A phonological model of Uyghur Intonation

Travis Major & Connor Mayer
University of California, Los Angeles

ICPhS Satellite Workshop
Intonational Phonology of Typologically Rare or Understudied Languages
August 4th, 2019

Uyghur

- ~10 million speakers
- Spoken primarily in Xinjiang, China and neighboring regions.
- Southwestern Turkic language, most closely related to Uzbek.

Basic Grammar

Subject			*Object*			*Adjunct*	*Verb*
[Ikki	**yaman**	**adem]**	**[her**	**qizil**	**almi-ni]**	**mektep-te**	**yé-di**
Two	bad	man	each	red	apple-acc	school-loc	eat-pst.3

“Two bad men ate each red apple in the school.”

- Generally subject >> object >> verb.
- Case marking.
- Flexible word order (default SOV).
- Almost exclusively a suffixing language.

Goals of this presentation

We will present a phonological model of Uyghur in the autosegmental metrical framework (Pierrehumbert 1980; Beckman & Pierrehumbert 1986; Ladd 2008).

- Extends Major & Mayer (2018)
- Work is still ongoing!

In particular, we will

- Provide additional data on stress in Uyghur
- Describe more complex IP boundary tones

Stress in Uyghur

Uyghur has been claimed to be a stress language where only *duration* is correlated with stress (Yakup 2013; Major and Mayer 2018)

- Pitch and intensity are not
- Speakers have (sometimes inconsistent) intuitions about syllable prominence

Suggests Uyghur is a stress language with only edge-marking intonation!

- i.e., stressed syllables cannot be identified from the pitch contour
- Differs from Turkish, which is (generally) considered a stress language with both edge- and head-marking intonation (e.g., Ipek 2015)

Typological background

A stress language with only edge-marking intonation is unusual in prosodic typology (Jun 2005)

- Not unattested: Kuot (Lindström & Remijsen 2005), Chimwiini (Kisseberth and Abasheikh 2011), and Chuvash (Dobrovolsky 1999)
- No formal models of prosody for these languages

An acoustic study of Uyghur stress and intonation

Participants: 8 native speakers of Uyghur

- 4 from Xinjiang, China (2M, 2F)
- 4 from Almaty, Kazakhstan (2M, 2F)

Stimuli: Two carrier phrases

_____ *bek yaxshi söz*	"_____ is a good word"
Mahinur _____ *deydu*	"Mahinur will say _____"

Target words from Yakup (2013)

Word 1	**Gloss 1**	**Word 2**	**Gloss 2**
DAka	*gauze*	daLA	*plain*
BAza	*base*	baHA	*price*
DAcha	*villa*	daDA	*father*
DOra	*medicine*	doQA	*forehead*
CHAsa	*square*	chaTAQ	*problem*
Acha	*elder sister*	aCHA	*branching*
BAla	*child*	baLA	*disaster*
Ara	*fork*	aRA	*between*

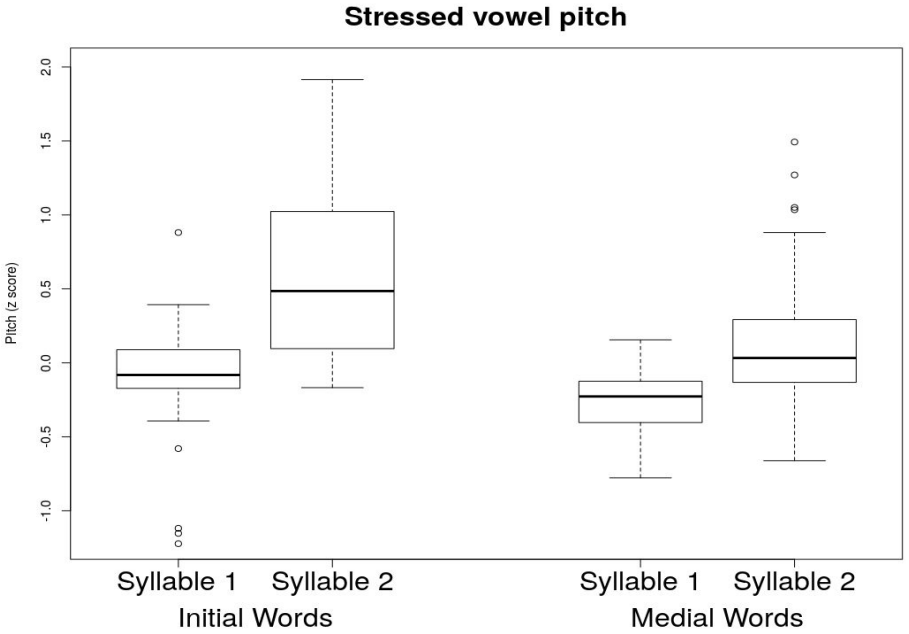
Procedure

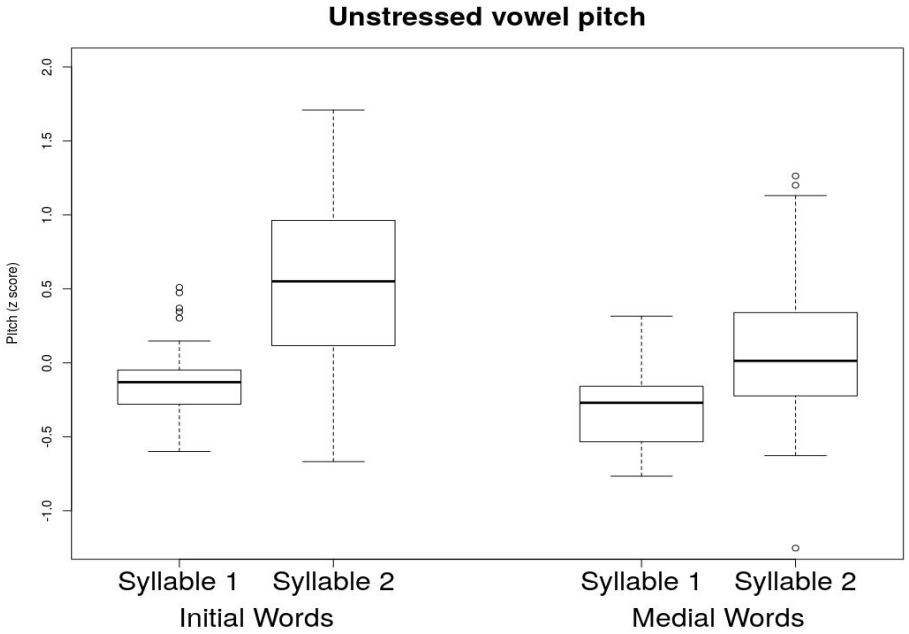
- Consultants read sentences from randomized list
- Sentences preceded by context question:

  Néme boldi? “What happened?”

