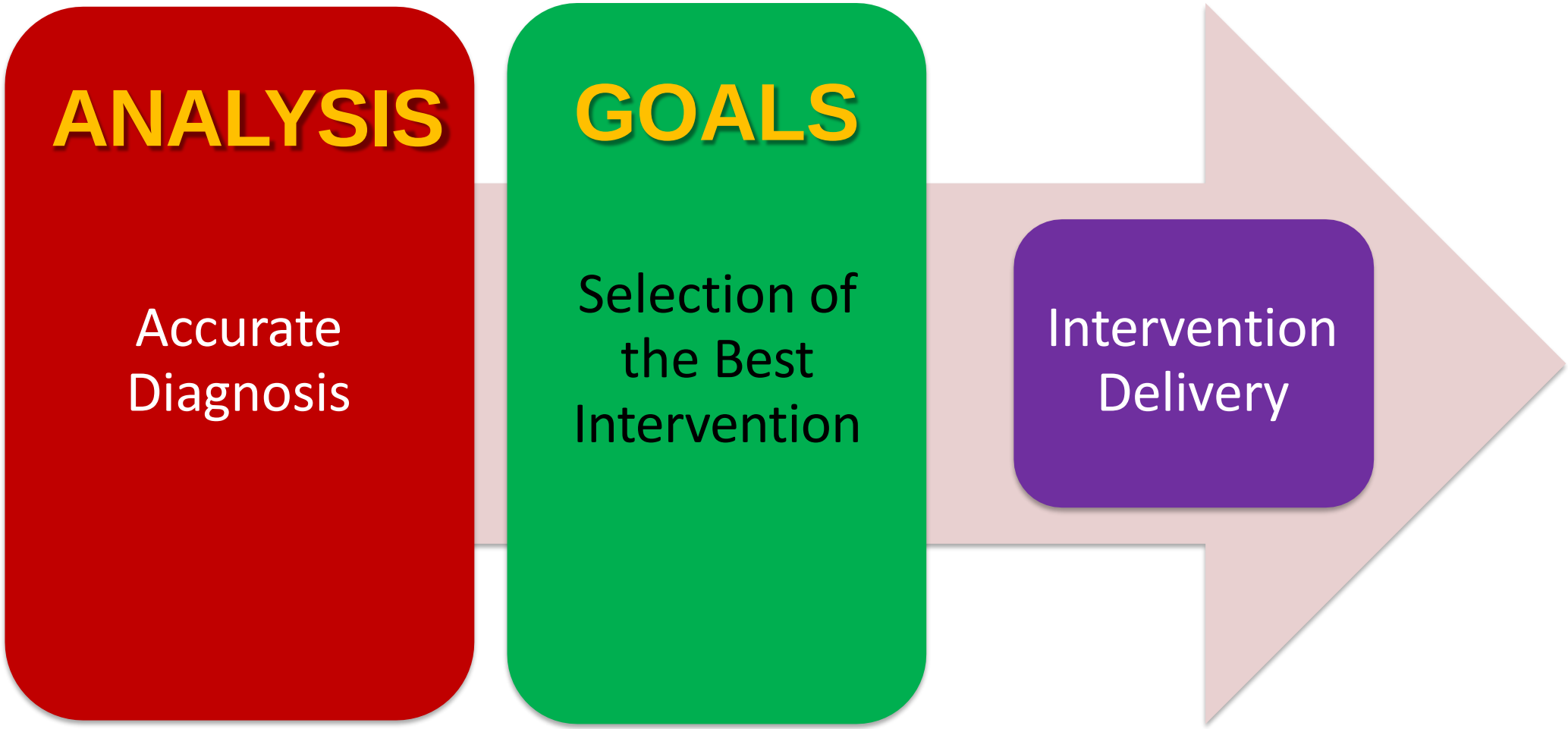

F
f


S
s
T
t

Best-Practice Model



Effective vs. efficient


ANALYSIS
Accurate Diagnosis
GOALS
Selection of the Best Intervention
Intervention Delivery

Analyze the distinguishing features of the different contrastive approaches according to the four domains of the Phonological Intervention Taxonomy.

Reflection 1:

- Describe the **heart** of each contrastive approach
- Describe the **goal** of each contrastive approach
- Describe the **population** best suited for each approach

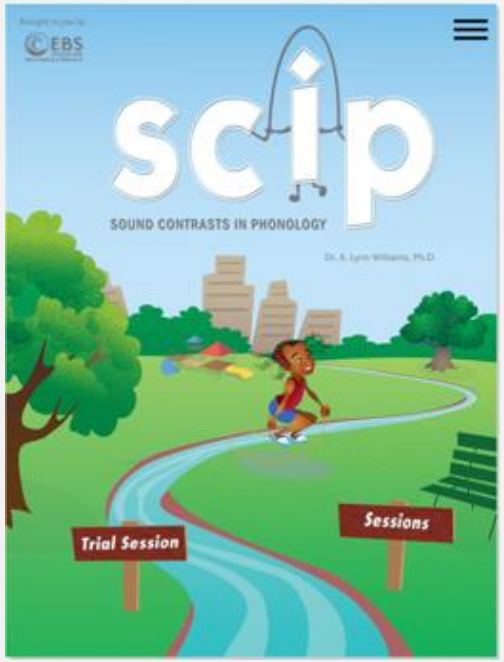
Learning Outcome 1
The learner will…

Microburst 4: Apps and EBP

What is Available?

