Power point presentation in:
/vdata/Seminare/Prosody/talks/alb_inton_slides.pptx

Albanian Intonation

Enkeleida Kapia
Intonation und Prosodie, IPS
26.01.2022

European Research Council
Established by the European Commission

Lecture Literature

- Kapia, E., Harrington, J., Kleber, F. (forthcoming). *An Autosegmental-Metrical Analysis of Albanian Prosody.* Prosodic Typology III, eds. Jun, S.A. Oxford University Press. (in lit folder: KapiaHarringtonKleber2022)

- Kapia, E., Kleber, F., Harrington, J. (2020). *An Autosegmental-Metrical Analysis of Rising Contours in Standard Albanian*. Proc. 10th International Conference on Speech Prosody 2020, 171-175. (in lit folder: KapiaKleberHarrington2020)

Roadmap of Talk

- Part I
  - ToBi Analysis of Albanian intonation production data
- Part II
  - Perception of prominences and boundaries in Albanian

Part I:

ToBi Analysis of Albanian intonation production data

work done with Jonathan Harrington & Felicitas Kleber

Class Assignment 1 - Prominence

- https://docs.google.com/forms/d/1fF3qOwIVWmlxe-XDZv5qAfDzstHnHoq43EKiU3KUp-M/edit

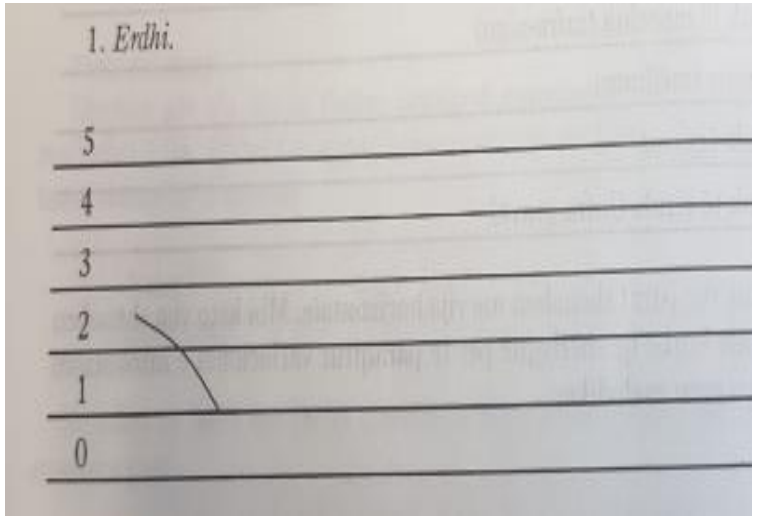
What are prominences?

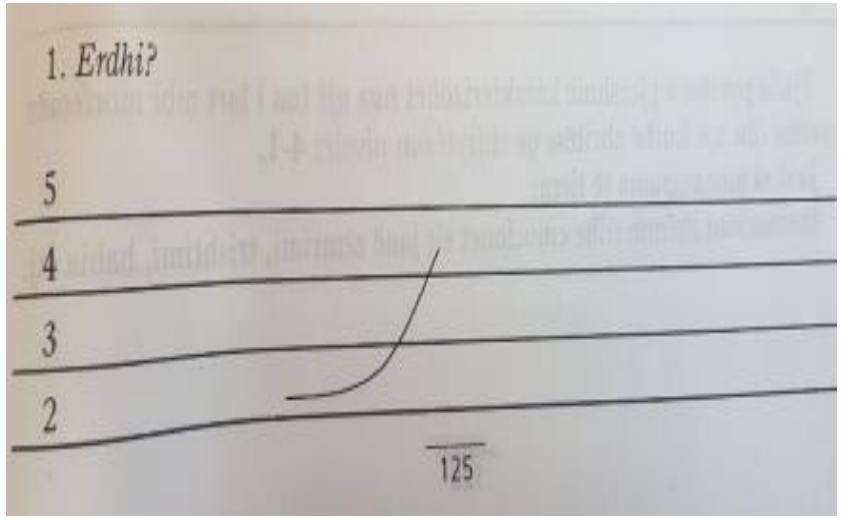
Albanian in general

- Albanian is a language of the Indo-European family with 6-7 million speakers (Klein et al., 2017; Rusakov, 2017)
- Two main dialects:
  - Gheg (Geg) → northern and central Albania
  - Tosk (Tosk) → southern Albania
- Albanian forms a branch of its own within the Indo-European language family (e.g. Bopp, 1855; Çabej, 1976; Pedersen, 1897)

- young tradition of grammatical studies
- even younger history of phonetic investigations

Early, but not so early, work





Intonational contours from Beci (2004):

a declarative utterance (*Erdhi.* S/he came.)

a question (*Erdhi? S*/he came?)

Lexical Stress

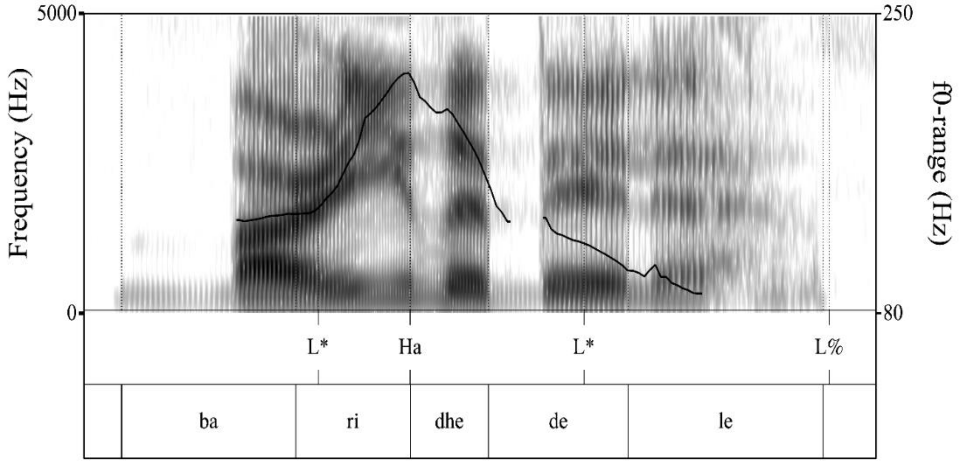
- At sub-word level, Albanian distinguishes between metrically strong and weak syllables.

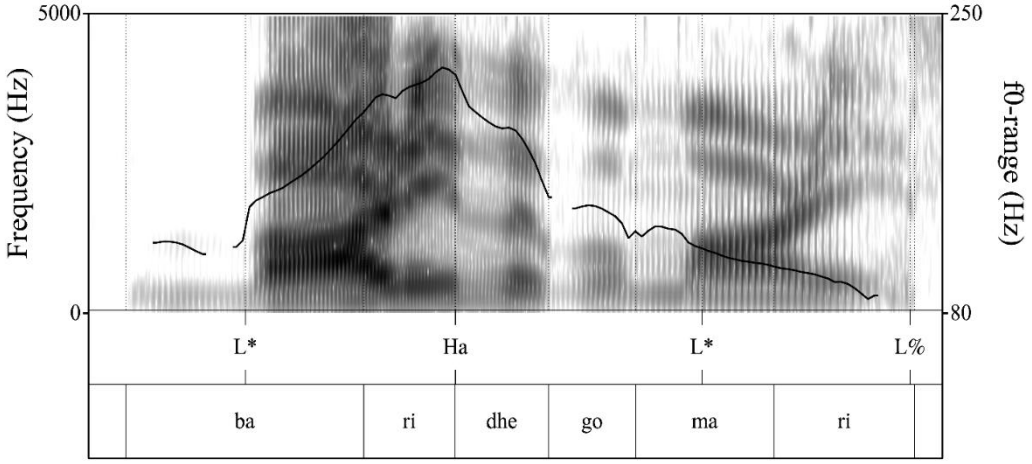
- strong syllable is the rhythmically strongest syllable (i.e., the syllable that is the prosodic head of the word) or in traditional terms the syllable with lexical stress (Memushaj, 2017)

- e.g. /la/ in *ka'la* 'castle
  /li/ in '*li'bra* 'books'
  /flu/ in 'flu'tura 'butterflies'

Lexical Stress and Pitch Accents

- Lexically stressed syllable is associated with a pitch-accent that causes a pitch obtrusion - typically a trough, but also sometimes a peak - in its temporal vicinity.



