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# The Role of Phonological Similarity in Feature Redeployment

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This work has been done in collaboration with Ruth Martinez (University of Toronto) and Michael Dow (Université de Montréal)

# Introduction

- Similarity underlies phonological behaviour in end-state grammars: sounds that are similar identify triggers and targets for assimilation and dissimilation rules (Frisch, Pierrehumbert & Broe, 2004; Rose & Walker, 2004).
- In L2, similarity plays a central role in capturing the ease or difficulty with which learners perceive and produce new sounds.
- How is similarity defined? In L2, it has been defined with reference to:
  - acoustic-phonetic space (Flege, 1995; Escudero, 2005)
  - articulatory gestures (Best & Tyler, 2007)
  - phonological primitives (features) (Brown, 1998, 2000)

# Introduction

- We defend the view that similarity is defined with reference to features.
- On exposure to new contrasts in perception, similarity level between the L1 grammar and target L2 sounds determines the ease with which an L1 feature can be redeployed (in the sense of Archibald, 2005).
- The calculation of similarity is sensitive to:
  - a feature's status in the L1 grammar (contrastive or allophonic; cf. Brown 1998, 2000);
  - the domain in which this status holds (vowel system or consonant system; cf. Nespor, Peña & Mehler, 2003).

# Redeployment conditions

**(i)** **Redeployment within systems:** Can features that function contrastively for L1 vowels/(consonants) be recombined, yielding new vowels/(consonants) in the L2?

**(ii)** **Redeployment across levels:** Can features that function allophonically in the L1 vowel/(consonant) system be 'elevated' to contrastive status in the L2 vowel/(consonant) system?

**(iii)** **Redeployment across systems:** Can features that function contrastively for L1 consonants/(vowels) be reassigned to build new vowels/(consonants) in the L2?

(Martinez, Goad & Dow, 2021)

# Calculation of similarity

(i) **Redeployment within systems:** Can features that function contrastively for L1 vowels/(consonants) be recombined, yielding new vowels/(consonants) in the L2?

**HIGH SIMILARITY:** The feature's status (contrastive) and the domain where it has this status (either vowel or consonant system) is the same in the L1 and L2.

HIGH SIMILARITY should be **most facilitative** for redeployment.

# Calculation of similarity

**(ii) Redeployment across levels:** Can features that function allophonically in the L1 vowel/(consonant) system be 'elevated' to contrastive status in the L2 vowel/(consonant) system?

**MODERATE SIMILARITY:** The feature is active in the same domain, but it has a different status in the L1 (allophonic) and L2 (contrastive).

MODERATE SIMILARITY should be **less facilitative** than high similarity and **more facilitative** than low similarity for redeployment.

# Calculation of similarity

**(iii) Redeployment across systems:** Can features that function contrastively for L1 consonants/(vowels) be reassigned to build new vowels/(consonants) in the L2?

**LOW SIMILARITY:** The L1-L2 status of the feature is the same (contrastive), but the domain where it has this status is not (consonant system vs. vowel system).

LOW SIMILARITY should be **least facilitative** for redeployment.

# Specific objectives

- To probe how the status of features in the L1 grammar constrains L2 perception at the very onset of acquisition (i.e., in naïve learners/listeners);
  - Specifically, to determine whether listeners from various L1 backgrounds can detect [nasal] for Brazilian Portuguese /i/ vs. /ĩ/.

- To determine whether success is tied to high(er) phonological similarity;
  - This could indicate that listeners from certain L1 backgrounds are **better positioned** to redeploy the feature [nasal] in actual language learning: to combine it with L1 height features to create the novel L2 category /ĩ/.

# Nasality across languages

**Domain and status of the feature [nasal]:**

- Can operate in both consonant and vowel systems.
- Can have contrastive or allophonic status.

| | Nasal C | Nasal V |
|---|---|---|
| Brazilian Portuguese | contrastive | contrastive |
| English | contrastive | allophonic |
| Eyak | allophonic | contrastive |
| Quileute | – | – |

# Nasality across languages

| Target L2 | Nasal C | Nasal V |
|---|---|---|
| Brazilian Portuguese (BP) | contrastive | contrastive (high & non-high vowels) |

| Learner L1s | Nasal C | Nasal V |
|---|---|---|
| French (FR) | contrastive | contrastive (non-high vowels only) |
| English (EN) | contrastive | allophonic |
| Non-Caribbean Spanish (NS) | contrastive | phonetic |

# Nasality across languages

**Nasality is contrastive:**

- Minimal pairs or distributional evidence for distinctive status can be found.
- Intended and controlled by speakers.
- Contrastive nasality employs the phonological feature [nasal].

# Nasality across languages

**Nasality is allophonic:**

- Contextually-determined; in vowels, arises from nasal gesture of consonant overlapping adjacent vowel.
- Intended and controlled by speakers (Moraes, 1977; Solé, 1992).
- Allophonic nasality employs the phonological feature [nasal].

# Nasality across languages

**Nasality is phonetic:**

- Contextually-determined; in vowels, arises from nasal gesture of consonant overlapping adjacent vowel.
- Unintended and automatic; results from physiological constraints (Moraes, 1977; Solé, 1992).
- Phonetic nasality does not employ the phonological feature [nasal].