- Each word read once in each carrier phrase
- Measured **vowel duration, intensity, and pitch**
  - No interesting effects for intensity
- Analyzed using linear mixed effects models

Pitch results

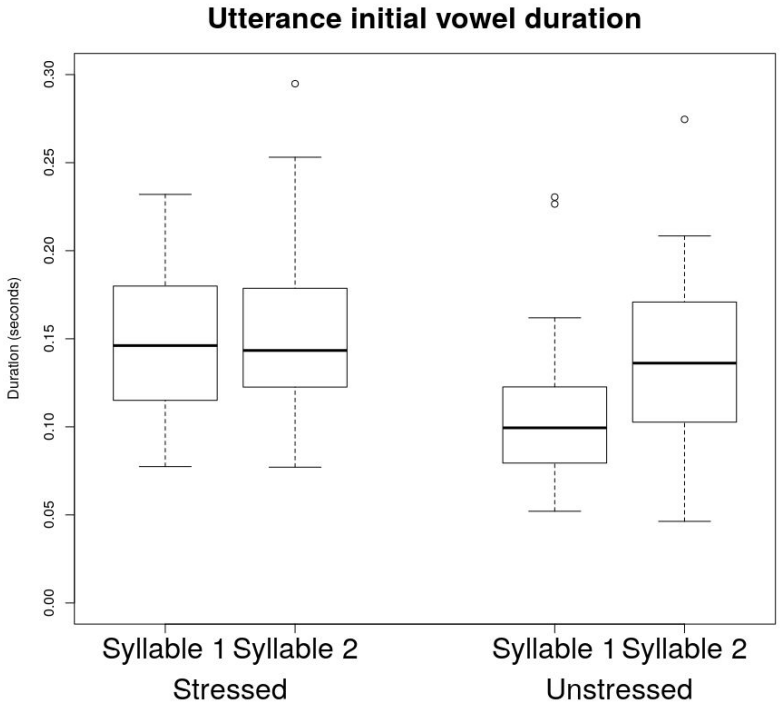




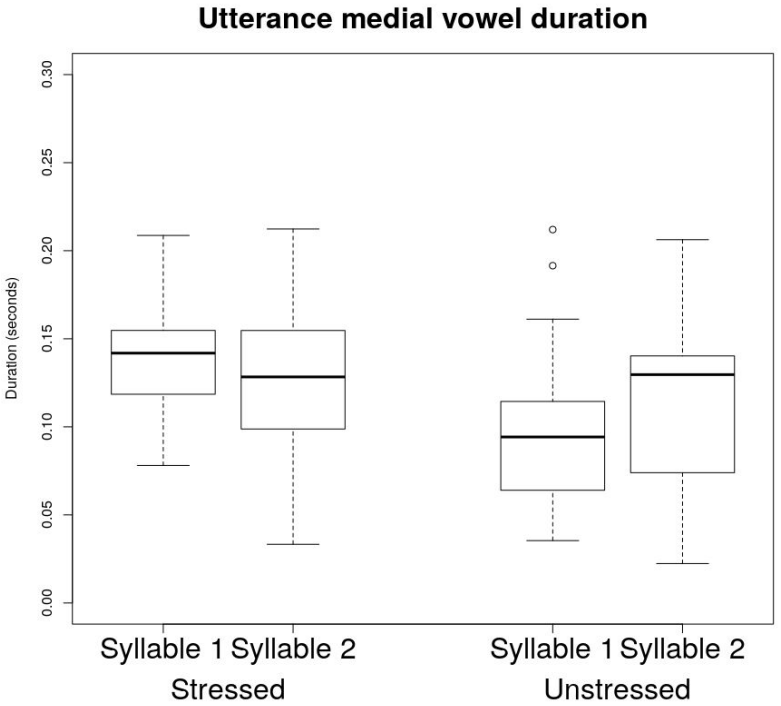
- No significant effect of stress
- Last syllable > first syllable

- Word initial > word medial
- Word initial last syllable > word medial last syllable

