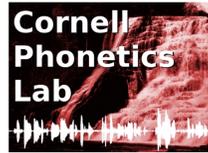


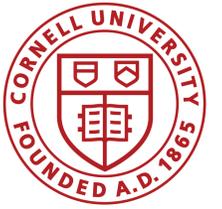
# Categorical and gradient dimensions of stress in English compounds



Forrest Davis and Abigail C Cohn

Cornell University

Berkeley Linguistics Society Workshop, February 2020



## Introduction

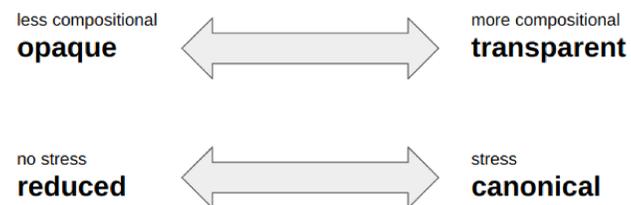
**reduced**  
cúpboard

**not reduced**  
sóngbird

- **Compositionality** Degree that the meaning of a compound is the sum of its parts (e.g. *humbug* vs. *blueberry*)
- Standard assumption: Highly opaque compounds **listed in the lexicon** and highly transparent compounds **produced online** (Kiparsky, 1982)

$[[AB]]_{\text{pwd}}$        $[[A]_{\text{pwd}} [B]_{\text{pwd}}]_{\text{pwd}}$

## Prior Work



- Opaque/transparent and reduced/unreduced shown to be **gradient** in naturalistic corpus data (Davis and Cohn, 2019)
- Moreover, these effects are correlated (and distinct from other factors commonly associated with reduction, i.e. frequency)
- Is this evidence for gradient phonology? Is this gradience manifested as gradient well-formedness (Cohn 2006)?

## Research Questions

- Are the lexical representations of compounds homogeneous?
- What is the relationship between gradient phonological reduction and the perception of compound stress?

## Hypothesis

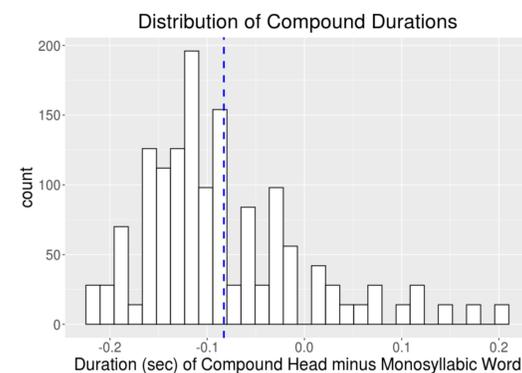
**Gradient phonological reduction** in compound heads will be **perceived categorically** relative to higher level prosodic organization (i.e. stress)

## Data

- 248 words from Boston University Radio News Corpus (Ostendorf et. al, 1995)
- **133** bisyllabic nominal compounds including *tax plan*, *bathroom*, *chairman*
- Fillers - 2 or 3 syllables with initial, medial, or final (citation) stress including *restaurant*, *official*, *result*
- 14 listeners asked to assign no stress, secondary stress, or primary stress to each syllable

## Measures

- Calculate consistency of judgements using Fleiss's kappa
- Duration of compound head minus monomorphemic word (e.g. relativized distance from primary stress)



## Stress Rating Results

### Probability of Rated Stress Level by Duration

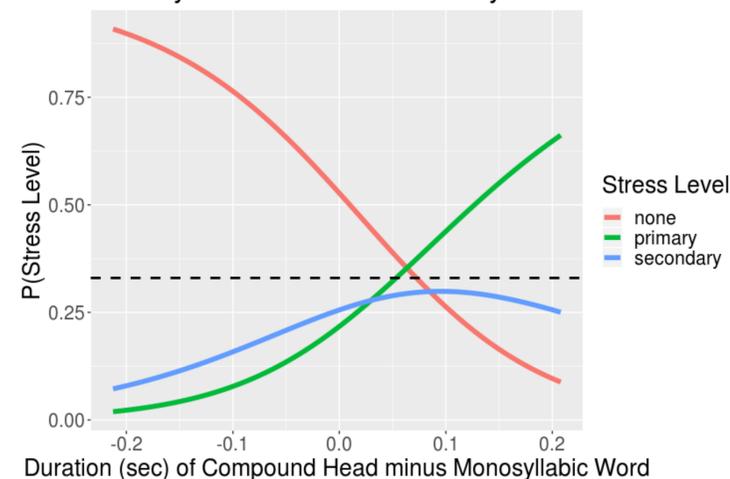


Figure 1: Probability of the three stress categories given duration from multinomial logistic regression

## Main Results

- The no stress rating is overwhelmingly preferred to secondary stress
- Secondary stress is never rated above chance
- Duration is significant predictor of assigned stress level

## Implications

- Raters make use of end points of ratings (no stress vs. primary stress) suggesting differing but categorical lexical representations (cf. Compound Stress Rule)
- What gradient phonetic cues do higher levels of grammatical organization have access to (Pierrehumbert, 2002; Hay, 2004; Ladd, 2006)?
- A reanalysis or reorganization of lexical items suggesting an anti-Paradigm Uniformity effect, where compound heads are distanced from monomorphemic forms (cf. Steriade, 2000)

## Contact Information

- <http://conf.ling.cornell.edu/forrestdavis/>
- [fd252@cornell.edu](mailto:fd252@cornell.edu)

## Selected References

- Bell, Alan, Jason M Brenier, Michelle Gregory, Cynthia Girand, and Dan Jurafsky. 2009. Predictability effects on durations of content and function words in conversational English. *Journal of Memory and Language*, 60.
- Cohn, Abigail C. 2006. Is there Gradient Phonology. *Gradience in Grammar*, 25-44.
- Davis, Forrest and Abigail C. Cohn. 2019b. The relationship between lexical frequency, compositionality, and phonological reduction in English compounds. *Presented at 94th Annual Meeting of the LSA*.
- Hay, Jennifer. 2004. Causes and Consequences of Word Structure. *Routledge*.
- Ito, Junko and Armin Mester. 2007. Prosodic adjunction in Japanese compounds. *MIT working papers in linguistics*, 55, 97-111.
- Kiparsky, Paul. 1982. Lexical morphology and phonology. *Linguistics in the morning calm: Selected papers from SICOL-1981*, 3-91.
- Ladd, D. Robert. 2006. "Distinctive phones" in surface representation. *Laboratory Phonology 8*, 3-26.
- Ostendorf, Mari, Patti J. Price, and Stefanie Shattuck-Hufnagel. "The Boston University radio news corpus." *Linguistic Data Consortium (1995)*: 1-19.
- Pierrehumbert, Janet. 2002. Word-specific phonetics. *Laboratory Phonology 7*, 101-139.
- Steriade, Donca. 2000. Paradigm uniformity and the phonetics-phonology boundary. *Papers in laboratory phonology*, 5, 313-334.