Innovations for Multilingual Learners and Speech Sound Disorders

Philip Combiths & Jennifer Taps Richard
ASHA 2025, Washington D.C.

IOWA

SLPath

SAN DIEGO UNIFIED SCHOOL DISTRICT

SAN DIEGO STATE UNIVERSITY

Slides and Resources

Global Language Use

- Mandarin: ~ 1.1 billion
- Hindi: ~ 615 million
- English: ~ 1.1 billion
- Spanish: ~ 534 million
- Arabic: ~ 273 million
- French: ~ 280 million
- German: ~ 132 million
- Hebrew: ~ 5 million
- Russian: ~ 258 million
- Italian: ~ 68 million
- Japanese: ~ 127 million
- Vietnamese: ~ 77 million
- Tagalog: ~ 24 million
- Polish: ~ 46 million
- Samoan: ~ 413,000
- Somali: ~ 15 million
- Korean: ~ 77 million

Ethnologue, 2019

Public Domain: Wikimedia Commons, 2013

Multilingualism in the US

- 23% in the US speak a language other than English at home
- 6% of SLPs identify as bilingual service providers
- Speech sound disorders affect **all languages spoken by a child**, and optimal treatment addresses each language

ASHA Bilingual Service Providers, Year-End 2017

Getty Images

The need to move forward…

- Survey of SLPs from 13 countries
  - 87% of SLPs provided only monolingual intervention to multilingual children
  - 89% of SLPs recommended that parents only speak one language to children
  - ***Only 18%*** used interpreters during assessment or intervention

Jordaan, 2008; Kritikos, 2003; Campos, 1995

Hi!

- Speech-Language Pathologist, San Diego Unified
- Director, SLPath
- Adjunct Professor at San Diego State University
- Fourth-Generation Irish-German-Polish-American
- Monolingual speaker who would love to be multilingual

Hi!

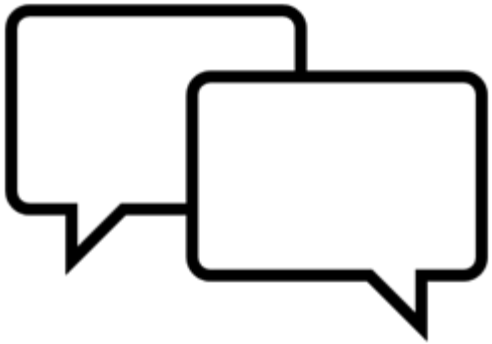
- Assistant Professor, University of Iowa
- Director, Clinical Linguistics and Disparities Lab
- Clinician-Scientist
- Third-Generation Mexican-American
- Spanish is not my native language…

A Different View on Multilingualism

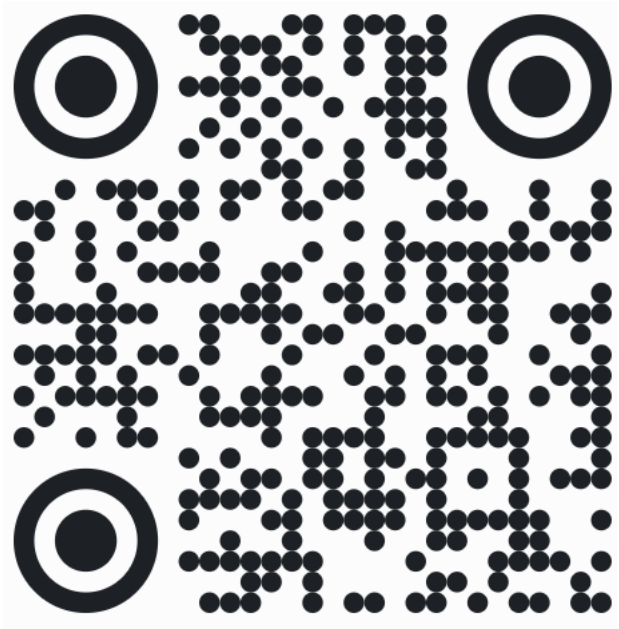
To improve how we support multilingual children, we need to reconsider how we conceptualize multilingualism

Turn and talk

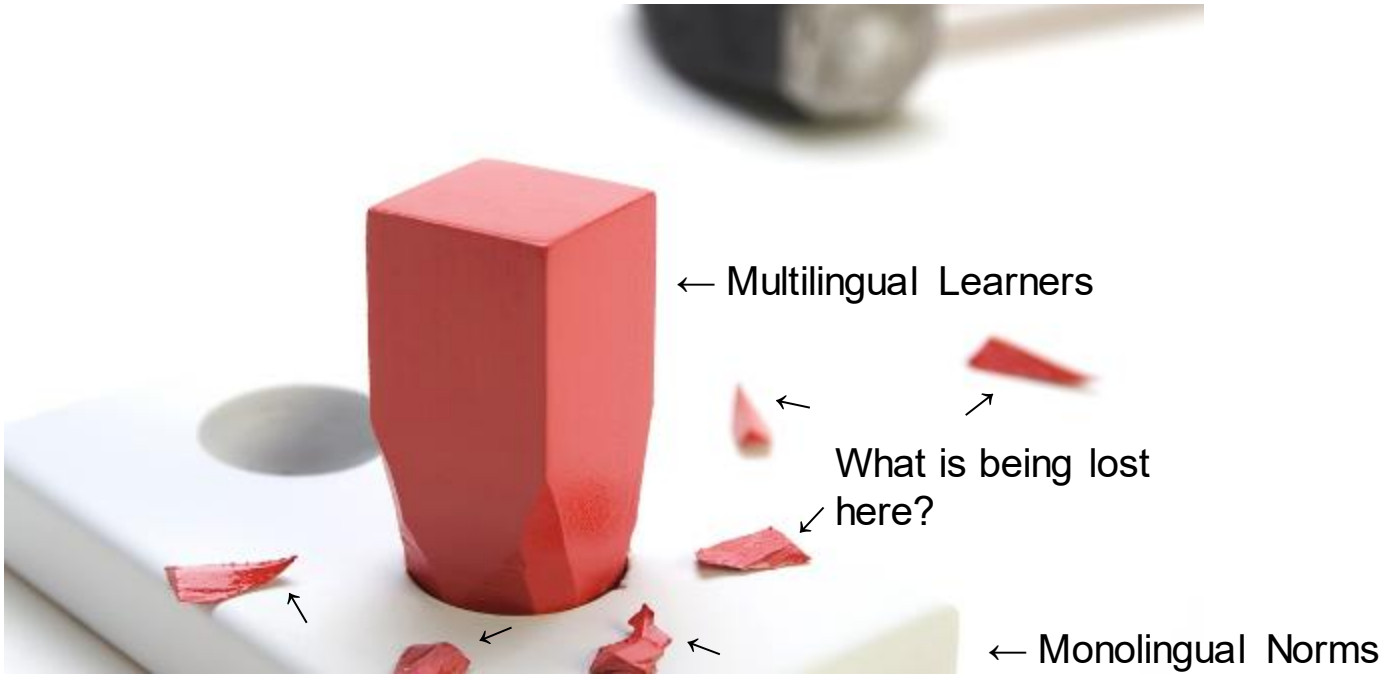
- Talk about a multilingual child on your caseload
- What language does she/he speak?
- What are her/his strengths and unique qualities?
- What are your goals for her/him



