

# Using GFTA-3 Spanish Scores and Phoneme Emergence/Mastery Data to Inform Diagnostic Decisions and Recommendations

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## Abstract

GFTA-3 Spanish research data showing age of emergence vs. mastery of speech sounds, combined with test score information, provide clinicians with data needed to make appropriate interpretations of test results and convey results in a meaningful way to stakeholders.

## Learner Outcomes

- Describe why it is important to examine an individual's speech sound productions in multiple contexts rather than in a single instance in each position of a word.
- Explain how to use age- and sex-based information provided by GFTA-3 Spanish Manual or Record Form to determine if the individual is beginning to produce developmentally-appropriate speech sounds at either an emerging or mastery level.
- Explain how to use information in the GFTA-3 Spanish Manual or Record Form to identify the age at which speech sounds should be produced correctly at least 85% of the time.

## Method

### Development of the Spanish Test

#### Multiple phase process

- Input from SLPs who are users of Spanish assessments
- Review of current research
- Bias review
- Pilot ( $n=34$ ); National tryout ( $n=262$ ); Standardization ( $n=860$ )

#### Sample

- Standardization: collected in 2016 and 2017
- 62% of the sample collected with individuals whose primary caregiver had 0–12 years of education (41% with less than 12 years education; 21% earned a high school diploma)
- 38% of the sample included individuals whose primary caregiver had some college or technical training (21%) or a college degree (16%)
- Countries of origin: Argentina, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Spain, Uruguay, Venezuela

## Findings: Emergence and Mastery Data by Age and Gender

### Emergence and Mastery of Phonemes by Age and Sex

Table PR1 Ages at Which Phonemes Were Present in percentages of Normative Sample (Female)

Age	Produced by 50% of children			Produced by 75% of children			Produced by 90% of children		
	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme
2:0-2:5	/g/ /b/ /y/	/b/ /d/ /k/ /t/ /f/ /r/	/p/ /m/ /n/ /l/ /j/ /x/ /v/						
2:6-2:11	/t/ /b/ /m/ /k/ /p/	/s/	/b/ /d/ /k/ /t/ /f/ /r/						
3:0-3:5	/g/	/g/ /m/ /p/	/t/						
3:6-3:11	/b/ /t/ /g/ /k/ /r/	/t/	/g/						
4:0-4:5		/b/ /t/ /g/	/b/ /k/						
4:6-4:11	/p/	/b/ /g/ /k/ /r/	/b/ /m/ /p/						
5:0-5:11		/t/ /r/	/t/ /g/						
6:0-6:11			/b/ /g/ /k/ /r/						
7:0-7:11			/p/						
8:0-8:11									
>8:11			/p/						

Table PR2 Ages at Which 85% of the Normative Sample Correctly Produced Consonants by Prevocalic, Intervocalic, and Postvocalic Position (Female)

Age	Prevocalic			Intervocalic			Postvocalic		
	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme
2:0-2:5									
2:6-2:11									
3:0-3:5	/p/ /b/ /m/ /j/			/p/ /t/ /k/ /p/					
3:6-3:11				/f/					
4:0-4:5	/t/ /k/ /m/ /f/ /n/ /b/ /m/ /p/			/m/ /n/ /l/ /j/ /x/ /k/					
4:6-4:11	/k/			/m/ /f/					
5:0-5:11	/s/			/s/					
6:0-6:11	/d/ /g/ /b/ /t/ /g/ /k/ /r/								
7:0-7:11				/b/ /t/					
8:0-8:11	/t/ /p/								
>8:11				/t/					

Table PR1 Ages at Which Phonemes Were Present in percentages of Normative Sample (Male)