Duration results for Xinjiang speakers

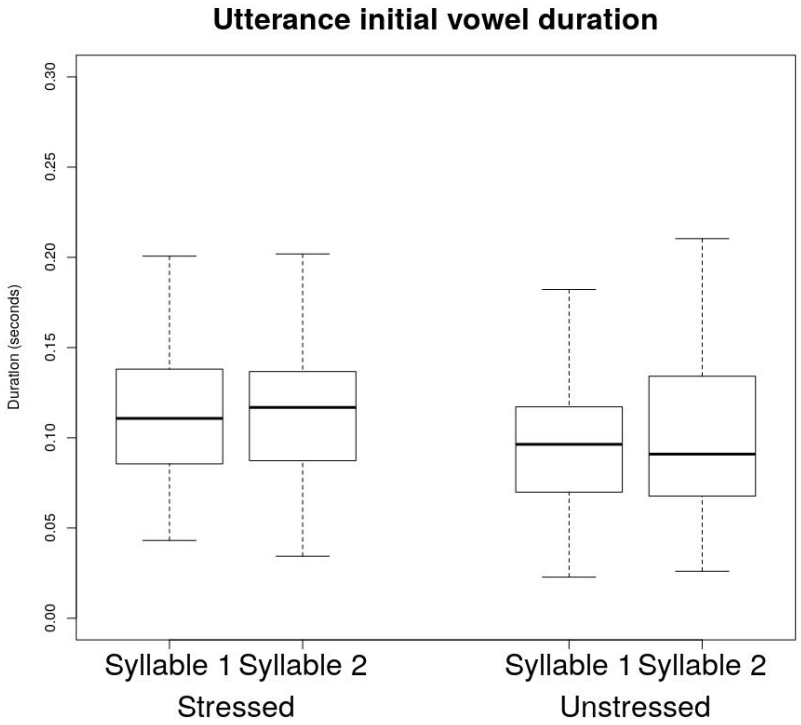


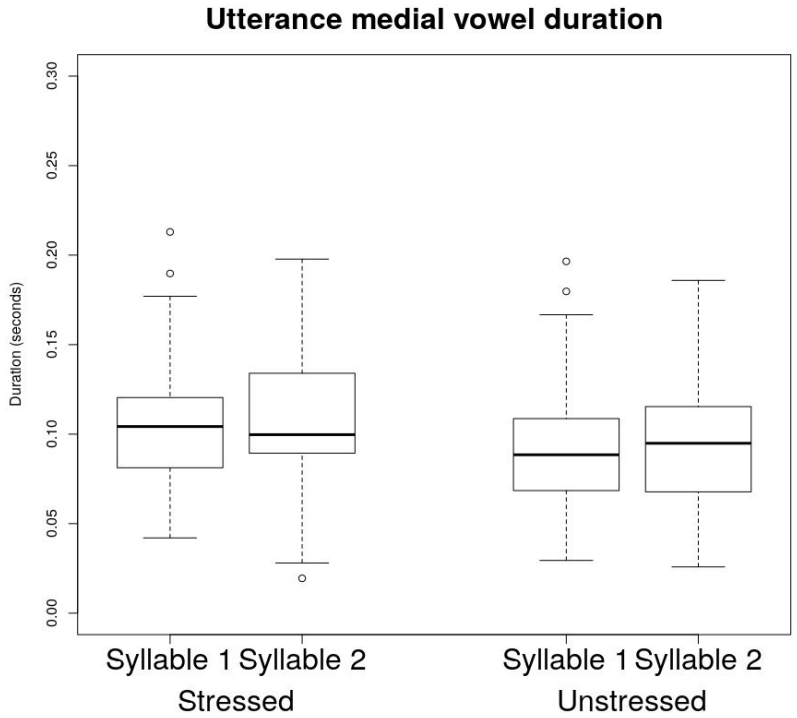
- Stressed > unstressed



- Syllable 2 utterance initially > syllable 2 utterance medially (marginal)

Duration results for Almaty speakers





No significant differences in duration!

Results summary

Pitch: predicted by position of syllable in word, and word in utterance

- Final syllable > initial syllable
- Utterance-initial > utterance-medial

Consistent with edge-marking intonation

Duration: Stress location is a significant predictor of **duration** but not **pitch**

- Stressed > unstressed

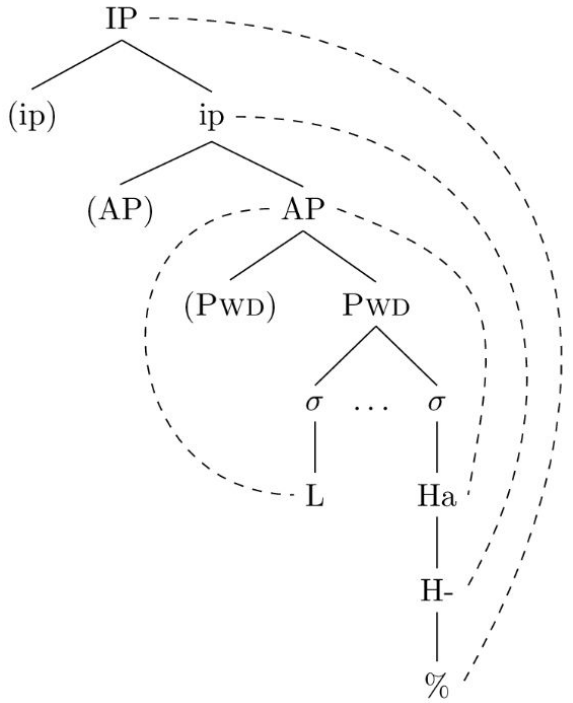
But only for Xinjiang speakers!

Uyghur intonational phonology

Our model has three prosodic levels above the word:

- Accentual phrase (AP)
- Intermediate phrase (ip)
- Intonational phrase (IP)

Based on the results from the previous section, our model only involves edge-marking intonation.

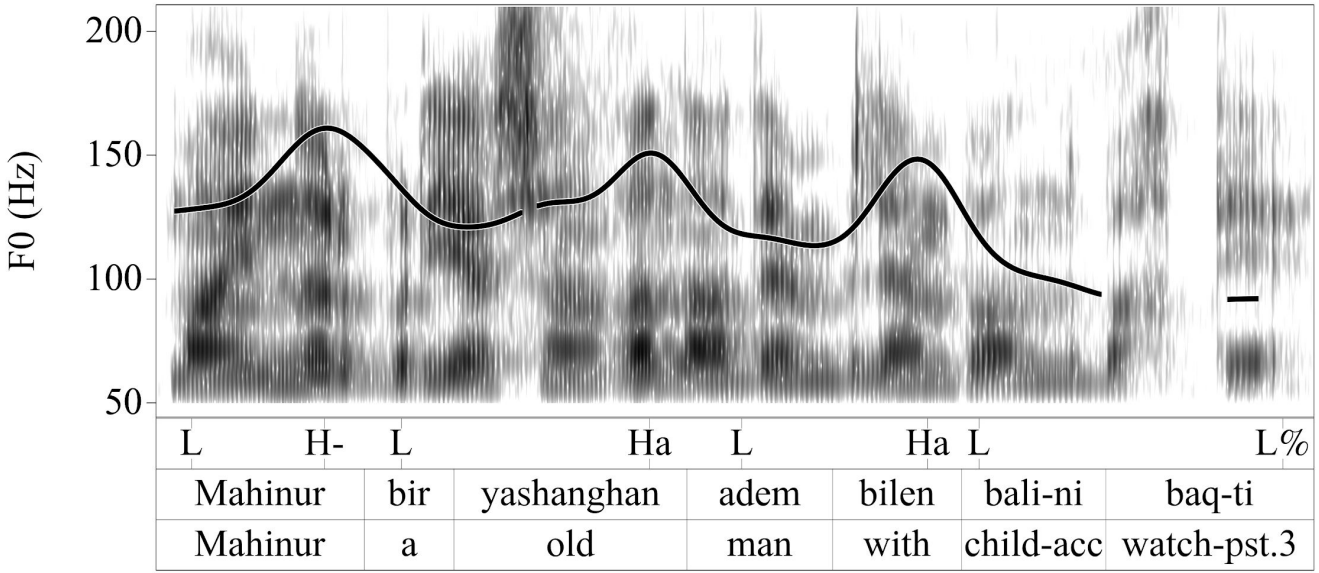


Accentual Phrase (AP)

The first level above the prosodic word:

- Left edge marked by L tone.
- Right edge marked by Ha tone.
- Consists of at least one prosodic word.
- Multi-word APs generally arise in *modifier-noun* constructions.