Our multilingual students/clients



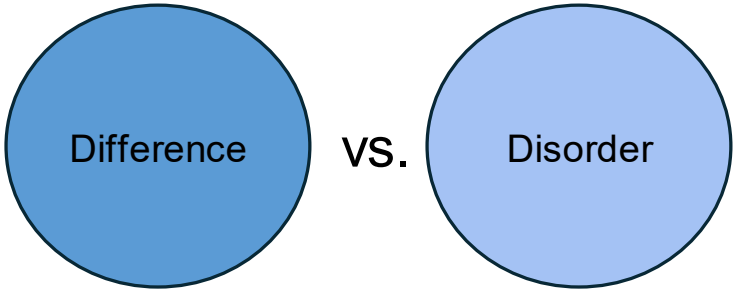
Monolingual Norms



Mark Gabrenya | Getty Images

Some of our Solutions

- Contrastive Analysis (McGregor et al., 1997; c.f. Yu et al., 2020)



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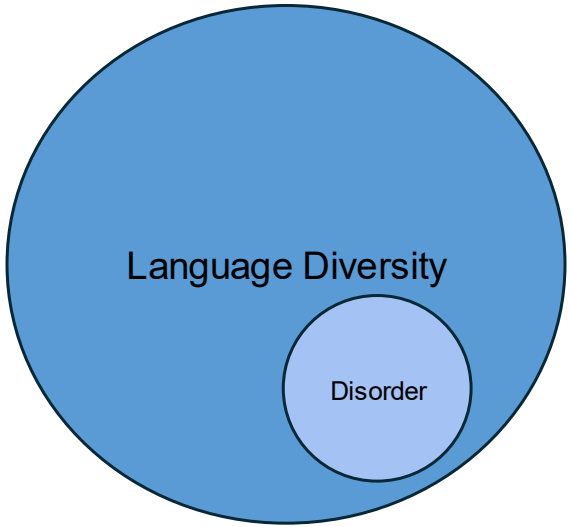
Some of our Solutions

- Converging Evidence Approach (e.g., Restrepo, 1998; Castilla-Earls et al., 2020)



Oetting, 2018

Speech Diversity

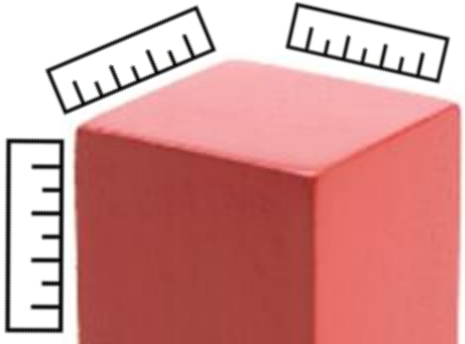
- Sound production that does not match a target dialect
  - Dialect
  - Second language acquisition
- Essay on embracing diversity of speech sound production

- Important to consider disorder within diverse populations
  - Same rate of SSD
  - multilingual children often under-identified in preschool and over-identified in school-aged populations

Stow & Dodd, 2005; Artiles et al, 2002; Sullivan, 2011; Samson & Lesaux, 2009

Our Better Solutions

- Converging Evidence Approach (e.g., Restrepo, 1998)
- Descriptive, Independent, Criterion Referenced (e.g., Fabiano-Smith, 2019)



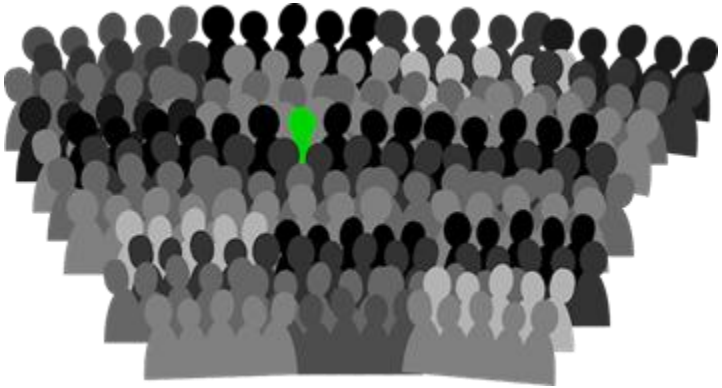


Image from:
Anna Mendoza
https://annamend.com/

Why support multilingualism?

