

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

UCARE Research Products

UCARE: Undergraduate Creative Activities &  
Research Experiences

---

4-2016

# Perception and Production of Phonetic Stress in Spanish: An Investigation of Native Speakers and Non-native Learners

Benjamin Stoltenberg

*University of Nebraska - Lincoln*, [bstoltenberg@cox.net](mailto:bstoltenberg@cox.net)

Elizabeth Enkin

*University of Nebraska-Lincoln*, [eenkin@unl.edu](mailto:eenkin@unl.edu)

Follow this and additional works at: <http://digitalcommons.unl.edu/ucareresearch>



Part of the [Spanish Linguistics Commons](#)

---

Stoltenberg, Benjamin and Enkin, Elizabeth, "Perception and Production of Phonetic Stress in Spanish: An Investigation of Native Speakers and Non-native Learners" (2016). *UCARE Research Products*. 74.

<http://digitalcommons.unl.edu/ucareresearch/74>

This Poster is brought to you for free and open access by the UCARE: Undergraduate Creative Activities & Research Experiences at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in UCARE Research Products by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.



# PERCEPTION OF PHONETIC STRESS IN SPANISH - AN INVESTIGATION OF NATIVE SPEAKERS AND NON-NATIVE LEARNERS

Ben Stoltenberg and Elizabeth Enkin - Department of Modern Languages and Literatures, University of Nebraska-Lincoln

## Research Questions

Is there a difference in the ability of native Spanish speakers and non-native learners to correctly perceive phonetic stress in Spanish non-words?

Do different syllabic structures in non-words affect phonetic stress perception in non-native learners? If so, why?

## Background

Both Spanish and English are considered to be free-stress languages: the position of phonetic stress is not predictable from the phonological shape of a word. Consequently, stress may be used contrastively in both languages, and the ability to correctly perceive and produce phonetic stress is vital to language usage.

Data shows that in Spanish, both stressed and unstressed vowels are given their full quality, while the stressing of a vowel in English is accompanied by the shortening of a vowel in one or more surrounding syllables (Romanelli 2015). Spanish uses suprasegmental cues such as intensity and pitch to distinguish stressed from unstressed syllables, while English relies on segmental qualities of the word. These differences may cause problems for non-native learners of Spanish in perceiving stress in Spanish words.

Previous research has found that Spanish natives are better than learners at identifying phonetic stress in Spanish non-words, but that an immersion experience can lead to native-like perception of penultimate stress (Romanelli 2015). We seek to further explore if and how different syllabic structures affect learners' ability to perceive stress compared to natives, eventually focusing on penultimately stressed words.

## Methodology

Both native speakers of Spanish and non-native learners of Spanish were recruited at UNL to participate in the study. Participants were asked to listen to recordings of 54 non-words and mark the syllable on which they perceived the stress.

The non-words were broken down into categories of syllabic structure and stress placement. The three syllabic structures were CV.CV.CVC, CV.CV.CV, and CV.CVC.CV (C=consonant, V=vowel). The two stress placements were on the penultimate and final syllable. The participants were scored on the number of words in each combined syllabic pattern and stress placement category (shown below) of which they correctly identified the stress, giving them a score out of 9 for each category.

CV.CV.CVC penultimate	CV.CV.CV penultimate	CV.CVC.CV penultimate
CV.CV.CVC final	CV.CV.CV final	CV.CVC.CV final

The analysis was carried out using linear mixed effects models (LMERs) and data points were fitted to the model.

## Results

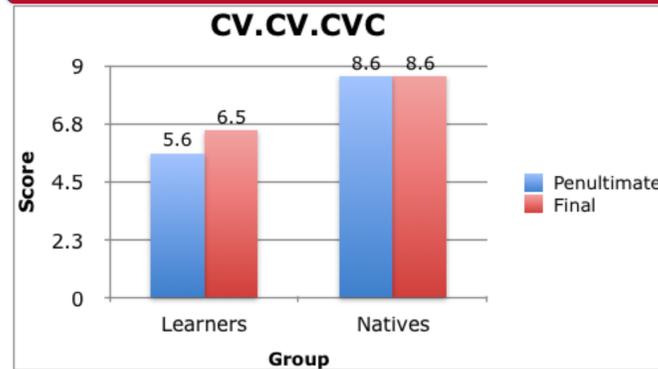


Figure 1: Penultimate and Final Stress Scores for CV.CV.CVC for Learners and Native Speakers

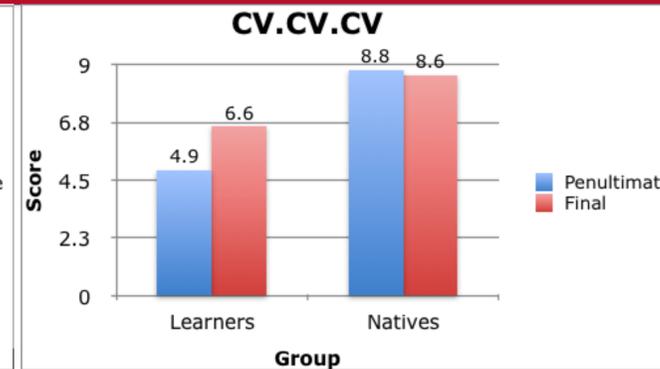


Figure 2: Penultimate and Final Stress Scores for CV.CV.CV for Learners and Native Speakers