Minimal Pairs Academy

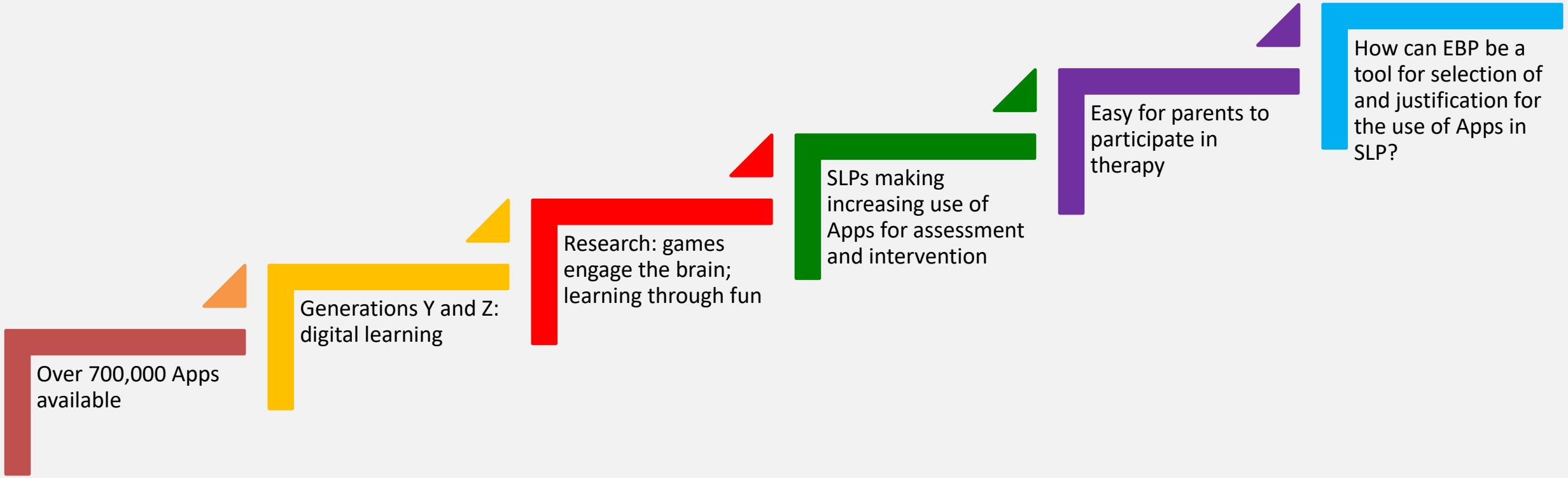
Minimal Pairs for Speech



SCIP

SLP Minimal Pairs Full

EBP and Apps


Over 700,000 Apps available
Generations Y and Z: digital learning
Research: games engage the brain; learning through fun
SLPs making increasing use of Apps for assessment and intervention
Easy for parents to participate in therapy
How can EBP be a tool for selection of and justification for the use of Apps in SLP?

How SLPs Select Apps

- Suggestions by other SLPs
- App Reviews by bloggers, lists, twitter, App store reviews, colleagues and parents' opinions
- Descriptions by developers
- Trial and error

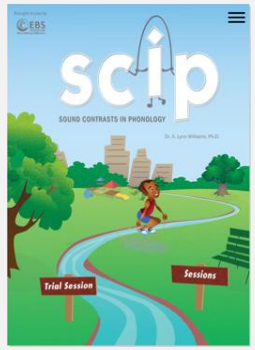
Schaber & Wakefield (2012)

What SLPs Want

- Single robust resource
- Comprehensive
- Critically examined
- Minimize biases

Schaber & Wakefield (2012)

Critical APPraisal of Phonology apps (Williams, 2017)



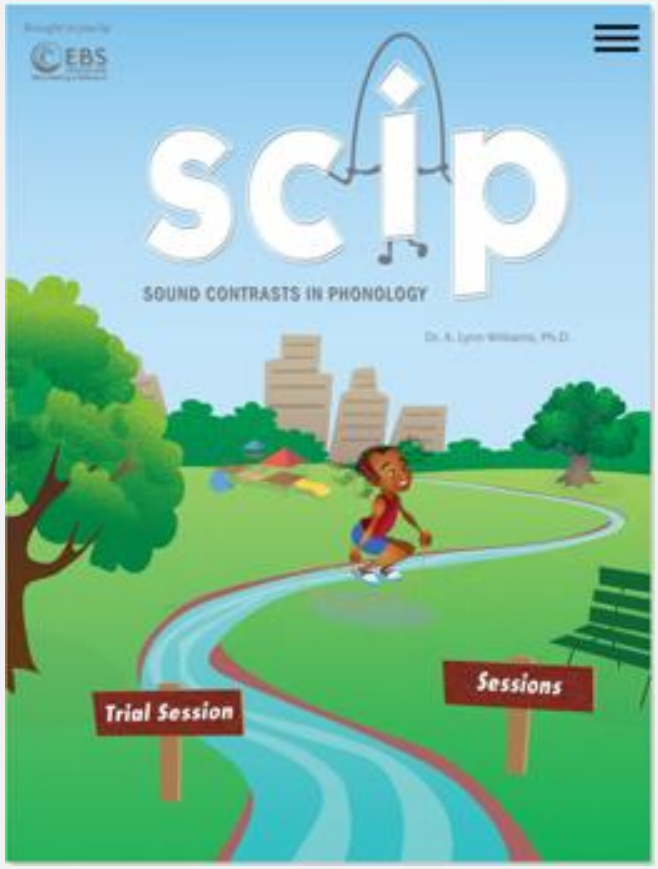
Rating Chart for Speech/Language/Education Apps

	MP Academy	MP for Speech	SCIP	SLP MP Full
General Info	4.1	4.7	4.9	3.6
Features	5.8	3.7	6.0	5.3
App Design	3.2	2.4	2.9	2.3
Speech/Language Use	2.7	2.7	3.3	2.6
AVERAGE	15.8	13.5	17.1	13.8
Star Rating	4	4	5	4

Evaluation Rubric for iPad Apps

	MP Academy	MP for Speech	SCIP	SLP MP Full
Curriculum connection	7	7	7	7
Authenticity	6	7	7	6
Feedback	6	4	6	4
Differentiation	7	5	7	6
User friendliness	6	5	5	4
Student motivation	7	6	6	5
Reporting	7	4	7	7
Sound	6	7	4	6
Instructions	7	5	6	5
Support	7	5	7	5
AVERAGE	6.6	5.5	6.2	5.5

Contrastive Phonological Approaches



- Minimal Pairs
- Multiple Oppositions
- Maximal Oppositions
- Empty Set
- Vowel Contrasts

SCIP app

SOUND EVIDENCE: Assessment and Treatment of SSD in Children

Part III: Clinical Decision-Making and Implementation

A. Lynn Williams, Ph.D., CCC-SLP
College of Clinical and Rehabilitative Health Sciences
East Tennessee State University

Disclosures

Financial:

- Received honorarium and registration waiver from SHAA
- Receive royalties from Brookes Publishing and EBS Healthcare

Nonfinancial:

- Author of one of the analyses, target selection approaches, and studied interventions
- Copyright holder of the Phonological Intervention Taxonomy

Research Team

Learner Objectives: Part III

Make it ACAP!

