

PERUVIAN AMAZONIAN SPANISH: STATUS OF TRITONAL PITCH ACCENTS

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IntoSpan2014- October 11, 2014

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Introduction

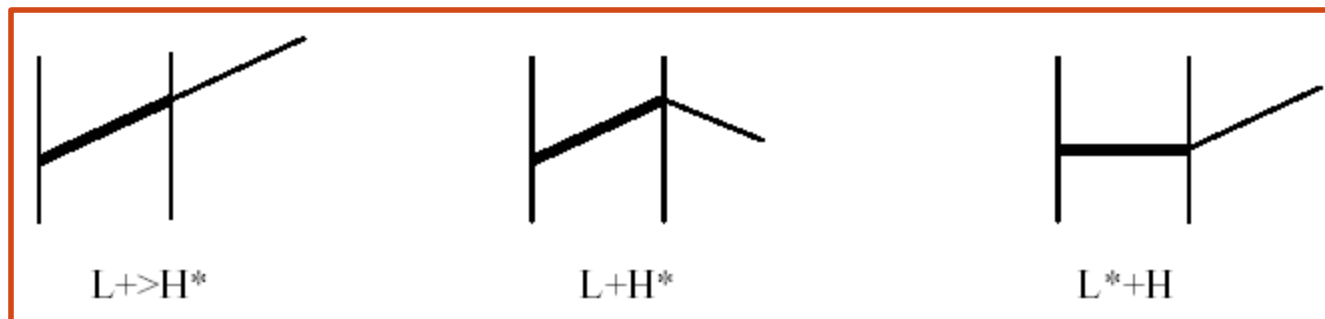
- A **tritonal pitch accent** has been proposed in two dialects of Spanish to phonologically represent contrastive focus
 - Argentine Spanish (Gabriel et al. 2010)
 - Peruvian Amazonian Spanish (PAS) (García 2011)
 - In García (2011), I also proposed this pitch accent as a means to distinguish the pragmatic meanings between **broad vs. narrow/contrastive focus**, but did not support this proposal with experimental data
- The current study tests this proposed pitch accent for PAS, using phonetic analysis to determine whether or not this tritonal pitch accent is an accurate representation of what is happening in PAS contrastive focus sentences.

Presentation Overview

- Introduction
- Background:
 - Phonological Representations of Rising Accents in Spanish
 - Tritonal Pitch Accents
 - Intonation in Peruvian Amazonian Spanish (PAS)
- Goals
- Research Questions
- Methodology
- Results
- Theoretical Implications
- Concluding Remarks

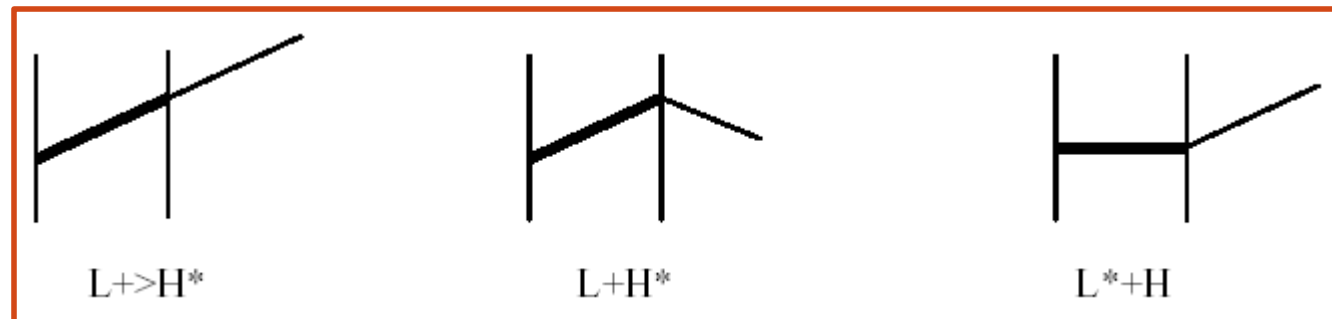
Background: *Rising Pitch accents in Spanish*