# Similarity calculation for BP /i/-/ĩ/

| Lang | Status of [nas] for L1 consonants | Similarity calculation: L1 [nas] in consonants used for BP /ĩ/ | Status of [nas] for L1 vowels | Similarity calculation: L1 [nas] in vowels used for BP /ĩ/ |
|---|---|---|---|---|
| BP | contrastive | | contrastive (hi & non-hi Vs) | |
| FR | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | contrastive (non-hi Vs) | Redeploy L1 [nas] within systems: HIGH SIMILARITY |
| EN | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | allophonic | Redeploy L1 [nas] across levels: MODERATE SIMILARITY |
| NS | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | phonetic | No redeployment possible from L1 vowel system |

# Similarity calculation for BP /i/-/ĩ/

| Lang | Status of [nas] for L1 consonants | Similarity calculation: L1 [nas] in consonants used for BP /ĩ/ | Status of [nas] for L1 vowels | Similarity calculation: L1 [nas] in vowels used for BP /ĩ/ |
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| EN | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | allophonic | Redeploy L1 [nas] across levels: MODERATE SIMILARITY |
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| FR | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | contrastive (non-hi Vs) | Redeploy L1 [nas] within systems: HIGH SIMILARITY |
| EN | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | allophonic | Redeploy L1 [nas] across levels: MODERATE SIMILARITY |
| NS | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | phonetic | No redeployment possible from L1 vowel system |

# Similarity calculation for BP /i/-/ĩ/

| Lang | Status of [nas] for L1 consonants | Similarity calculation: L1 [nas] in consonants used for BP /ĩ/ | Status of [nas] for L1 vowels | Similarity calculation: L1 [nas] in vowels used for BP /ĩ/ |
|---|---|---|---|---|
| BP | contrastive | | contrastive (hi & non-hi Vs) | |
| FR | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | contrastive (non-hi Vs) | Redeploy L1 [nas] within systems: HIGH SIMILARITY |
| EN | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | allophonic | Redeploy L1 [nas] across levels: MODERATE SIMILARITY |
| NS | contrastive | Redeploy L1 [nas] across systems: LOW SIMILARITY | phonetic | No redeployment possible from L1 vowel system |

# Experiment

- Probe perception of oral-nasal contrast in Brazilian Portuguese high (and mid) front vowels by naïve learners/listeners from L1s that differ:
  - in the status assigned to [nasal] in their vowel system;
  - in the level of similarity holding between their grammar of nasality and the target grammar for nasal vowels.

# Predictions

**Detection of /i/-/ĩ/ under HIGH SIMILARITY:**

- Redeployment of contrastive [nasal] within the vowel system itself would yield:

| Contrastive [nasal] for V | No contrastive [nasal] for V | Expected discrimination results |
|---|---|---|
| FR | | ✓ |
| | EN | ✗ |
| | NS | ✗ |

HIGH SIMILARITY predicted to be **most facilitative** for discrimination of new contrast on first exposure.

# Predictions

**Detection of /i/-/ĩ/ under MODERATE SIMILARITY:**

- Redeployment across levels: Elevation of [nasal] from allophonic to contrastive status within vowel system:

| Allophonic [nasal] for V | No allophonic [nasal] for V | Expected discrimination results |
|---|---|---|
| EN | NS | ✓<br>✗ |

MODERATE SIMILARITY predicted to be **less facilitative** than high similarity and **more facilitative** than low similarity.

# Predictions

**Detection of /i/-/ĩ/ under LOW SIMILARITY:**

- Redeployment of contrastive [nasal] from the consonant system to the vowel system would yield:

| Contrastive [nasal] for C | No contrastive [nasal] for C | Expected discrimination results |
|---|---|---|
| EN | | ✓ |
| FR | | ✓ |
| NS | | ✓ |

LOW SIMILARITY predicted to be **least facilitative** for discrimination of new contrast on first exposure.

# Participants

- Naïve learners:
  - France French (FFR): 11
  - Québec French (QFR): 10
  - English (EN): 14
  - Non-Caribbean Spanish (NS): 18*
- Brazilian Portuguese (BP) controls: 15
- Age range: 18-35 (51F, 32 M)

* NS includes Mexican, South American and most Peninsular varieties; we also tested 15 Caribbean Spanish speakers (varieties spoken around the Caribbean sea, as well as in Andalusia and Extremadura).

# Participants

- Naïve learners had attained no higher than high intermediate proficiency in any L2;
- Naïve learners had no previous exposure to a language with high nasal vowels;
- Naïve learners (and BP controls) all had exposure to Québec French, which has /e/-/ẽ/;
  - Amount of exposure to Québec French did not impact performance on /e/-/ẽ/ (all groups except QFR performed significantly lower than BP, but all groups performed well-above chance ($p$s < 0.001));
  - Exposure to Québec French did not impact performance on /i/-/ĩ/ for non-French naïve learners.

# Stimuli

| Contrast category | Contrast shape |
|---|---|
| Naïve perception | Ci-Cĩ |
| Non-naïve perception<br>(due to participants' exposure to QFR) | Ce-Cẽ |
| Perceptual illusion<br>(to ensure that accurate discrimination of /i/-/ĩ/ is not due to misperception of /ĩ/ as /iŋ/) | CṼ-CVŋ |
| Control | CV-CVŋ,<br>Ciŋ-Ceŋ |

C = /p, k, f, s/

V = /i, e/; Ṽ = /ĩ, ẽ/

# Task

**AXB task:**

- Designed and administered in Praat;
- Designed to optimize elicitation of phonological judgements:
  - ISI set to 750ms
  - For each triad, A and B were produced by one BP talker, while X was produced by another talker (1F, 1M)
- Participants judged 120 triads.