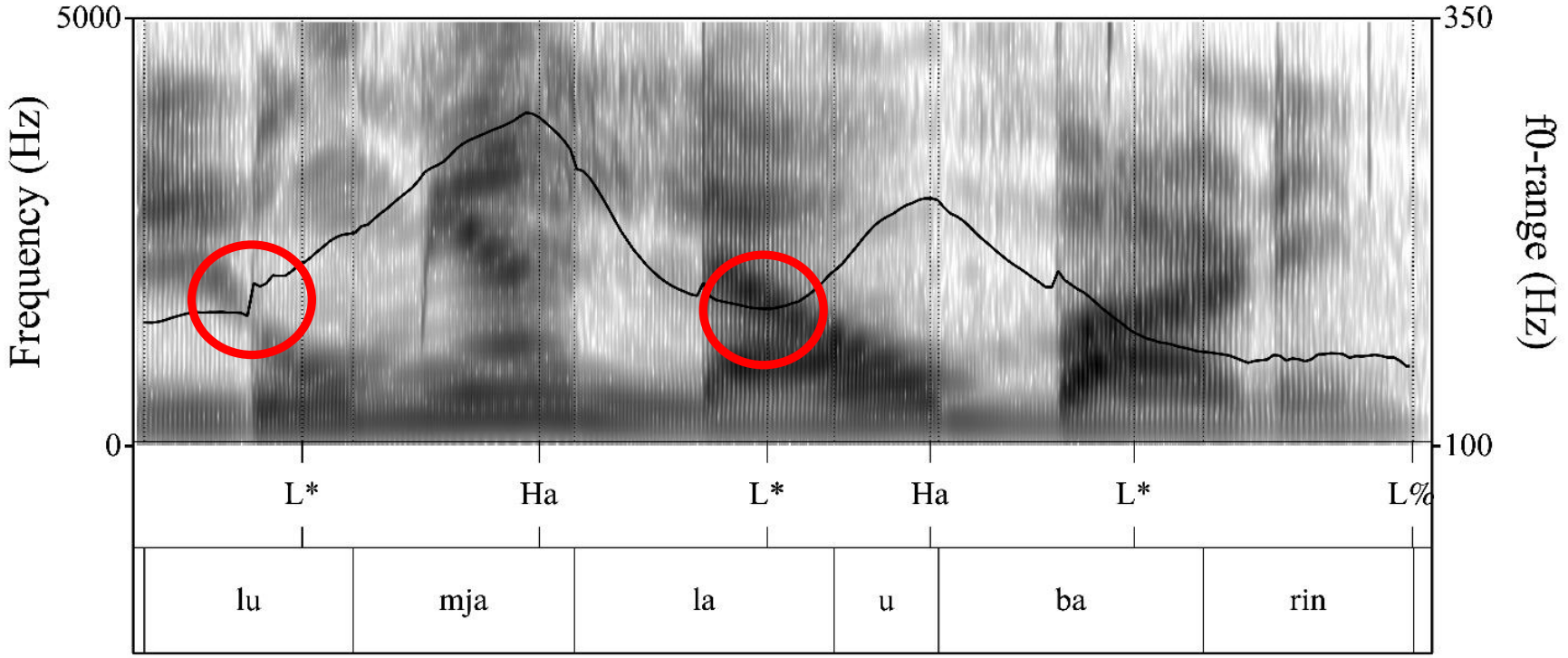


Typology

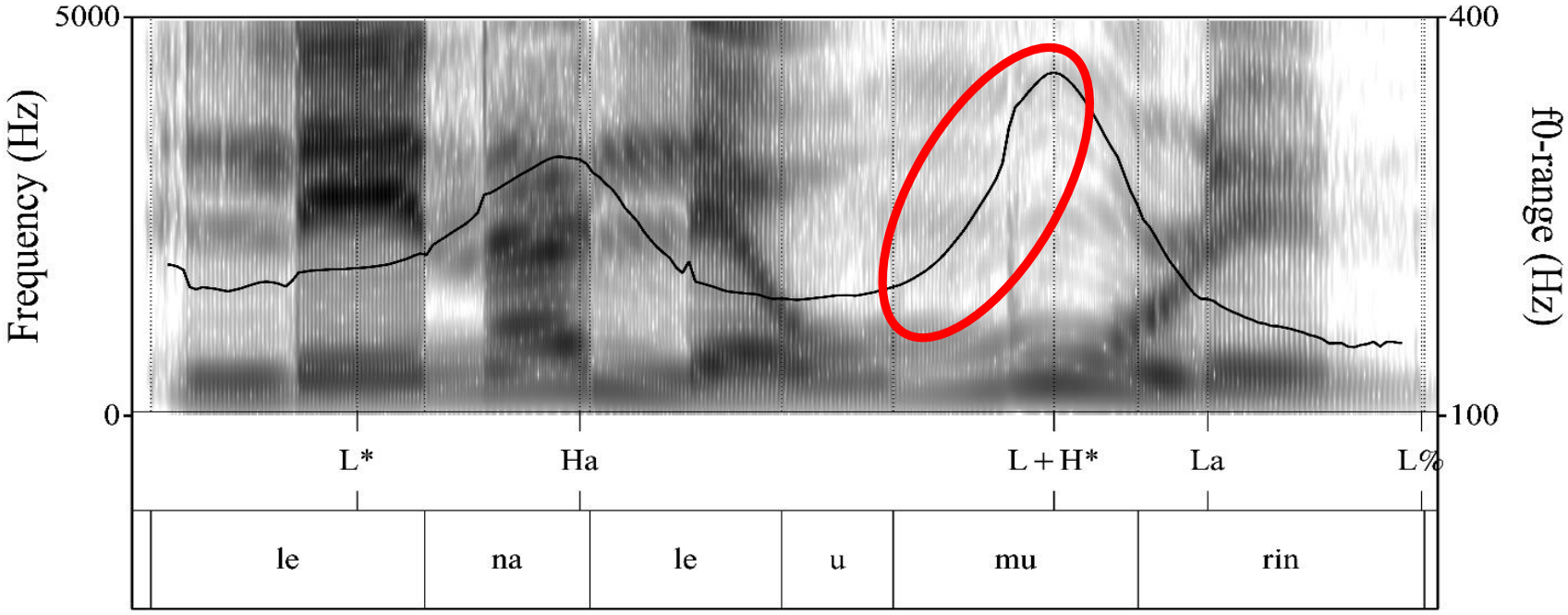
- Albanian is a head-and-edge type language

- pitch accent associated with lexically stressed syllable
- boundary tone associated with the right end of the word/phrase

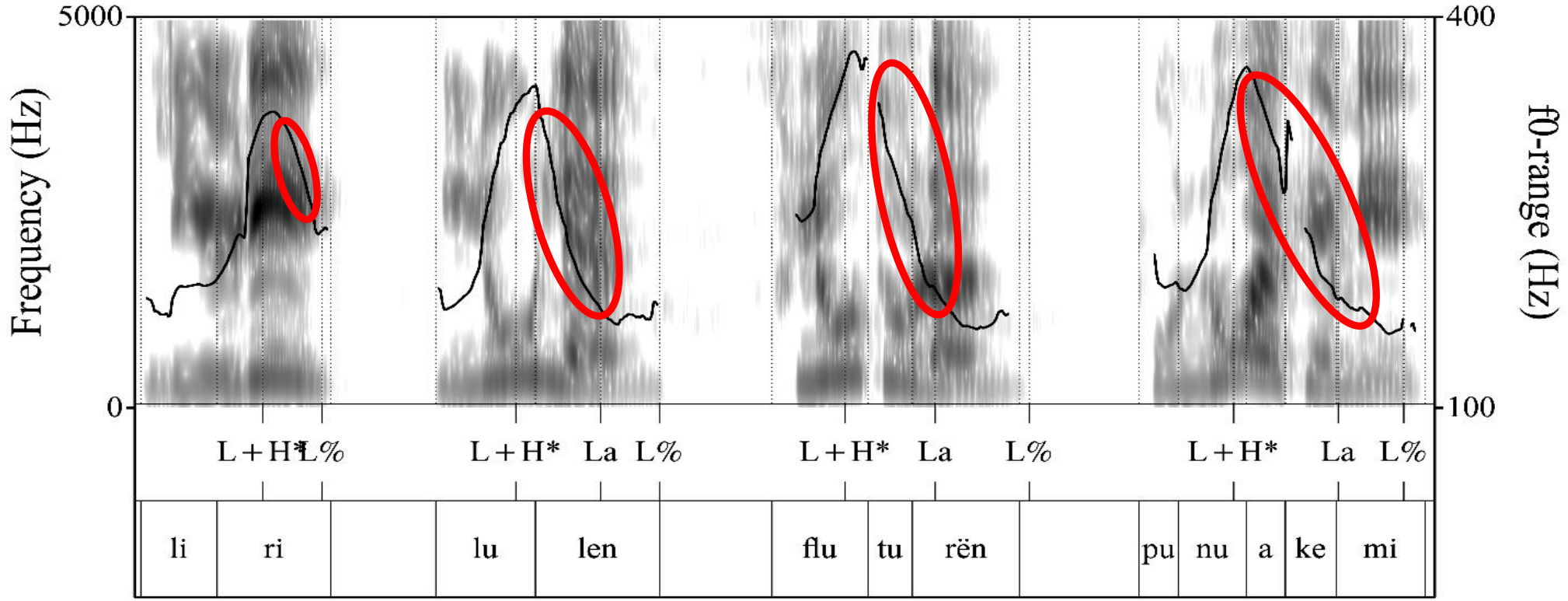
Pitch Accent Types : L*



Pitch Accent Types: L+H*



L+H*+L or L+H* … La?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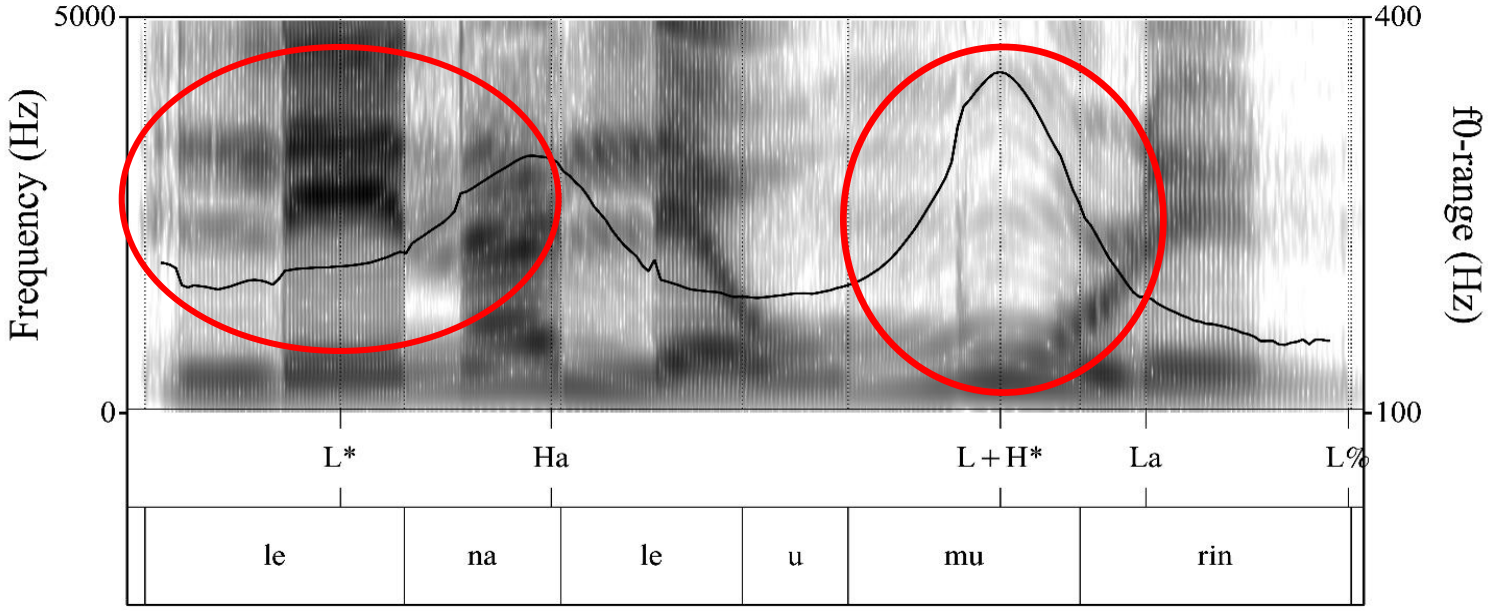
Class Assignment 2 - Boundaries

- https://docs.google.com/forms/d/1Ux6lWydI9Qb8BuJGDHrw9Oq4lZHAq-8n_UyYteERleE/edit

Boundary Tones and Phrasing

- Accentual Phrases (AP)
- Intonational Phrases (IP)