- 2 revisions to the original proposal for Spanish rising accents
 - Beckman et al. 2002 (original)
 - Face & Prieto 2007
 - Estebas-Vilaplana & Prieto 2009
- Thus far, **3 main bitonal rising accents** have been proposed for all Spanish dialects studied:
 - L^*+H
 - $L+H^*$
 - $L+>H^*$



Background: *Rising Pitch accents in Spanish*

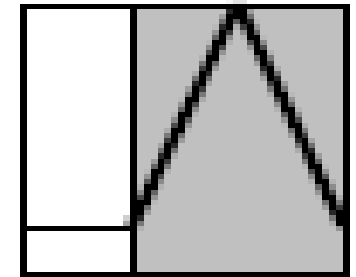
- L^*+H :
 - “F0 valley on the accented syllable with a rise on the post accentual syllable.”
- $L+H^*$:
 - “Rising pitch movement during the accented syllable, with the F0 peak at the end of the syllable.”
- $L+>H^*$
 - “Rising pitch movement on the accented syllable with the F0 peak aligned with the post accentual syllable.”



Background: *Tritonal Pitch Accent*

- “The tritonal pitch accent L+H*+L ... is phonetically realized as **a complex rise-fall within the accented syllable**” (Prieto 2008, p. 8)

- With a low trailing tone



- Previous uses of the tritonal pitch accent
 - Argentine Spanish & PAS - contrastive focus statements (Gabriel et al. 2010; García 2011)
 - Catalan - narrow focus statements (Prieto 2008)
 - Pisa Italian (Gili Fivela 2004; Prieto et al. 2006)
 - Croatian (Smiljanic 2004; Yu 2008)

Background: *Peruvian Spanish and PAS*

- **Peruvian Spanish:** Coastal; Andean, Amazonian
- **PAS:** Spanish spoken in the Amazonian region of Peru: city of Pucallpa
 - 211, 611 inhabitants (by 2013)
- Research on PAS is limited, but some descriptions have been made (Escobar 1978, Vigil Oliveros 1993; Ramírez 2003, Koops & Vallejos 2014)
- Amazonian Languages



Background: *PAS intonation*

- In García (2011), I described the general intonational patterns of PAS, and I proposed the following representations for different pragmatic meanings:
 - Broad: L+H*
 - Narrow/Contrastive: L+H*+L
- In PAS broad focus declaratives, **the F0 peak (high tone) tend to be aligned within the boundaries of the stressed syllable.**
- In PAS narrow/contrastive focus declaratives, **the F0 peak (high tone) is also aligned within the stressed syllable**, but much earlier than those in broad focus.
 - High F0 peak in the word under contrastive focus

Goals:

- In the current study, I explore whether the tritonal pitch accent is an appropriate label/analysis for PAS contrastive focus sentences.
 - I examine where the peak is reached in contrastive focus words vs. broad focus words

Research Questions

- **For Contrastive Focus**
 - Where is the F0 peak reached within the stressed syllable? Within the stressed vowel? What factors affect this?
- **For Broad Focus**
 - Where is the F0 peak reached within the stressed syllable? Within the stressed vowel? What factors affect this?
- **Phonological Representations**
 - What is the best way to phonologically represent broad and contrastive focus in PAS?
 - Is the tritonal pitch accent an appropriate representation of contrastive focus in PAS?

Methodology: *Participants*

- 4 monolingual Spanish-speakers born and raised in Pucallpa, Peru
 - University students
 - Ages 18-30 (*mean*: 22.5)
 - Monolingual parents, who have lived in Pucallpa for more than 25 years
 - 2 males, 2 females
 - Uniform group

Methodology: *Tasks*

- This data comes from a larger corpus of data collected for my dissertation during the summer of 2014 in Pucallpa, Peru.
 - Recorded using a head-mounted microphone
- **Task 1: Elicitation of Broad Focus Sentences**
 - Participants were asked the question *¿Qué pasó? / ¿Qué pasa? / ¿Qué pasaba?* [‘What happened? What happens? What was happening?’], and they responded reading a sentence provided on a sheet of paper.
 - Example:
 - *¿Qué pasaba?*
 - Lorena donaba la corona. [‘Lorena was donating the crown’]
 - 24 broad focus sentences elicited from each speaker
- **Task 3: Elicitation of Contrastive Focus Sentences**
 - Example:
 - *¿Lorena compraba la corona?* [‘Was Lorena buying the crown’]
 - Lorena DONABA la corona. [‘Lorena WAS DONATING the crown’]
 - 24 contrastive focus sentences elicited from each speaker.

