

Acoustic correlates of stress in Udmurt verbs: variation and theoretical implications

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Introduction

- Udmurt (Uralic, Permic) has fixed **final** stress (Yemelyanov 1927; GSUJa I 1962; Denisov 1980; Winkler 2001)
- There are morphologically-motivated exceptions with **initial** stress:
 - imperative verbs
 - negated indicative verbs
 - reduplicated adjectives
 - etc.

Possible interpretations

Hypothesis 1:

Final stress is word stress, **initial** “stress” is a phrasal intonational phenomenon.

Hypothesis 2:

Initial stress is word stress, default **final** “stress” is absence of stress.

Hypothesis 3:

Both **initial** and **final** stresses represent word stress.

Object of study

- Minimal pairs consisting of:

indicative verbs (PRS.3SG)

imperative verbs (IMP.2SG/PL)

Object of study

- Minimal pairs consisting of:

indicative verbs (PRS.3SG)

final stress

imperative verbs (IMP.2SG/PL)

initial stress

Materials and participants

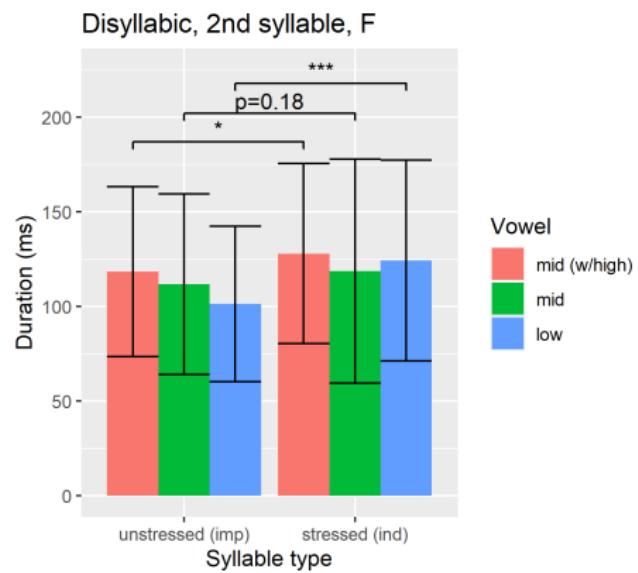
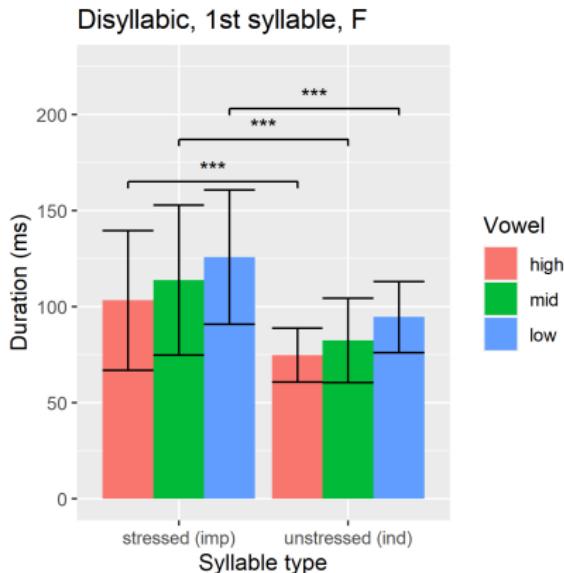
- string-identical **minimal pairs** formed by **indicative** and **imperative** verbs (total n=172)
 - di- and trisyllabic
 - CV syllables
 - vowel height: low, mid, high
 - information structure: focused (F) vs. non-focused (non-F)
- 6 native speakers (5 f, 1 m; age 20–40)

Experimental contexts

- ① I [Foc **vàla**] word said, but **gàža** word didn't. [F]
- ② I **vàla** word [Foc quietly] said, but loudly didn't. [non-F]
- ③ I [Foc **valà**] word said, but **gažà** word didn't. [F]
- ④ I **valà** word [Foc slowly] said, but quickly didn't. [non-F]