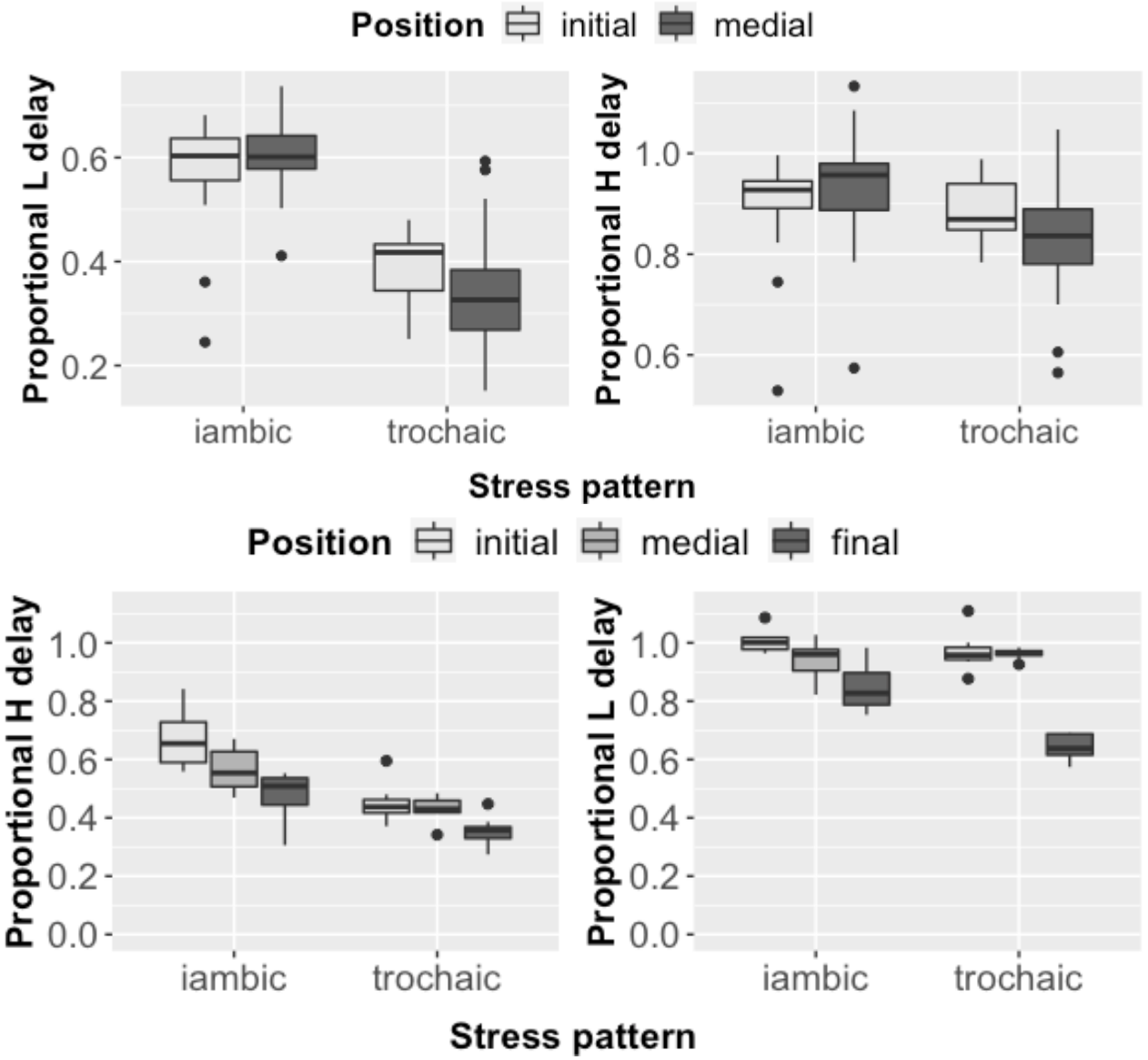
Accentual Phrase: L* …Ha & L+H* … La



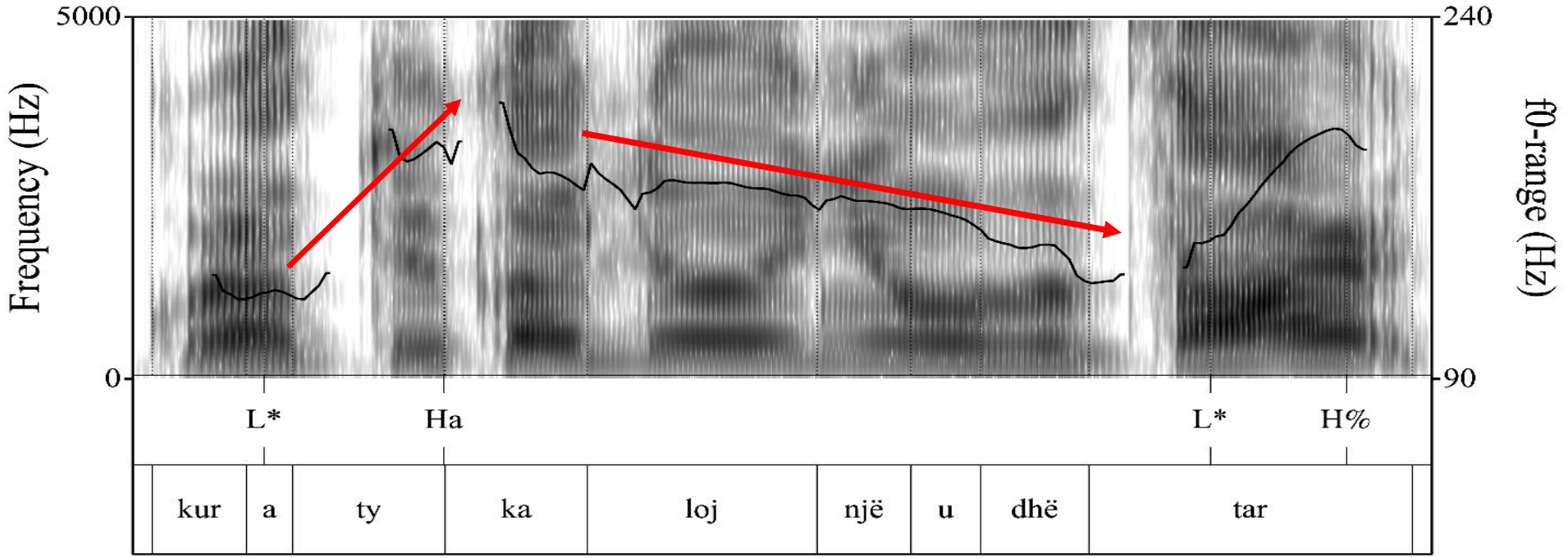
More on APs

L* … Ha

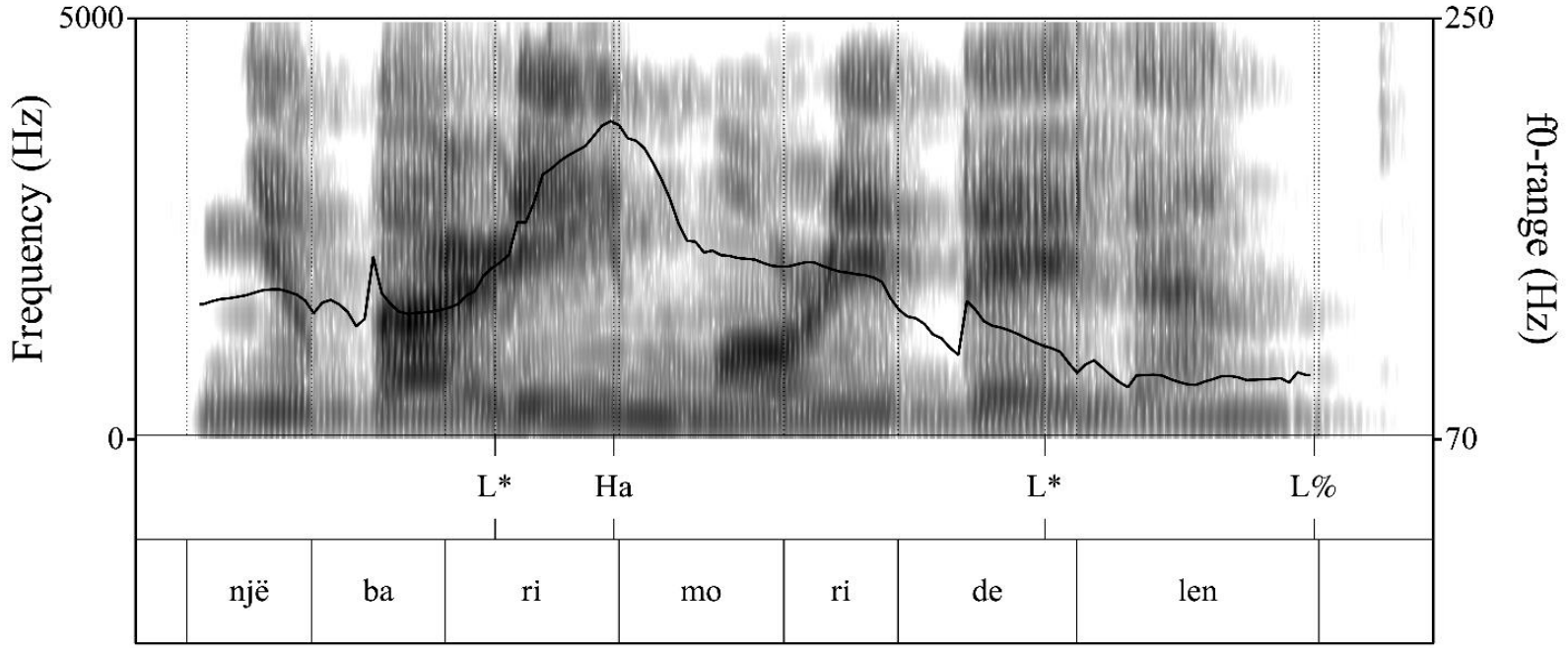
L+H* … La



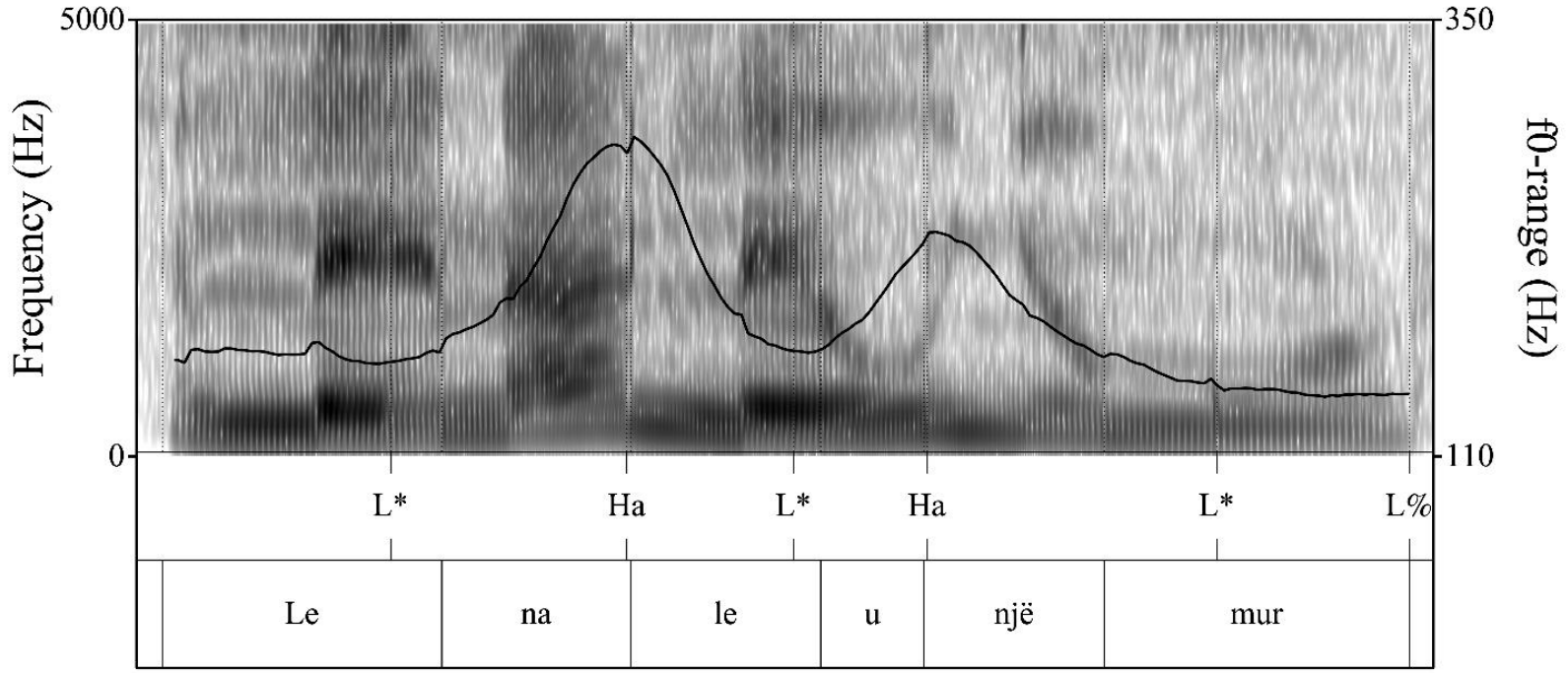
Interpolation



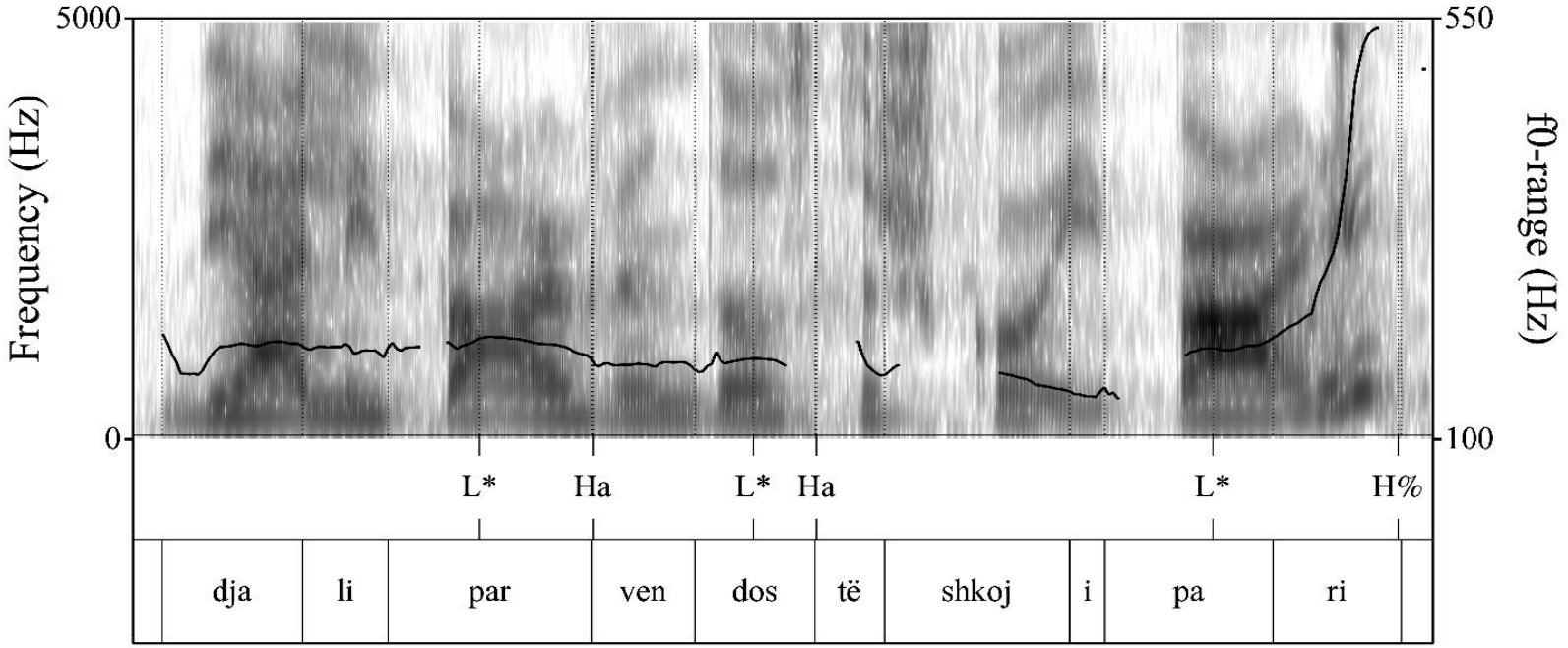
AP Domain 1 word or more