Methodology: *Variables*

- Structure of Sentences
 - All target words were **trisyllabic**, made up of **sonorants** and with **penultimate stress**
 - Most contained non-high vowels
 - Sentence length varied from **2-5 prosodic words**
 - **Contrastive focus** was either on **the verb** or on **the object**
- Variables

Broad Focus	Contrastive Focus
Word Position in Sentence: initial, medial, final	Location of contrastive word in sentence (verb or object)
Sentence length: 2, 3, 4, 5 prosodic words	
Syllable structure of the stressed syllable: CV or CVC	

Methodology: *Analysis*

- Acoustic analysis
 - Acoustic analysis using *Praat*.
 - Sentences were segmented and the labels in the target words included the following points:
 - Beginning time of stressed vowel / End time of stressed vowel
 - Beginning time of stressed syllable / End time of stressed syllable
 - Time when F0 peak is reached

Methodology: *Analysis*

- Where F0 peak is reached was calculated as a percentage in the stressed vowel or syllable:

Formula for Vowels:

$$\frac{\text{Time of Peak} - \text{Vowel BEG}}{\text{Vowel END} - \text{Vowel BEG}}$$

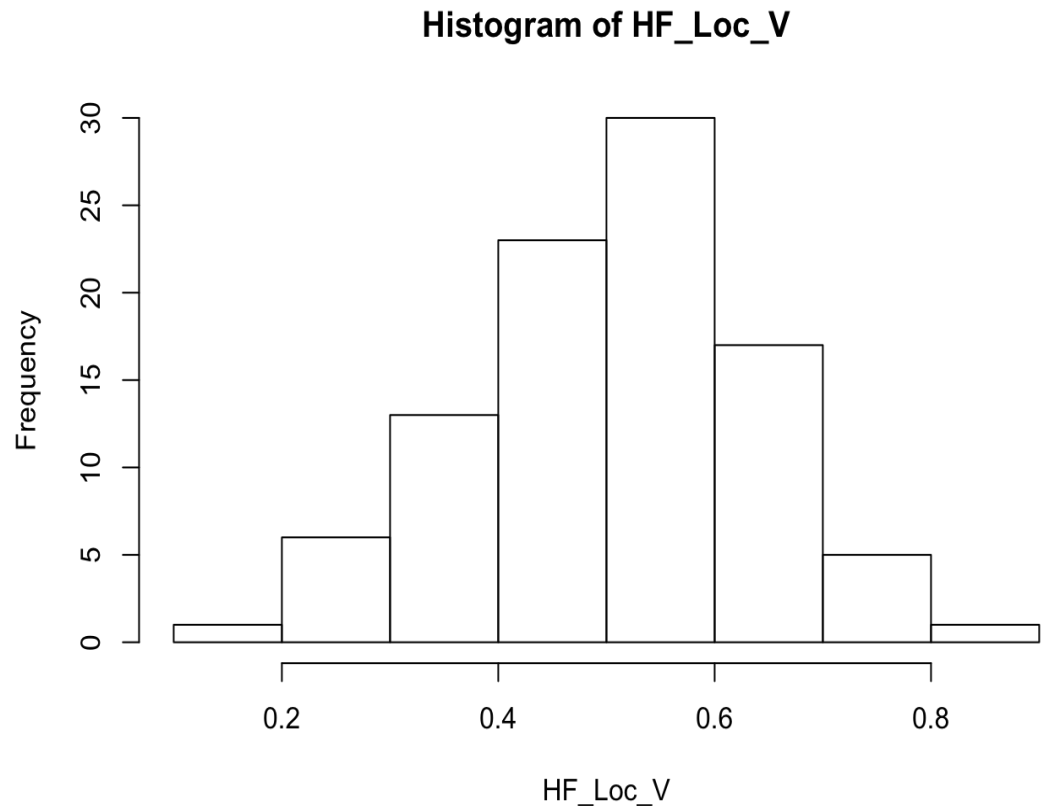
Formula for Syllables:

$$\frac{\text{Time of Peak} - \text{Syllable BEG}}{\text{Syllable END} - \text{Syllable BEG}}$$

