**Diachronically stable, lexically specific variation: the phonological representation of secondary /æ/-lengthening**

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### Data collection and measurement

- **Speakers:** Native SSBE-speaking Cambridge undergraduates (n=21)  
- **Sentences containing 101 monosyllabic, 53 disyllabic words with stressed /æ/  
- **Vowel length measured in Pratt (Boersma & Weenink 2016)  
- **Duration includes modal and breathy portions of vowel, prespiration excluded (Heijn 2015)**

### Treatments of primary /æ/-lengthening (TRAP-BATH split) in Lexical Phonology

- **Within the framework of Lexical Phonology, diachronic change can be located in either:**  
  - **Lexical rules (lexical diffusion)**  
  - **Post-lexical rules (Neogrammarian change)**

- **Kiparsky** (1988) and **Harris** (1989) propose that lexical rules can explain outputs in NYC/Philadelphia systems  
- **Labov** (1981) treat them as two separate phonemes with no lexical rules in play  
- **Primary /æ/-lengthening phonemic in SSBE, but what about secondary /æ/-lengthening?**

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### Results: By-word lengthening effects

- **Subset analyzed in linear mixed effect model run in R with InterTest package (R Core Team 2016; Kuznetsova et al. 2016)**  
  - 73 monosyllabic words (token n=1,774)  
  - **Duration (ms) predicted by:**  
    - Fixed effects: word frequency (LogZipf); voicing, manner, place of articulation (postvocalic consonants) + interactions  
    - Random effects (interprets only): word, subject, word:subject

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### Exemplar Theory (Bybee 2001; Pierrehumbert 2002): A better framework

- **Usage-based approaches have no strict separation of lexical/post-lexical rule strata**  
- **Phillips** (2006): gradual phonetic changes always lexically diffused  
- **Pierrehumbert** (2002): long-term word-specific phonetic patterns predicted  
- **But positive frequency effect of duration goes against generally predicted reduction**

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### References