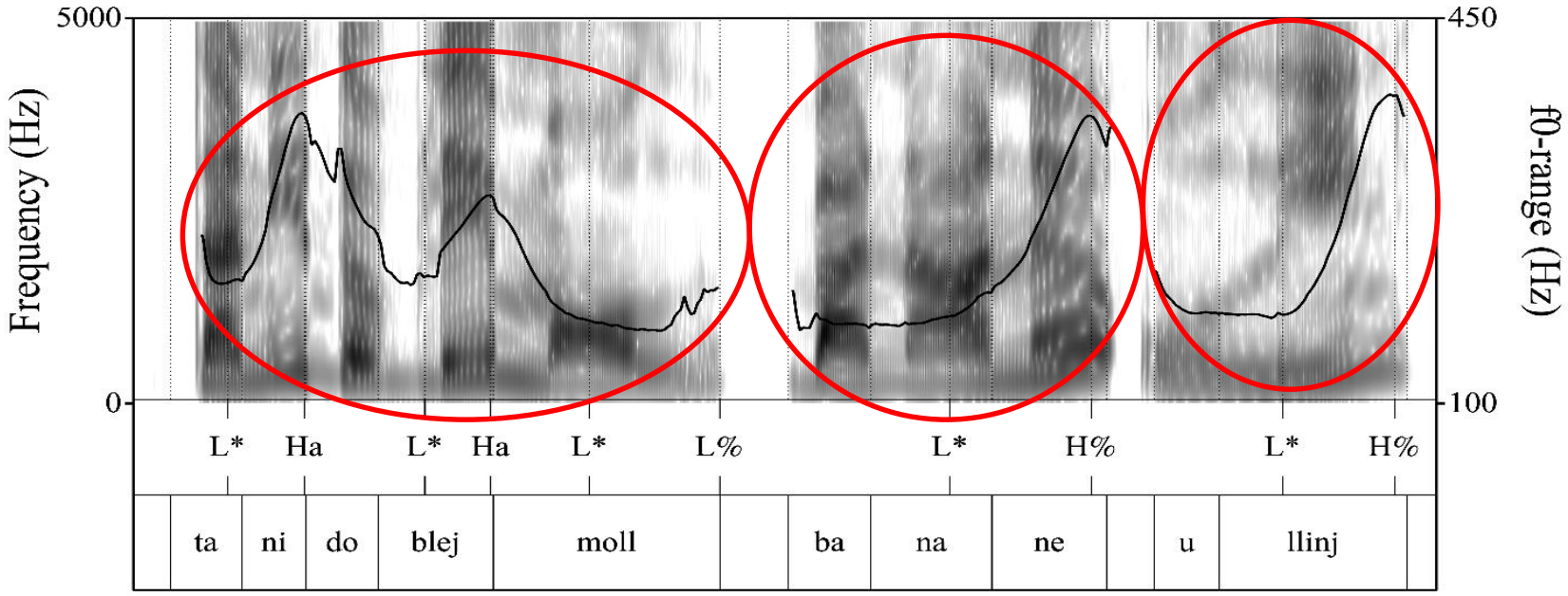
Declination



Overriding and Undershooting



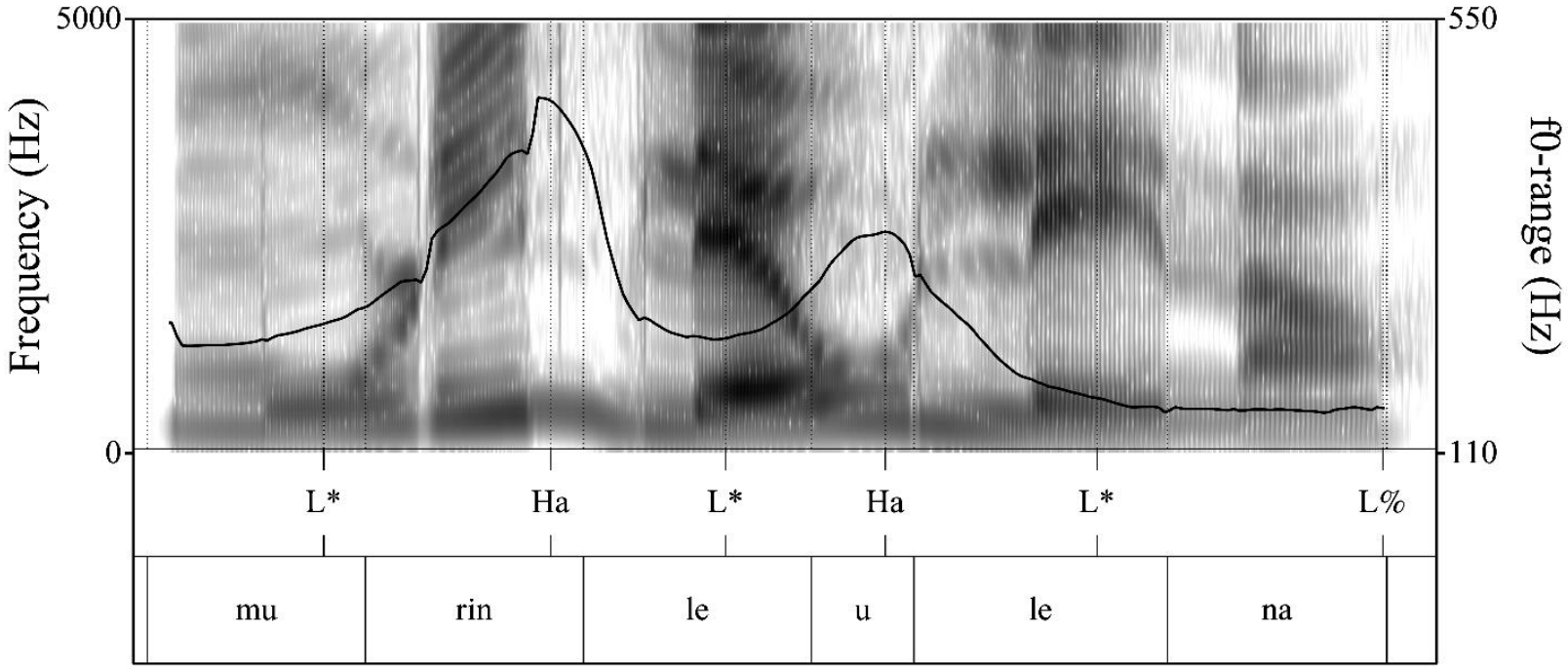
Intonational Phrases



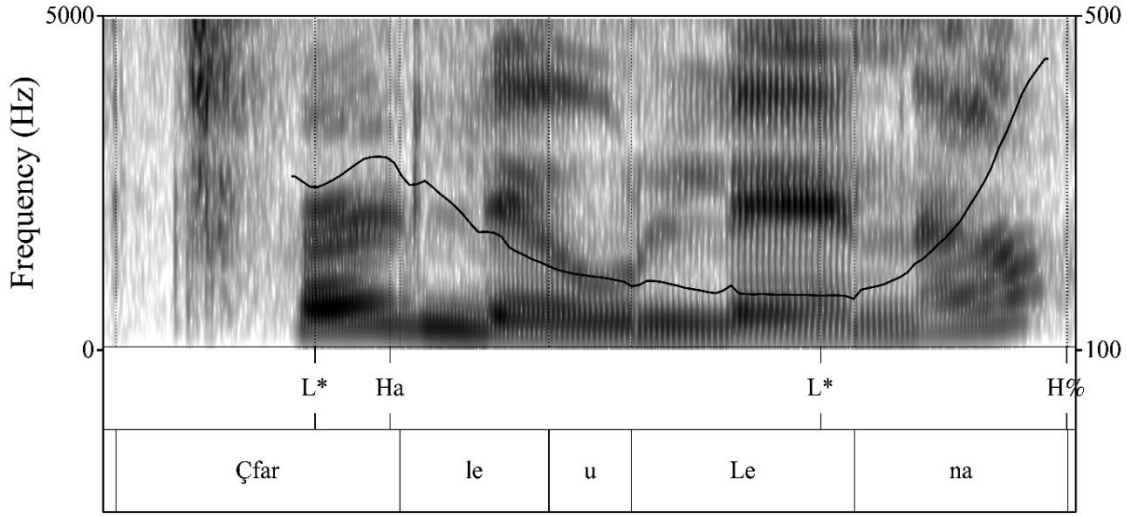
Sentence Types and Focus

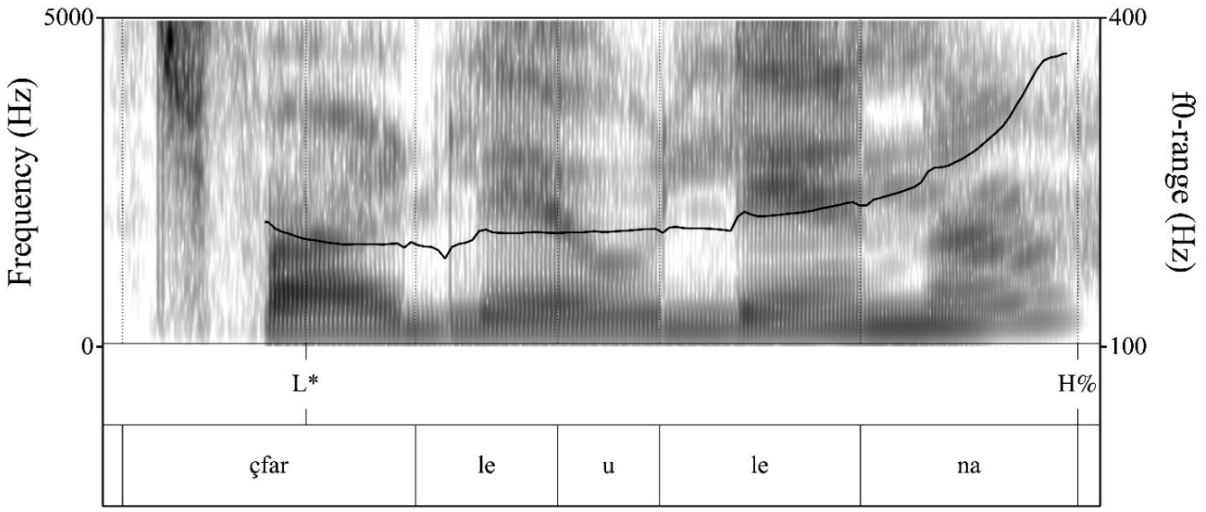
- Declaratives
- Interrogatives
- Yes-No Questions
- Alternative Questions
- Pragmatic Focus