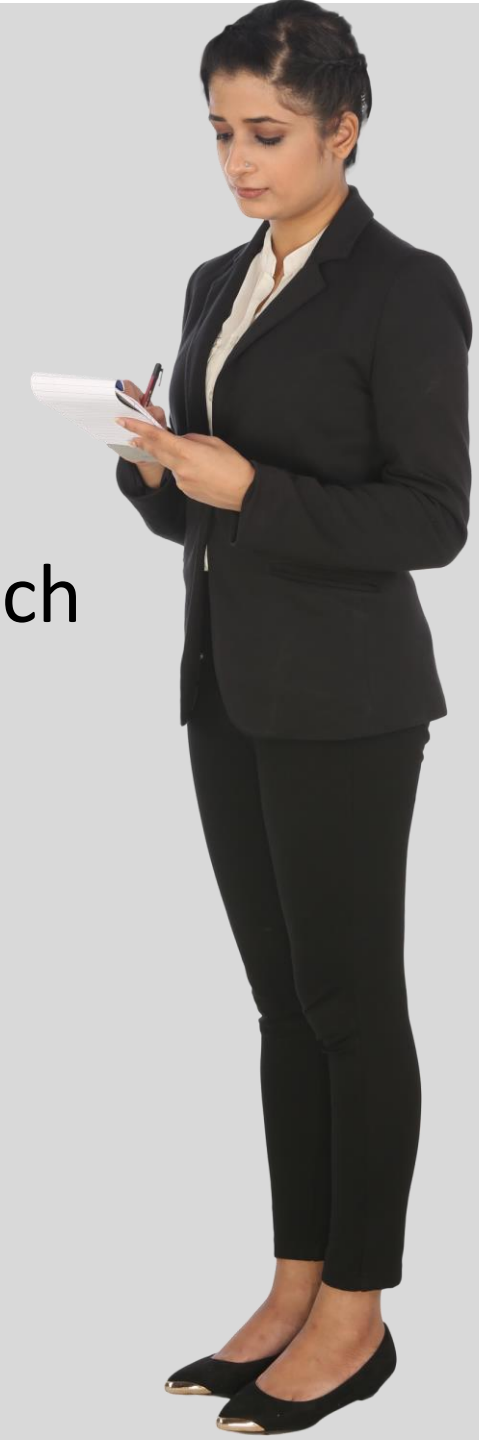
01 Use a clinical decision-making model to select the contrastive approach that is suited for particular characteristics of a phonological SSD

02 Describe the child, clinician, and intervention characteristics that comprise the clinical decision-making model

03 Determine two strategies to use to evaluate the fidelity of implementation of contrastive phonological intervention approaches

Cases

Let's look at some cases to see which approaches might work.



Logan

- 4 years, 7 months
- English only language spoken in home
- Arizona-4 Standard Score of 68, Percentile of 2
- Arizona-4 classifies as “severe disorder”
- Language and phonological awareness were borderline
- A more reticent personality; easily frustrated

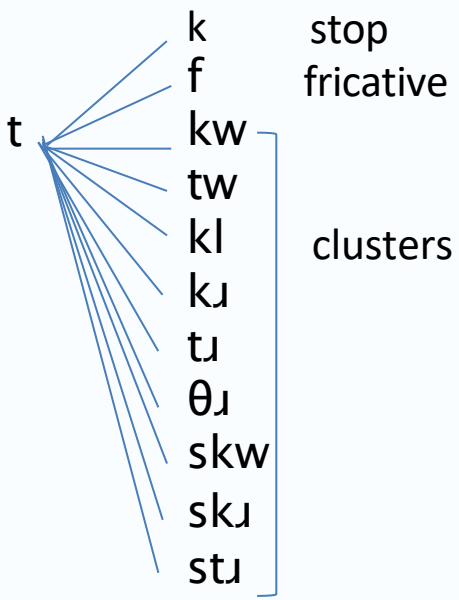
Williams & Storkel, 2022

Logan (4;7)

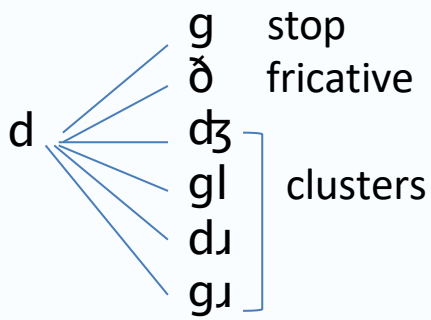
	Onset#	Onset %	Coda#	Coda%	Total%	Onset Productions					Coda Productions				
k	0	0%	5	100%	50%	t	t	t	t	t	k	k	k	k	k
g	0	0%	5	100%	50%	d	d	d	d	d	g	g	g	g	g
f	0	0%	1	20%	10%	t	s	t	s	t	f	p	p	p	p
v	3	60%	2	40%	50%	v	j	v	del	v	b	v	b	b	v
T	0	0%	0	0%	0%	s	t	s	t	s	s	p	ts	ts	t
D	0	0%	0	0%	0%	d	d	d	d	d	d	d	d	N/A	N/A
s	4	80%	3	60%	70%	s	t	s	s	s	s	ts	ts	s	s
z	4	80%	3	60%	70%	z	v	z	z	z	z	d	d	z	z
S	1	20%	1	20%	20%	s	S	s	s	s	ts	s	S	ts	s
C	5	100%	1	20%	60%	C	C	C	C	C	C	ts	ts	ts	ts
J	1	20%	1	20%	20%	J	d	d	d	d	del	J	d	d	d
G	N/A	N/A	0	0%	0%	N/A	N/A	N/A	N/A	N/A	n	n	n	n	n
l	0	0%	0	0%	0%	w	w	v	w	w	del	del	del	del	del
r	0	0%	0	0%	0%	w	w	w	w	w	del	del	del	del	del
ALL	**18**	**27%**	**22**	**32%**	**30%**	67 opportunities					68 opportunities				

Snd	#	%	Accuracy Analysis by Sound	Productions																	
w-cluster	0	0%	kw, tw, sw	t	t	t	t	f	f												
l-cluster	0	0%	kl, pl, bl, gl, fl, sl	t	t	p	p	b	b	d	d	s	t	f	f						
r-cluster	0	0%	kr, pr, tr, br, dr, gr, fr, Sr, Tr	t	t	p	p	t	t	b	b	d	d	d	d	t	t	s	s	t	t
s-cluster	0	0%	sw, sl, sm, sn, sk, sp, st	f	f	f	f	m	m	n	n	t	t	p	p	t	t				
3s	0	0%	skw, spl, skr, spr, str	t	t	p	p	t	t	p	p	C	t								

Logan's WI Phoneme Collapses



1:11 collapse of obstruents and clusters to [t]



1:6 collapse of obstruents and clusters to [d]

Which approach would you choose?

Maximal Oppositions

Initial	I
f	yes
θ	
ð	
ʃ	yes
ʤ	yes

VC2_Rhyme_IPA	C2 Dev	ʤ	l
æm	early-8	J@m	l@m
ip	early-8	Jip	lip
in	early-8	Jin	lin
eɪd	early-8	Jed	led
ɪm	early-8	Jɪm	lɪm

Predictions for Generalization

- Improvement in fricatives/affricates
- Improvement in liquids
- System-wide change

Multiple Oppositions

tate ~ Kate, late, straight

toll ~ coal, foal, stroll

/teɪn/ ~ cane, feign, strain

/teɪ/ ~ Kay, Faye, stray

Predictions for Generalization

- 1:11 Phoneme Collapse will reduce (or restructure) to include 2 and 3 consonant clusters
- Generalization to the mirror phoneme collapse to [d]
- System-wide change

Minimal Pairs

argets:

OR t ~f

ntrasts:

take ~ fake

tea ~ key

tan ~ fan

two ~ coo

tea ~ fee

Predictions for Generalization

- Elimination of fronting will generalize to [g] and to [k, g] clusters

Olivia

- 6 years, 7 months
- White, Not Hispanic
- English only language spoken in home
- Arizona-4 Standard Score of <50, Percentile of <0.1
- Arizona-4 classifies as “severe disorder”
- Language and phonological awareness delays
- Hard worker; quiet & shy; speaks in a whisper and avoids communication