# Results

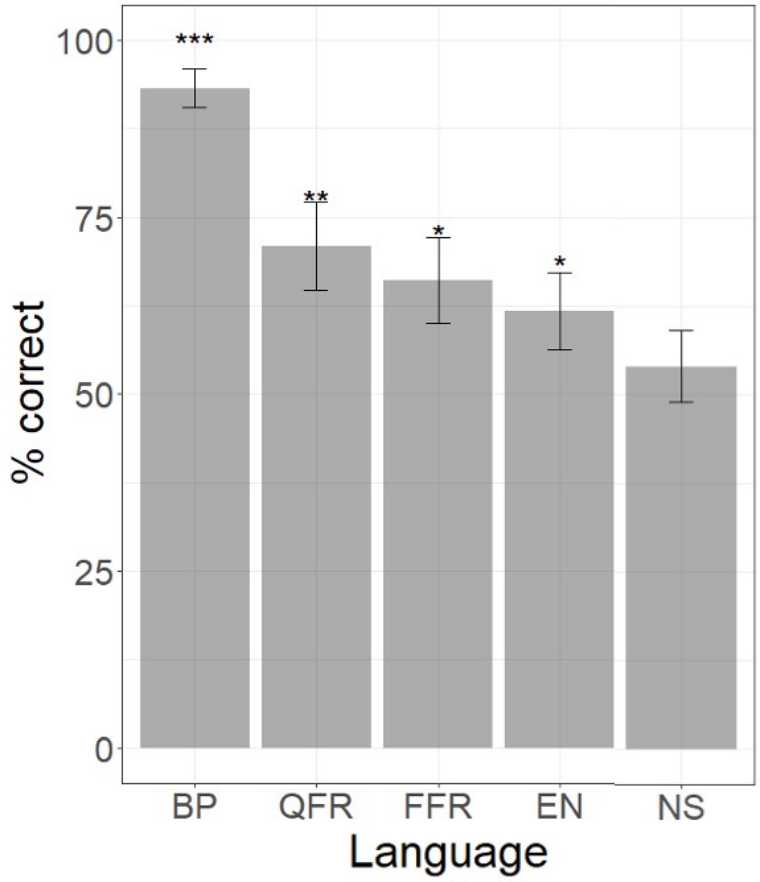


**Figure 1.** Performance on Ci-Cĩ contrast across language groups. The level of statistical significance of above-chance performance is indicated by asterisks (*p*s < 0.05*, 0.01**, 0.001***).

# Results

- All learner groups except NS perform above chance;
- All learner groups significantly lower than BP (baseline);
    - Taken together, suggest that 'redeployment' on first exposure to new contrast is possible but costly.

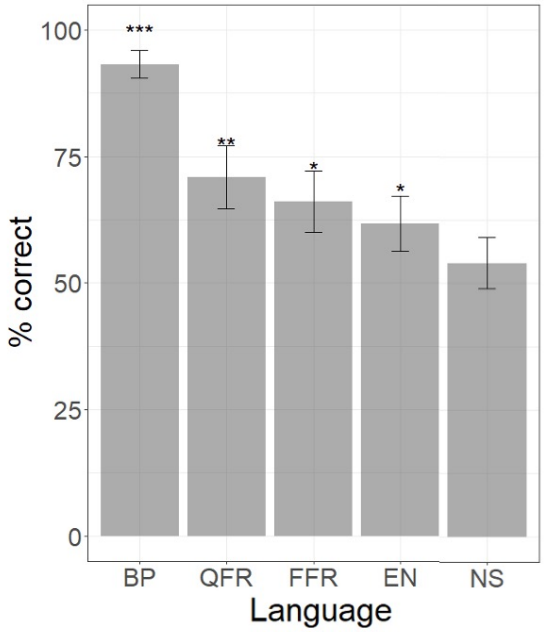


Fig 1. Ci-Cĩ contrast.

- NS is the only learner group not above chance;
    - Suggests no 'redeployment' across systems (contrastive [nas] from C system to V system) on first exposure;
    - Consistent with LOW SIMILARITY being **least facilitative**.

# Results

- Comparing learner groups, QFR FFR and EN not significantly different from each other;
  - Suggests that 'redeployment' within systems (contrastive [nas] within V system) and across levels (allophonic [nas] within V system) on first exposure to new contrast are equally possible.