Declaratives

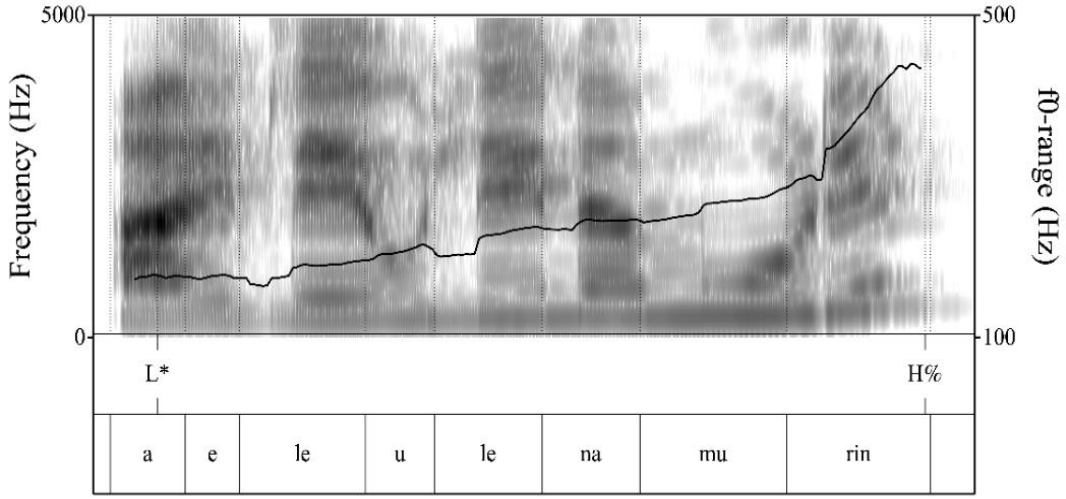


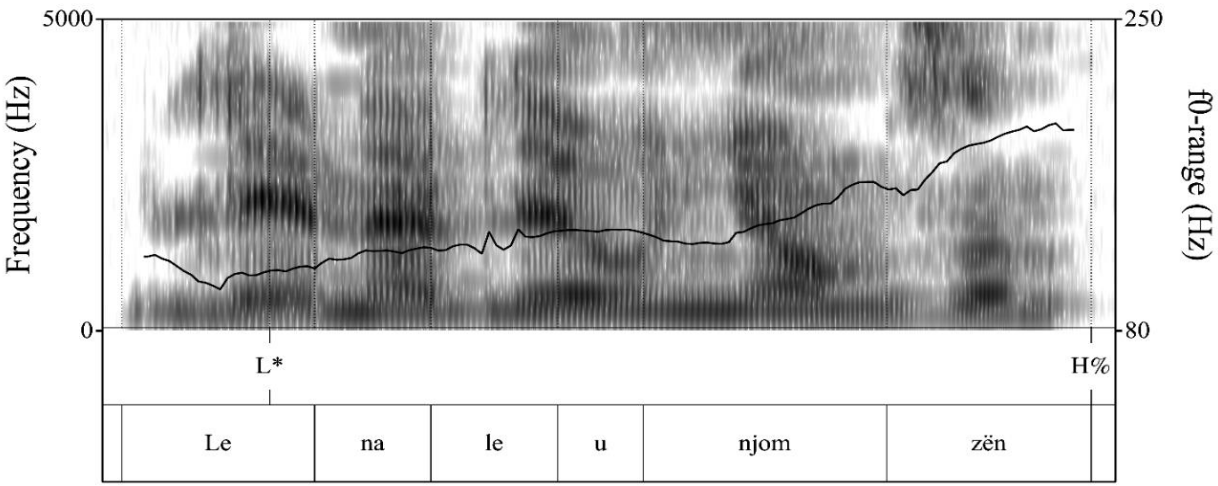
Interrogatives



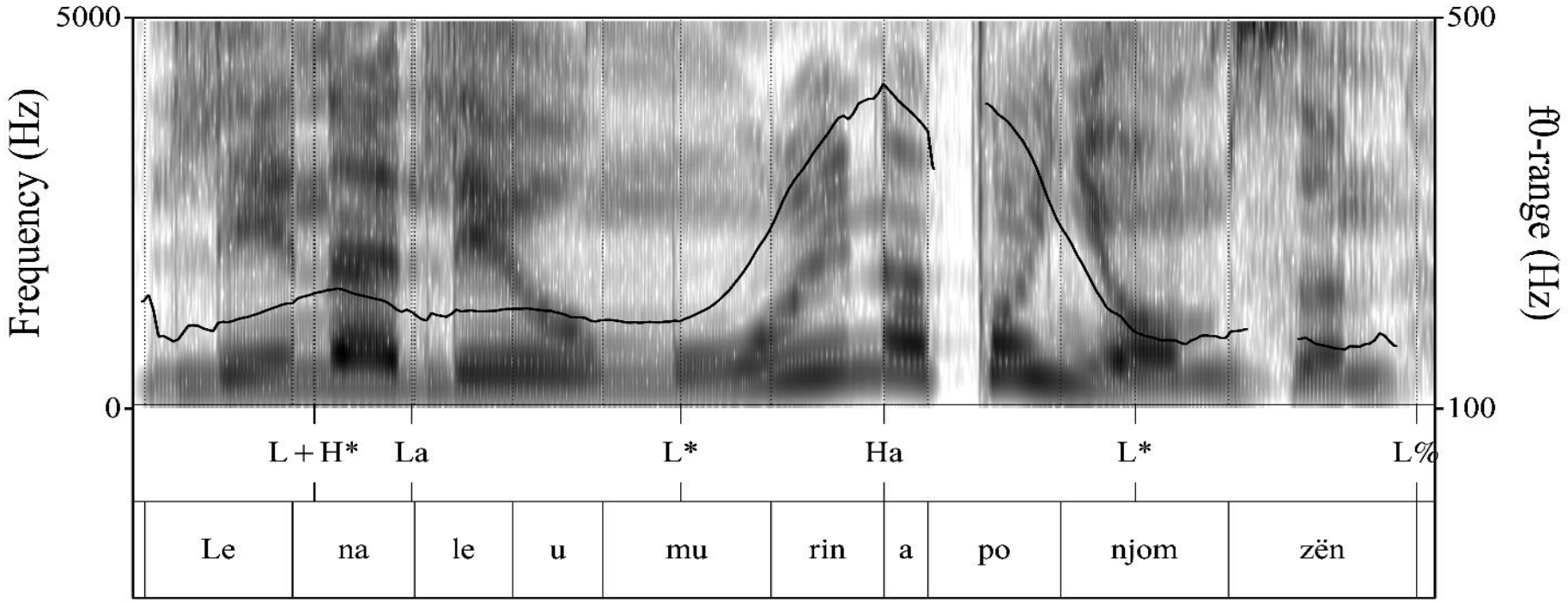


Yes-No Questions

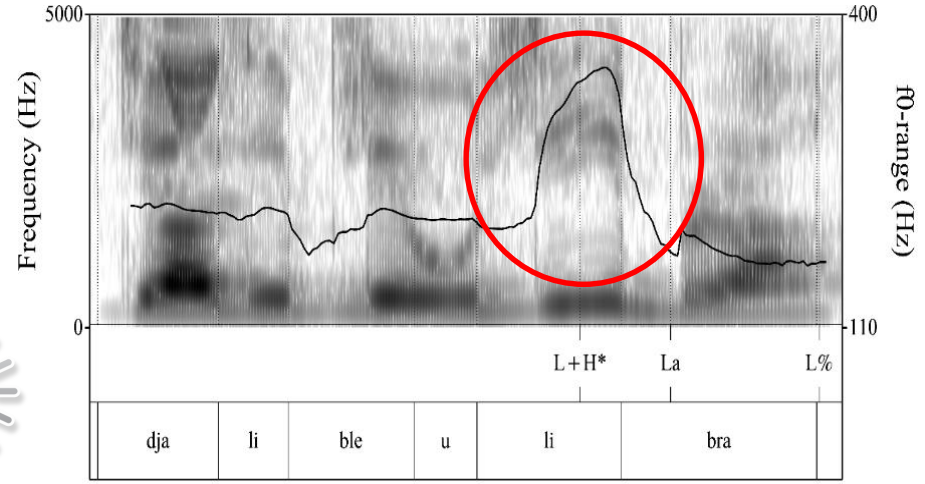




Alternative Questions



Focus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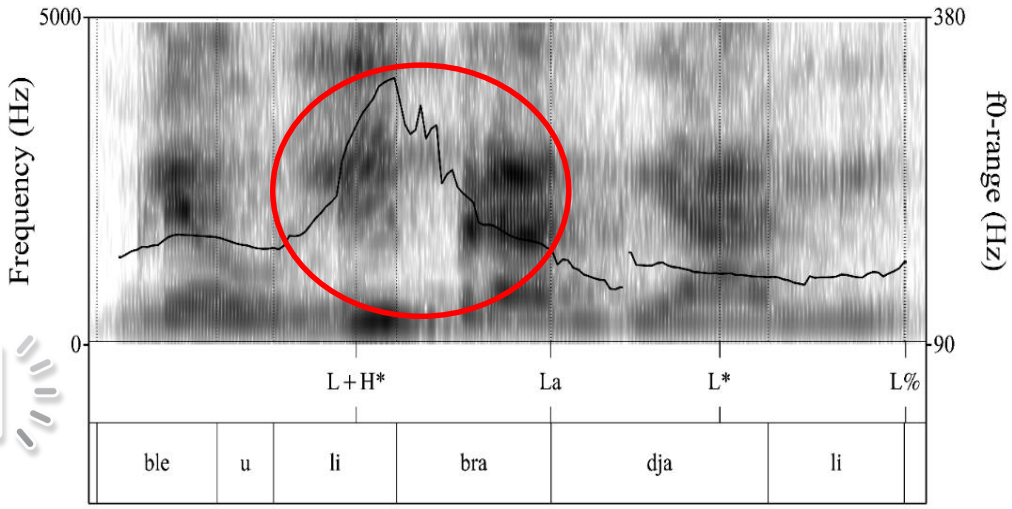
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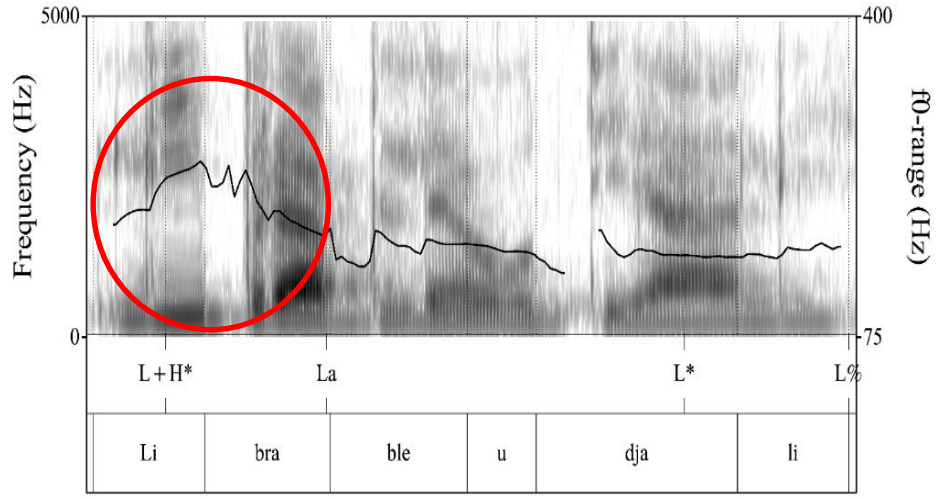
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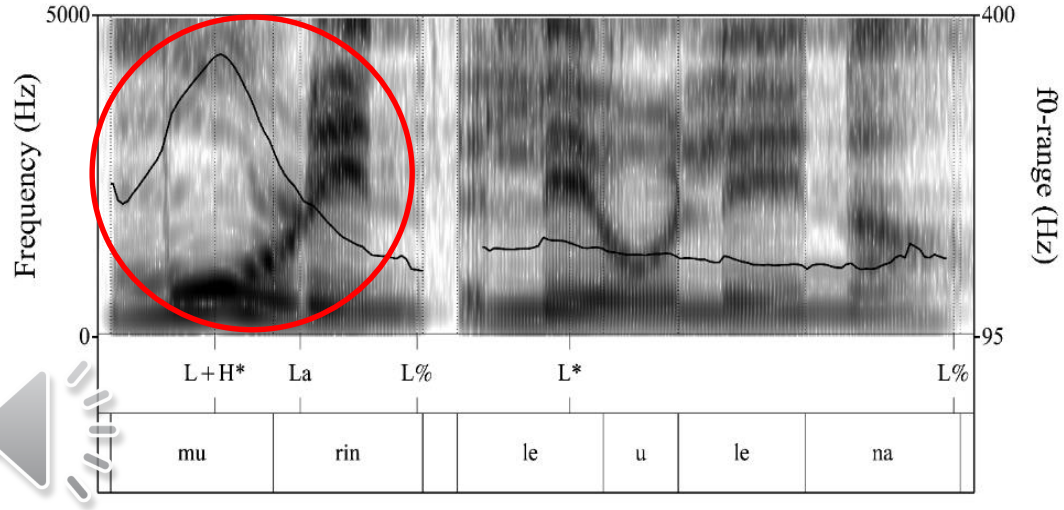
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Summary

	Pitch-accents
L*	common in declaratives
L+H*	common in focused words in declaratives
	AP Boundary Tones
Ha	common after L* realized at the end of the final syllable of an AP overridden in final APs
La	common after L+H* realized at the end of the final syllable of APs
	IP Boundary Tones
L%	common in declaratives realized on IP-final syllable
H%	common in wh-questions and yes-no questions realized on IP-final syllable

Part II:

Prosodic and non-prosodic cues to prominences and boundaries
Perception data

Work done with Alejna Brugos

Main question

- How native speakers of Albanian perceive prosodic prominences and boundaries in natural speech?

