Effects of semantic processing on VOT of voiced Stops in Spanish L2 learners

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Background/Motivation

- Phonetic category development can occur during the early stages of L2 learning [@CasillasProdPercStops]
- Semantic processing affects the planning, programming, and execution (phonetic processing) of articulation in monolingual (pathological) speech [@nozari2010naming; @van2012dramatic]
- There is evidence for semantic processing effects (SPE) in high-intermediate L2 bilabial stop production, i.e., stops sound less native-like [@gustafson2013phonetic]
- It remains unclear how the SPE is modulated by proficiency when learning an L2
- We examine the production of bilabial stops in L2 learners with varying levels of proficiency (LexTALE)

Research Questions

1. As adult L2 learners begin to acquire the fine phonetic detail associated with Spanish voice-timing, are initial L2 gains affected by semantic processing [@gustafson2013phonetic]?
2. If so, do L2 learners eventually overcome SPE as they become more proficient in their L2?

Hypothesis: We predict u-shaped development of the SPE, that is, semantic processing will cause cross-linguistic interference as proficiency increases and then diminish as learners master the L2

Method and Materials

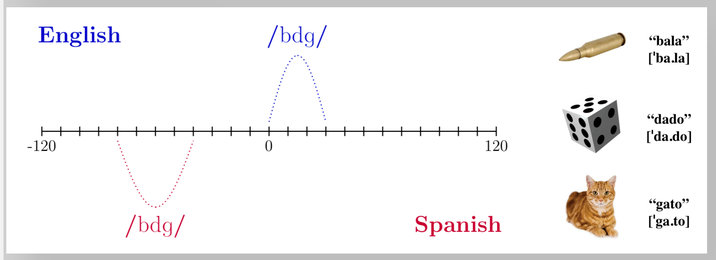
Participants

- Adult English speaking learners of Spanish (n = 36)

Tasks

- LexTALE lexical decision (proxy for L2 proficiency)
- Delayed repetition ("Gato es la palabra")
- Picture naming (semantic processing)

1. Participants of varying levels of proficiency were asked to read words presented on a screen in a random order.
2. They were then asked to identify these same words only being presented pictures of these words on a screen. The words that we were paying attention to all began with with stops.
3. All of these trials were recorded and the VOT of these stops were measured in Praat



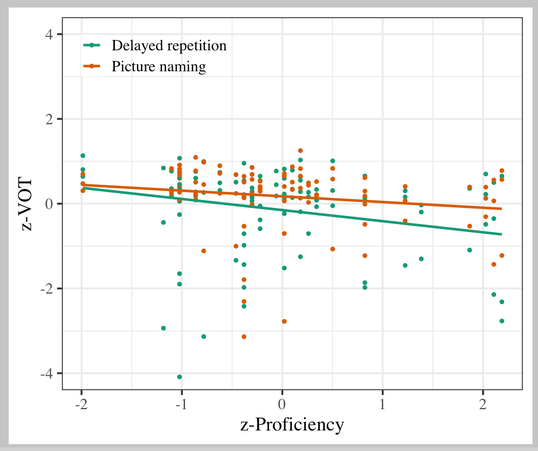
Analysis

We measured VOT of voiced stops.
We analyzed the data using a Bayesian multilevel model that fit VOT as a function of task (delayed repetition, picture naming) and standardized proficiency scores (LexTALE).

Results/Discussion

- Participants with higher proficiency pronounced voiced stops in a more Spanish-like manner (lead VOT) when reading target words (evidence for phonetic category development), but were also most affected by semantic processing (increased VOT when picture naming)
- SPE smaller for learners with low proficiency (still developing phonetic categories for Spanish stops)
- SPE did **not** decrease in highest proficiency learners (no u-shaped development)

VOT as a function of task and LexTALE scores



References

Casillas, J. V. (2019). Phonetic category formation is perceptually driven during the early stages of adult L2 development.Â *Language and Speech*.Â https://doi.org/https://doi.org/10.1177/0023830919866225

Gustafson, E., Engstler, C., & Goldrick, M. (2013). Phonetic processing of non-native speech in semantic vs non-semantic tasks.Â *The Journal of the Acoustical Society of America*,Â *134*(6), EL506â€“EL512.

Nozari, N., Kittredge, A. K., Dell, G. S., & Schwartz, M. F. (2010). Naming and repetition in aphasia: Steps, routes, and frequency effects.Â *Journal of Memory and Language*,Â *63*(4), 541â€“559.

Van Lancker Sidtis, D., Cameron, K., & Sidtis, J. J. (2012). Dramatic effects of speech task on motor and linguistic planning in severely dysfluent parkinsonian speech.Â *Clinical Linguistics & Phonetics*,Â *26*(8), 695â€“711.