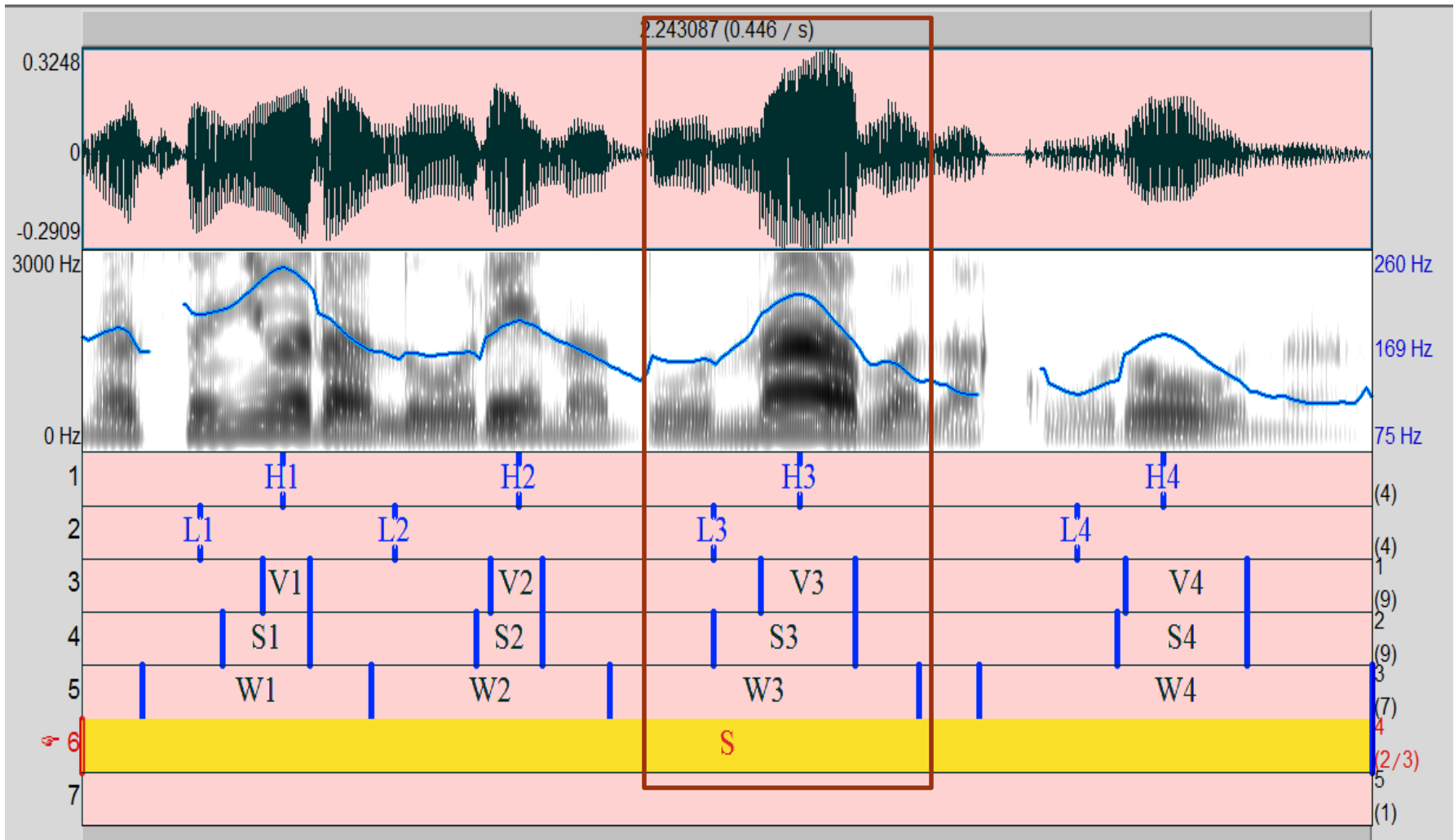
- Statistical analysis
 - **T-Tests**
 - **ANOVA**