Williams & Storkel, 2022

Olivia (6;7)

	Onset#	Onset %	Coda#	Coda%	Total%	Onset Productions					Coda Productions				
k	3	60%	5	100%	80%	t	k	t	k	k	k	k	k	k	k
g	2	40%	5	100%	70%	d	g	d	g	d	g	g	g	g	g
f	5	100%	5	100%	100%	f	f	f	f	f	f	f	f	f	f
v	0	0%	1	20%	10%	b	b	del	b	b	b	b	v	b	b
T	1	20%	0	0%	10%	T	k	f	s dent	f	f	f	f	f	f
D	0	0%	0	0%	0%	d	d	d	d	d	b	b	b	N/A	N/A
s	5	100%	5	100%	100%	s pal	s	s pal	s pal	s pal	s pal	s pal	s pal	s pal	s pal
z	5	100%	5	100%	100%	z	z devoice	z	z devoiced	z pal	z pal	z pal	z pal	z pal	z pal
S	0	0%	0	0%	0%	s dent	s dent	s pal	s dent	s pal	s pal	s dent	s dent	s dent	s pal
C	5	100%	4	80%	90%	C	C	C	C	C	C	S	C	C	C
J	5	100%	4	80%	90%	J	J	J	J	J	J	dz	J	J	J
G	N/A	N/A	0	0%	0%	N/A	N/A	N/A	N/A	N/A	n	n	n	n	n
l	0	0%	0	0%	0%	w	w	w	w	w	del	del	del	del	del
r	0	0%	0	0%	0%	w	w	w	w	w	del	del	del	del	del
ALL	**31**	**46%**	**34**	**50%**	**48%**	67 opportunities					68 opportunities				

- Distortions on s-clusters
- Gliding of l & r in l & r clusters

Olivia's WI Phoneme Collapses

Velar stops and interdental fricatives collapse to alveolar stops

1:2 collapse of sonorants to [w]

Use a clinical decision-making model to select the contrastive approach this is suited for particular characteristics of a phonological SSD.

Clinical Decisions

- Determine goals and contrastive word pairs for MP, MO, and MaxO
- Which approach(es) are best suited for Olivia

Learning Outcome 1
The learner will…

Elijah

- 3 years, 5 months
- White, Not Hispanic
- English only language spoken in home
- Arizona-4 Standard Score of 80, Percentile of 9
- Arizona-4 classifies as “mild disorder”
- Good language and phonological awareness
- Outgoing, socially interactive, active & busy, always moving

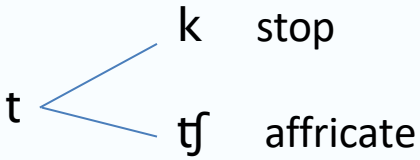
Williams & Storkel, 2022

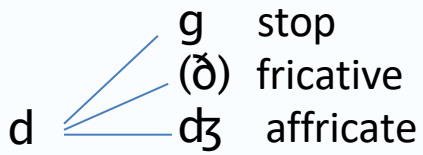
Elijah (3;5)

	Onset#	Onset %	Coda#	Coda%	Total%	Onset Productions					Coda Productions				
k	0	0%	0	0%	0%	t	t	t	t	t	t	t	t	t	t
g	0	0%	0	0%	0%	J	d	d	d	d	d	d	d	d	d
f	5	100%	5	100%	100%	f	f	f	f	f	f	f	f	f	f
v	2	40%	1	20%	30%	v	b	v	m	b	b	f	f	f	v
T	0	0%	0	0%	0%	f	f	f	f	f	f	f	f	f	f
D	0	0%	0	0%	0%	v	d	v	v	d	d	d	d	N/A	N/A
s	5	100%	5	100%	100%	s	s	s	s	s	s	s	s	s	s
z	5	100%	3	60%	80%	z	z	z	z	z	z	s	z	s	z
S	4	80%	1	20%	50%	S	s	S	S	S	S	s	s	s	s
C	1	20%	0	0%	10%	C	t	t	t	t	s	s	ts	s	S
J	0	0%	0	0%	0%	d	d	d	d	d	S	S	s	S	s
G	N/A	N/A	0	0%	0%	N/A	N/A	N/A	N/A	N/A	n	n	n	n	n
l	0	0%	0	0%	0%	w	w	w	w	w	del	del	del	del	del
r	0	0%	0	0%	0%	w	w	w	w	w	del	del	del	del	del
ALL	**22**	**33%**	**15**	**22%**	**27%**	67 opportunities					68 opportunities				

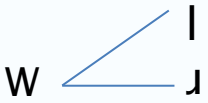
Gliding of l & r in l & r clusters

Elijah's WI Phoneme Collapses





1:3 phoneme collapse of voiced obstruents to [d]



1:2 collapse of sonorants to [w]

Use a clinical decision-making model to select the contrastive approach this is suited for particular characteristics of a phonological SSD.