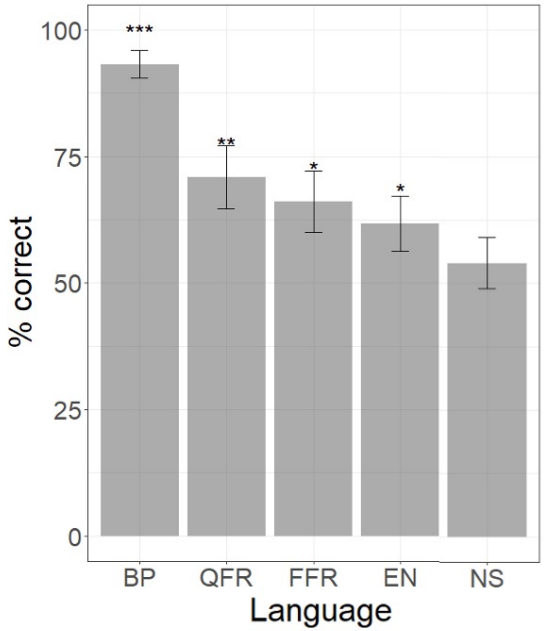


Fig 1. Ci-Cĩ contrast.

  - Consistent with HIGH SIMILARITY being **most facilitative**.
  - Suggests MODERATE SIMILARITY is **equally facilitative**.
- Proceed with caution! Maybe learners perceive Cĩ as Ciŋ.

# Results

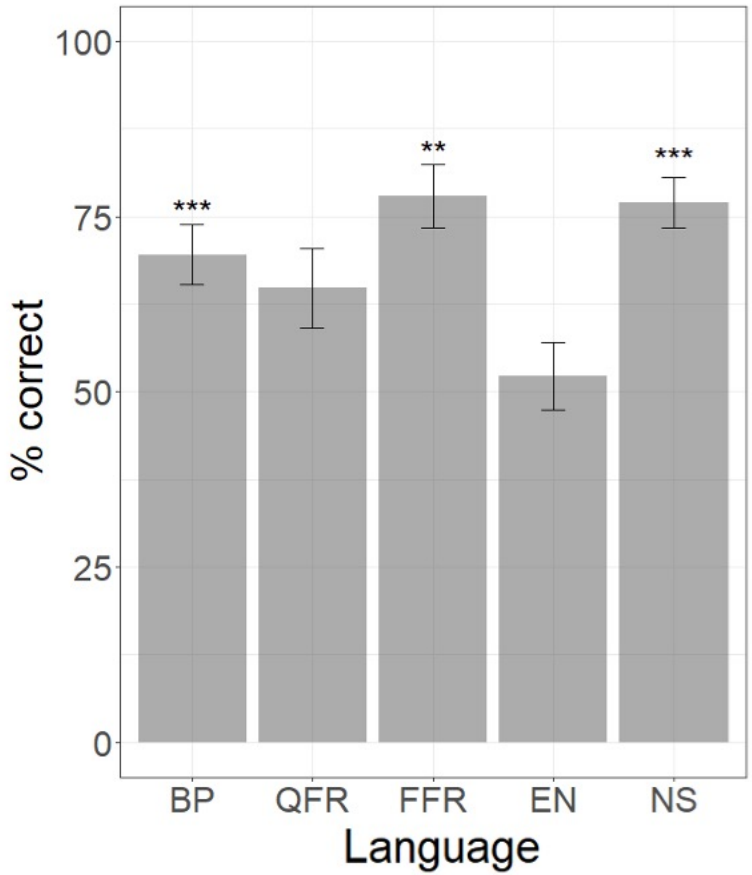


**Figure 2.** Performance on Cĩ-Ciŋ contrast across language groups. The level of statistical significance of above-chance performance is indicated by asterisks (*p*s < 0.05*, 0.01**, 0.001***).

# Results

- All groups except QFR and EN perform above chance.
- Why is BP not at ceiling?
  - This is not a native contrast for BP.
- Why is QFR not above chance?
  - Variation in data: if we remove random intercept for participants, result is significantly above chance ($p = 0.04$).

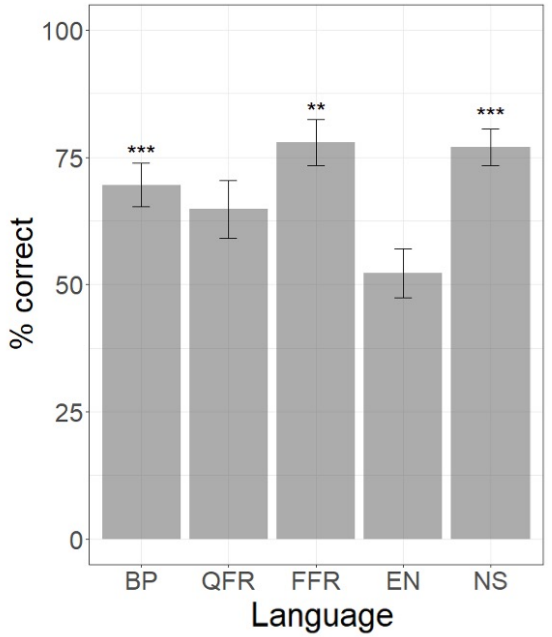


Fig 2. Cĩ-Ciŋ contrast.

# Results

- Why is NS not above chance?
  - [nasal] feature is not in the phonological system of NS vowels;
  - NS listeners thus perceive Cĩ as Ci (Fig 1).
  - Absence of [nasal] on vowels leads to Cĩ-Ciŋ pairs (Fig 2) being perceived as distinct: Ci-Ciŋ.