Results: *Contrastive Focus*

- Where F0 peak falls in the **stressed vowel**?
 - **Mean .51**
 - **N= 96**
 - **SD: 0.13**
- **51 % in the stressed vowel**



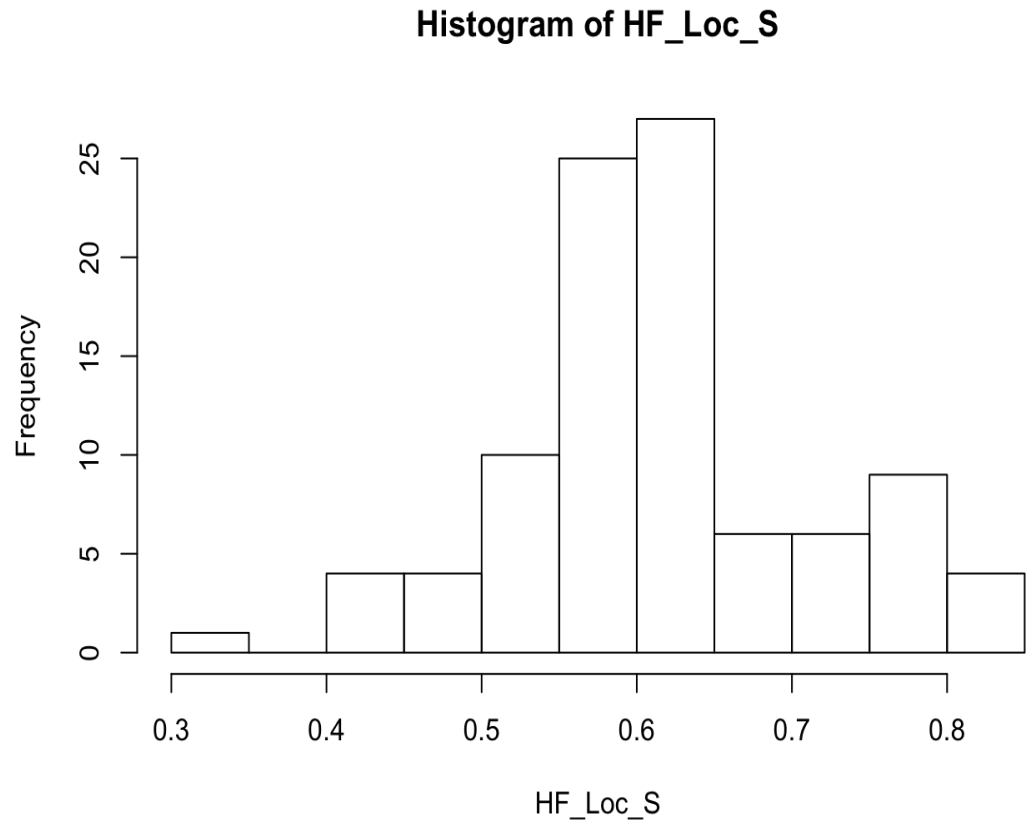
Results: *Contrastive Focus*



Results: *Contrastive Focus*

- Where F0 peak falls in the **stressed syllable**:
 - **Mean .61**
 - **N= 96**
 - **SD: 0.1**

