

¿Cómo Suena? Phonological Similarity in Spanish

Leyla Marquez, Department of Speech-Language Pathology and Audiology

Faculty Advisor: Dr. Skott Jones, Department of Speech-Language Pathology and
Audiology

Background. Upon exposure to a novel language, individuals are first tasked with learning certain distributional properties of it. Such awareness includes noting patterns of similarity, including how certain words may sound similar to one another. This lexical variable, dubbed *neighborhood density* (ND), refers to how many similar-sounding words exist in a language for a given word. It has typically been operationalized in the literature by counting the number of words, termed *neighbors*, that are present in a language by adding, substituting, or deleting a sound in any word position (Landauer and Streeter, 1973; Luce and Pisoni, 1998; cf. Freedman, Gennaro, and DiTomaso, 2016).

Previous work has attempted to validate the one-sound metric in English. Luce and Large (2001) presented CVC nonwords to typical adults, who were asked to produce a word that sounded similar to the presented word. Seventy-one percent of the responses involved a one-sound change, lending support to the aforementioned definition. Further analysis was not conducted, however, such as where in the word substitutions occurred, or what kind of syllable structure changes may have been produced (e.g., additions). Freedman, Gennaro, and DiTomaso (2015) replicated the task in English with a new set of stimuli, but expanded the analyses to include segmental aspects of productions (e.g., word position, type of change that occurred). Findings indicated that participants made an average of 1.1 changes per word. Note that this appears to be consistent with the traditional one-sound metric definition of ND. However, the

average number of changes varied considerably by participants, ranging between .88-1.38. Results also revealed that the most common type of change made by participants was substituting the sound in the word-final position (46% of all changes). This was a novel finding. The second most frequent type of change made was substituting the sound in the word-initial position (17% of all changes).

The Present Study. This project combined two important components of IC 20/20: inquiry-based learning and diversity. In the present study, we examined how 23 Spanish-speaking adults perceive phonological similarity. After first obtaining permission from the Institutional Review Board to conduct our research, we recruited participants by making announcements in Spanish classes and on Intercom. Twenty-three participants were administered a task in which they were asked to respond to 110 Consonant-Vowel-Consonant-Vowel nonwords with similar-sounding real words in Spanish.

All responses were transcribed using the International Phonetic Alphabet, a skill taught to undergraduate speech-language pathology students. For each response, sound additions, deletions, and substitutions were noted in all word positions (initial, medial, final), as well as any syllable changes. Each participant's data were then averaged, revealing the average number of changes made by a participant, and where such changes were likely to occur.

Results/Discussion. Findings revealed that participants made an average change to two of the four potential sounds in a stimulus. This is significantly different than what has been reported in English, where it is estimated that participants typically only make *one* sound change. This is therefore a novel finding, and likely related to some of the phonotactic differences between English and Spanish (e.g., English has more final consonants, Spanish words are greater in length). Regarding the types of changes that participants made, sound substitutions

were the most common, particularly on the second consonant (where more changes occurred than anywhere else within a word), and sound deletions were the least common. Additions of a sound appeared to depend on a particular stimulus. Positional sound changes in the order of most to least were as follows: third segment, fourth segment, second segment, and first segments. In other words, participants were more likely to make sound modifications to the latest sounds that they perceived, suggestive more of a recency rather than a primary effect. Lastly, participants added a syllable to the stimulus roughly 20% of the time. This is also a novel finding yet to be reported in the literature. Future directions of this work include administering a similar task in English and Spanish to bilingual participants. This design would allow for a within-participant analysis of the responses.

References

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