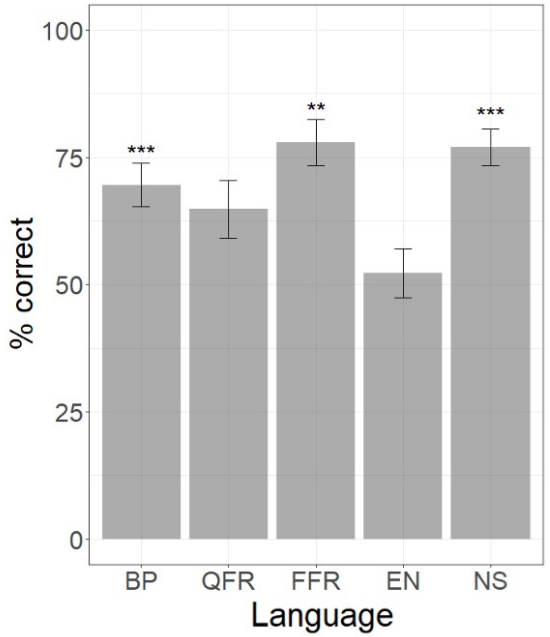


Fig 2. Cĩ-Ciŋ contrast.

# Results

- Why is EN not above chance?
  - EN listeners perceive Cĩ-Ciŋ pairs as non-distinct (Fig 2);
  - This forces us to revisit our interpretation of above-chance results for Cĩ-Ci (Fig 1).
  - Taken together, suggest that EN listeners perceive Cĩ-Ci as Ciŋ-Ci.

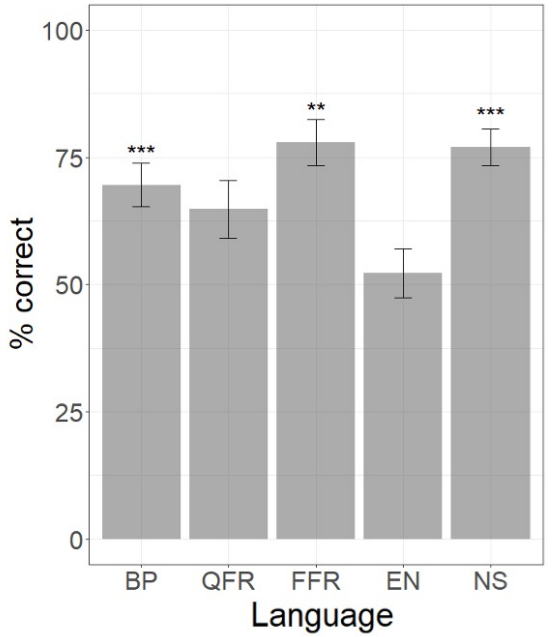


Fig 2. Cĩ-Ciŋ contrast.

- Redeployment across levels and within systems on first exposure to new contrast are *not* equally possible.
  - Consistent with HIGH SIMILARITY being **most facilitative**.
  - Suggests MODERATE SIMILARITY is **less facilitative**.

# Discussion

- Only FR groups accurately discriminate Ci-Cĩ contrast.
- This result is consistent with **redeployment within systems:** Features that function contrastively for L1 vowels/ (consonants) can be recombined, yielding new vowels/ (consonants) in the L2.
- Redeployment within systems involves **HIGH SIMILARITY:** The status of [nasal] (contrastive) and the domain where it has this status (vowel system) is the same in the L1 and L2.
- But accurate discrimination of /i/–/ĩ/ on first exposure does not mean that naïve listeners have created a new phonological category for /ĩ/; rather, they are **optimally positioned** for successful creation of this category in real language learning.

# Discussion

| | Ci-Cĩ perceived as | Explanation |
|---|---|---|
| FR | Ci-Cĩ | HIGH SIMILARITY is most facilitative (contrastive [nasal] in L1 vowel system can be 'redeployed' on first exposure to novel nasal vowels) |
| EN | Ci-Ciŋ | MODERATE SIMILARITY is less facilitative (allophonic [nasal] in L1 vowel system cannot be dissociated from its consonant host on first exposure to novel nasal vowels) |
| NS | Ci-Ci | No phonological [nasal] in L1 vowel system to redeploy |

# Thank you!

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# Appendices

- Data were modelled in R using hierarchical logistic regressions with crossed by-participant and by-item random intercepts, to account for the variation across participants within each language group and across test items within each contrast category, respectively (R Development Core Team, 2017).
- The logistic regressions were run using the glmer() function of the lme4 package (Bates et al., 2015) with the BP group as the baseline to determine whether the non-native groups performed significantly differently from BP on each contrast.
- Additional logistic regressions were run using the glht() function of the multcomp package (Hothorn et al., 2008) to obtain comparisons across all non-native groups.
- To compare the performance on the high vs. mid vowel, one logistic regression per language group and contrast with by-participant and by-item random intercepts was run using the glmer() function of the lme4 package.
- In addition to making comparisons across language groups and vowels, the performance of each group on each contrast was considered relative to chance (50%). One intercept-only logistic regression per language group and contrast with by-participant and by-item random intercepts was run using the glmer() function of the lme4 package.