Accentual phrase (AP)



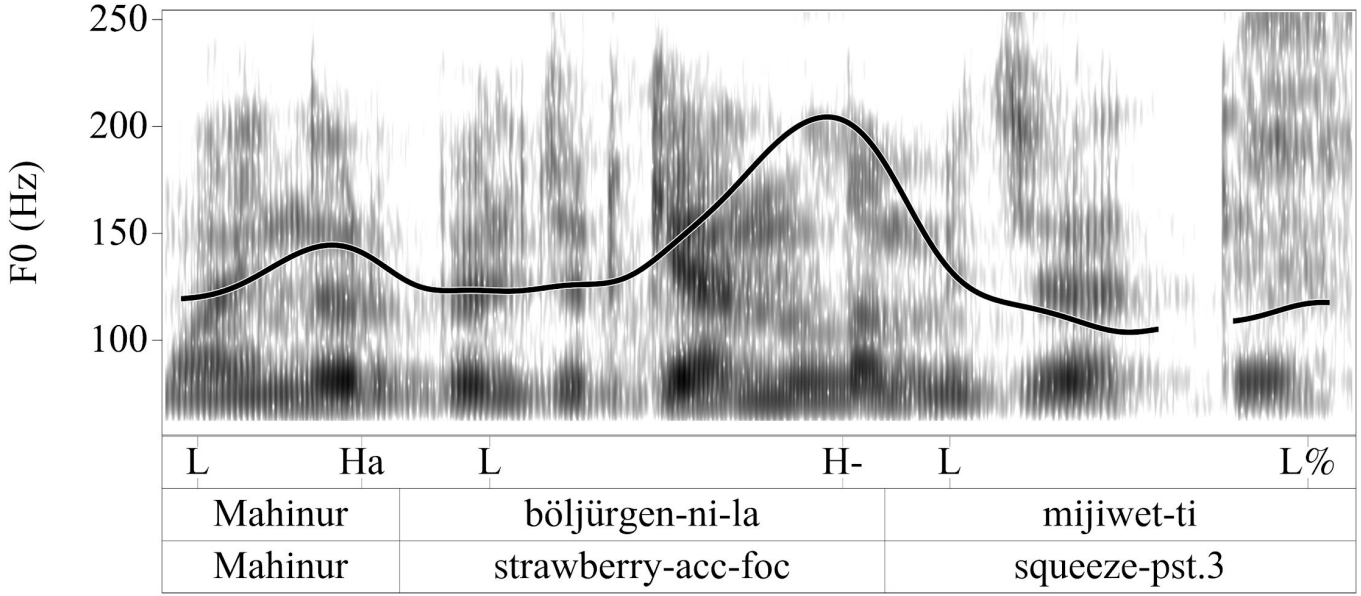
- All APs show L H sequence, not all words!

Intermediate phrase (ip)

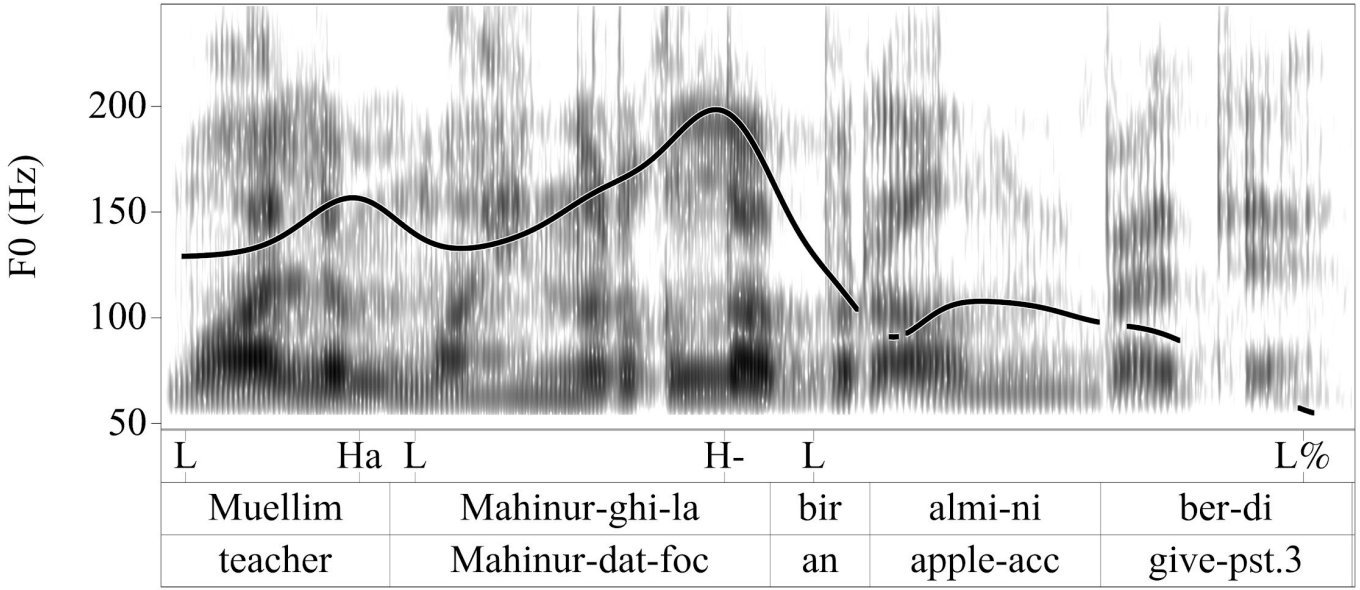
Contains one or more APs

- H- tone on right edge
  - Higher than the Ha tone marking the edge of APs.
  - Larger following juncture (Major & Mayer 2018)
- Neutral sentences: subject generally forms an ip
- Focused elements generally form ips

