THE ACQUISITION OF FINE PHONETIC DETAIL IN A FOREIGN LANGUAGE

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Overview

- Background
- Goals of the study
- Research questions
- Literature review
- Methodology
- Preliminary findings
- Conclusion

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General goal of the study

The acquisition of L2 English stops /p b k g/ in initial position by late L2 Brazilian Portuguese learners of English.

⇨ Perception and production of stops
Voice onset time (VOT)

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Voice Onset Time (VOT)

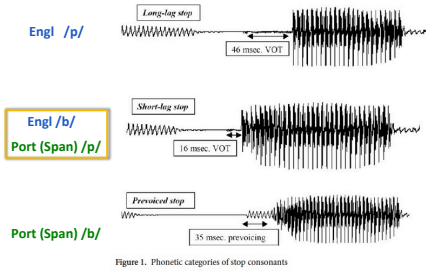

Figure 1. Phonetic categories of stop consonants

Zampini, 2008 (p. 222)

Ex. L2 /pɛt/ can be understood as /bɛt/.

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Four main goals

- **Perception & production**

❑Has there been learning of English stops?

Compare L2 English data (perception and production separately) across learner groups.

❑If learning is found, is it due to the formation of new production VOT categories (for production) and new perceptual strategies (for perception)?

Compare L2 English data to L1 Portuguese data (perception and production separately) within learner groups.

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Four main goals

- **Phonetic Drift**

❑Does experience with English affect Portuguese?

Compare L1 Portuguese data to monolingual Brazilian Portuguese speakers' data (perception and production separately) across learner groups.

❑**Intelligibility**

Will monolingual English listeners identify L2 words?

❑Verify proportion of correct identification across learner groups.

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Research questions

- **Research Question n. 1:** Will higher-proficiency L2 learners (as identified by general grammatical proficiency measures) produce VOT values in the appropriate phonetic categories closer to what would be expected from English native speakers?
- **Research Question n. 2:**Will higher-proficiency L2 learners demonstrate the development of language-specific perceptual systems for VOT categories when processing sounds in their L1 or in their L2?
- **Research Question n. 3:** Will phonetic drift in L1 VOT values be observed in perception and production of L2 learners?
- **Research Question n. 4:** How intelligible will be L2 words with initials /p/ and /b/, produced by L2 learner across different levels of proficiency, judged by monolingual English speakers?

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Literature review

- L2 VOT production: intermediate values (e.g., Caramazza et al. 1973; Flege, 1987; Fowler, Sramko, Ostry, Rowland, & Halle, 2008)
- Early fluent bilinguals have demonstrated the development of language-specific perceptual systems (e.g., García-Sierra et al, 2012; Gonzales & Lotto, 2013)
- Phonetic drift in L1 (e.g., Chang, 2011; Flege; 1987; Lev-Ari & Peperkamp, 2013; Lord, 2008; Major, 1992; Sancier & Fowler, 1996)
- Intelligibility (Sidaras et al., 2009; Smith & Nelson, 1985; Munro & Derwing, 1995)

Do late L2 learners, who have learned the target language in a foreign country, with limited exposure to L1, improve in production and perception of VOT in L2 as they improve in language proficiency?

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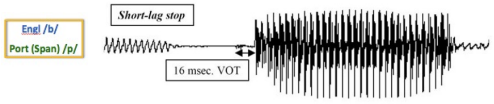
Literature review

- **Gonzales and Loto (2013)**

Goal: Investigate the development of language-specific perceptual systems

Participants: early fluent English-Spanish bilinguals



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- **Gonzales and Loto (2013)**

Stimuli: a continuum of 14 VOT variations from *bafri* to *pafri* (-35ms to +35 ms; steps of 5ms, skipping 0 VOT) , presented in each language mode (English, Spanish).

bafri pafri
Spanish /ri/ English /ɹi/
paf baf

⬇

(Spanish token) paf (+5 ms VOT)
Voiceless stops: insert +5 ms
Voiced stops: insert -5ms from Spanish /b/ before the release burst

⬇

14 VOT variations b…p
+ Spanish /ri/
+ English /ɹi/

⬇

BAFRI… PAFRI

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- **Gonzales and Loto (2013)**

Results:

Bilinguals significantly shifted their perception across language contexts when hearing short-lag stops (e.g., higher instances of voiceless identifications in the Spanish context than in the English context). – *Fluent bilinguals have language-specific perceptual systems*.

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Results for Spanish and English modes

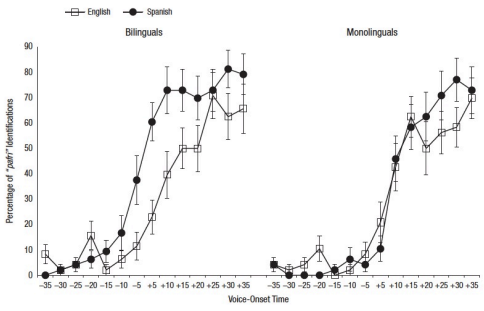

Fig. 2. Percentage of correct "pafri" identifications as a function of voice-onset time and the language background of participants. Results are shown separately for bilinguals and monolinguals. Error bars show standard errors of the mean.