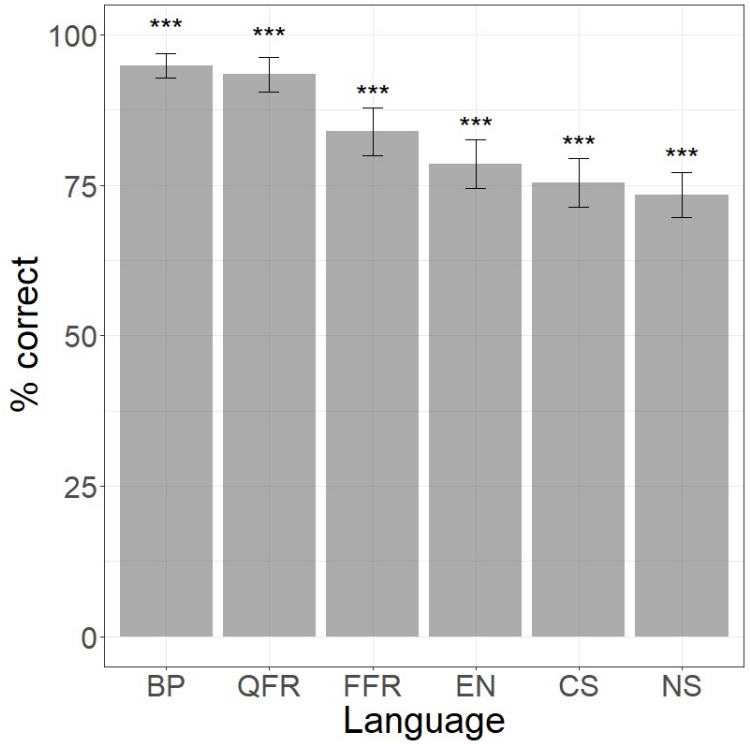


**Figure 1A.** Performance on Ce-Cẽ contrast across language groups. The level of statistical significance of above-chance performance is indicated by asterisks (*p*s < 0.05*, 0.01**, 0.001***).

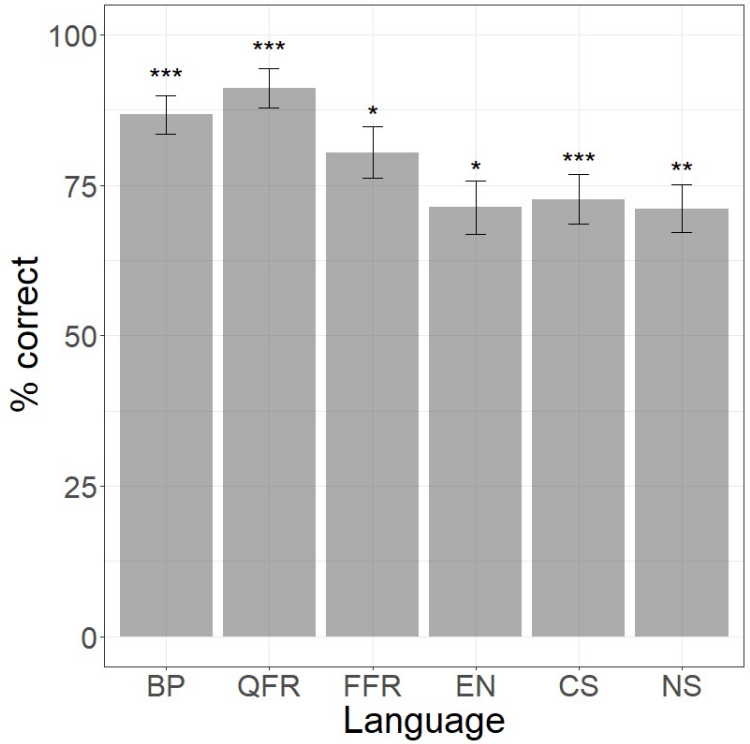


**Figure 2A.** Performance on Cẽ-Ceŋ contrast across language groups. The level of statistical significance of above-chance performance is indicated by asterisks (*p*s < 0.05*, 0.01**, 0.001***).

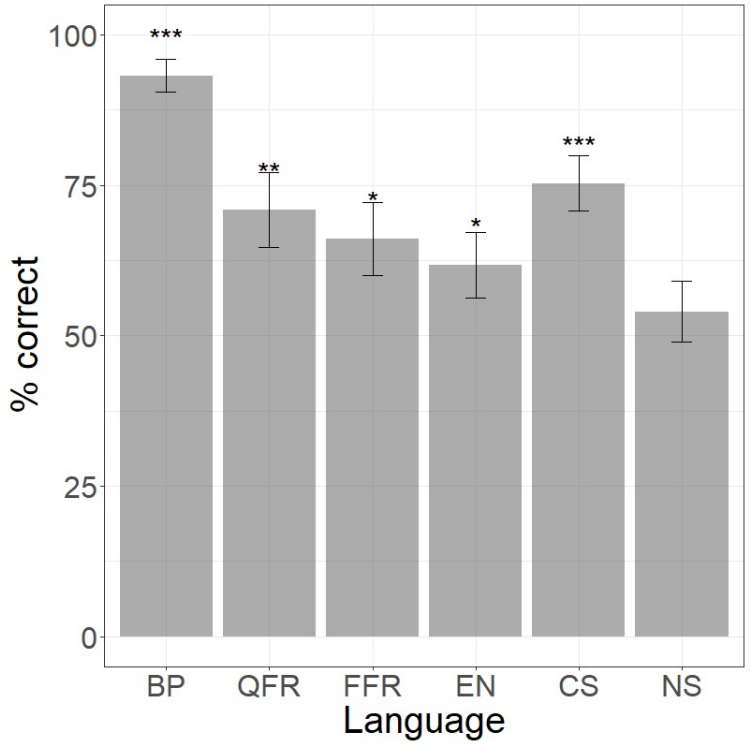


**Figure 3A.** Performance on Ci-Cĩ contrast across language groups. The level of statistical significance of above-chance performance is indicated by asterisks (*p*s < 0.05*, 0.01**, 0.001*** ).