Object focus



Post-focus de-phrasing

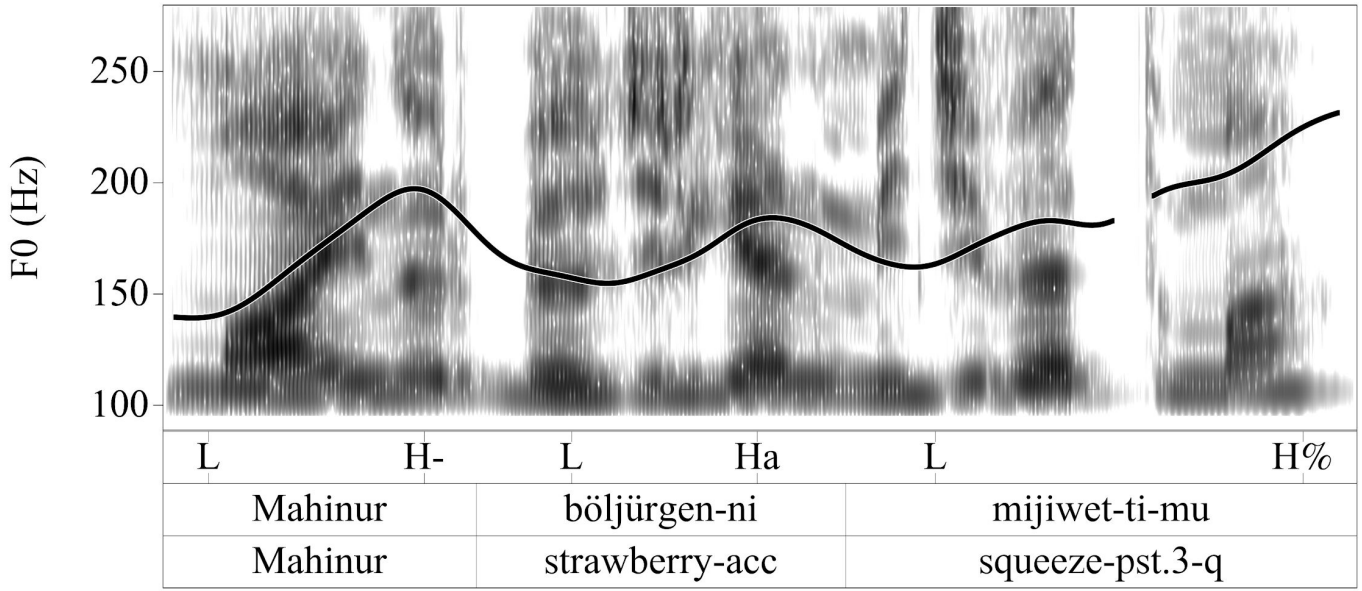


Intonational phrase (IP)

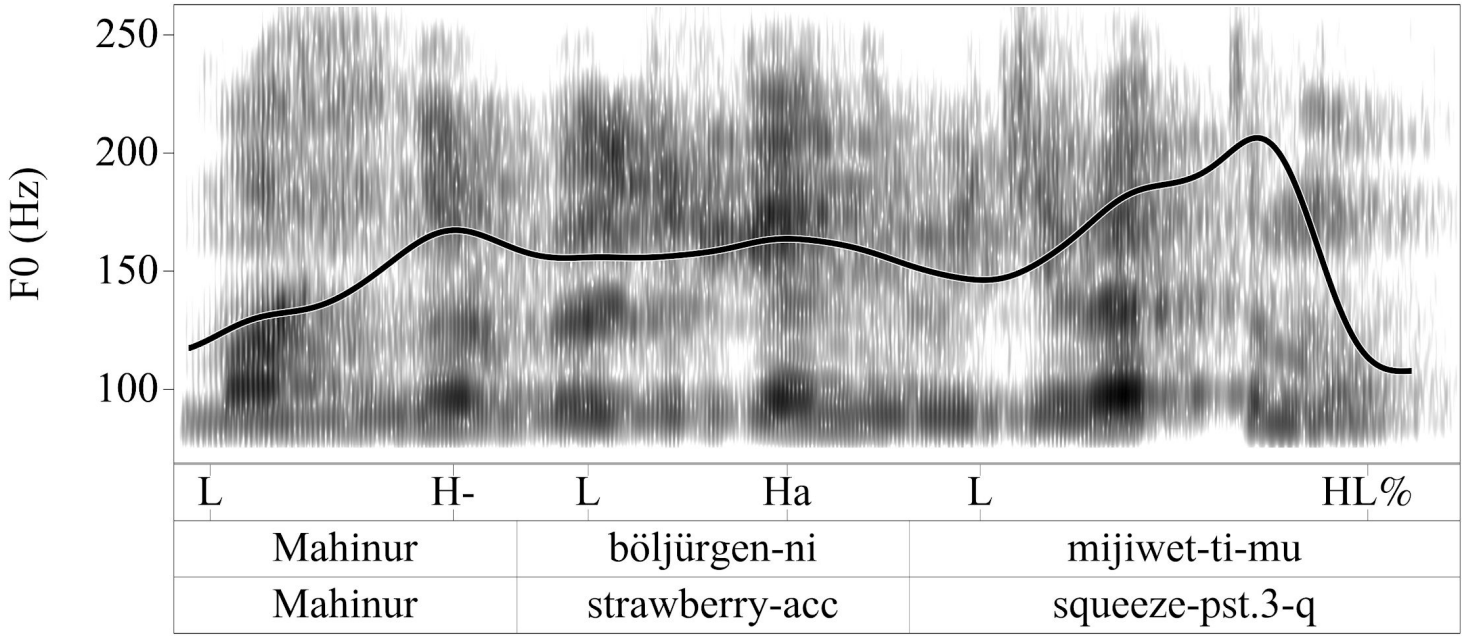
Contains one or more ips

- L% on the right edge for basic declaratives.
- H% for continuations or juxtaposed clauses.
- Polar questions end with either an H%, HL%, or LH%.
    - May be dialectal to some extent
- Wh-questions can end in an LH% or HL%
    - often more closely resemble focus constructions.

