Big Question: How do phonological processes acquire non-surface conditioning over time?

Local Question: /ai/-Raising can respond to underlying voicing of flapped /t/ (un-Raised rider vs. Raised writer) from the earliest stages (Fruehwald, 2016). How so, if it is phonologized from a purely phonetic precursor?

One proposal: Pre-existing stem-level Clipping shortens all pre-voiceless vowels; phonetic /ai/-Raising then applies only to shortened /ai/ (Bermúdez-Otero, 2019):

Stimuli: Monomorphemic monosyllables. Each list was all /ai/ (25 words) or all /ei/ (18 words).

Tasks: Read aloud, then sort into groups judged to share vowel with (non-rhyming) guide words (Di Paolo and Faber, 1990).

Hyp. 1: /ai/-Raising implies /ai/-Clipping. NO. There is no correlation.

Hyp. 2: /ai/-sorting predicted by /ai/-Clipping at least as well as by /ai/-Raising. NO. The reverse is true.

Hyp. 3 /ei/- and /ai/-sorting should correlate. YES.

Experiment: Reading and sorting of /ai/ and /ei/

Participants: Recruited via Prolific Academic across the U.S. to sample varieties at different stages of phonologization. 201 finished; 75 were excluded (52 skipped practice or failed it; 23 bad audio). Geography of remaining 126:

I.e., in incipient Raising, the phonological category is determined by Clipping, which applies to all vowels, not by /ai/-Raising.

Across varieties at different stages of phonologization,

- Hyp. 1: /ai/-Raising implies /ai/-Clipping. NO
- Hyp. 2: Phonological category judgements of /ai/ are at least as well predicted by Clipping as by Raising. NO
- Hyp. 3: Phonological category judgements of /ei/ and /ai/ are positively correlated. YES

Discussion: Mixed results for Clipping proposal: Clipping is not a precondition for /ai/-Raising, does not predict /ai/ (or /ei/) sorting, and lacks other properties of a stem-level rule (e.g., lexical exceptions not involving /ai/, late acquisition in L1).

Alternative explanation for Fruehwald (2016)’s Philadelphia results: Abstract Phonetics Hypothesis: Abstract conditioning is already present in phonetic precursors before phonologization, and can be phonologized along with them. Predicts opaque interaction of Flapping and phonetic /ei/-Raising (e.g., Raised later).

References


Does /ei/-Raising imply /ei/-Clipping? NO

- slope = 0.03552, s.e. = 0.04736, p = 0.46 (R^2 = 0.0048)

Is /ei/-sorting better predicted by /ei/-Clipping than by /ei/-Raising? NO

- Observed: slope = 0.44, s.e. = 0.35, p = 0.22 (R^2 = 0.012)
- Observed: slope = 0.37, s.e. = 0.18, p = 0.04 (R^2 = 0.036)

Is /ei/-Raising correlated with /ai/-Raising? YES

- slope = 0.10, s.e. = 0.038, p = 0.0061 (R^2 = 0.065)

Is /ei/-Clipping correlated with /ai/-Clipping? YES

- slope = 0.62, s.e. = 0.064, p < 0.0001 (R^2 = 0.4315)

Does anything change when geographical clumps are removed? NO

As the map shows, some dialect regions were sampled multiple times, with the result that observations were not really independent of each other. To address this problem, we took 1000 bootstrap resamples from the data, subject to the condition that no two participants in the resample were closer than 250 km to each other in terms of the population centroid of the three-digit ZIP code either (a) where they grew up, or (b) where they live now (i.e., both conditions had to be satisfied simultaneously). The two linear models for Hypothesis 2 were fit to each bootstrap resample. The 95% bootstrap confidence intervals for the slopes were

- [-0.682, 1.633] (median 0.447) for Sorting Index as a function of Duration Ratio
- [0.009, 0.568] (median 0.252) for Sorting Index as a function of Raising Index

Please write to us if you know of...

- an English dialect that has pre-voiceless Raising of something other than /ai/ or /au/
- non-/ai/, non-/au/ lexical exceptions to Clipping
- pre-voiceless Raising of any sort in a non-English language

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