Exposure to second language accent prompts recalibration of phonemic categories

Drew J. McLaughlin1 & Arthur G. Samuel1,2,3
1Basque Center on Cognition, Brain and Language, 2Department of Psychology, Stony Brook University, 3 IKERBASQUE

Is adaptation to second language (L2) accent supported by a phonemic recalibration mechanism?

Background & Method

- When listening to atypical sounds produced by a first language (L1) talker, listeners will accommodate the talker by recalibrating their internal sound category boundaries.1,2,3
- Previously unexamined on this topic is whether:
  1. processing of natural, second language (L2, or “foreign”) accent is supported by this same recalibration mechanism
  2. listeners generalize phonemic learning to similar (but untrained) sound categories
  3. experience makes recalibration faster

Online data collection

- Young adult, L1 Spanish multilinguals (N = 287)
- Trained with different combinations of bilabial, alveolar, and/or velar plosives (~ n = 39 / group)

Movement within pre-test session

- All participants completed the same pre-test, and were analyzed as one large dataset (N = 287)
- Experience with English was a composite of daily use (listening, reading, speaking)

RESULTS

1. Boundary movement within the pre-test session for all places of articulation (POAs)
2. More experienced listeners had more English-like boundaries at pre-test – particularly in the bilabial condition

Pre- to post-test change depends on training materials

2AFC Task Design

- Bilabial block (ba, pa)
- Alveolar block (t, k, etc.)
- Velar block (d, g, etc.)

Training with American-accented Spanish tokens (critical plosive in onset position)

- Native Spanish
- American-accented Spanish

VOT (ms)

Violin plot

Bilabial block

Training with American-accented Spanish tokens (critical plosive in onset position)

- Non-minimal pairs promote adaptation of plosive boundary

Critical Tokens (x10)

- “bano” /banco/ (American accent)
- “pance” /panco/ (American accent)

Filler Tokens (x10)

- “torcer” (etc.)
- “caer” (etc.)

Notes & References

References: 1 Harris, McQueen, & Cutler (2003), 2 Samuel (2017), 3 Y. A. Samuel (2020)

Funding: This work was supported by the European Union’s Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No. 101103964, the Basque Government through the BERC 2022-2025 program, and the Spanish State Research Agency through BSCB, Severo Ochoa excellence accreditation (CEX2018-000102-S).

Email: dmcLaughlin@bcbl.eu, a.samuel@bcbl.eu

Conclusions

Phonemic recalibration is a mechanism that supports real-world accent adaptation

Experience with the L1 of an L2-accented talker facilitates recalibration

- Listeners may have rapidly identified the accent and applied their English category boundaries