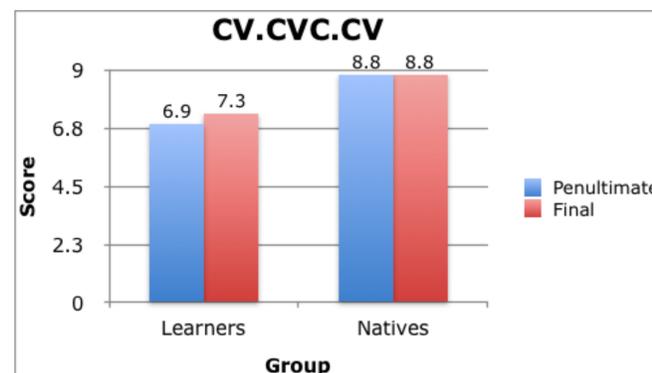


Figure 3: Penultimate and Final Stress Scores for CV.CVC.CV for Learners and Native Speakers

- All three analyses produced a significant main effect of group (all  $p < .05$ ), indicating that the native Spanish speakers performed significantly better than the Spanish learners in perceiving stress in all three environments for both penultimate and final stress (Figures 1-3) (for CV.CV.CVC:  $t = 2.46$ ; for CV.CV.CV:  $t = 2.52$ ; for CV.CVC.CV:  $t = 2.25$ ).
- Syllabic structure did affect phonetic stress perception in non-native learners. When looking at penultimate stress, non-native perceived CV.CVC.CV best, followed by CV.CV.CVC and finally CV.CV.CV (Figures 1-3).

## Discussion

Why is penultimate stress easiest to identify in CV.CVC.CV structure?

- The penultimate syllable is elongated with the addition of a consonant, and therefore learners can perceive the stress relatively easily.
- When the penultimate syllable is stressed in Spanish, the pitch goes significantly lower and then starts higher in the final syllable (Figure 4). However, the pitch does not rise in the final syllable for CV.CV.CV or CV.CV.CVC words (Figures 5 and 6). It could be that native English speakers use pitch, a suprasegmental marker, as the marker for identifying stress.

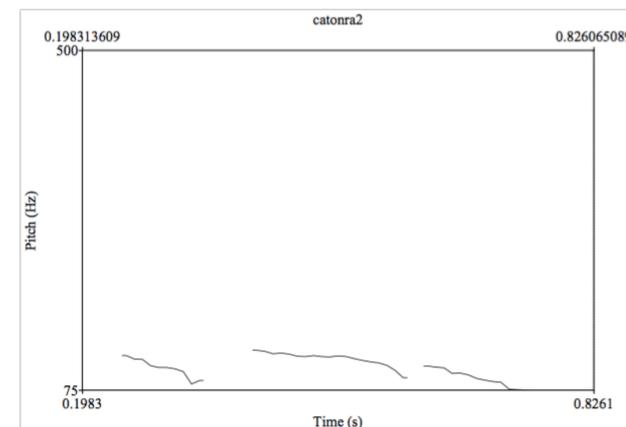


Figure 4: Spectrogram (showing pitch) for a CV.CVC.CV Structure Word in Spanish

## Discussion Cont'd

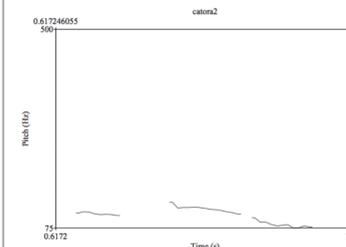


Figure 5: Spectrogram (showing pitch) for a CV.CV.CVC Structure Word in Spanish

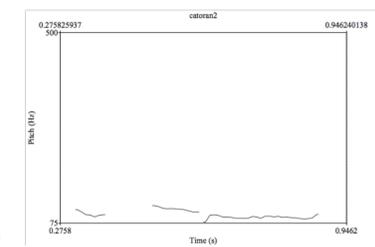


Figure 6: Spectrogram (showing pitch) for a CV.CVC.CV Structure Word in Spanish

Why is penultimate stress easier to identify in CV.CV.CVC structure versus CV.CV.CV structure?

- Spanish has weakened consonants at the end of a word. Thus, it would be easier to recognize that the stress is not on the final syllable of the CV.CV.CVC structure.
- The consonant at the end of the final syllable makes that syllable longer, so it is easier to pick out if the stress is in that syllable or not. CV.CV.CV has no such marker.
- It is more common to end a syllable in a consonant in English than it is in Spanish, which could possibly add to the reason why penultimate stress is most difficult to identify in the CV.CV.CV structure.

## Conclusions

Overall, these results show that learners and native speakers of Spanish differ in their ability to perceive stress patterns in non-words, with native speakers being better than learners in all categories.

Syllabic structures do affect non-native learners' ability to perceive stress, as has been shown with the penultimate stress placement. Possible explanations include syllable length, pitch differences, and comparisons to English syllabic structure. Additional research can explore these possible explanations.

## References

Romanelli S. & Menegotto A. C. (2015). English Speakers Learning Spanish: Perception Issues Regarding Vowels and Stress. *Journal of Language Teaching and Research*, 6, 30-42.