Age	Produced by 50% of children			Produced by 75% of children			Produced by 90% of children		
	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme
2:0-2:5	/b/ /y/ /p/ /t/	/d/ /n/ /s/ /f/ /r/ /x/	/p/ /t/ /k/ /m/ /n/ /l/						
2:6-2:11	/b/ /t/ /k/ /p/ /r/	/g/ /y/	/b/ /d/ /k/ /t/ /f/ /r/ /x/						
3:0-3:5	/b/ /m/ /g/								
3:6-3:11									
4:0-4:5	/b/ /t/ /g/ /k/ /p/			/b/ /m/ /k/ /p/					
4:6-4:11				/t/					
5:0-5:11				/t/ /g/					
6:0-6:11				/b/ /g/ /k/ /r/					
7:0-7:11									
8:0-8:11				/b/ /t/ /g/ /k/ /p/ /r/					
>8:11									

Table PR2 Ages at Which 85% of the Normative Sample Correctly Produced Consonants by Prevocalic, Intervocalic, and Postvocalic Position (Male)

Age	Prevocalic			Intervocalic			Postvocalic		
	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme	Phoneme
2:0-2:5									
2:6-2:11									
3:0-3:5	/p/								
3:6-3:11	/m/			/t/ /n/ /p/					
4:0-4:5	/b/ /k/ /g/ /m/ /f/ /n/ /j/ /p/			/f/ /n/ /k/					
4:6-4:11	/n/			/b/ /k/					
5:0-5:11	/b/ /m/			/m/ /j/ /f/					
6:0-6:11	/s/ /k/ /g/ /k/			/s/					
7:0-7:11	/d/ /t/ /b/ /t/ /g/ /k/ /p/ /r/			/b/ /t/					
8:0-8:11									
>8:11				/t/					

\* Emergence = 1 or more correct productions \*\* Mastery = 85% or greater correct productions

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## How This Data Informs Diagnostic Decisions and Recommendations

Item	Target Word	PK Transcription	Response	Prevocalic	Intervocalic	Postvocalic
1	pato	pato	p	1		
2	mesa	messa	m	4		
3	nariz	nariz	n	7	5	
4	vaca	baka	b	4		
5	cama	kama	k	3		
6	leche	letje	t	7		

All errors are counted in the raw score, not ignored

Stimulus	Prevocalic			Intervocalic			Postvocalic		
	p	b	t	p	b	t	p	b	t
d	1	20		18	42				
b	4	7							
t	8	15	38	1	10	11	16	34	
d	21	45	45	40	42	48			
g	15	37	43						
k	5	17	35	38	4	40			

How many errors are made? Are there facilitating contexts?

Response	Alternative	Dialectal variation
pa	(a) other position of word	(b) /a/ < /e/
pa	(a) /a/ < /e/	(b) /a/ < /e/
pa	(a) /a/ < /e/	(b) /a/ < /e/
pa	(a) /a/ < /e/	(b) /a/ < /e/
pa	(a) /a/ < /e/	(b) /a/ < /e/

Is dialect a factor?

Stimulus	Syllable			Word			Sentence		
	Pre-vocalic	Inter-vocalic	Post-vocalic	Pre-vocalic	Inter-vocalic	Post-vocalic	Pre-vocalic	Inter-vocalic	Post-vocalic
p									
b									
t									
d									
k									

Is the child stimulable?

Intelligibility rating	4:0-4:5	4:6-4:11	5:0-5:11	6:0-6:11
< 90%	51.1	51.0	40.0	26.8
≥ 90%	48.9	49.0	60.0	73.2

Is the child intelligible?

Score Differences Between Typically Developing Individuals and Those Identified with an Articulation Disorder

Score	Speech Sound Disorder		Matched Controls		Difference	t-value	p-value	Standard Difference
	Mean	SD	Mean	SD				
Sonidos-en-palabras	76.6	9.4	104.4	13.8	27.76	10.34	<.01	2.35
Sonidos-en-oraciones	76.0	15.6	100.3	18.4	24.29	7.24	<.01	1.42

### Recommendations/Programming Options

- Re-evaluate at a later date (time to develop phonemes without need for special services)
- Monitor at regular intervals to identify additional correct productions
- Practice In-classroom / articulation lab / home
- Interval therapy
- Traditional therapy