- Culture, family, community membership, and identity

What is lost when children and parents cannot communicate easily with one another?

Wong-Fillmore (1991); Oh & Fuligni, 2010; Yan (2003); Oh & Fuligni, 2010

Why support multilingualism?

- Positive sense of self, identity, and culture
- Stronger parent-child and family relationships
- Increase language development opportunities
- Strong home language foundation = Stronger English in school

Castilla, Pérez-Leroux, and Restrepo (2009); Cummins (2000); de Houwer (1999); Gutiérrez-Clellen (1996); Kohnert, Kim, Nett, Kan, & Duran (2005); Oller & Eilers (2002); Souza (2023)

How to Improve Multilingual Speech Assessment

Principles of Multilingual Speech Assessment

- Acknowledge the child as an individual with an identity; learn from the child and their family
- Consider the impact of the child's unique **cultural** and **linguistic** profile on their speech and communication
- Understand and document the child's multilingual **language environment**
- Assess speech and phonology in each of the child's languages **(yes you can!)**
- Evaluate results according to the child's own multilingual language development (i.e., **not monolingual norms**)
- Distinguish typical multilingual development from **multilingual development in the context of a disorder**

Collaboration with SLPA to assess Vietnamese speakers

- Created own probe that samples all Vietnamese singletons multiple times
- Scores as +/- for spontaneous, imitated, stimulable
- Estimates overall intelligibility
- Provides approximate MLU
- Describes grammatical skills

Ngo & Tipton, 2010

Example: Karen Probe

Pictures Phrases

English Word	Karen Word (IPA Transcription & English Phonetic Spelling)	Child's Production
bake	/gu da/ goo-dah	
bath	/ju ti/ you-tee	
blow	/u/ oooh	
bow	/he da ju jo/ hey-die-you-yo	
brush	/kwi/ quee	
build	/de ta/ day-tah	

Multilingual Speech Assessment Components

- Use surveys, questionnaires, and interviews for reported measures of speech/language ability across contexts and informants
- Include elicited speech samples, in both languages
- Include a connected speech/language sample, in both languages
- Use your transcription skills *(narrow transcription helps for diverse language backgrounds)*
- Derive independent and relational measures from speech samples
- Include language-general and broader measures
    - less biased by little “l” [l]anguage experience
- Choose appropriate references *(e.g., criterion-based or locally normed)*

Assessment Tools: Surveys and Questionnaires

- Alberta Language Environment and Development Questionnaires (Paradis et al., 2010) https://sites.google.com/ualberta.ca/chesl/questionnaires
- Home Language Questionnaire (via resource link)
- Child Language Questionnaire (via resource link)
- Intelligibility in Context Scale (McLeod et al., 2012) http://www.csu.edu.au/research/multilingual-speech/ics
- Speech Participation and Activity Assessment for Children (McLeod, 2004) https://www.csu.edu.au/research/multilingual-speech/speech-assessments/spaa-c
    - Are you concerned with your child's speech?
    - Do you have concerns with the ability of others to understand your child?

Assessment Tools: Non-English Speech Probes

- Speakaboo (free mobile/tablet app)
  - Intended to be administered by a speaker of the language *(e.g., interpreter)*
  - Check out the instruction videos! (the app itself doesn't explain much)
  - Provides picture word stimuli and targets for analysis
- Evaluation of Spanish Phonology: https://cld.lab.uiowa.edu/efe-spanish-probe
- Multilingual Speech Assessment Tools (McLeod, 2024) https://www.csu.edu.au/research/multilingual-speech/speech-assessments/speech-assessment-tools
- Cross-Linguistic Phonology Project: http://phonodevelopment.sites.olt.ubc.ca/practice-units/
- Phon: https://www.phon.ca/
  - Free transcription and phonological analysis software
  - Generates target transcriptions for 28 different languages/dialects *(as of v3.5.2)*
  - Automated calculation of independent and relational measures

Assessment Tools: Speech Sample Measures

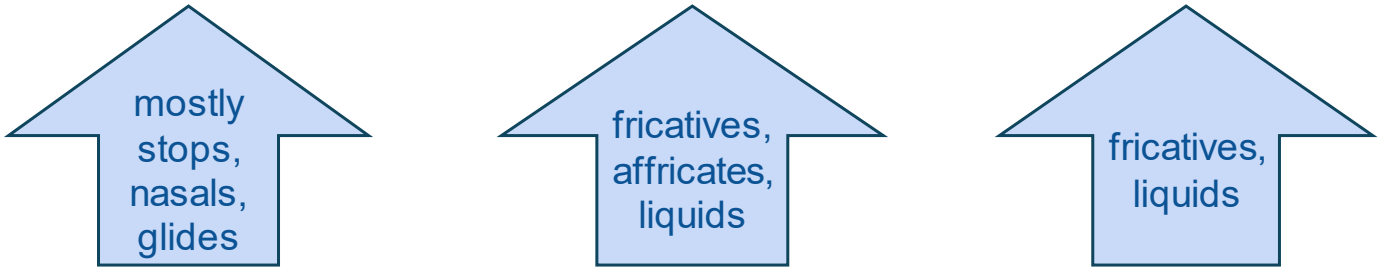
- Independent measures
  - **Descriptive** of the child's speech, phonological knowledge
  - Independent of *(i.e., not compared to)* the target phonology
  - Examples:
    - Phonetic, Cluster, and Phonemic Inventories
    - Percent Intelligible Words
- Relational measures
  - **Relate** *(i.e., compare)* the child's speech to the target phonology
  - Requires comparison to targets **appropriate for the child's language background**
  - Examples:
    - PCC / Percent Words Correct
    - Phonological Processes / Error Patterns