Polar questions: Xinjiang speaker



Polar questions: Almaty speaker



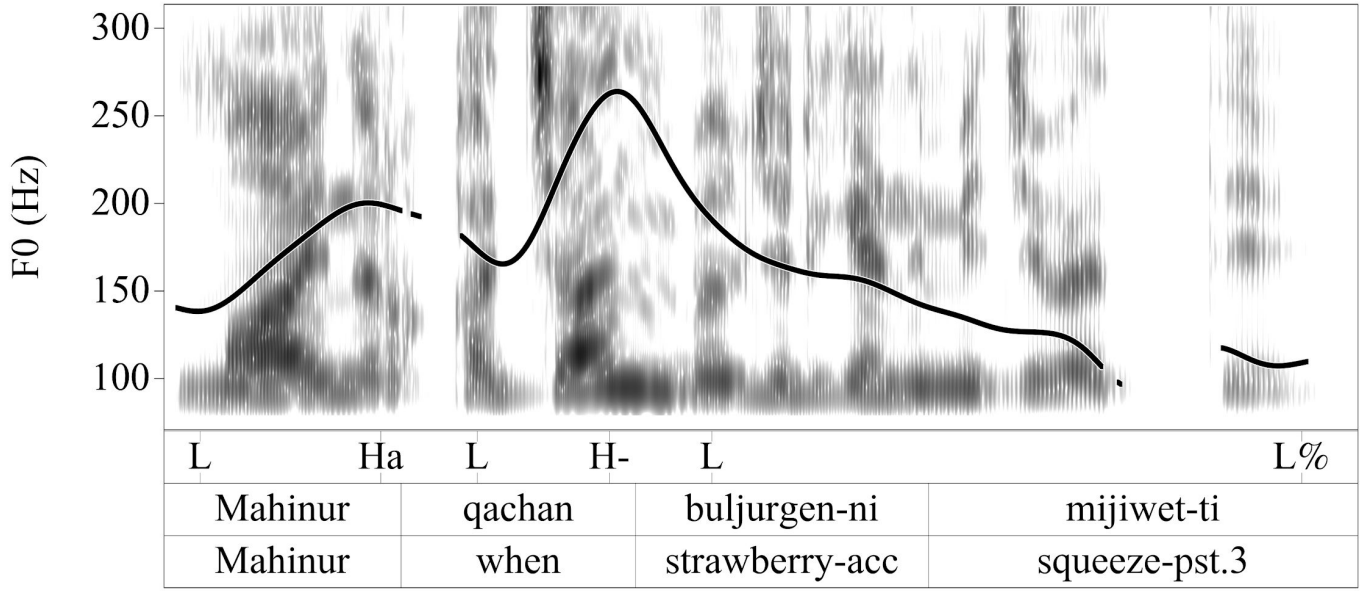
WH-questions

Wh-questions show considerable variation:

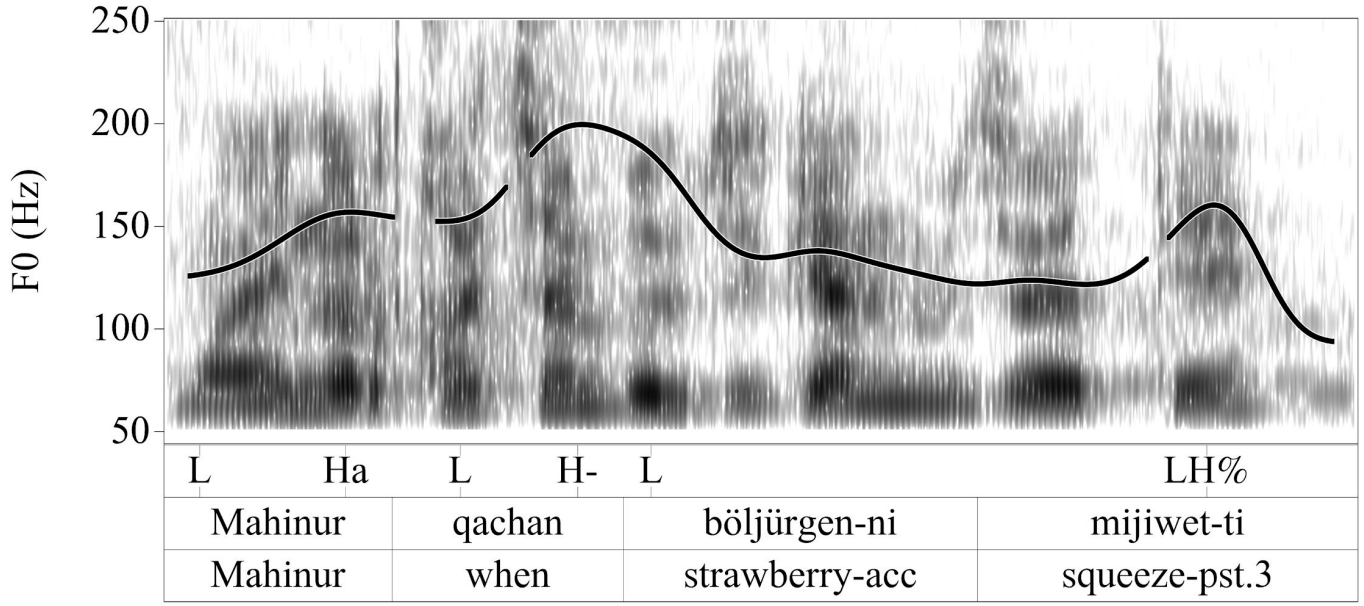
- The wh-expression bears focus (H- on the right edge).
  - The following material generally de-phrases, like in regular focus as well.