- Study stands alongside work we've been doing here at IPS with regard to prosodic system of Albanian (Kapia et al, 2020, 2021, submitted)

Motivation 1: Adding nuances to annotation

- Very small group of human annotators (Arnold et al, 2013)
  - Prevents us from studying listener variation in a systematic fashion (Cole at al, 2010; Cole & Shuttuck-Hufnagel, 2016)
- Trained annotators (e.g. phoneticians)
  - Behave differently from untrained listeners (Lancia & Winter, 2013)
- Annotators biased from their theoretical views
  - Aware of intonational categories (Baumann & Winter, 2018)
- Annotators have lots of time
  - Not available to listeners in real communication (Baumman & Winter, 2018)

Motivation 2: Discovering more about Albanian

- Albanian marks both prominences and boundaries (Kapia et al, 2020)
- Is that true in perception?

Main Question again

- How do native listeners of Albanian interpret prosodic and non-prosodic cues if required to judge the presence or absence of prominences and boundaries?
  - Do native listeners perceive prominences and boundaries?
  - If so, what factors affect these perceptions?

Present Study

- Expand knowledge on Albanian by looking at:
  - Perception of natural speech
  - Prosodic and non-prosodic cues to prominence and boundaries

- Two perception experiments using the Rapid Prosody Transcription (RPT) method (Mo et al. 2008; Cole, Mo & Hasegawa-Johnson 2010; Cole, Mo & Baek 2010; Cole & Shattuck-Hufnagel 2016)

RPT Task

- naïve ordinary listeners listen to excerpts of audio recordings twice
- transcript of excerpts shown on screen without punctuation
- prominence: click on words which they perceive as prominent
- boundary: click on words that are the last word of a grouping
- simple and direct
- coarse-grained data: prosodic judgments by untrained listeners, based on their holistic perception of form and function

Subjects

- 26 native speakers took part in both experiments
- 13 female
- mean age: 43.7 yrs old

- no bilinguals
- recruited through Facebook

Stimuli and Procedure

- 20 audio recordings ~ 384 words total
- varying length ~ 15 sec
- 2 male & 2 female speakers of standard/northern Tosk variety
- taken from a corpus of natural speech
- story of sequence of pictures from QUIS (Skopeteas et al, 2006)
- designed to investigate IS from a typological perspective
- web-based tool Percy (Draxler, 2011)

Item 1: Man carrying chair

Item 2: Woman hitting cow

Test variables

- Prosodic
  - duration (word, stressed syllable)
  - pitch (min, max, mean)
  - presence of a pause
  - voice quality
  - number of syllables
  - AlbTobi labels
- Non prosodic
  - syntactic break
  - part of speech
  - word class
  - last verbal argument

Why these variables?

- increase in duration, pitch range → higher perceived prominence in many languages (e.g. Cole, Mo & Hasegawa-Johnson 2010; Rietveld & Gussenhoven 1985)
- presence of a pause and domain-final lengthening → triggers perception of a phrase break (e.g. Turk & Shattuck-Hufnagel 2007)
- structural morpho-syntactic factors shown to play a role (Buring, 2012; Uhman, 1988; Risling et al, 2018; 2020; Baumann & Winter, 2018)

Zooming in on our Variables

- Syntactic break → no, weak, strong
- Part of speech → noun, verb, adjective, etc.
- Word class → content, function
- Last verbal argument → yes, no

Data Analysis

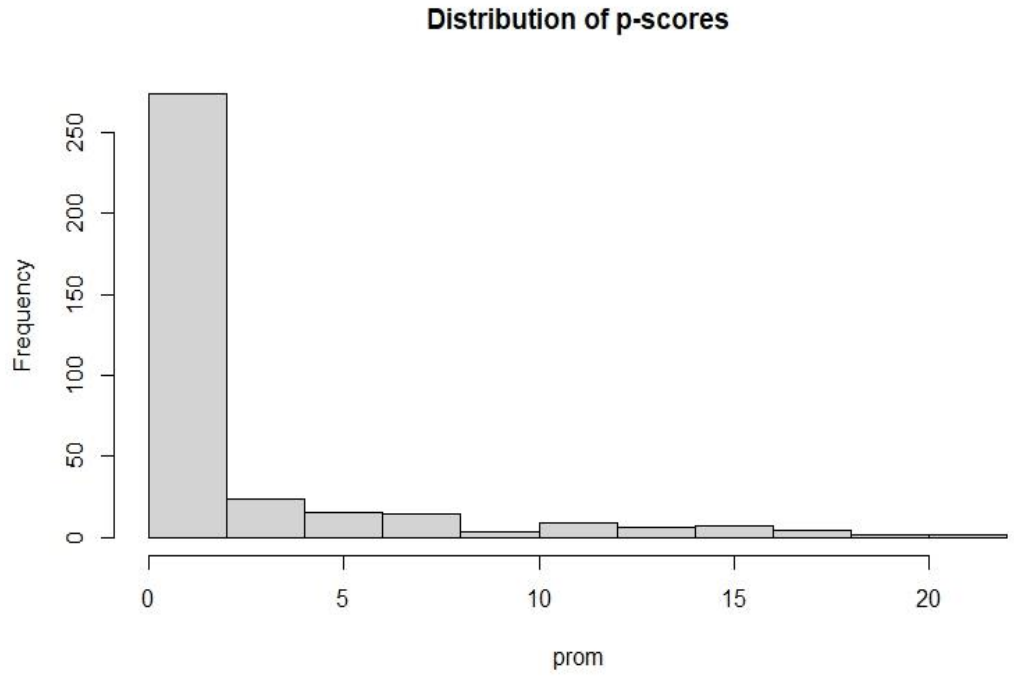
- p-score and b-score, relative measures representing the ratio of subjects that clicked on a word

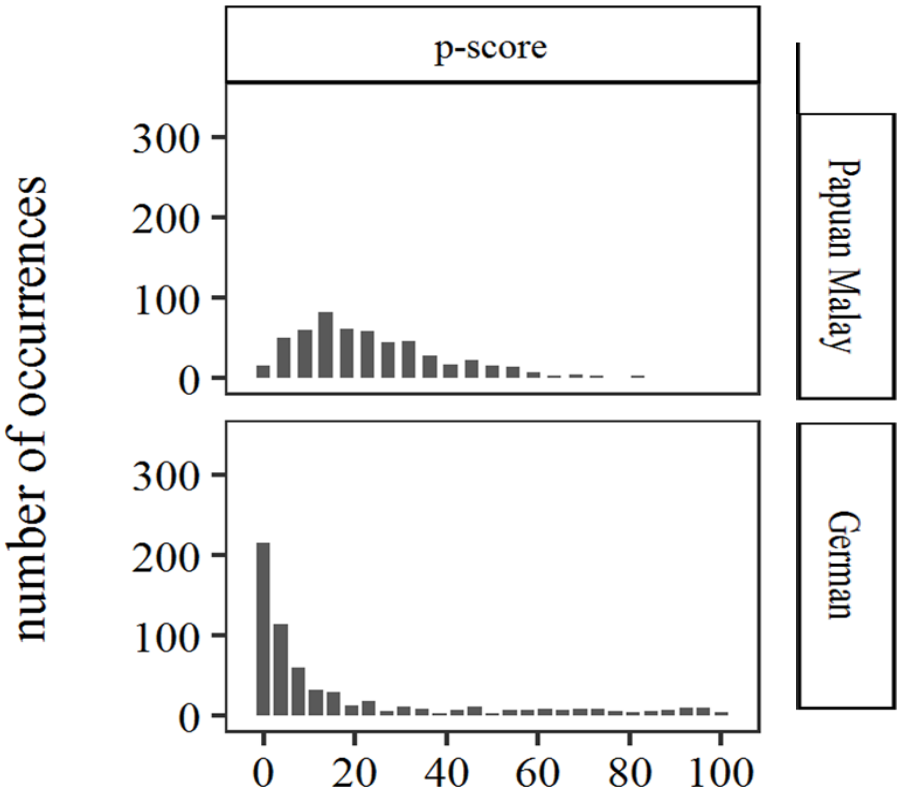
- Fleiss' kappa coefficient, measure of agreement across all raters

- study exploratory in nature, only single effect logistic regression models (e.g., only syntactic break or part-of-speech, but not both variables) with random intercepts for speaker and sentence in R, using the lme4-package (Bates et al., 2015) in R (R Core Team, 2015)

