

Multisyllabic words in Spanish-speaking children with protracted phonological development¹



School of Audiology and Speech Sciences
Blending real-life learning with sound science.

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Abstract

Canadian speech-language pathologists (SLPs) need to assess Spanish-speaking children's phonology. Multisyllabic words were studied in 59 Granada Spanish-speaking preschoolers with typical (TD) and protracted phonological development (PPD). Mismatches in number of syllables, stress pattern and word structure vary by age, group and word length. The data may serve as a guide to evaluation of multisyllabic words in Spanish-speaking children.

Introduction

- Canadian SLPs increasingly need to assess Spanish-speaking children. Spanish is the 3rd most common immigrant language as mother tongue in Canada (Statistics Canada, 2012).
- Typically developing Spanish-speaking children master words with 2 and 3 syllables relatively early compared with English learners (Piñeira & Manzano, 2000; Astruc et al., 2007)
- Data from typically developing English-speaking children show age and syllable length effects on mismatches in multisyllabic word (MSW) productions (James, 2006).

Study Objectives

- To explore how children's age, gender and group (PPD or TD) relate to word structure mismatches on MSWs, based on a composite score of deletions, insertions and stress shift
- To compare word structure accuracy in initial unstressed vs. medial stressed syllables

2-Syllable Targets

Syllables	Stress	Word	Adult Form	Translation
Two (n=6)	wS	azul	a'ʃ(ə)u{l/ri/ə}	blue
		dragón	dra'ʝo{ɲ/n/ə}	dragon
		jamón	{x/h}a'mo{n/ə}	ham
		nariz	na'ri{s/θ/ə}	nose
		papá	pa'pa	father
		ratón	ra'to{n/ə}	mouse
reloj	re'l(ə)ʝ{x/θ/ə}	clock		

4- and 5-Syllable Targets

Syllables	Stress	Word	Adult Form	Translation
Four and Five (n=10)	wSww	teléfono	te'l(ə)fo'no	telephone
		chimenea	{tʃ/ʃ}i'me'ne.a	chimney
		chocolate	tʃo'ko'late	chocolate
		cocodrilo	ko'ko'ðri'lo	crocodile
		dinosaurio	dino'ɾ{s/θ}a'urjo	dinosaur
		elefante	e'le'fante	elephant
	wwSw	escalera	e'ska'l(ə)'ka'le'r(ɾ)ra	ladder
		primavera	prima'β(ə)ra	spring
		zanahoria	{s/θ}ana'orja	carrot
		hipopótamo	ipo'po'tamo	hippopotamus

Granada Spanish Consonant Inventory

	Labial	Dento-alveolar	Alveopalatal	Dorsal (/Glottal)
Nasal	m	n	ɲ	(ŋ)
Stop	p b/β	t d/ð		k g/ɣ
Affricate			tʃ dʒ	
Fricative	f	s/(θ)	(ʃ)	x/(h)
Trill and Tap		r, r̄		
Lateral		l		

3-Syllable Targets

Syllables	Stress	Word	Adult Form	Translation
Three (n=26)	Sww	lámpara	'lampara	lamp
		pájaro	'pa{x/h}aro	bird
		triángulo	'triangolo	triangle
		abierto	aβ{j(ə)ic/ɾ}r(ɾ)ta	open
		bailando	ba'l(ə)ndo	dancing
		caballo	ka'βa{l(ə)ð(ɟ)jo}	horse
	wSw	chocando	tʃo'kando	crashing
		conejo	ko'ne{x/h}o	rabbit
		estanque	e'sta'n(ə)'tanke	pond
		Europa	eu'ropa	Europe
		guitarra	gi'tara	guitar
		hermano	e'r(ɾ)m(ə)'mano	brother
	wwS	hirviendo	i'r(β/β)j(ə)ic/ɾ}ndo	boiling
		jirafa	{x/h}'rafa	giraffe
		juguete	{x/h}'uete	toy
		llorando	{ð(ɟ)j(ə)ic/ɾ}o'rando	crying
		martillo	ma'r(ɾ)l(ə)'i'llo	hammer
		muñeca	m(ə)'neka	doll
wwSww	pezcapdo	pe's(ə)k(ə)'ka{ð/ð}o	fish	
	princesa	prin'f(θ/s)ε{θ/s)a	princess	
	regalo	re'valo	gift	
	saltando	{s/θ}a'l(ɾ)'tando	jumping	
	sombrero	{s/θ}om'brero	hat	
	tortuga	to'r(ɾ)'tuɣa	turtle	
zapato	{s/θ}a'pato	shoe		
wwS	pantalón	pan'ta'lo{n/ɲ/ə}	pants	