Criterion-Based References and Local Norms

- Criterion-Referenced Measures | Data Available for Multilingual Children
  - Occurrence of Phonological Processes / Error Patterns
  - Percent Consonants Correct
  - Phonetic Inventory Level
  - Percent Intelligibility / Intelligibility in Context Scale
  - See criterion references reviewed in:
    - **Fabiano-Smith (2019)**, **Privette & Fabiano-Smith (2023)**
- Local Norms
  - Successful mitigation of equity gaps in identification for gifted education *(Carman et al., 2018; Peters, 2022; Peters et al., 2019; Worrell & Dixson, 2022)*
  - Localized phonological acquisition data *(Porter & Hodson, 2001)*

Early-Middle-Late Sounds Across Languages

Language	Early	Middle	Late
English	p, b, m, d, n, h, t, k, g, w, ŋ, f, j	l, ʤ, ʧ, s, v, ʃ, z	ɹ, ʒ, ð, θ
Japanese	m, t, j, cɕ, p, g, k, ɟʑ, d, n, b, w, ɸ, h	ç, ɾ, ɕ, s, ts	z
Korean	t*, k*, p^{h}, h, t^{h}, k^{h}	p, t, m, s*, tɕ*, tɕ^{h}, n, tɕ, k, ŋ	s, l
Spanish	p, t, m, k, j, ɲ, l, ʧ	ŋ, ʒ, ʤ, g, n, b, d, f, x, ð, w, ɾ	r, s, β



Most typically developing children have acquired all or nearly all of the consonants of their primary language(s) by **5 years old**, *regardless of the language(s) they speak*

Adapted from McLeod & Crowe (2018)

How to Provide Better Language Access

Many Ways to Support Language

- Create a translanguaging environment
- Be inquisitive about home languages
- Become a cheerleader for culture, communication, and expression

Take actions to ensure language access!

Providing Language Access

- During a conversation **prior** to a planned initial session, clearly confirm full language access or confirm plan for access
  - Most comfortable language (and dialect) for caregivers
  - All languages (and dialects) in the child's environments
  - Child's preferred or most dominant language

First, I want to confirm the best language environment for our meeting. We will discuss any concerns you have about your child, and your goals for them. What is the most comfortable language for you to have this conversation? ***It does not have to be English unless that is your preference.***

We will also assess your child in all the languages they speak or hear often. What languages should we prepare for?

Working with Interpreters: BID

- **B**rief – prior to the interaction away from everyone
- **I**nteraction – during the interaction
- **D**ebrief – after the interaction away from everyone

Hyter & Salas-Provance (2023), Langdon & Saenz (2015)

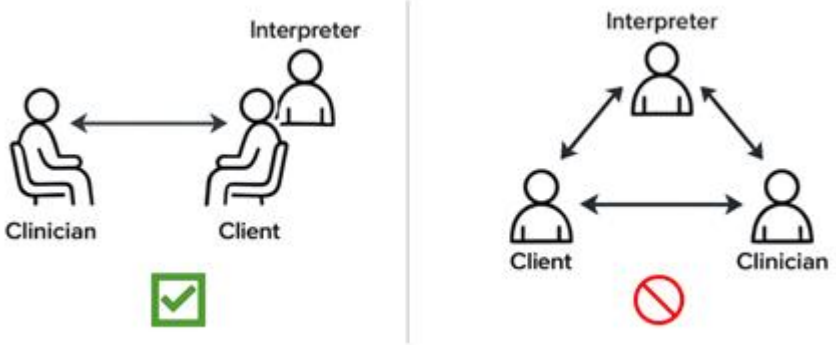
Working with Interpreters: Briefing

- Interpreter is a part of the health care team (Li et al., 2017)
- Explain the purpose of the session, expected outcomes
- Describe participants and relevant session procedures
- Establish your role vs. interpreter's role
  - Establish and prepare for any client interaction, data collection or analysis assistance
- Specify how to provide information
  - Chunk in 1-2 sentences, speak continuously, etc.
- Discuss dialect and culturally relevant aspects of communication
- Explain jargon/vocabulary you expect to use

Bilinguistics | **How to Brief an Interpreter**:
https://youtu.be/6cacw_U_MNk?t=19

Working with Interpreters: Interaction

- Establish an optimal environment/layout
- Remember **three** languages are involved:
  - *English, Family language, Language of your profession (i.e., jargon)*
- Stick to planned communication pace / turn-taking style
- Check in frequently for understanding and invite questions
- Speak directly to caregiver or child



Working with Interpreters: Debriefing

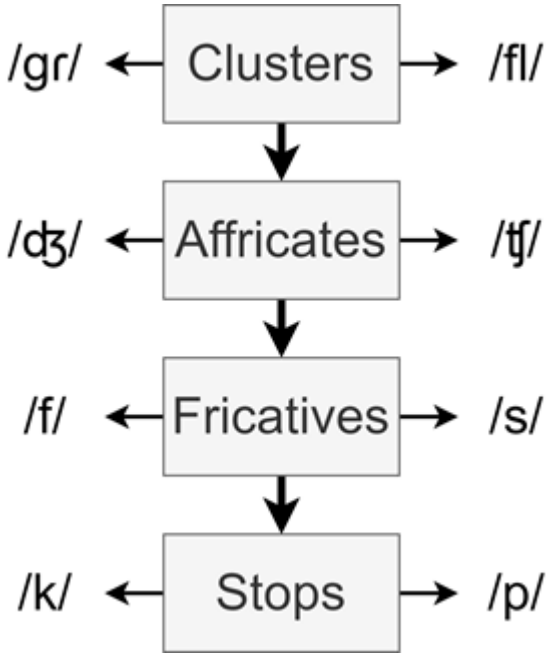
- Ask about culturally relevant aspects of the interaction
- A well-prepared interpreter can:
  - Collect a speech/language sample or administer a speech probe
  - Complete a questionnaire/survey (e.g., *Intelligibility in Context Scale*, *Child Language Questionnaire*)
  - Compare speech/language/communication to other children in their community
  - Estimate percent of intelligible utterances
  - Identify speech errors by providing actual vs. correct/expected word forms
  - The better the prep/briefing, the more useful this information will be
- Collect or shred any notes made by interpreter
- Later, in any reports, describe how interpreters were used