Inter-Rater Agreement for p-scores

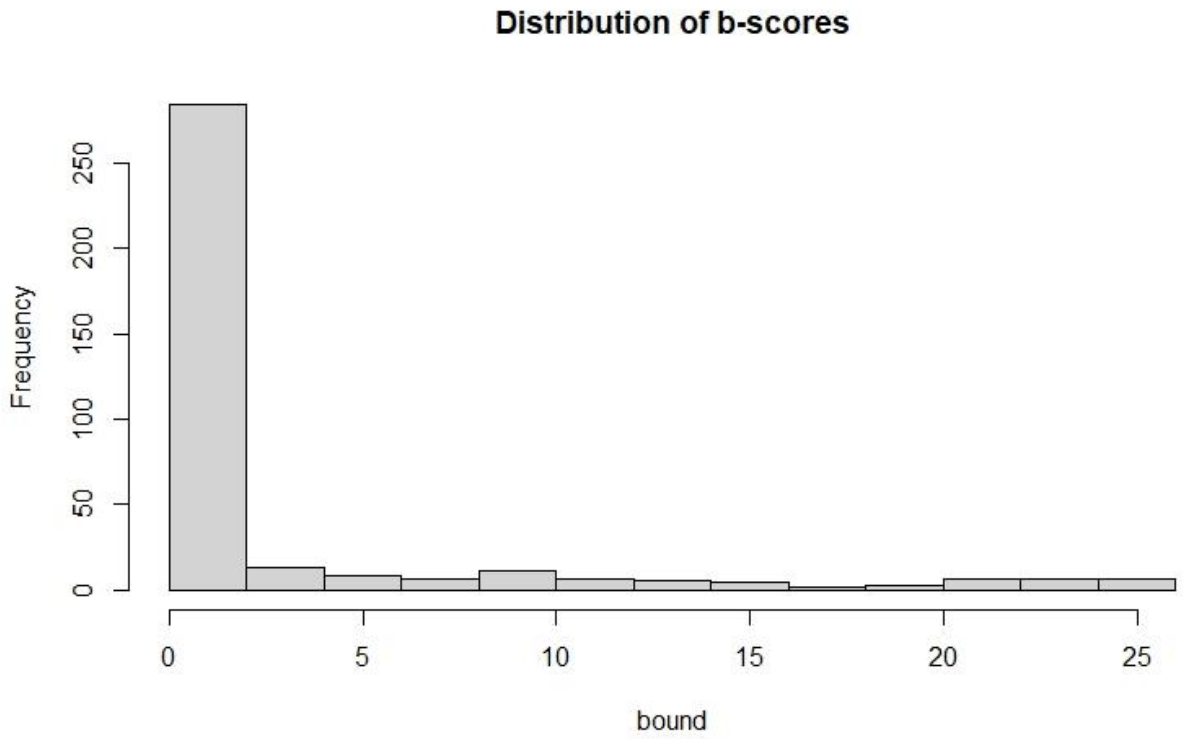
kappa = 0.32, p = 0

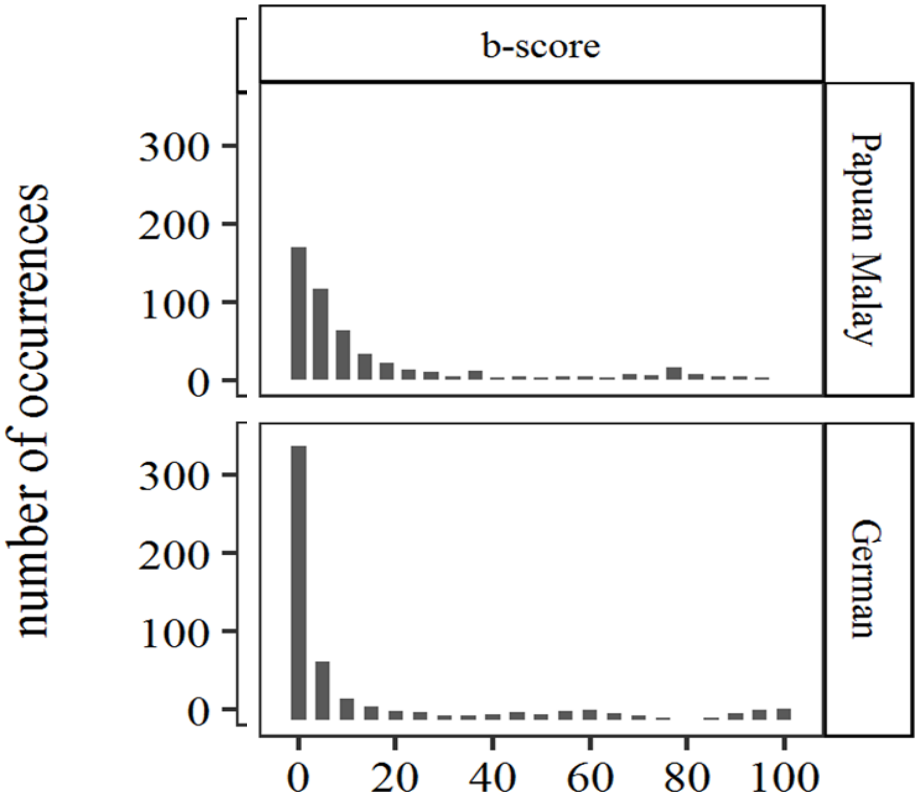




Inter-Rater Agreement for b-scores

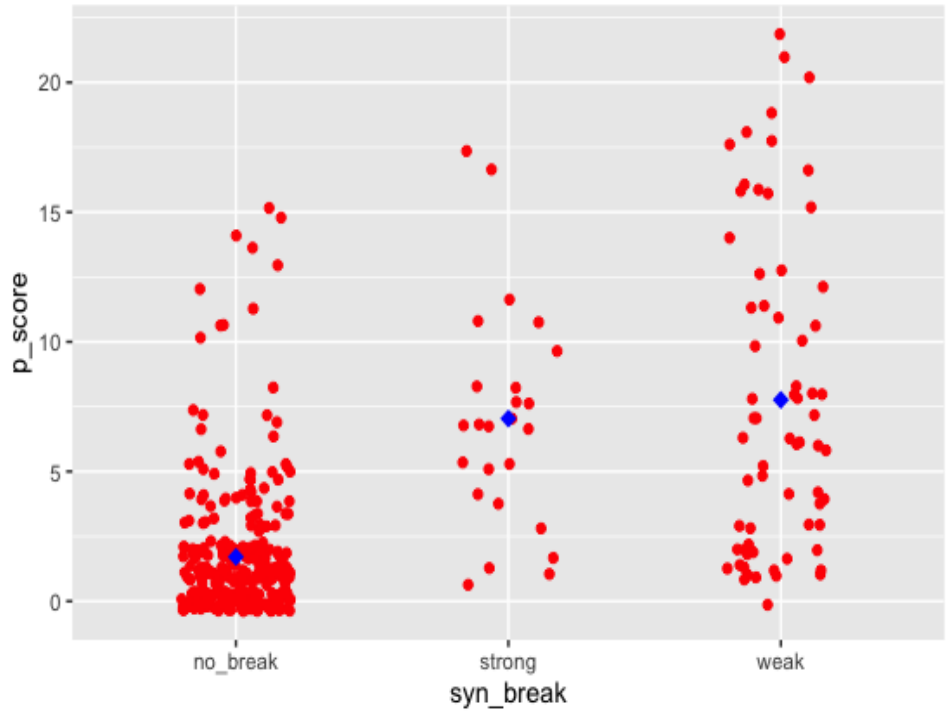
kappa = 0.76, p < 0.0001



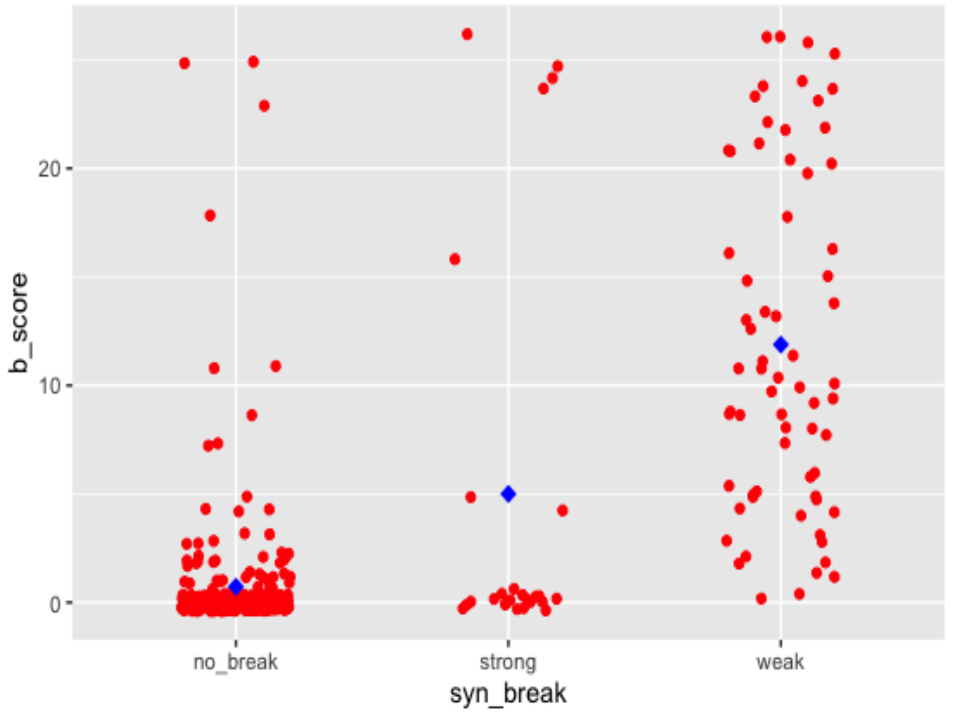


Syntactic break

p-score

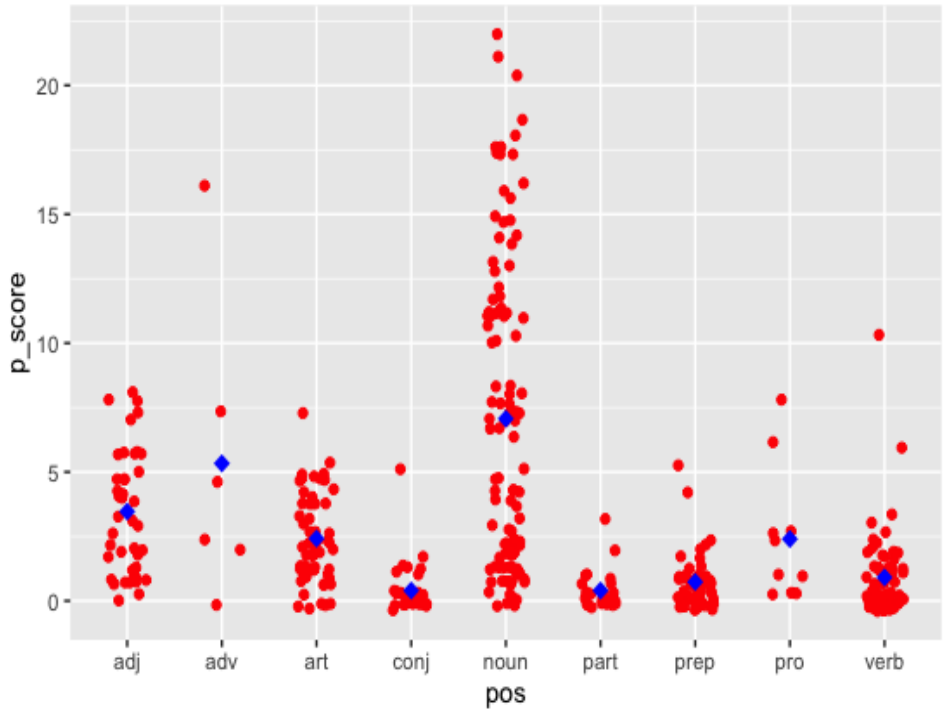


b-score

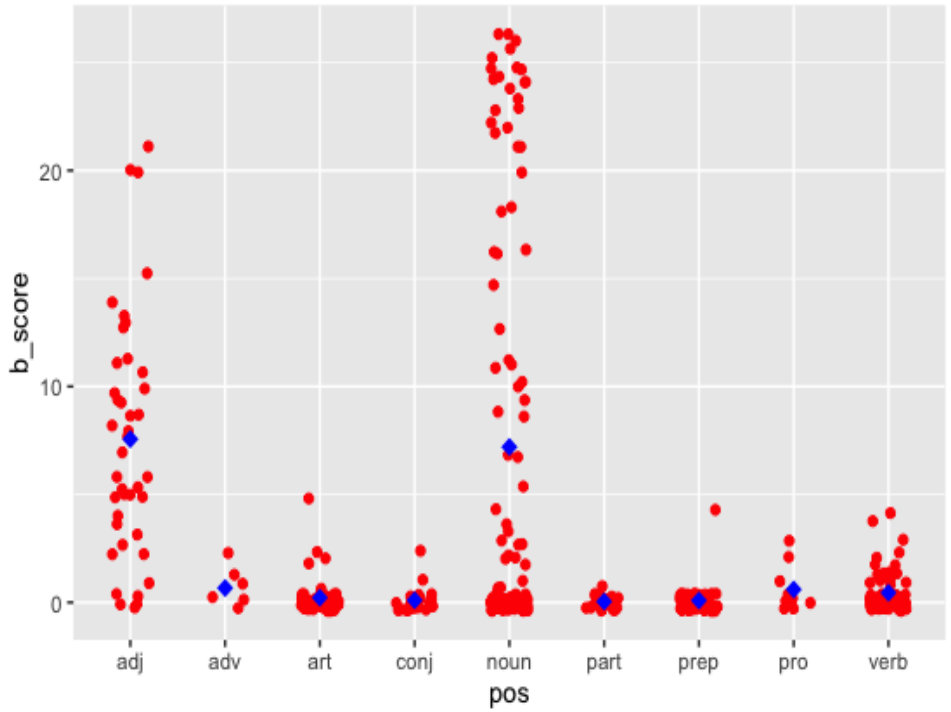


Part of speech

p-score

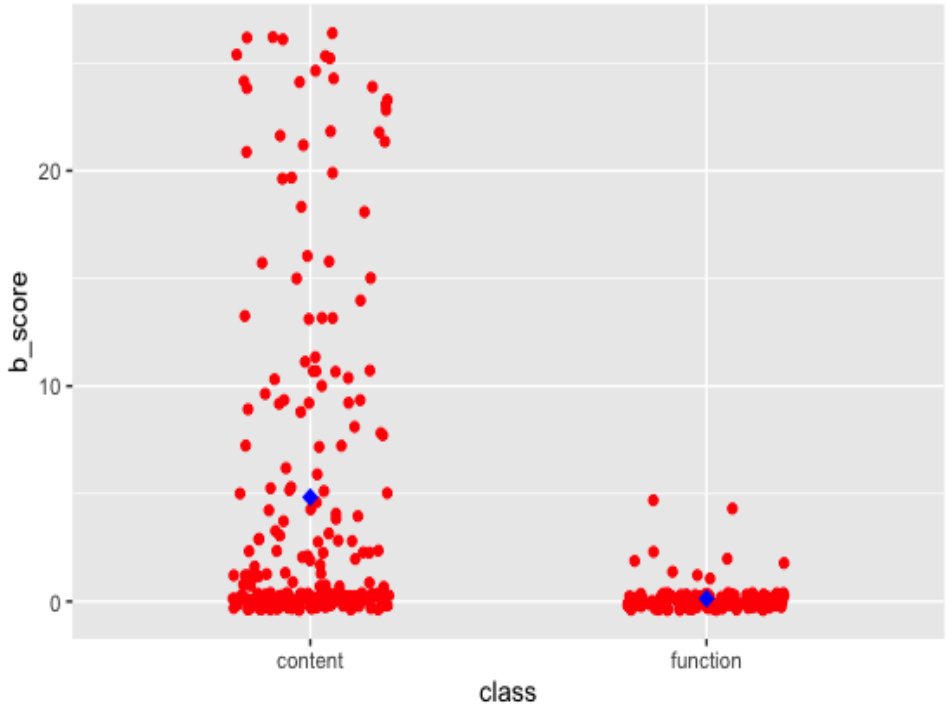


b-score

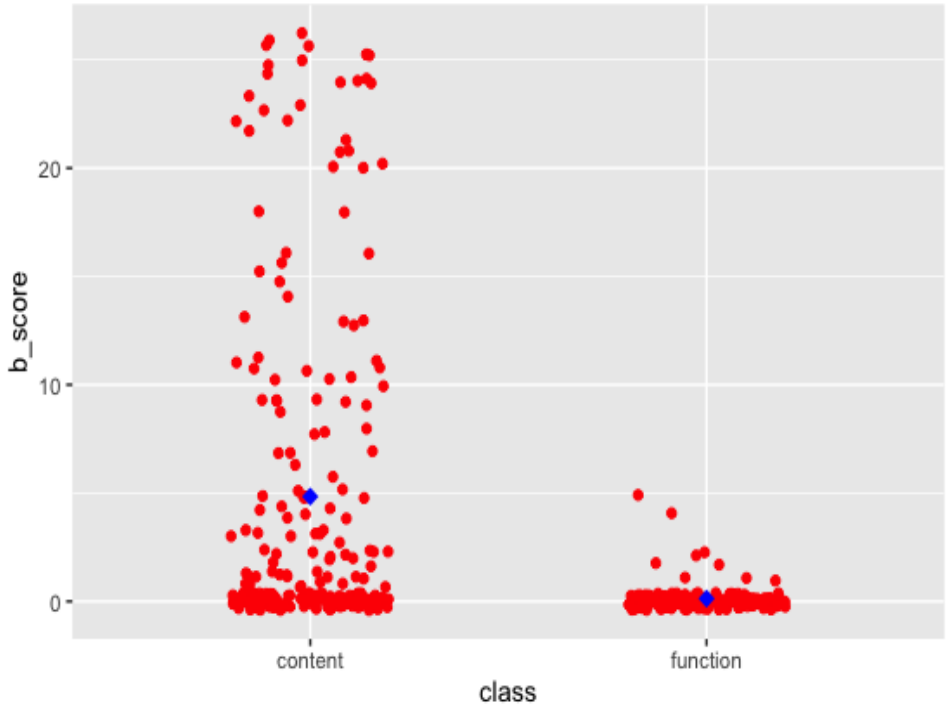


Word class

p-score

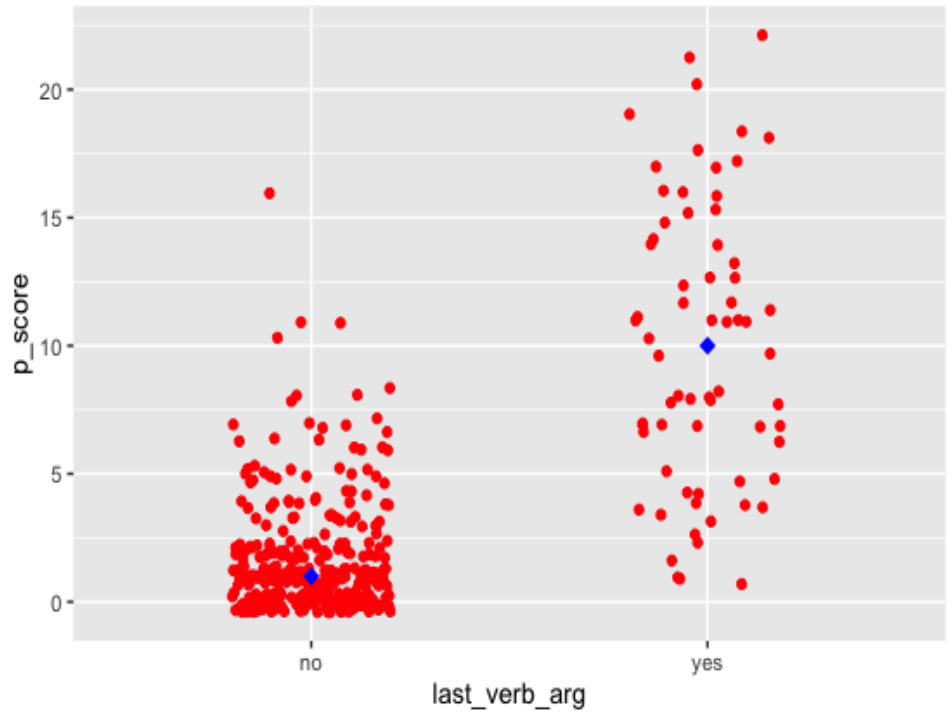


b-score

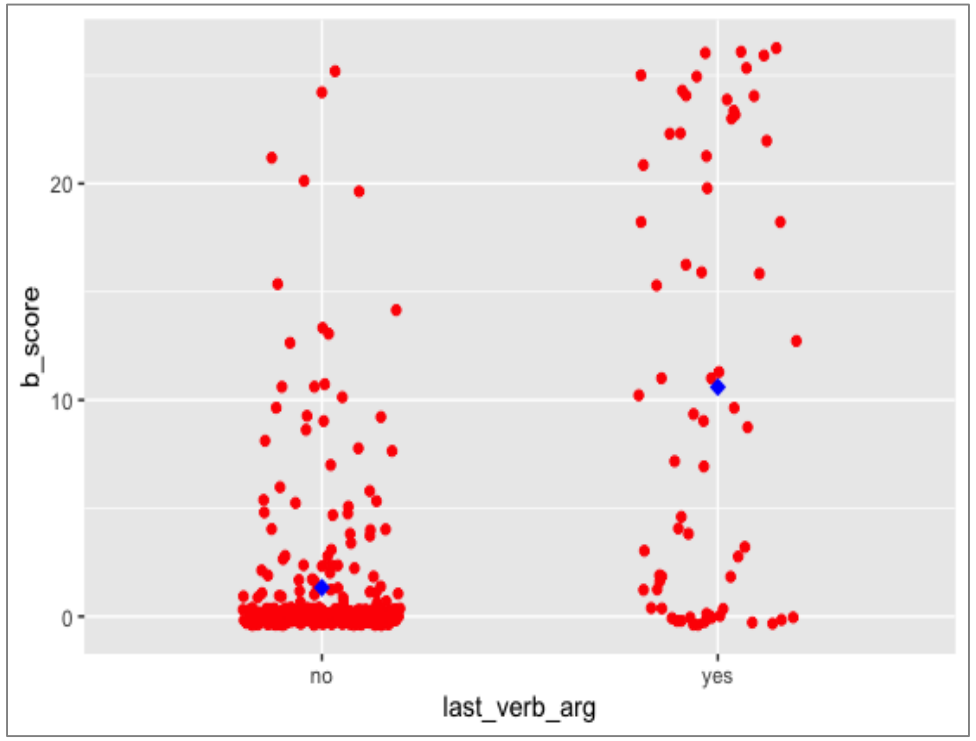


Last verbal argument

p-score



b-score



Interim Summary

- Non-prosodic cues seem to trigger prominences and boundaries

- Weak syntactic breaks, but not strong breaks (Riesberg et al, 2020 for German & Papua Malay)
- Nouns and adjectives (Roy et al, 2017 for English, Baumann & Winter, 2018, 2020 for German & Papua Malay)