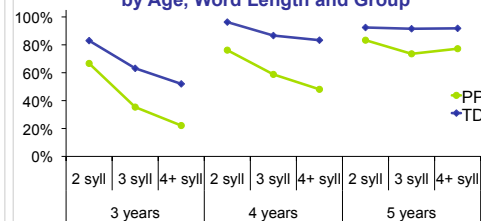
Acknowledgments: The authors thank the children and families for their participation and the Canadian funding agency SSHRC. Contact B. May Bernhardt at bernharb@mail.ubc.ca for more information on the crosslinguistic study. A digital copy of this poster is available at: <http://blogs.ubc.ca/crosslinguisticprojectmaterials/>

Method

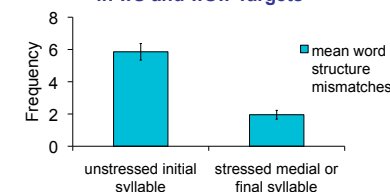
- Participants: N = 59 monolingual Spanish-speaking children in Granada, Spain
 - All have typical hearing, cognition and language development.
 - PPD group: n = 29 (12 females, 17 males); TD group: n = 30 (16 females, 14 males)
- Data collection: single-word picture-naming elicitation
 - 99-110 words in full set, with subset of 42 multisyllabic words used for analysis.
 - Transcribed phonetically by native speakers in Granada, confirmed by Bernhardt's research lab.
- Data analysis: mismatches coded for # of syllables, stress, and word shape (CV)

Results

Percent Word Structure Match by Age, Word Length and Group



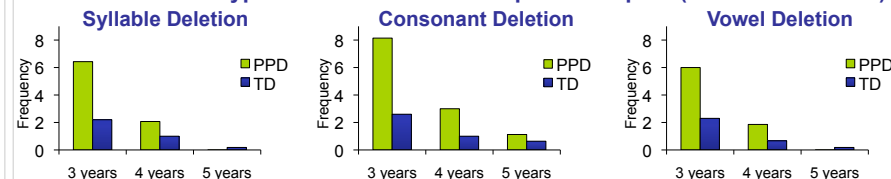
Word Structure Mismatches by Stress in wS and wSw Targets



Overall % match increases with age, decreases in longer words and is lower among children with PPD.

Unstressed initial syllables have significantly more mismatches than medial stressed syllables: $t(55) = 9.89, p < .0005; d = 1.32$ (large effect size).

Most Common Types of Word Mismatches per Participant (words without CC)



Syllable deletion, singleton consonant deletion and singleton vowel deletion are the most frequent mismatch types in 2-, 3-, 4- and 5-syllable targets with no CC sequences. Mismatches decrease with age.

Discussion and Clinical Implications

- Performance on # of syllables, word shape (CV) and stress in MSWs varies by word length, age and group, with an age decline in mismatches.
- Initial unstressed (weak=w) syllables appear more vulnerable for mismatches than medial or final stressed syllables, more at age 3 than at ages 4 and 5 for both groups
- These data provide criteria for identification of protracted phonological development in terms of word structure for Spanish-speaking children at ages 3 and 4. The Spanish and other language elicitation tools are available at: <http://blogs.ubc.ca/crosslinguisticprojectmaterials/>

¹The term 'protracted phonological development' is otherwise known as 'speech sound disorder' or 'phonological disorder/deviation/impairment/delay'. The term 'protracted' has a more positive implication, in that it assumes people will eventually develop 'typical' speech (Bernhardt & Stemberger, 1998).