Speech Intervention for Multilingual Learners

Supporting the Complete **[L]**anguage System

Teach **complex phonology**

Greater **complexity** of the treatment target can stimulate system-wide phonological growth



Allen (2013); Cummings et al. (2019; 2020), Elbert et al. (1984), Gierut (1990, 1998, 1999), Gierut et al. (1994, 1996), Gierut & Champion (2001), Gierut & Morrisette (2012), Gierut & O'Connor (2002), Dinnsen et al. (1990), Dinnsen & Elbert (1984), cf. Rvachew & Bernhardt (2010)

Complex Target Selection Guidelines

- Target complex phonology to increase the complexity of the speech system
  - 3-element CCC **>** 2-element CC **>** later-acquired earlier-acquired
  - Example: /spl-/ **>** /pl-/ **>** /tw-/ **>** /θ/ **>** /f/ **>** /b/
- Target gaps in phonological knowledge
  - Not in inventory, low accuracy, non-stimulable

A Study of System-Wide Bilingual Change

N = 6 / Ages 4;1–6;6

Phonological disorder

Spanish-English bilingual children

PHONT [fãnt]

PHONOLOGICAL TYPOLOGIES PROJECT

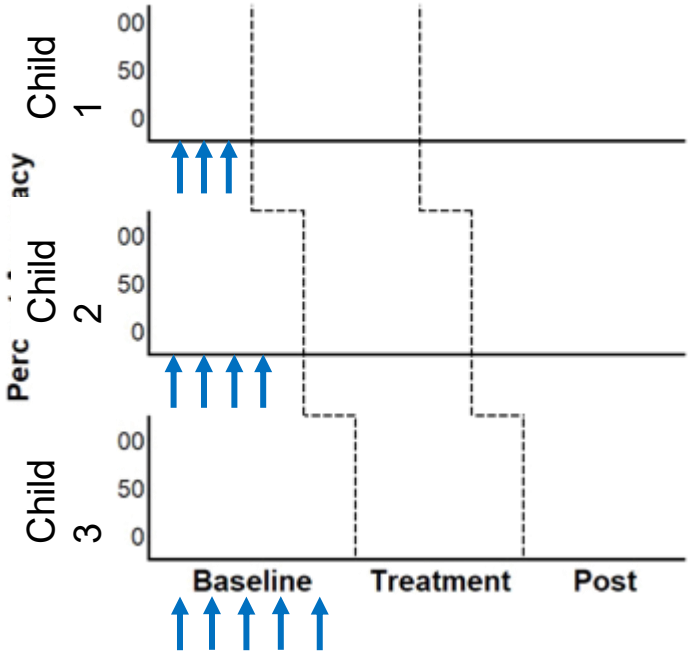
ChiLD^3 Language Lab

Development · Disorders · Disparities

Clinical Linguistics & Disparities Lab

Multiple Baseline

Single-Case Experimental Design



About the Intervention

Treatment Targets:

