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The Acquisition of Spanish Vowels by Native English Speakers: A Perception Study

For second language (L2) learners, target languages' novel sound inventories, particularly vowels, present a challenge perceptually and in terms of production. Given the general acceptance that perception must precede production (Best, 1991; Flege 1995), it is vital to better understand this development in L2 learners. However, L2 perception has received relatively little attention in recent literature, especially for English speakers learning Spanish as a second language. In addition, empirical findings are inconsistent with each other. For example, Gordon (2011) found that, perceptually, learners tend to map Spanish /i/ and /e/ to the English vowels /ɪ/ and /ɛ/, respectively while Garcia de las Bayonas (2004; 2008) indicates that learners struggle most perceiving /u/ and /e/. Most research in this area focuses on learner production rather than perception, with equally inconsistent findings (see, for example, Cobb and Simonet, 2015; Menke and Face, 2010). These discrepancies indicate a greater need to understand these developmental processes, beginning with perception as it must precede production.

Building on the methodology of Garcia de las Bayonas (2004) and other perceptual studies, this remotely conducted study explores the perception of Spanish vowels by English-speaking learners with special attention paid to the role of syllable stress. It was hypothesized that (1) L2 learners would demonstrate difficulty identifying /i/, /e/, and /u/, (2) unstressed vowels would prove more difficult to perceive correctly for learners, and (3) learners with more experience with the Spanish language would perform more accurately than those with little-to-no experience.

This study included a discrimination and an identification task (see figures 1 and 2). In the discrimination task, participants heard two Spanish words and were asked to decide if the words were different or if they were the same. In the identification task, participants were given a disyllabic Spanish word with one vowel highlighted either in a stressed or unstressed syllable. They were then asked to select which vowel sound belonged in each location. Participants were provided with options from both English and Spanish vowel inventories which occupied nearby acoustic space. Confidence levels (on a scale of 1-7) were reported for all responses.

Preliminary results from a pilot study included four native Spanish speakers, seven native English speakers, and nine beginning L2 Spanish learners. In the discrimination task, learners performed somewhat more accurately with Spanish vowels in stressed syllables (88.6%) compared to unstressed syllables (82.2%). Discriminating between /o/ and /u/ in unstressed syllables proved the most difficult context for both English speakers and L2 learners. In terms of confidence ratings, all groups reported generally high confidence levels.

In the identification task, high accuracy was shown identifying Spanish vowels /i/, /o/, and /u/, but all groups struggled to correctly identify /e/ and /a/. English vowels /ɪ/, /ɛ/, /æ/, and /ɑ/ were often selected in place of /e/ and /a/. Despite imperfect perception, learners report high confidence in their responses (about 5.4/7), indicating under-developed vowel inventories in the target language. Participants with little or no Spanish training showed higher levels of confidence (6.3/7), indicating that experience with the Spanish language did improve learners' awareness of acoustical differences between choices. These results partially support the conclusions of Gordon (2011) as /e/ (but not /i/) presented difficulty to learners in Task 2. On the other hand, /a/ seemed to also cause difficulty, which was not expected. At the time of presentation, these results will include larger and more diverse participant groups, including students at different stages of experience with the target language. It is expected that learners with more experience will show more accuracy in both tasks as well as higher confidence levels (Fox, Flege, & Munro, 1995). Results should also provide a more complete understanding of L2 perceptual development.

Selected References and Figures

- Best, C. (1991). The emergence of native-language phonological influences: A perceptual assimilation model. *Haskins Laboratories Status Report on Speech Research*, 108, 1-30.
- Cobb, K. & Simonet, M. (2015). Adult second language learning of Spanish vowels. *Hispania*, 98 (1) pp. 47-60.
- Fox, R. A., Flege, J. E., & Munro, M. (1995) The perception of English and Spanish vowels by native English and Spanish listeners: A multidimensional scaling analysis. *The Journal of the Acoustical Society of America*. 97. pp 2540.
- García de las Bayonas, M. (2004). The acquisition of vowels in Spanish and English as a second language. Doctoral dissertation, Indiana University.
- García de las Bayonas, M. (2008). Perception of English vowels as first and second language. *Revista Electrónica de Lingüística Aplicada*. 7, pp 79-89.
- Gordon, L. (2011) English speakers' perception of Spanish vowels: evidence for Multiple-category assimilation. In Sanz, C. & Leow, R. (eds). *Implicit and explicit language learning: Conditions, processes, and knowledge in SLA and bilingualism*. Georgetown University Press. Washington, DC.
- Menke, M. & Face, T. (2010). Second language Spanish vowel production: An acoustic analysis. *Studies in Hispanic and Lusophone Linguistics*. 3 (1). pp 181-214.

Figure 1: Discrimination task as viewed by participants on the study website.

In this task, you will hear a series of word pairs in Spanish. Some words are real words and others are not. For each pair, indicate if you believe the words are identical or if they are different. After making your selection, indicate your confidence level in your answer on a scale of 1 to 7 (1 meaning little confidence and 7 meaning high confidence).

For example:

- You hear the words "paso paso" and select "same" because they are identical. You then indicate your confidence level.
- You hear the words "paso paco" and select "different" because they are not identical. You then indicate your confidence level.

(The questions included on this page are pilot materials only.)

0% complete

<input type="button" value="Play word pair"/>	Are the words the same or different?	How confident are you?	<input type="button" value="Next"/>
	<input type="radio"/> Same	<input type="radio"/> 7 (high confidence)	
	<input type="radio"/> Different	<input type="radio"/> 6	
		<input type="radio"/> 5	
		<input type="radio"/> 4	
		<input type="radio"/> 3	
		<input type="radio"/> 2	
		<input type="radio"/> 1 (little confidence)	

Figure 2: Identification task as viewed by participants on the study website.

In this task, you will be presented with five (5) sounds at a time. Each of these sounds represents a possible vowel sound. You will also be given a word in Spanish. This word will have one of its vowels **underlined and in red** (for example, you may see "peso"). You will then select which of the five (5) sounds you believe best fits as the **underlined/red** vowel in the Spanish word you were given. After making your selection, indicate your confidence level in your answer on a scale of 1 to 7 (1 meaning little confidence and 7 meaning high confidence).

For example:

- You are presented with the word "tema". You listen to the seven available sounds, then indicate which one best represents the "e" sound in this word, because the "e" is highlighted. You then indicate your confidence level.

(The questions included on this page are pilot materials only.)

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<input type="button" value="Play sound 1"/>	Which of the sounds provided would you expect to hear for the underlined/red letter in t<u>e</u>co ?	How confident are you?	<input type="button" value="Next"/>
<input type="button" value="Play sound 2"/>		<input type="radio"/> 7 (high confidence)	
<input type="button" value="Play sound 3"/>		<input type="radio"/> 6	
<input type="button" value="Play sound 4"/>		<input type="radio"/> 5	
<input type="button" value="Play sound 5"/>		<input type="radio"/> 4	
	<input type="radio"/> Sound 1	<input type="radio"/> 3	
	<input type="radio"/> Sound 2	<input type="radio"/> 2	
	<input type="radio"/> Sound 3	<input type="radio"/> 1 (little confidence)	
	<input type="radio"/> Sound 4		
	<input type="radio"/> Sound 5		