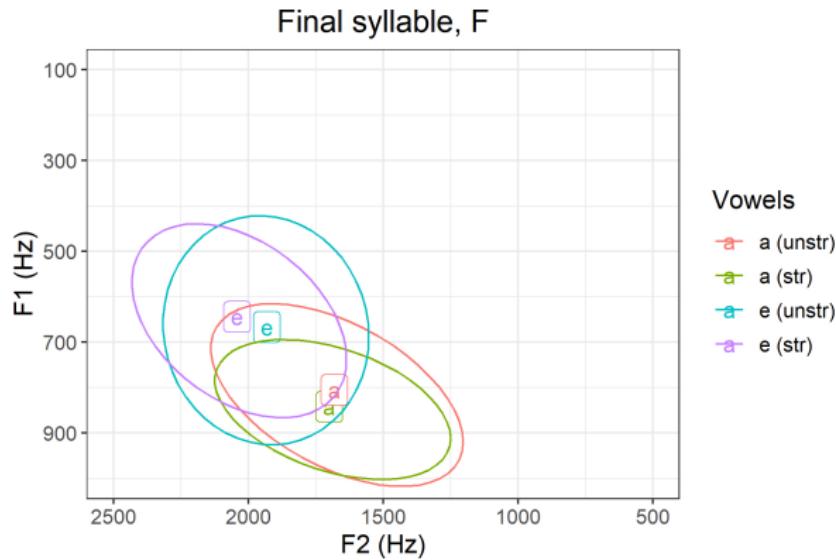
Results: vowel duration

- **Initial** stress is systematically cued by vowel duration
- **Final** stress is less so



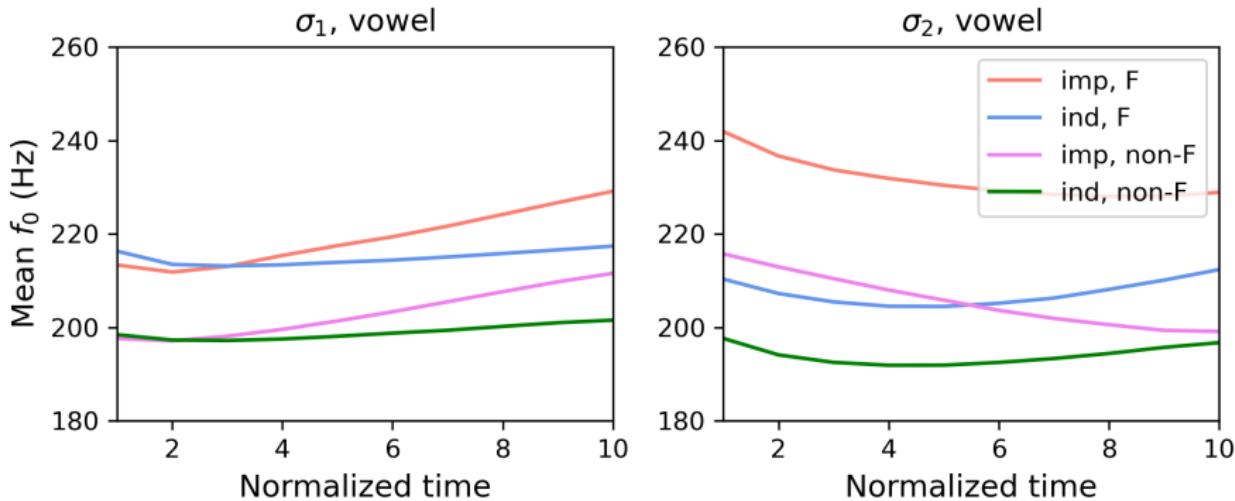
Results: vowel quality (final syllables)

- Stressed and unstressed /a/ systematically differ in **F1** values ($p<0.001^{***}$)
- Stressed and unstressed /e/ systematically differ in **F1** and **F2** values ($p<0.01^{**}$ and $p<0.001^{***}$, respectively)



Results: f_0

- **Imperatives** carry \mathbf{H}^* on the initial syllable (delayed till the juncture with the second syllable)
- **Indicatives** carry $(\mathbf{H}+) \mathbf{L}^*$ on the final syllable
- Focused contexts have **higher overall f_0** values



Main findings

- The results support **Hypothesis 3**:
both **initial** and **final** stresses represent word stress

	vowel duration	vowel quality
initial stress	✓	✓
final stress		✓

- Both types of stress are aligned with **pitch accents**

In the long version/discussion...

- **Inter-speaker variation (!):**
 - individual speakers may rely on **vowel duration** and/or **vowel quality** to cue stress
 - may (not) differentiate stress- and IS-based minimal pairs with f_0
- More details on the **data and analysis**
- Comparison with **previous studies** on stress in Udmurt (Baitchura 1973; Lytkin & Tepliashina 1962; Denisov 1980)

Thank you for your attention!

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