- The right edge of the IP in wh-questions can bear:
  - LH%
  - L%

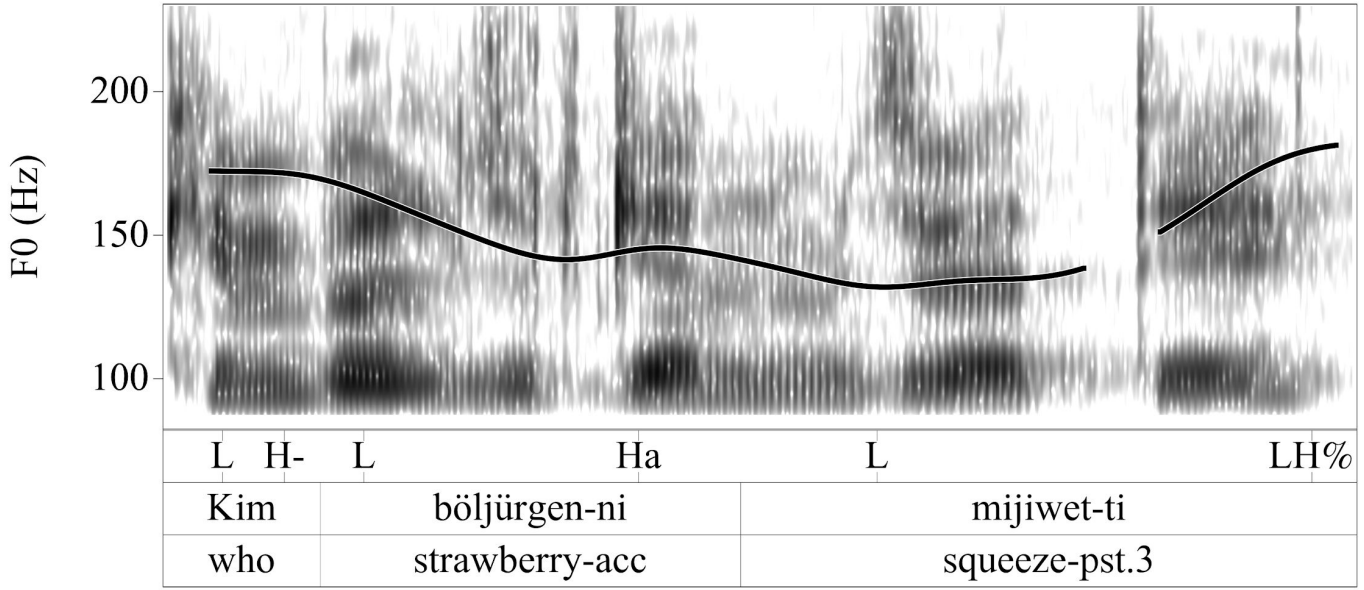
Adjunct wh-questions: Xinjiang speaker



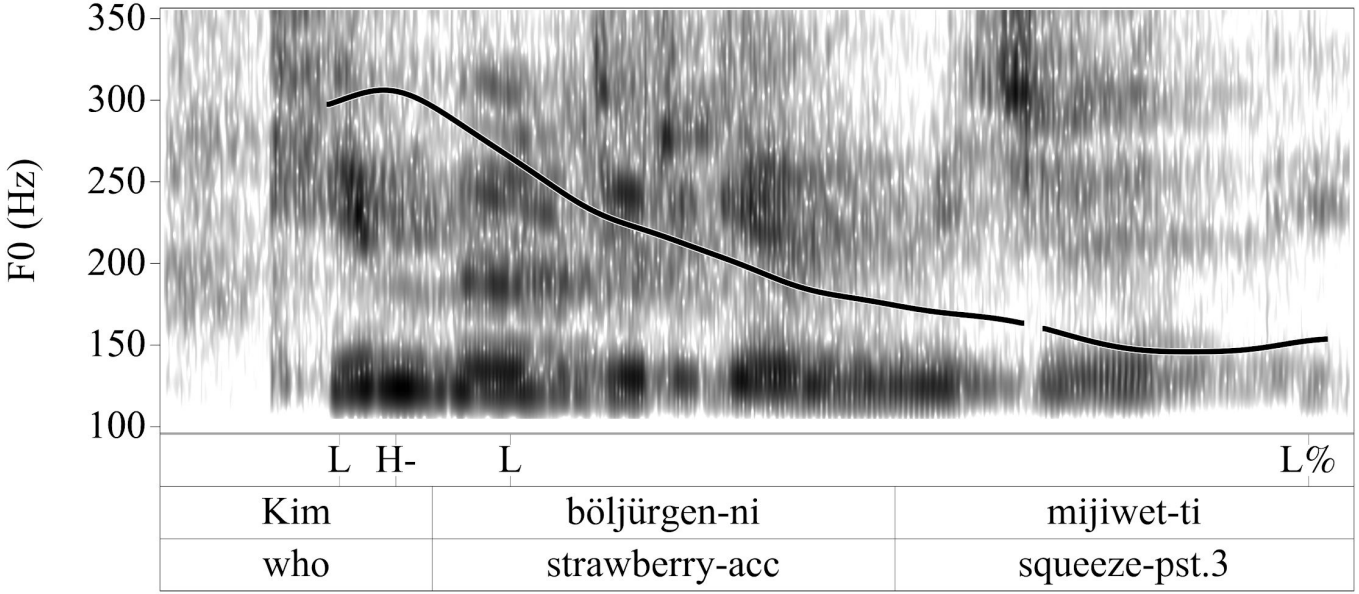
Adjunct wh-questions: Almaty speaker



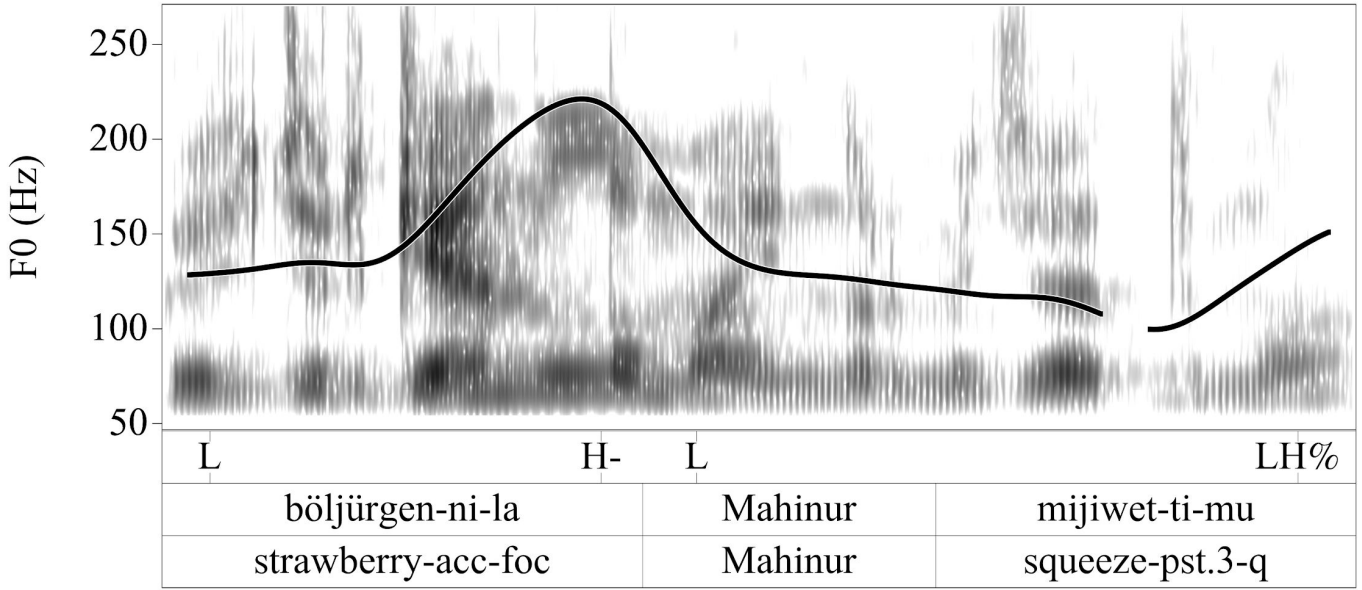
Argument wh-questions: Almaty speaker



Argument wh-questions: Almaty speaker

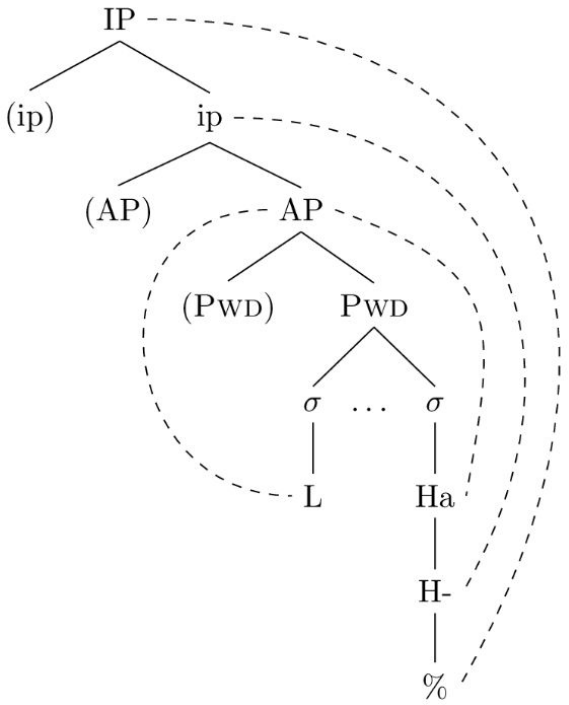


Polar questions with focused elements



Conclusions

- Uyghur intonation is insensitive to stress
- Durational stress may be a Xinjiang feature
- We propose a three-level model of Uyghur intonation that is exclusively edge-marking



Conclusions

Focus:

- H- marking on the focused element
- De-phrasing of following material.
- Focus of a non-subject involves demoting the subject to an AP.

Questions

- Polar questions end in H% or HL% contours
- Wh-questions show properties of both focus and polar questions:
  - Wh-word is focused
  - Elements to right de-phrased
  - The right edge bears L% or LH%.

Future Directions

- Analyze 6 additional Almaty speakers
- Collect more data from Xinjiang speakers
- How many words can fit in an AP?
- Better diagnostics for AP/ip distinction
- Collaborating with Uyghur linguist to tease out semantic/pragmatic contributions of contours

Köp rehmet!!!!

We would like to thank our consultants in the United States: Ziba Ablet, Memet Semet, Mahire Yakup, Gülnar Eziz, Mustafa Aksu, and Akbar Amat; and our consultants in Almaty, Kazakhstan at School 153.