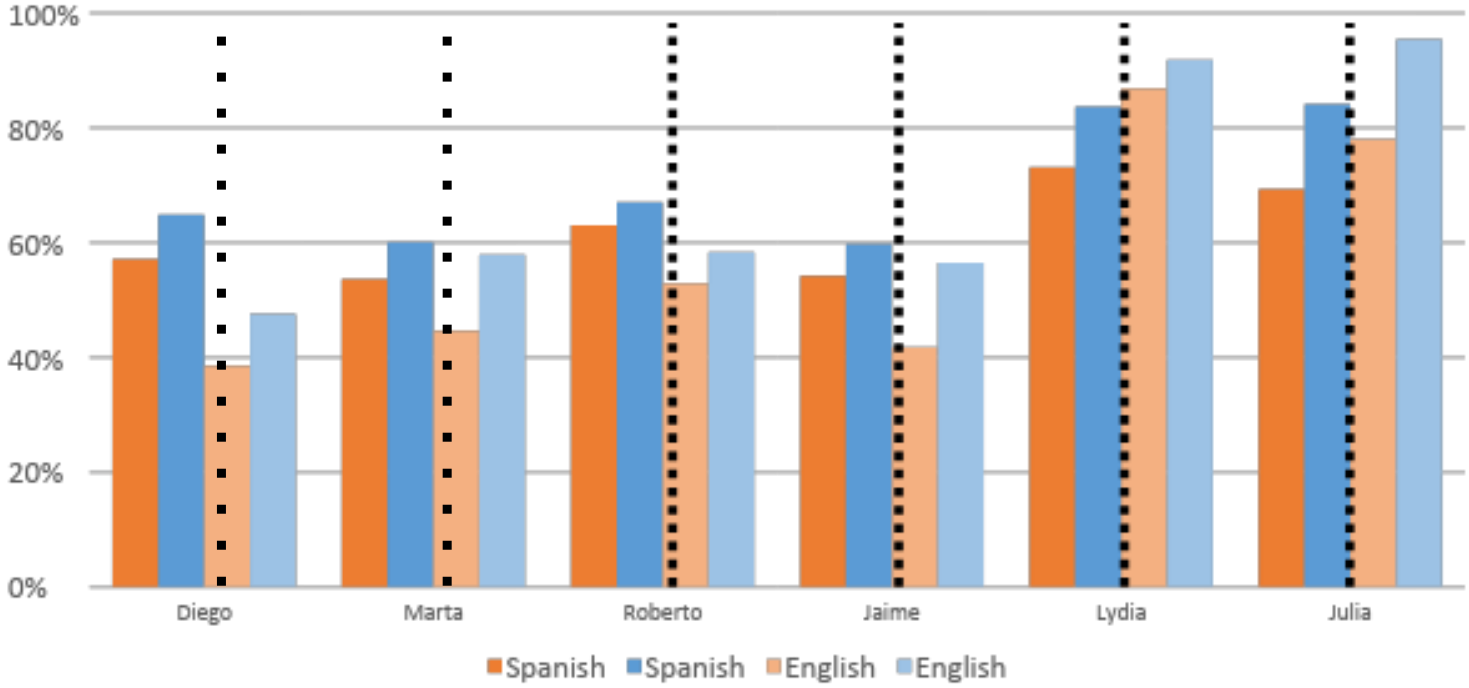
/bɾ-/, /gɾ-/, /tɾ-/, /l/

Activities:

- Play and story-based activities
- Imitated → spontaneous productions
- Real words and nonwords in varied contexts

Percentage of Consonants Correct-R

Pre/Post Spanish/English



A Clinical Perspective

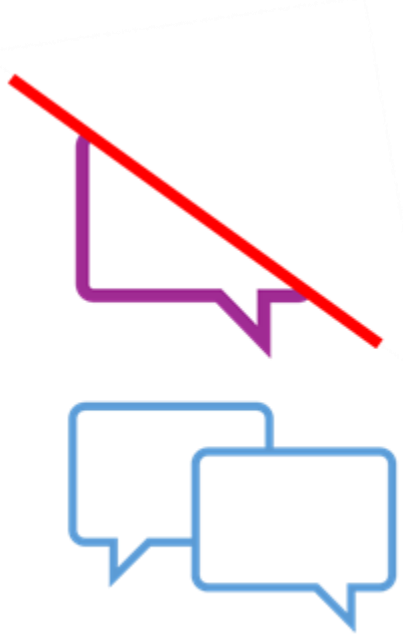
Key

No change
Less adult-like
Ambiguous change
More adult-like
Adult-like (accurate)

	Jaime		*Diego*		*Roberto*		*Marta*	
Word	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
caja	kaxa	kaxa	kaha	kaxa	kaxa	kaxa	kaxa	kaxa
fantasma	fatama	fatama	tapana	patama	pampasma	pantasma	sapanta	fatata
rueda	wela	rʷela	weda	weda	veda	weda	nena	weda
gasolina	laɬoina	xasoina	gasododina	gasugina	gasʌlinina	gasonina	golesina	nosinina
jabón	xawon	xabon	xabo	xaƀon	xaƀon	xabon	xabon	xabon
gris	li:	klis	gis	gis	wis	gwis	jis	dis
mariposa	mapota	maifota	maneposa	maniposa	maniposa	meniposa	malaposa	maɪposa
piano	pijano	pjano	pinon	pijano	pijano	pijano	pijano	pijano
ciudades	suđae	sjulales	sudades	sudades	sjuđađes	sjudades	sujade	sudades
rey	kʷlej	lej	dej	ðej	wej	wej	ɟej	ɟej
sartenes	datene	satenets	satenes	saltenes	santenes	santene	satenes	satenes
mueca	weka	weka	mweka	mweka	wenka	meka	meka	mwekwa
delfin	defin	defin	difi	defin	defin	delfind	nafim	dʌfin
espalda	epala	epala	pada	epala	espanda	espanda	abada	epada
nariz	nait	nais	nanis	nanis	nanis	nanis	nadis	naḍis
dieta	jeta	tjeta	djeta	djeta	djeta	djeta	djeta	djeta
cuatro	kwaṭo	kwato	kwato	kwato	fato	fato	kako	kako
pintura	pitula	pitʰula	pitura	pitola	pituna	pintuda	patula	putuda
pulmón	julmon	pumon	pumon	pumon	pulmon	pulmon	mulmo	puđon
cumpleaños	kumpliano	kupleaɲots	kupiaɲos	kupeaɲos	kumenanos	kumpiaɲos	piɟaɲos	piɟaɲos
bandera	balela	fanela	badeda	badeda	bandera	bandera	manela	badeda
salmón	ɬamon	ɬamon	samo	samon	salmon	salmon	samon	samol
dragón	dalon	taɟon	dago	dagon	wakon	wagon	nanon	dalon
camarones	kamalone	kamalonets	kamaḍodes	kamalones	kamarones	kamanones	kamalones	kamalodes
tortuga	totuka	tutula	tutuda	totuda	tutura	tutuga	tatula	totuda
hoy	oj	oj	oj	oj	oj	oj	oj	oj
corriendo	kojeno	kwejeno	koleḍot	kodido	konendo	konjendo	koleno	kedeno
riesgo	liexo	djeko	gedo	gajgos	mwiesgo	wijesgo	seso	ijeso
muerde	mwele	mwele	vede:	wede	βene	mene	mede	mede
abrigo	abio	amio	abigoʔ	abigo	aningo	awigo	adido	amino

Intervention: Why target each language?