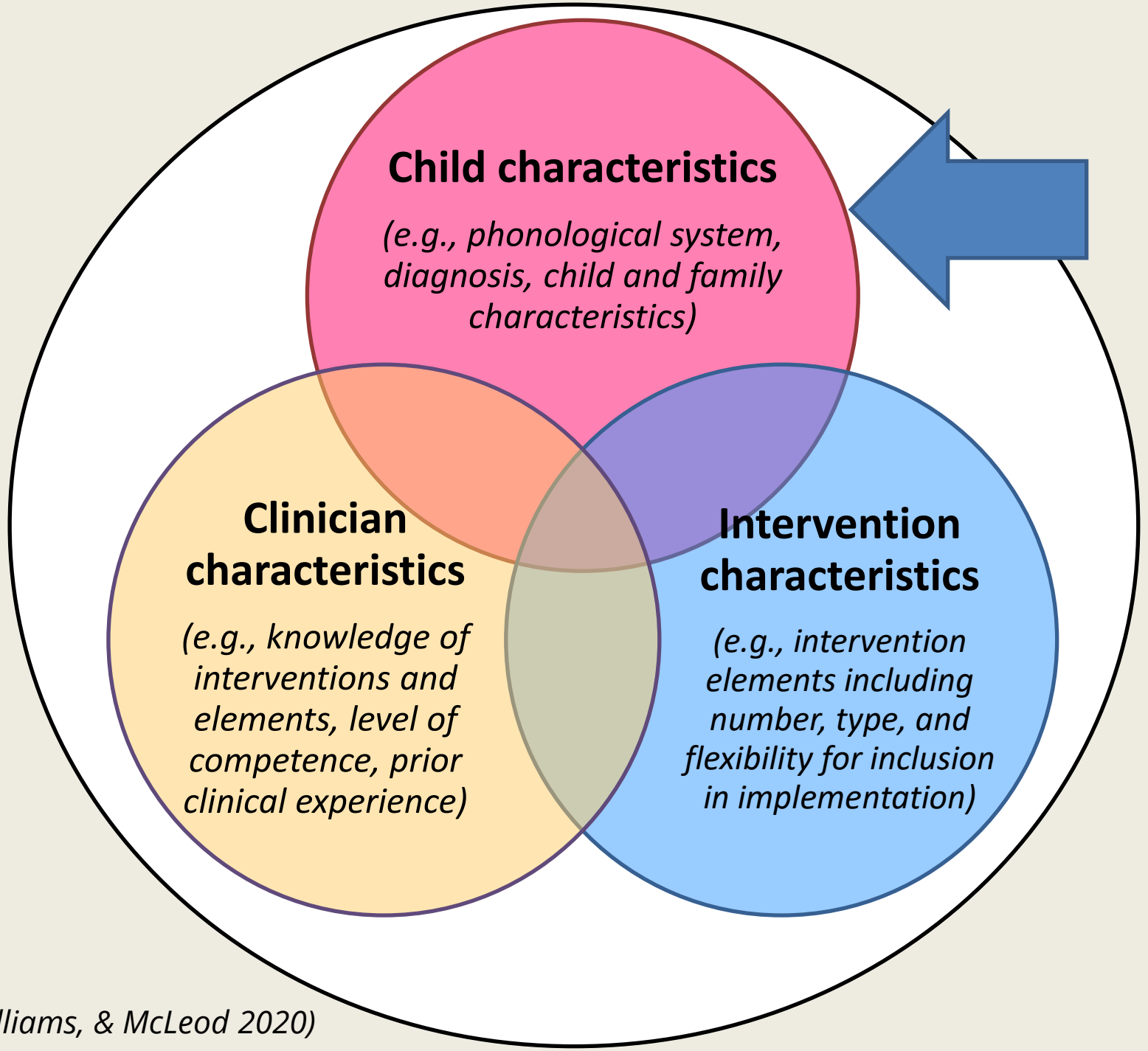
Clinical Decisions

- Determine goals and contrastive word pairs for MP, MO, and MaxO
- Which approach(es) are best suited for Elijah?