We would also like to thank the attendees of Speech Prosody 9 for useful feedback. We additionally would like to thank Sun-Ah Jun and Adam Royer for feedback and discussion throughout this project.

References

Beckman, M. & Pierrehumbert, J. (1986). Intonation structure in Japanese and English. *Phonology Yearbook, 3*: 255-309.

Dobrovolsky, M. (1999). The phonetics of Chuvash stress: Implications for phonology. In *Proceedings of the 14th International Congress of Phonetic Sciences*: 539-542.

Ipek, C. (2015). The phonology and phonetics of Turkish intonation. Ph.D. dissertation, University of Southern California.

Jun, S. (2005). Prosody Typology. In Jun, S. (Ed), *Prosodic Typology: The Phonology of Intonation and Phrasing*. Oxford: Oxford University Press, 430-458.

References

Kisseberth, C.W., & Abasheikh, M.I. (2011). Chimwiini phonological phrasing revisited. *Lingua, 121*: 1987-2013.

Ladd, D.R. (1986/2008). *Intonational Phonology,* 1st ed. Cambridge: Cambridge University Press.

Lindström, E. & Remijsen, B. (2005). Aspects of the prosody of Kuot, a language where intonation ignores stress. *Linguistics, 43*(4): 839-870.

Major, T., & Mayer, C. (2018). Towards a phonological model of Uyghur intonation. In K. Klessa, J. Bachan, A. Wagner, M. Karpiński, and D. Śledziński (Eds). Proceedings of the 9th Speech Prosody International Conference.

References

Pierrehumbert, J. (1980). The phonology and phonetics of English intonation. Ph.D. dissertation, MIT.

Yakup, M. (2013). Acoustic correlates of lexical stress in native speakers of Uyghur and L2 learners. Ph.D. dissertation, University of Kansas.