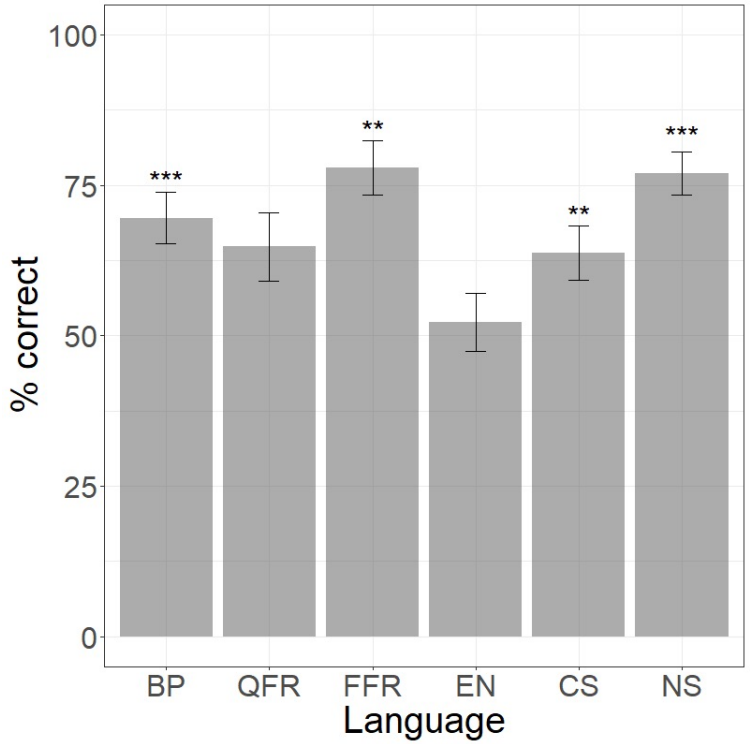


**Figure 4A.** Performance on Cĩ-Ciŋ contrast across language groups. The level of statistical significance of above-chance performance is indicated by asterisks (ps < 0.05*, 0.01**, 0.001***).

**Appendix 1.** Model for Ce–Cẽ contrast: Additional comparisons across non-native groups.

| | Estimate ( $\hat{\beta}$ ) | 95% CI | Std. error | z value | p value |
|---|---|---|---|---|---|
| QFR vs. FFR | 1.0411 | [–0.65, 2.73] | 0.5998 | 1.736 | ns |
| QFR vs. EN | 1.4439 | [–0.16, 3.05] | 0.5702 | 2.532 | ns |
| QFR vs. CS | 1.6363 | [0.04, 3.22] | 0.5624 | 2.909 | $< 0.05$ |
| QFR vs. NS | 1.7414 | [0.18, 3.29] | 0.5495 | 3.169 | $< 0.05$ |
| FFR vs. EN | 0.4027 | [–0.85, 1.66] | 0.4450 | 0.905 | ns |
| FFR vs. CS | 0.5952 | [–0.63, 1.82] | 0.4344 | 1.370 | ns |
| FFR vs. NS | 0.7003 | [–0.48, 188] | 0.4175 | 1.677 | ns |
| EN vs. CS | 0.1924 | [–0.91, 1.29] | 0.3903 | 0.493 | ns |
| EN vs. NS | 0.2976 | [–0.75, 1.34] | 0.3713 | 0.801 | ns |
| CS vs. NS | 0.1052 | [–0.90, 1.11] | 0.3572 | 0.294 | ns |

*Notes*. CS = varieties of Spanish spoken around the Caribbean sea as well as in Andalusia and Extremadura. EN = English. FFR = France French. NS = non-Caribbean Spanish such as Mexican, South American and most Peninsular varieties. QFR = Québec French.

**Appendix 2.** Models for Ce–Cẽ contrast: Performance relative to chance.

| | Estimate ( $\hat{\beta}$ ) | 95% CI | Std. error | z value | p value |
|---|---|---|---|---|---|
| BP | 2.9178 | [2.18, 3.85] | 0.4191 | 6.962 | $< 0.001$ |
| QFR | 2.6532 | [1.84, 3.70] | 0.4627 | 5.734 | $< 0.001$ |
| FFR | 1.6514 | [1.11, 2.26] | 0.2918 | 5.660 | $< 0.001$ |
| EN | 1.2953 | [0.85, 1.77] | 0.2353 | 5.504 | $< 0.001$ |
| CS | 1.1221 | [0.70, 1.56] | 0.2176 | 5.157 | $< 0.001$ |
| NS | 1.0141 | [0.64, 1.40] | 0.1919 | 5.284 | $< 0.001$ |

*Notes*. BP = Brazilian Portuguese. CS = varieties of Spanish spoken around the Caribbean sea as well as in Andalusia and Extremadura. EN = English. FFR = France French. NS = non-Caribbean Spanish such as Mexican, South American and most Peninsular varieties. QFR = Québec French.

