2. Background

2.1 Lexical factors as explanatory concepts in sound change

- **Function load hypothesis**: sound change is constrained by a language's system of lexical contrasts (e.g., Hockett 1967).
- **Usage Frequency**: the frequencies of individual words, categories and phonetic contexts influence the likelihood and rate of change (e.g., Bybee 2001).

2.2 Allophonic Alternations

- **Non-structure-preserving alternations**: middle-point on the trajectory to a phonemic split: some context conditions a categorical change in the surface form of a target phoneme.
  - e.g.: ich-laut vs. ach-laut in German: \(/x/ \rightarrow [x] / _[-V, -back]_\) e.g. Küche [kççç] vs Kuchen [kççç]

- **Classic approach to allophony**: triggering context provides information that helps us predict the surface form of the phoneme.
- **Alternative way to think about allophony**: surface form of the phoneme provides information that predicts the triggering context.

3. Research question

Do allophonic alternations correlate with greater functional load of the trigger context?

- **Question**: Are the number of minimal pairs defined by phoneme-pairs across a triggering context larger than expected?

**Baseline Comparison**: the number of minimal pairs defined by phoneme-pairs within a triggering context

4. Building a database

Use existing lemma-frequency lists corpora to build a database of non-neutralizing, segmental allophonic patterns

- American English: Vowel lengthening before voiced codas
- RP English: u-fronting except before coda /l/
- Korean: /j, s, h, k/ change before /l/
- Korean: Vowel F0 lowering after plain stops
- Cantonese: Vowel laxing before velar codas
- Turkish: Low-vowel raising before coda sonorants
- Turkish: l-backing after back vowels.
- Spanish: h̃/h̃-backing before /l/
- German: /ç/ backing after back vowels
- French: coronal stop affrication before front vowels
- Dutch: breaking/lengthening of /i, y, u, e, e, æ/ before /l/
- Dutch: palatalization of /s, z, t, n/ before /j/
- Hungarian: nasalization of vowels before /n/\([+cont]\) sequences

5. Results

5.1 Lexical functional load of the trigger context + target

- phoneme pairs across allophonic trigger contexts have a higher number of minimal pair types and prefixal minimal pair types
- correlated measures (R = 0.59, p < 0.001)

5.2 Trigger context + target frequency

- Logistic regression model:
  - DV = Within vs. Across
  - IVs = min pair types, prefix pair types, trigger-target frequency model with only random intercepts: confirms the effect of prefixal minimal pairs and phoneme frequency
  - models with random slopes: very unstable, no clear outcome

6. Interim Conclusions and Next Steps

1. A greater number of minimal pairs or lexical contexts distinguished by the trigger context plus target may be predictive of allophonic alternation.
2. Trigger context frequency: Where a trigger context can be distinguished from an elsewhere condition, the trigger context is more frequent compared to the elsewhere condition.
3. Allophonic alternation is more generally correlated with high frequency of the sublexical sequence of trigger context plus target, irrespective of elsewhere status.

- Both of these findings are consistent with the prediction that high usage frequency potentiates assimilatory phonetic biases (e.g. Bybee 2001), which may promote the development of an allophonic alternation.

4. Next steps

- Add more patterns to the dataset
- Continue work to distinguish an apparent lexical effect distinct from the sublexical trigger + target sequence frequency effect.