- **61 % in the stressed syllable**



Results: *Contrastive Focus*

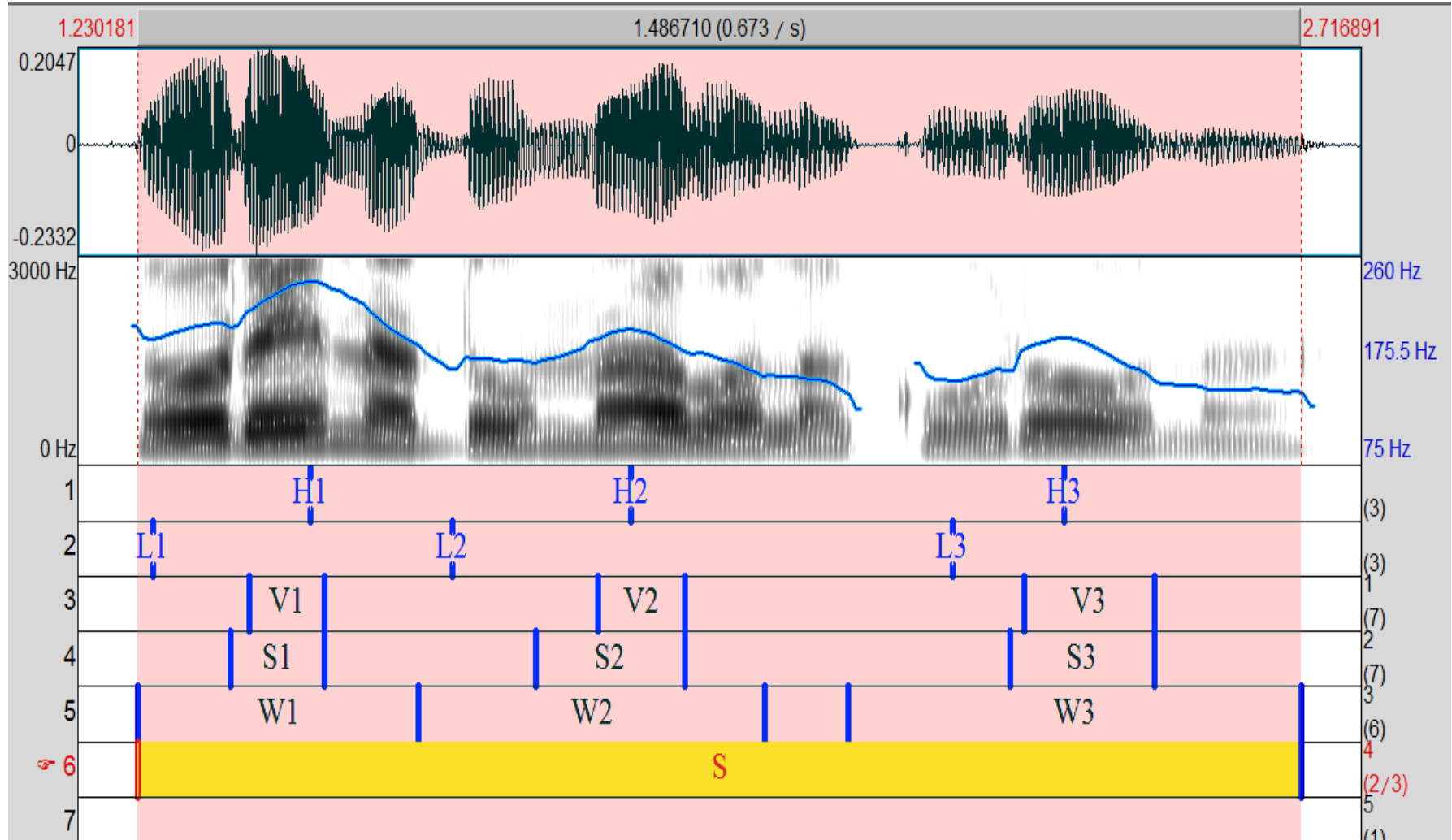
- Syllable structure: CV vs. CVC

Syllable Type	Mean	SD
CV	0.46	.12
CVC	0.55	.12

Results: *Contrastive Focus*

- Factors affecting the F0 peak location in vowels and syllables:
 - 1) *Syllable Type*
 - The peak is reached much earlier in CV than in CVC
 - 2) *Position of the focus word in the sentence:*
 - Final position vs. Penultimate position
 - Final position vs. Antepenultimate position
 - F0 peak is reached earlier in final position
- Speaker and # of words were not significant factors.