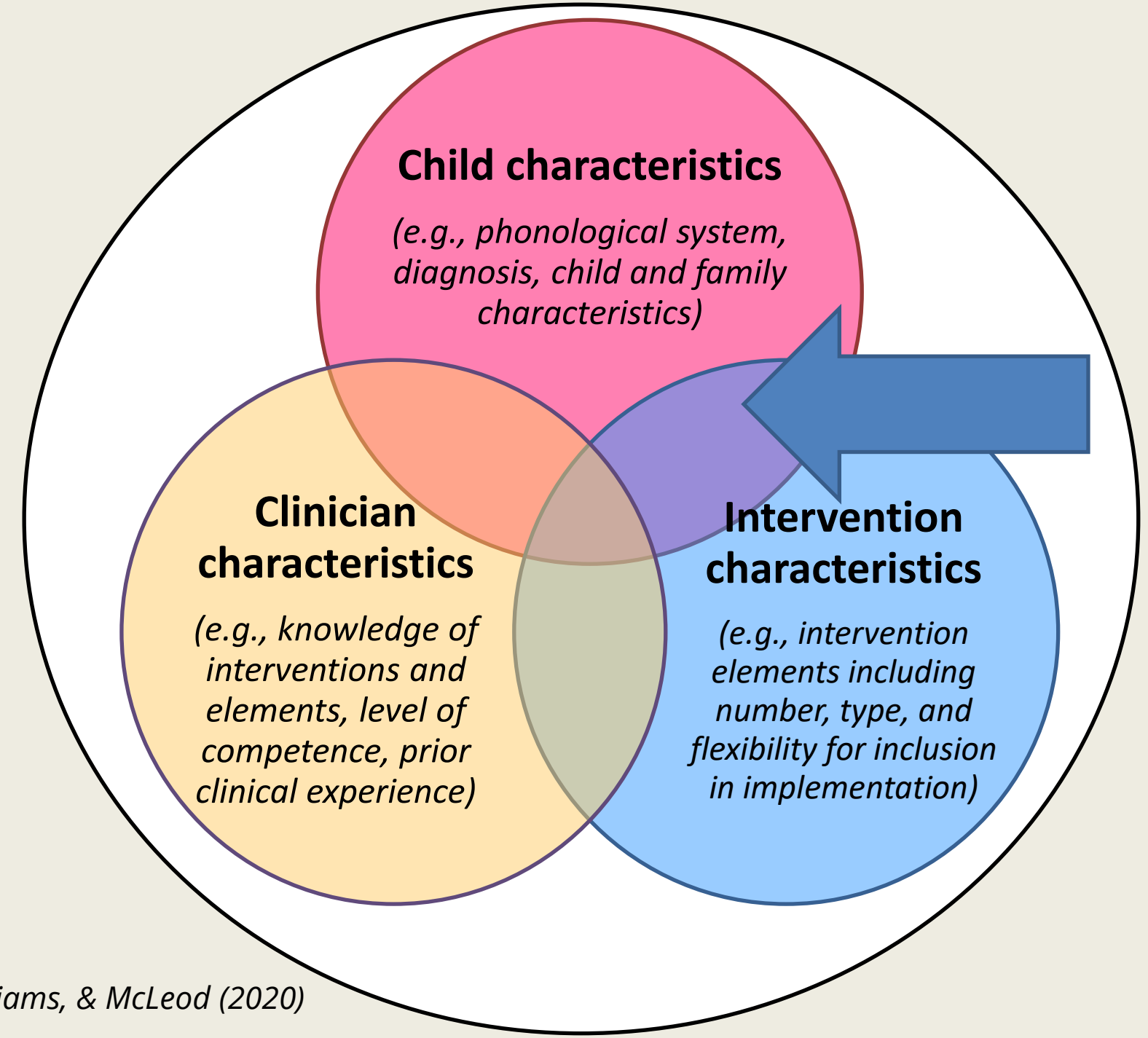
Learning Outcome 1
The learner will…

Clinical Decision-Making

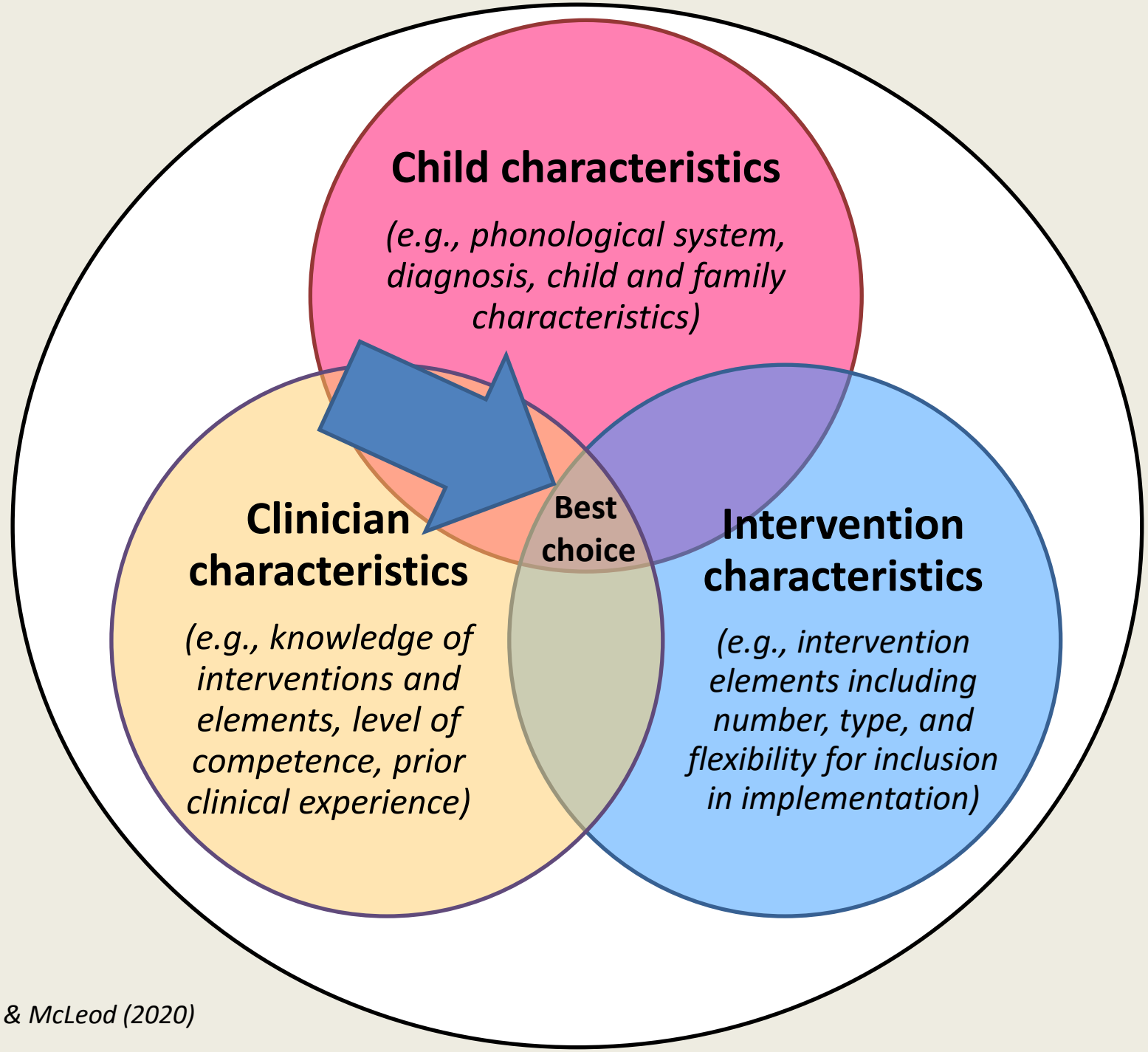
How can the Phonological Intervention Taxonomy be used to support clinical decision-making skills?



Baker, McCauley, Williams, & McLeod 2020)



Baker, McCauley, Williams, & McLeod (2020)



Baker, McCauley, Williams, & McLeod (2020)

Describe the child, clinician, and intervention characteristics that comprise the clinical decision-making model.

Clinical Decision-Making

Learning Outcome 2
The learner will…

20 Questions to consider when learning a new intervention approach

(Baker & Williams, 2021)

GOALS

1. What type of SSD is suitable for the intervention approach?

2. What is the focus of the intervention? (e.g., a specific consonant or classification of consonants, vowels, pattern-based errors, speech perception, intelligbility, lexical consistency, loudness, speech rate, fluency, morphosyntax, and/or phonological awareness)

3. What are the goal characteristics? (e.g., consistency of error, stimulability status of targets, complexity of targets)

4. What linguistic contexts are used to target goals? (e.g., real words, nonwords, contrastive words, sentences, conversation, and/or written words)

5. If more than one goal is targeted, what is the strategy for targeting the goals? (e.g., vertical, horizontal, or cyclical)

TEACHING MOMENT

1. What constitutes a teaching moment? (e.g., antecedent event, response, consequent event)

2. What type of model(s) and/or instructions are provided? (e.g., phonetic, phonological, prosodic, metaphor, morphosyntactic, and/or meta-phonological instructions)

3. What modalities are used to provide models or instructions? (e.g., spoken, visual, tactile-kinesthetic, and/or gestural)

4. What type of responses are expected of children? (e.g., imitate or spontaneous production; produce speech, listen, point, make a specific gesture, draw, and/or write)

5. What type of feedback is provided to children? (e.g., knowledge of results and/or performance, reflective feedback,and/or responsive feedback e.g. recast)

CONTEXT

1. Who will be involved in implementing intervention? (e.g., SLP, parent, teacher, other children or sibilngs, and/or other agents)

2. Where will intervention occur? (e.g., clinic, home, school, and/or other setting)

3. What format will be used for intervention? (e.g., individual and/or group)?

4. What type of resources are needed (e.g., paper-based materials, objects, scripts, computer, and/or specific type of device)?

5. Will the activities in which teaching moments occur be in more structured and/or more naturalistic contexts?

PROCEDURAL ISSUES

1. What is the intensity of the intervention? (e.g., session frequency, session duartion, dose per sesion, total intervention duration)

2. Is specific training required for implementation for the SLP and/or other personnel? (e.g., parent, other health or education professional)

3. Does the intervention approach have a prescribed sequence of procedures or steps with performance or time-based criteria?

4. How will intervention be evaluated--by whom and how often?

5. What tool(s) will be used to measure the effect of intervention? (e.g., single-word probe and/or CS sample, intelligibiltiy rating, parent and/or teacher report)

Fidelity Checklist

Fidelity Checklists

- Do-Confirm (*post-hoc* checklist)
- Read-Do (*a priori* checklist)
- Review-Do-Confirm checklists
- *"used to do a self-evaluation or coach-facilitated evaluation of how well one was able to complete the tasks as operationally defined"* (Dunst, 2017, p.2)

Fidelity Rating Checklist (Williams, McCauley, & McLeod, 2021)

Multiple Oppositions Fidelity Rating Checklist

Multiple Oppositions Phase 2: Fidelity Rating Checklist

This form is to be completed for *one* activity within a session. An activity involves going through each word set once.

This form is designed to analyze the adherence to the teaching moments of the intervention.