- Young children benefit from intervention in a language they can understand
- Child's home language is acknowledged and supported
- Acquiring L2 through L1 yields self-confidence and motivation
- Strong L1 foundation → Better English (L2) outcomes
- Home language **and** English are supported



Cummins, 1991; Gutiérrez-Clellen, 1996, 1999; Kohnert et al., 2005; Yavas & Goldstein, 1998

Intervention: How to select targets for multilingual learners

- Research L1 to understand phonology/language structures
- Assess across languages
- Consider complex targets for system-wide change across the entire **[L]**anguage system
- Consider shared/overlapping speech targets
- Identify target words across languages
- Use resources for models of target words in languages you do not speak

Combiths et al. (2022), Irizarry-Pérez et al. (2023; 2024)

Stories and Applications: Intervention

- Practice in both languages
  - Intervention in one language may or may not transfer to other language (Goldstein, 2010)
- Example: K student practicing /fl-/ in English and Spanish at school; /fl-/ in Spanish at home

flan/flan

flauta/flute

flamenco/flamingo

Vietnamese-English Intervention

Example: 1st grader (Kuromi)
Vietnamese (initial /ɹ/) and English (/spl-/)

- ★ Selected /ɹ/ in Vietnamese: Liquids → Fricatives
- ★ Selected /spl-/ in English because three-element clusters → two-element clusters and singletons (e.g., Gierut & Champion, 2001)
- ★ Used expertise in teaching /ɹ/ in English to support Vietnamese practice
- ★ Student provided feedback about vowels
- ★ Alternated weeks between targets during first 8 weeks (now - both in same session)

Resources for 26 languages

Vietnamese Initial /ɹ/ Increasing Overall Intelligibility Through Shared Complex Targets

San Diego Unified's 5th Phonology Conference:
Supporting Multilingual Speakers Across Languages

Created by: Minh Ngo, Meagan Jones, Tuyet-Bang (Stephanie) Nguyen, Lena Lahanas, Heather Rivera.

rồng

PLAY ME!

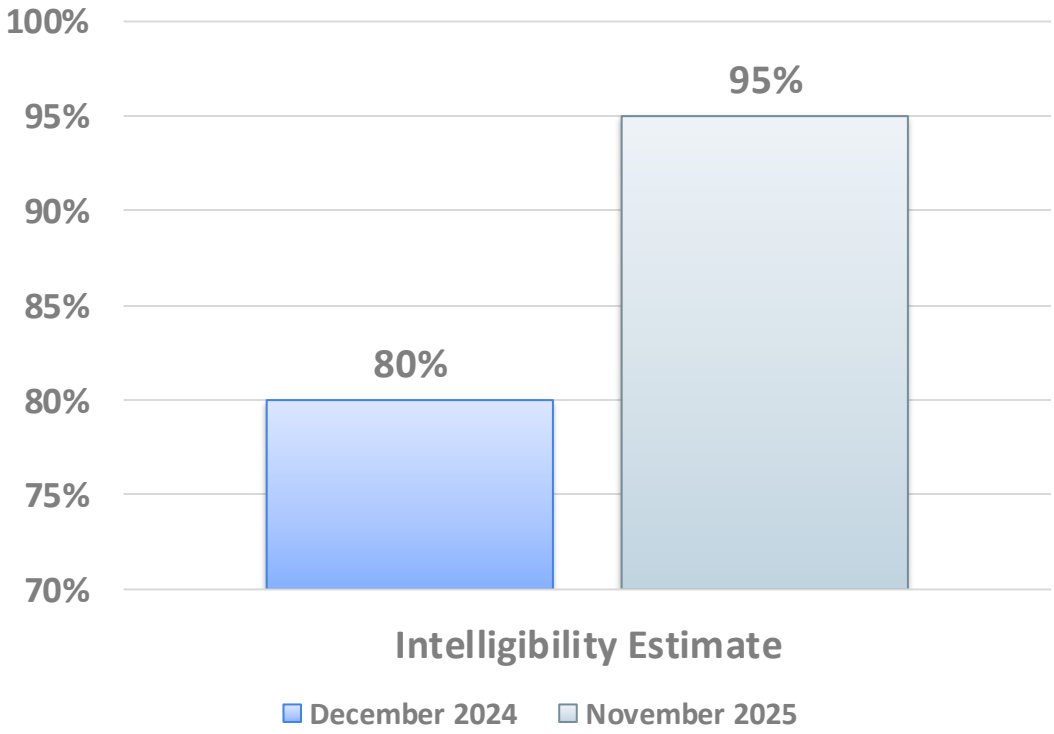
English - dragon

rùa

PLAY ME!