**Appendix 3.** Models for Cẽ–Ceɲ contrast: Performance relative to chance.

| | Estimate ( $\hat{\beta}$ ) | 95% CI | Std. error | z value | p value |
|---|---|---|---|---|---|
| BP | 2.0682 | [1.17, 2.96] | 0.4575 | 4.520 | $< 0.001$ |
| QFR | 2.5690 | [1.32, 3.81] | 0.6354 | 4.043 | $< 0.001$ |
| FFR | 2.5260 | [0.38, 4.66] | 1.0900 | 2.316 | $< 0.05$ |
| EN | 1.2109 | [0.23, 2.18] | 0.4972 | 2.435 | $< 0.05$ |
| CS | 1.0366 | [0.51, 1.56] | 0.2684 | 3.862 | $< 0.001$ |
| NS | 1.0954 | [0.31, 1.87] | 0.3968 | 2.761 | $< 0.01$ |

*Notes*. BP = Brazilian Portuguese. CS = varieties of Spanish spoken around the Caribbean sea as well as in Andalusia and Extremadura. EN = English. FFR = France French. NS = non-Caribbean Spanish such as Mexican, South American and most Peninsular varieties. QFR = Québec French.

**Appendix 4.** Models for Ci–Cĩ contrast: Performance relative to chance.

| | Estimate ( $\hat{\beta}$ ) | 95% CI | Std. error | z value | p value |
|---|---|---|---|---|---|
| BP | 2.6150 | [1.87, 3.55] | 0.4229 | 6.183 | $< 0.001$ |
| QFR | 0.8910 | [0.32, 1.50] | 0.2969 | 3.001 | $< 0.01$ |
| FFR | 0.6690 | [0.15, 1.21] | 0.2683 | 2.493 | $< 0.05$ |
| EN | 0.5447 | [0.09, 1.01] | 0.2334 | 2.334 | $< 0.05$ |
| CS | 1.1137 | [0.64, 1.61] | 0.2457 | 4.532 | $< 0.001$ |
| NS | 0.1603 | [–0.23, 0.55] | 0.2006 | 0.799 | ns |

*Notes*. BP = Brazilian Portuguese. CS = varieties of Spanish spoken around the Caribbean sea as well as in Andalusia and Extremadura. EN = English. FFR = France French. NS = non-Caribbean Spanish such as Mexican, South American and most Peninsular varieties. QFR = Québec French.

**Appendix 5.** Model for Ci–Cĩ contrast: Additional comparisons across non-native groups.

| | Estimate ( $\hat{\beta}$ ) | 95% CI | Std. error | z value | p value |
|---|---|---|---|---|---|
| QFR vs. FFR | 0.2185 | [–0.92, 1.36] | 0.4040 | –0.541 | ns |
| QFR vs. EN | 0.3511 | [–0.73, 1.43] | 0.3813 | –0.921 | ns |
| QFR vs. CS | –0.2312 | [–1.33, 0.87] | 0.3887 | 0.595 | ns |
| QFR vs. NS | 0.7355 | [–0.29, 1.76] | 0.3619 | 2.032 | ns |
| FFR vs. EN | 0.1326 | [–0.88, 1.15] | 0.3594 | –0.369 | ns |
| FFR vs. CS | –0.4497 | [–1.49, 0.59] | 0.3672 | 1.225 | ns |
| FFR vs. NS | 0.5170 | [–0.44, 1.47] | 0.3386 | 1.527 | ns |
| EN vs. CS | –0.5823 | [–1.55, 0.38] | 0.3422 | –1.702 | ns |
| EN vs. NS | 0.3844 | [–0.49, 1.26] | 0.3112 | 1.235 | ns |
| CS vs. NS | 0.9667 | [0.05, 1.87] | 0.3204 | 3.017 | $< 0.05$ |

*Notes*. CS = varieties of Spanish spoken around the Caribbean sea as well as in Andalusia and Extremadura. EN = English. FFR = France French. NS = non-Caribbean Spanish such as Mexican, South American and most Peninsular varieties. QFR = Québec French.

**Appendix 6.** Models for Cĩ–Ciŋ contrast: Performance relative to chance.

| | Estimate ( $\hat{\beta}$ ) | 95% CI | Std. error | z value | p value |
|---|---|---|---|---|---|
| BP | 0.8469 | [0.39, 1.29] | 0.2282 | 3.711 | $< 0.001$ |
| QFR | 0.8351 | [–0.23, 1.90] | 0.5472 | 1.526 | ns |
| FFR | 1.4742 | [0.56, 2.38] | 0.4638 | 3.179 | $< 0.01$ |
| EN | 0.0930 | [–0.30, 0.49] | 0.2031 | 0.458 | ns |
| CS | 0.5900 | [0.15, 1.02] | 0.2225 | 2.652 | $< 0.01$ |
| NS | 1.4061 | [0.61, 2.19] | 0.4028 | 3.491 | $< 0.001$ |

*Notes*. BP = Brazilian Portuguese. CS = varieties of Spanish spoken around the Caribbean sea as well as in Andalusia and Extremadura. EN = English. FFR = France French. NS = non-Caribbean Spanish such as Mexican, South American and most Peninsular varieties. QFR = Québec French.