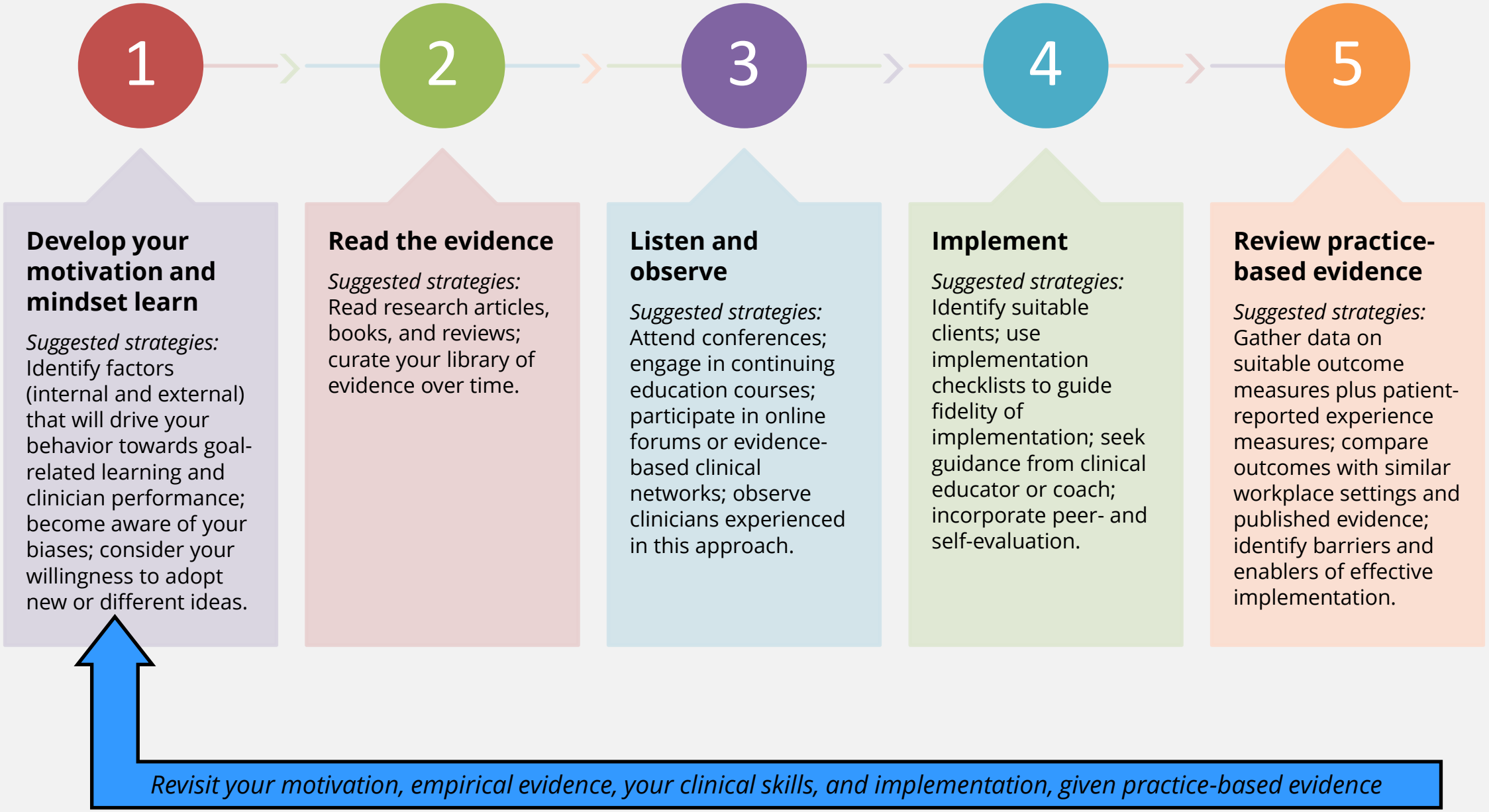
Child: **Session number:** **Imitation/Spontaneous (note for each target):** **Activity completed by:** **Form completed by:**	Word set 1	Word set 2	Word set 3	Word set 4	Word set 5
Please indicate which of the key elements you were able to use as part of the multiple oppositions intervention approach:	Seldom or Never (0-25%)	Some of the Time (25-50%)	As Often As I Can (50-75%)	Most of the Time (75-100%)	Notes
Antecedent event					
Pairs the target and comparison sound together for each contrast					
Varies order of presentation of cards when child is ~ 40% accuracy					
Includes metaphor for target					
Includes gesture for target					
Imitative or spontaneous (matches phase)					
Consequent event (feedback)					
Linguistic feedback provided					

If target incorrect:
• *Uses Intervention Continuum to provide appropriate feedback*
  ○ *Level 1: Immediate recast and modelling*
  ○ *Level 2: Modelling and semantic confusion*
  ○ *Level 3: Semantic confusion and wrong model (to see if child corrects clinician)*					

Procedural Issues					
Dose/session (50-70 responses in 30 min individual session)					
Uses MO data sheet to record child's responses					
General					
Sits at child's eye level					
Interactive naturalistic play included in session					
Total					

Notes:

The Dynamic Process for Learning Interventions for Children with SSD (Baker & Williams, 2021)



Determine two strategies to use to evaluate the fidelity of implementation of contrastive phonological intervention approaches.

Implementation with Fidelity

Learning Outcome 3
The learner will…

Wrapping Up

Match Diagnosis (or characteristics) to Intervention

- One approach doesn’t fit all children
- One approach doesn’t fit one child all the time

Develop a Plan

- Learn the key elements of an intervention to implement with acceptable fidelity

Key Take-Away


thank
you

A. Lynn Williams

Interim Dean and Professor, East Tennessee State University

Contact Me

Email: williamL@etsu.edu

Instagram: @LynnWilliamsSLP

LinkedIn: Lynn Williams

References

Alary Gauvreau, C., Le Dorze, G., Kairy, D. et al. (2019). Evaluation of a community of practice for speech-language pathologists in aphasia rehabilitation: a logic analysis. BMC Health Service Research, 19, 530 (2019) doi:10.1186/s12913-019-4338-0 Baker, E. (2010). Minimal pair intervention. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 41-72). Baltimore, MD: Paul H. Brookes.

Allen, M. M. (2013). Intervention efficacy and intensity for children with speech sound disorders. Journal of Speech, Language, and Hearing Research, 56, 865–877.

Baker, E., & McLeod, S. (2011). Evidence-based practice for children with speech sound disorders: Part 1 Narrative review. Language, Speech, and Hearing Services in Schools, 42, 102-139. doi: 10.1044/0161-1461(2010/09-0075)

Baker, E., McCauley, R.J., Williams, A.L., & McLeod, S. (2020). A taxonomy for phonological intervention (pp. 375-399). In E. Babatsouli (Ed.). *On under-reported monolingual child phonology.* Bristol, UK: Multilingual Matters.

Baker, E., & Williams, A.L. (2021). Implementing interventions (pp. 23-32). In A.L. Williams, S. McLeod, & R. McCauley (Eds). *Interventions for speech sound disorders in children* (2nd ed.). Baltimore: Paul H. Brookes.