English - turtle

Vietnamese Intervention Outcome



Kuromi 5;8: Vietnamese System

Sonorants in system: /w l ʊ j h m n ɲ ŋ/

Affricates **/ʤ/**

Fricatives **/f v s̪ z ʃ ʒ x/**

Stops **/p b t t̪˺ d ʈ c k g ʔ/**

OUT of system
Fricatives: /ʐ ɣ/
Affricate: /ʧ/
Liquid: /ɹ/

Note: no clusters in Vietnamese

Kuromi 6;7: Vietnamese System

Sonorants in system: /w l ʊ j h m n ɲ ŋ/

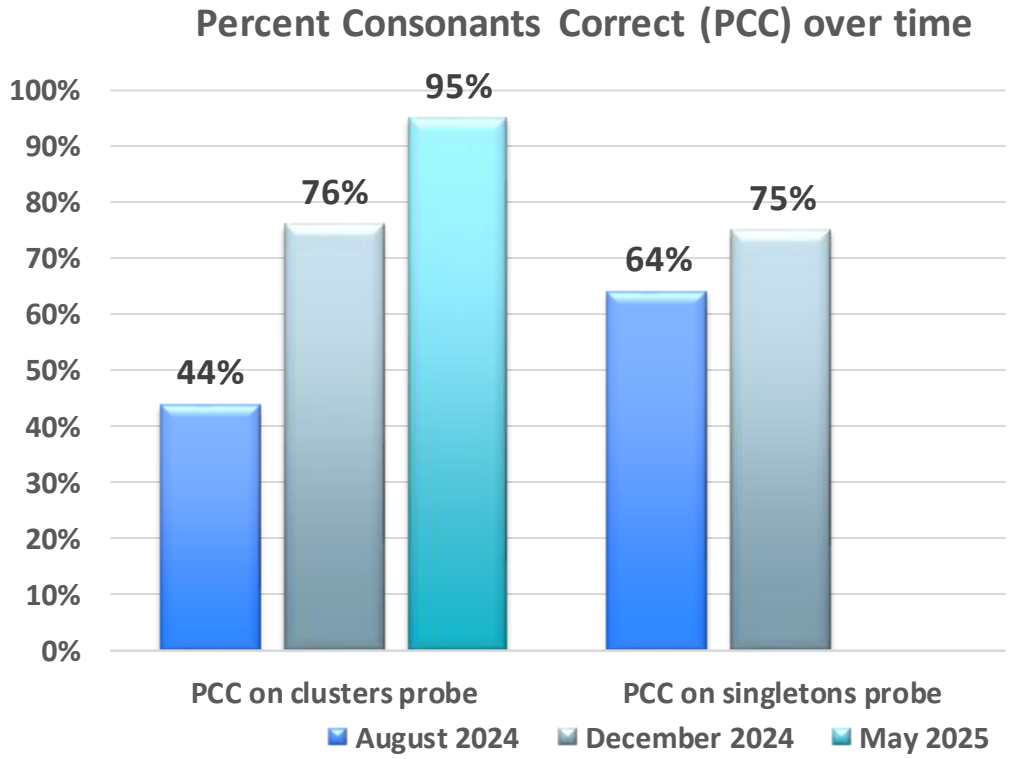
Affricates **/ʧ ʤ/**

Added 3 singletons in blue
/ɹ/ improved in intervention but did not generalize to probe words

Fricatives **/f v s̪ z ʃ ʒ ʐ x ɣ/**

Stops **/p b t t̪ d ʈ c k g ʔ/**

English Intervention Outcome



Kuromi 5;5: English System

Three-Element Clusters — **None**

Also in system: /w l* ɹ* j h m n ŋ/

*emerging in system (a few words)

Two-Element Clusters — **/mj-/ (“music”) /tj-/ (“tute” for “cute”) /pj-/ (“pure”)**

Affricates — **/ʦ ʤ/ (alveolar affricates)**

Fricatives — **/f v s z/**

Stops — **/p b t d k g/**

Kuromi 6;2: English System

Three-Element Clusters /spl-/ /skɹ-/ /spɹ-/ /skw-/

Also in system:
/l ɹ w j h m n ŋ/

Two-Element Clusters /ʃɹ-/ /sl-/ /fl-/ /fɹ-/
/bl-/ /gl-/ /bɹ-/ /dɹ-/ /gɹ-/ /sw-/
/kl-/ /pl-/ /kl-/ /tɹ-/ /kɹ-/
/kw-/ /tw-/ /pj-/
/sp-/ /st-/ /sk-/ /sm-/ /sn-/ /mj-/

Affricates /ʧ / /ʤ/

Fricatives /f v s z ʃ/

Added 1 singleton and 26 clusters in blue
/l ɹ/ increased accuracy

Stops /p b t d k g/

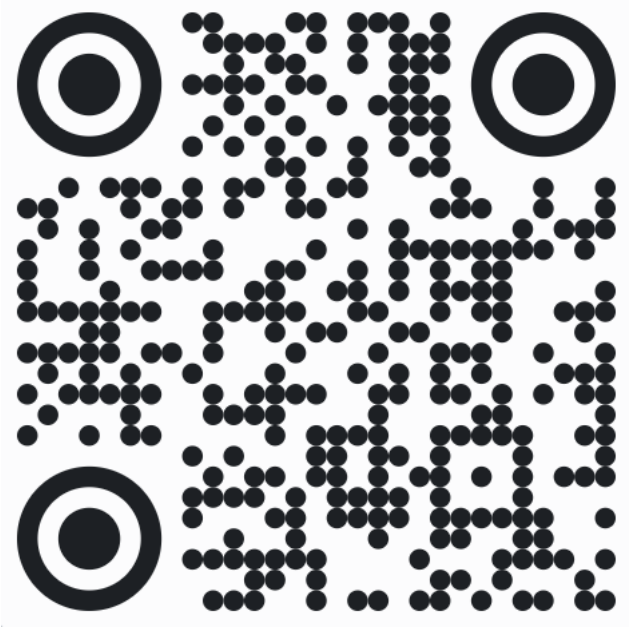
Targets	8/13/24	12/5/24	5/27/25
snake	seɪk	seɪk	sneɪk
slug	sug	slʌg	slʌg
spider	baɪdɚ	spaɪdɚ	spaɪdɚ
dragon	sægɪn	dɹægɪn	dɹægɪn
school	tuoʊ	kul	skul
flag	fæg	fwæg	flæg
crayons	tænz	kwænz	kɹænz
glue	du	glu	glu
glasses	dæsɪz	glæsɪz	glæsɪz
black	bæk	blæk	blæk
square	tɛɹ	skwɛɹ	skwɛɹ
splashing	fæsɪn	plæsɪŋ	splæsɪn
snowflake	soʊfeɪk	soʊfleɪk	snoʊfleɪk
stop	tap	tap	stap
broom	bum	bɹum	bɹum
skate	teɪps	teɪt	skeɪt
quiet	taɪ	kwaɪ	kɹaɪ
straight	seɪt	sɹeɪt	sɹeɪt

closer
adult-like

How to get started

- Level up assessment with 1-2 new approaches
- Level up intervention with system-wide speech targets
- Think about Big “L” **[L]**anguage skills
- Celebrate and advocate for multilingualism!

Your Next Step



Thank You!

Slides and Resources

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