- Content words (Baumann et al, 2016 for German)
- Last verbal arguments (Gussenhoven, 1984; Baumann & Winter, 2018 for German)

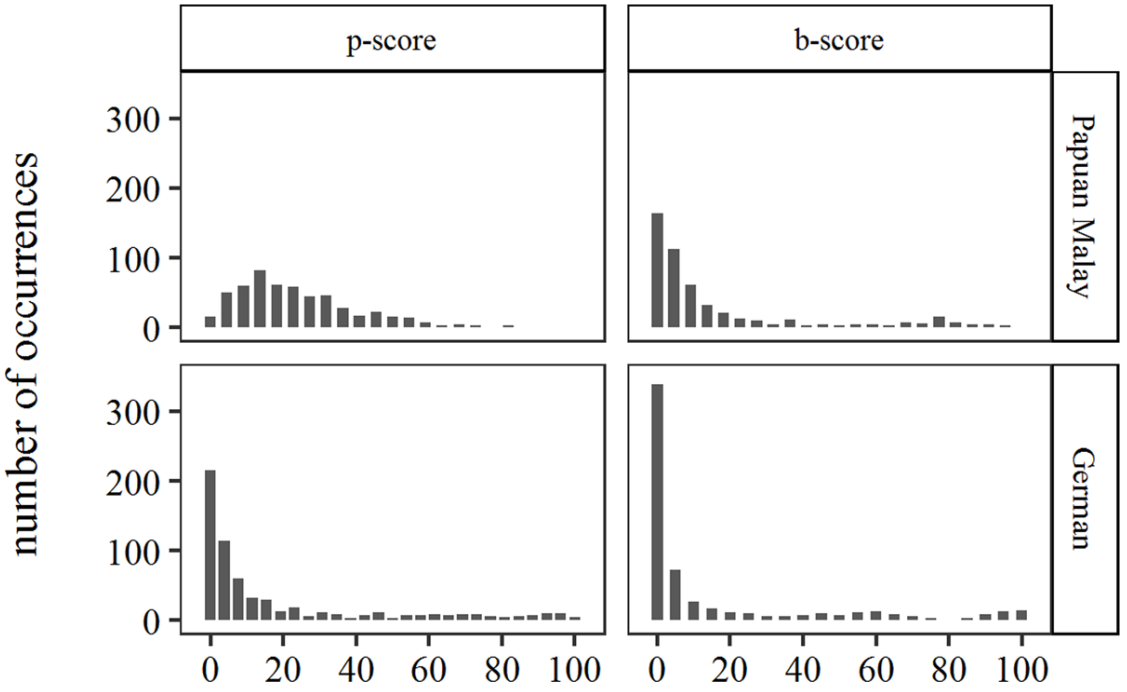
Future directions

- Advance with analysis of the other variables
- Use random forests to disentangle relative contribution of variables (Baumann, 2021, TAI)
- Use the random effects of linear mixed effects models to explore listener differences
- Comparing categories from the AlbToBI system with naïve listener judgments

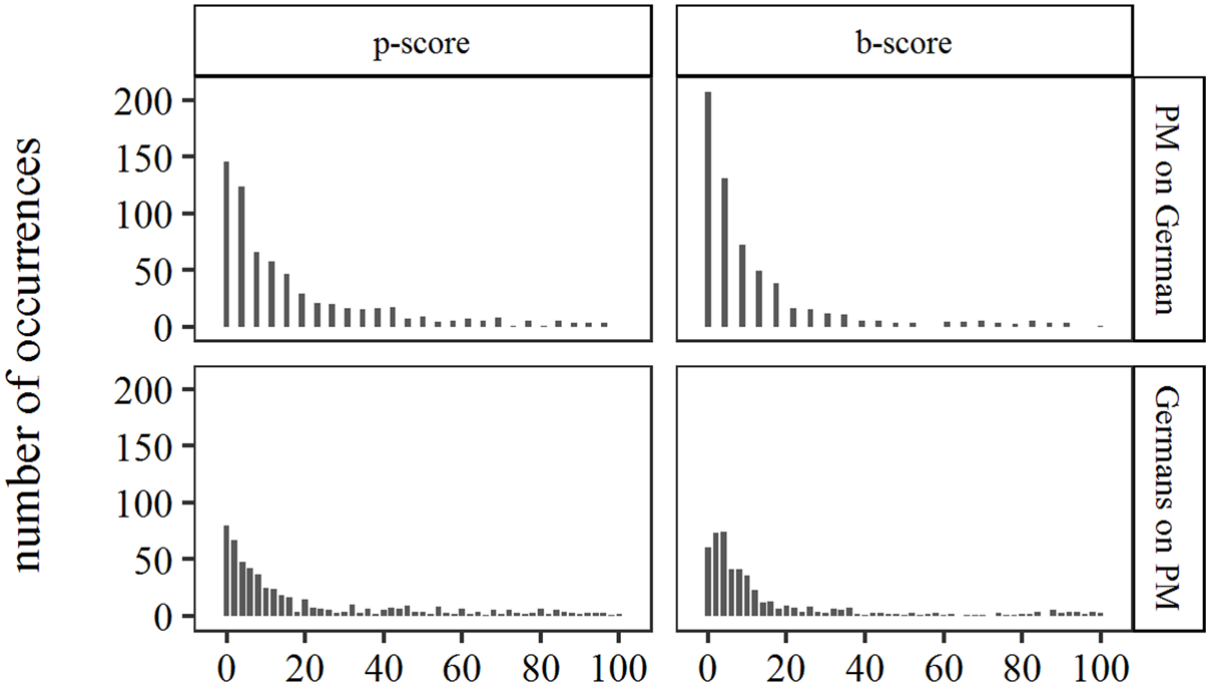
Conclusions

- Contribution to the study of prominence and boundaries
  - in terms of theory
    - with descriptive and theoretical generalizations of prominence and boundary cues in Albanian
  - in terms of methodology
    - showing how multiple analytical techniques can be synthesized to get a more comprehensive picture of prominence & boundary perception

Germans and Papua Malayans



Familiar language condition



Unfamiliar language condition

(Riesling et al, 2020)