Baker, E., Williams, A.L., McLeod, S., & McCauley, R. (2018). Elements of phonological interventions for children with speech sound disorders: the development of a taxonomy. American Journal of Speech-Language Pathology, 27(3), 906-935. doi:10.1044/2018_AJSLP-17-0127.

Bellini, S., Henry, D., & Pratt, C. (2011). From intuition to data: Using logic models to measure professional development outcomes for educators working with students on the autism spectrum. Teacher Education and Special Education, 34, 37-51.

Bernhardt, B. (1992). The application of nonlinear phonological theory to intervention with one phonologically disordered child. Clinical Linguistics and Phonetics, 6, 283-316. doi:10.3109/02699209208985537

Bernhardt, B. M., Bopp, K. D., Daudlin, B., Edwards, S. M., & Wastie, S. E. (2010). Nonlinear phonological intervention. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 315-332). Baltimore, MD: Paul H. Brookes.

Bowen, C. (2015). Children's speech sound disorders (2nd ed.). Oxford, UK: Wiley Blackwell.

Bowen, C., & Cupples, L. (1999). Parents and children together (PACT): A collaborative approach to phonological therapy. International Journal of Language and Communication Disorders., 34(1), 35-56. doi:10.1080/136828299247603

Camarata, S. (2010). Naturalistic intervention for speech intelligibility and speech accuracy. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 381-406). Baltimore, MD: Paul H. Brookes.

Crosbie, S., Holm, A., & Dodd, B. (2005). Intervention for children with severe speech disorder: A comparison of two approaches. International Journal of Language and Communication Disorders, 40, 467-491. doi:10.1080/13682820500126049.

disorders in children: Clinical decision making in assessment and intervention. (pp. 189–199). Baltimore, MD: Paul H. Brookes.

References

Crowe, K., & McLeod, S. (2020). Children's English consonant acquisition in the United States: A review. *AJSLP.* *https://doi.org/10.1044/2020_AJSLP-19-00168*.

Dodd, B., Holm, A., Crosbie, S., & McIntosh, B. (2010). Core vocabulary intervention. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 117-136). Baltimore, MD: Paul H. Brookes.

Dudding, C.C., & Pfeiffer, D.L. (2018). Clinical decision-making in graduate students: Quantitative findings. Teaching and Learning in Communication Sciences & Disorders, 2(1), Article 2.

Dunst, C. J. (2017). Research foundations for evidence-informed early childhood intervention performance checklists. Education Sciences 7(4): 78. doi.org/10.3390/educsci7040078

Finn, P. (2011). Critical thinking: Knowledge and skills for evidence-based practice. Language, Speech and Hearing Services in Schools, 42(1), 69-72. doi: 10.1044/0161-1461

Flanagan, K. J., & Ttofari Eecen, K. (2018). Core vocabulary therapy for the treatment of inconsistent phonological disorder: variations in service delivery. Child Language Teaching and Therapy 34(3), 209–219. doi.org/10.1177/0265659018784702

Gierut, J. (2007). Phonological complexity and language learnability. American Journal of Speech-Language Pathology, 16(1), 6–17.

Gierut, J. A. (1999). Syllable onsets: Clusters and adjuncts in acquisition. Journal of Speech, Language, and Hearing Research, 42, 708–726. doi:10.1044/jslhr.4203.708

Ginsberg, S. M., Friberg, J. C., & Visconti, C. F. (2016). Diagnostic reasoning by experienced speech-language pathologists and student clinicians. Contemporary Issues in Communication Science and Disorders, 43, 87-97. doi: 1092-5171/16/4301-0087

Hesketh, A. (2010). Metaphonological intervention: Phonological awareness. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 247-274). Baltimore, MD: Paul H. Brookes.

Hesketh, A., Adams, C., Nightingale, C., & Hall, R. (2000). Phonological awareness therapy and articulatory training approaches for children with phonological disorders: a comparative outcome study. International Journal of Language and Communication Disorders, 35(3), 337–354. doi:10.1177/026565900001600304

Hill, A. E., Davidson, B. J., & Theodoros, D. G. (2012). Reflections on clinical learning in novice speech-language therapy students. International Journal of Language & Communication Disorders, 47(4), 413-426. doi: 10.1111/j.1460-6984.2012.00154

Hodson, B. W. (2007). Evaluation and enhancing children's phonological systems: Research and theory to practice. Greenville, SC: Thinking Publications.

References

Hodson, B. W. (2011). Enhancing phonological patterns of young children with highly unintelligible speech. The ASHA Leader, 16(4), 16–19.

Hoffman, P. R., & Norris, J. A. (2010). Dynamic systems and whole language intervention. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 333-354). Baltimore, MD: Paul H. Brookes.

Hoffman, P. R., Norris, J. A., & Monjure, J. (1990). Comparison of process targeting and whole language treatments for phonologically delayed preschool children. Language, Speech, and Hearing Services in Schools, 21(2), 102-109. doi:10.1044/0161-1461.2102.102

Kaiser, A. P, Scherer, N. J, Frey, J.R, & Roberts, M.Y. (2017). The effects of enhanced milieu teaching with phonological emphasis on the speech and language skills of young children with cleft palate: A Pilot Study. American Journal of Speech-Language Pathology, 26(3):806–818. doi:10.1044/2016_AJSLP-16-0008

McLeod, S., & Baker, E. (2017). Children's speech: An evidence-based approach to assessment and intervention. Boston, MA: Pearson.

Miccio, A. W., & Williams, A. L. (2010). Stimulability intervention. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 179-202). Baltimore, MD: Paul H. Brookes.

Pascoe, M., Stackhouse, J., & Wells, B. (2005). Phonological therapy within a psycholinguistic framework: Promoting change in a child with persisting speech difficulties. International Journal of Language and Communication Disorders, 40(2), 189 - 220. doi:10.1080/13682820412331290979

Prézas, R. F., & Hodson, B. W. (2010). The cycles phonological remediation approach. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 137-158). Baltimore, MD: Paul H. Brookes.

Rossouw, K., & Pascoe, M. (2018). Intervention for bilingual speech sound disorders: A case study of an isiXhosa–English-speaking child. South African Journal of Communication Disorders, 65(1), 1-10. doi: 10.4102/sajcd.v65i1.566

Rvachew, S., & Brosseau-Lapré, F. (2010). Speech perception intervention. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 295-314). Baltimore, MD: Paul H. Brookes.

Rvachew, S., Nowak, M., & Cloutier, G. A. (2004). Effect of phonemic perception training on the speech production and phonological awareness skills of children with expressive phonological delay. American Journal of Speech-Language Pathology, 13(3), 250-263. doi: 10.1044/1058-0360(2004/026)

Stackhouse, J., & Pascoe, M. (2010). Psycholinguistic intervention. In A. L. Williams, S. McLeod, & R. J. McCauley (Eds.), Interventions for speech sound disorders in children (pp. 219-246). Baltimore, MD: Paul H. Brookes.