Results: *Broad Focus*



Results: *Broad Focus*

- Where the F0 peak falls in the **stressed vowel** (all positions):
 - **Mean: .61**
 - N: 336
 - SD: 0.28
- **61% in the stressed vowel**
- Where the F0 peak falls in the **stressed syllable** (all position):
 - **Mean: .61**
 - N: 336
 - SD: 0.28
- **61% in the stressed syllable**

Results: *Broad Focus*

- Syllable structure: CV vs. CVC

Syllable Type	Mean	SD
CV	0.65	.34
CVC	0.56	.19

Results: *Broad Focus*

- Factors affecting the F0 peak location in vowels and syllables:
 - 1) Speaker
 - Speaker #1 and #3 showed some differences
 - 2) *Syllable Type*
 - The peak is reached much earlier in CV than in CVC
 - 3) *Position (initial, medial, final)*:
 - Significant differences between:
 - **Initial vs. final**
 - **Medial vs. final**
 - Not in medial vs. initial
- # of words was not a significant factor.

Results: *Comparing Contrastive and Broad Focus*

- **Is there a statistically significant difference between where the peak is reached in broad and contrastive focused words?**

Type of sentences	Stressed Vowels	Stressed Syllables
Contrastive Focus	.47	0.60
Broad Focus	.50	0.61

- Stressed vowels: $t=1.493$; $p\text{-value}=0.1362$
- Stressed syllables: $t=0.4163$; $p\text{-value}=0.6774$
- So far, in this data, the difference of F0 peak location in both contrastive and broad focus is not significant; though it is more significant in relation to vowels.

Summary of Results

- Tritonal pitch accent behavior is present in PAS
 - In contrastive focus contexts, F0 peaks are reached at the 51% of the stressed vowels and at the 61% of stressed syllables
 - Factors: syllable type and position in the sentence
- Current analysis also suggests that in broad focus declaratives, the F0 peak is reached near the middle of the stressed vowel/syllable (61%)
 - Factors: speaker, syllable, and position in the sentence

Theoretical implications

- Based on experimental data, and the current analysis, **it is worth considering the addition of the tritonal pitch accent to the inventory of phonological representations for Spanish**, in addition to the other three rising accents that we currently use.
- Also, given that the F0 peak in broad and contrastive contexts occur at the same location in PAS, we may **possibly need to be redefine the tritonal pitch accent description**, taking into consideration:
 - Shape of the F0 fall
 - Height of the F0 peak

Theoretical implications

- **Reasons for adding/redefining the tritonal pitch accent to Spanish's inventory**
 - **Phonetically**
 - Location of F0 peak in contrastive focus words is near the middle of the stressed syllable/vowel.
 - Peak height and slope of fall might play a role in defining the tritonal pitch accent.
 - **Phonologically**
 - Tritonal pitch accent allows us to phonologically distinguish contrastive from broad focus in PAS and Argentine Spanish.
 - **Typologically**
 - Tritonal pitch accent is used in other languages for phonological distinctions.
 - This pitch accent will allow us to adequately describe multiple dialects of Spanish (PAS, Argentine Spanish, and maybe others that have yet to be studied).
 - Tritonal boundary tones have already been proposed for Spanish (Estebas-Vilaplana & Prieto 2009; Prieto & Roseano 2010)

Concluding Remarks

- Tritonal pitch is an appropriate way of describing PAS contrastive focus
 - Broad focus evidence suggests that we may also need to consider modifying the current definition of “triton pitch accents”
- Addition of this pitch accent to Spanish’s phonological inventory
 - This data supports early proposal made by Gabriel et al. (2010) and García 2011)
 - It will allow us to integrate both PAS and Argentine Spanish into the phonological representations of intonational patterns
- This research highlights the importance of examining understudied dialects to advance current tenets of phonological theories

Future Directions

- Finish with the entire data!
- Perception studies
 - Within the dialect
 - Across dialects
- Language contact?

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Thanks to:

- Rebeka Campos-Astorkiza; Terrell A. Morgan; Scott Schwenter; Allen Chen
- The InToSpan Organizing Committee
- PAS speakers

Thank you!

Questions? Comments?

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