Gonzales and Lotto (2013, p. 2139)

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Methodology

- Participants
  - 36 Brazilian Portuguese learners of English
  - 36 monolingual Brazilian Portuguese

L2 learners' Proficiency levels
(St. George International Online English Test)
Lower (L) and Higher (H) groups (18 participants in each group)

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Methodology

L2 language background questionnaire ($p < .05$):

a) Age of acquisition: H < 18 (Muñoz, 2010)
b) Experience abroad: Only 4 (H)
c) Length of learning: H (studied for a longer time)
d) Use of L2 English: H (use more)
e) Avoid Portuguese: H

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Araxá, Brazil

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Methodology

Design
Two language sessions: English and Portuguese.
Two consecutive experiments: a production test and a perception test.
Language mode: language context, environment

Procedure
- L2 learners:
  - production and perception tests (English mode),
  - production and perception tests (Portuguese mode),
  - English language proficiency test,
  - language background questionnaire,
  - consent form.
- Monolingual Brazilian Portuguese speakers:
  - production and perception tests (Portuguese mode),
  - background questionnaire,
  - consent form.

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The production data

- A delayed repetition task

Material: English and Portuguese words with initial /p b k g/ produced before a low vowel or by a high vowel (80 words; e.g., *peach/beach; pica/bica*)
Stimuli: auditory stimuli + orthographic form + conceptually related picture
Software: PsychoPy (Peirce, 2014).
Procedures:

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You will hear some English sentences. Repeat the first sentence, according to the example. Example:

Speaker: "TABLE is the word. What is the word?"

You: "TABLE is the word."
Click SPACE to start.

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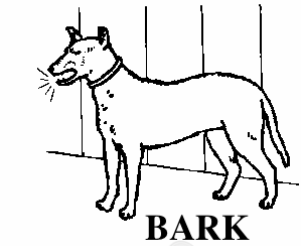

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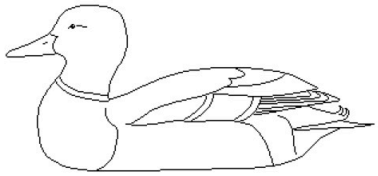

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The production data

- L2 learners:

2,880 English words

and

2,880 Portuguese words

(10 words x 4 stops x 2 phonological environments x 36 participants).

- Monolingual Brazilian Portuguese:

2,880 Portuguese words

(10 words x 4 stops x 2 phonological environments x 36 participants).

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The perception data

- A double phonemic boundary test

(following Gonzales and Lotto, 2013)

Stimuli: Gonzales and Lotto (2013) - 14 variants (steps of 5 ms, from -35 to +35 ms, skipping 0 VOT).

BAFRI…… PAFRI

Procedures:

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You will hear two words in English:

BAFRI and PAFRI.

If the word starts with B, click the left arrow.

If the word starts with P, click the right arrow.

Click SPACE to start.

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Português

Bafri Pafri

The perception data

- L2 learners:

5,040 responses for English
5,040 responses for Portuguese
(14 VOT variations x 10 repetitions x 36 participants).

Monolingual Brazilian Portuguese speakers:
5,040 responses for Portuguese
(14 VOT variations x 10 repetitions x 36 participants).

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The intelligibility data

- An intelligibility test

(Field, 2005)

Participants: monolingual English listeners
Stimuli: 10 minimal pairs from the production data (most frequent words – COCA [Davies, 2013]).
Task: Participants transcribe what they hear.

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Preliminary result for the L2 English perception data
(bafri…pafri)

- Response for ***pafri*** in the English mode:

L group identified /p/ more often (55.9%) than the H group (44.09%)

1-factor between-subject ANOVA, with proficiency (L, H) as the between-subject factor. The proportion of *pafri* identification was the dependent variable.
Result: ($F(1,502) = 8.02$, $p < .05$)

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Preliminary result for the perception data
(bafri…pafri)

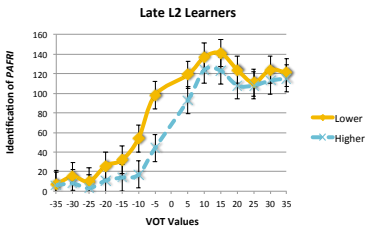

Figure 2. Number of times participants identified *pafri* as a function of voice-onset time. Results are shown separately for the lower- and higher-proficiency groups. Error bars show standard errors of the mean.

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Conclusion

This study will show whether late L2 learners who have learned the target language in formal settings, with limited exposure to L2:

- shift perception across language modes by switching between language-specific phonetic systems
- improvement in L2 learning leads to improvement of perception and production of VOT values
- phonetic drift occurs in L2 production and perception of Portuguese stops
- the degree in which words produced with initial stops by L2 learners are intelligible, even though they may be accented

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THANK YOU!

OBRIGADA!