Does phonotactic acquisition determine phonotactic change?

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Is there a link between phonotactic acquisition and change?
- Phonological errors in language acquisition do not mimic sound change (Dietz 2012)
- Phonological errors are repaired during language acquisition
- Proficient speakers contribute more to linguistic innovation than children do (Bybee 2010)

R \(_0\) as a measure of reproductive success in phonotactics
- Diphones (sequences of two sounds; /kt/ in baked, /bεikt/) are constituents of linguistic knowledge that spread through populations
- Population composed of learners \(L\) and users \(U\)
- Spread of diphones modeled by a simple dynamical system
- Basic reproductive ratio \(R_0\) defined as the expected number of learners that learn a diphone from a single user
- \(R_0\) is a standardized measure of reproductive success

Estimating \(R_0\) in diachrony
- Historical trajectory for every word-final consonant cluster in English
- Data: PPCME2, PPCEME, PPCMBE, COHA, COCA
- Transcription: ECCE, CMU
- \(R_0\)-GR (growth rate) estimated based on rate \(r\) from model of logistic growth (McIlroy 2014)

Estimating \(R_0\) in acquisition
- Age-of-acquisition rating for every word-final consonant cluster in English
- Data: AoA-rating dataset (Baumann et al. 2016)
- Transcription: CMU
- \(R_0\)-AoA estimate based AoA rating of the first word ending in that cluster (Dietz 1993, \(R_0 = 1 + \text{AoA}\))

What is the role of utterance frequency?
- Utterance frequency promotes change but can also have conserving effects (Bybee 2007)
- What is the effect of frequency on the relationship between \(R_0\)-GR and \(R_0\)-AoA?
- The relationship is a bit tighter in frequent diphones
- Highly frequent diphones are acquired earlier
- Frequency and diachronic stability correlate only slightly

So, how do acquisition and change hang together?
- Early acquired diphones are diachronically more successful
- \(R_0\)-AoA estimates are much higher than \(R_0\)-GR estimates
- Adult speakers, by implication, decrease reproductive success
- Language learners, in contrast, have a stabilizing function in phonotactic evolution
- Early acquired diphones are more entrenched and therefore resistant against phonological change at later ages

Language acquisition contributes to diachronic stability of diphones.

...late ones don’t.