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# Moraic sonorants and metrification

## An unexpected role for [ATR] in Bondu So verbs



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# Typological profile

# Bondu So

## Dogon, Mali

- 2 described varieties: Najamba (Heath 2017) and Kindige (Hantgan 2010)
- 2 Tones (HL)
- Noun class suffixes with agreement on adjectives, determiners, and numerals
- Subject marked on verb (suffix and/or tone)
- Object precedes verb (usually marked with accusative suffix)
- Root and suffix controlled [ATR] harmony on noun and verb stems

# Kindige example

Noun classes and agreement (Author's field notes, 'The First Rains').

nàà\_tóm -àŋ údzún -àŋ gìnd -óò bèl -j -è =b -óò  
One\_time **NCL2** wind **NCL2** big **CD2** get\_up MDP PFV PST **3P**  
'One time, big winds got up.'

mó nèn nú =mbò mà dúm -èè mà níí =mbò díndì  
**3S.ANIM** PP human **NLC1A** COOR livestock **NCL2A** COOR bird **NLC1A** all

hákilé bèl -j -é -è  
thought\Ar get\_up MDP 3S PFV

'Because of her/him [=the wind (**ANIM**)], all the **humans**, **livestock**, and **birds** were frightened.'

# Vowel harmony overview

# Dominant [ATR] harmony

(Hantgan & Davis 2012; Green & Hantgan 2019)

[+ATR]			[-ATR]		
Singular	Plural	Gloss	Singular	Plural	Gloss
bèdʒ-éè	bèdʒ-óò	bury	nèg-éè	nèg-óò	lick
póg-èè	póg-òò	dump	dòg-éè	dòg-óò	abandon
íb-èè	íb-òò	take	bìmb-éè	bìmb-óò	scrub
kúmb-èè	kúmb-òò	hold	gùb-éè	gùb-óò	hang
pág-èè	pág-òò	tie	dʒàmb-éè	dʒàmb-óò	betray

# Sonorants spread V-manner features

Green & Hantgan (2019)

[+ATR]			[-ATR]		
Singular	Plural	Gloss	Singular	Plural	Gloss
gìj-éè	gìj-óò	dance	gìj-éè	gìj-óò	kill
pór-èè	pór-òò	let escape	bèl-éè	bèl-óò	pick fruit
gòm-îî	gòm-úù	remove	gòm-éè	gòm-óò	reek
mìn-îî	mìn-úù	wait	mìn-éè	mìn-óò	swallow
dààn-îî	dààn-úù	grill	dzàŋ-éè	dzàŋ-óò	study

# Coerced moraicity

Hantgan, Green, and Contreras Roa (forthcoming)

[+ATR]			[-ATR]		
Singular =b-èè	Plural =b-òò	Gloss	Singular =b-èè	Plural =b-òò	Gloss
bèdʒ-í	bèdʒ-ú	bury	dʒàmb-é	dʒàmb-ó	betray
nòj-í	nòj-ú	sleep	gìj-é	gìj-ó	kill
gòm	gòm	remove	gòm-é	gòm-ó	reek
dààn	dààn	grill	dʒàŋ-é	dʒàŋ-ó	study
pór	pór	let escape	bèl-é	bèl-ó	pick fruit



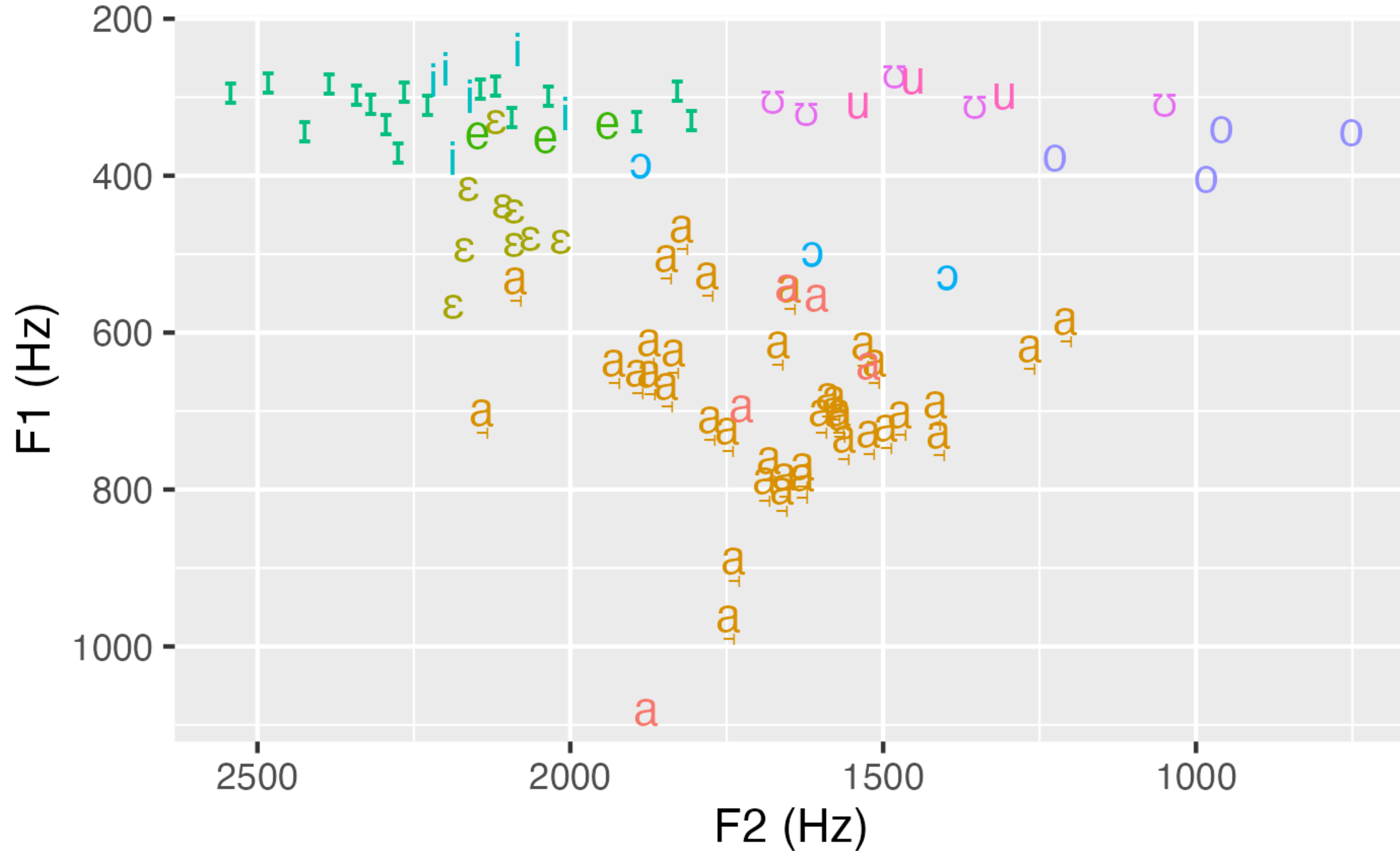
# Pilot Phonetic Study

# Methods

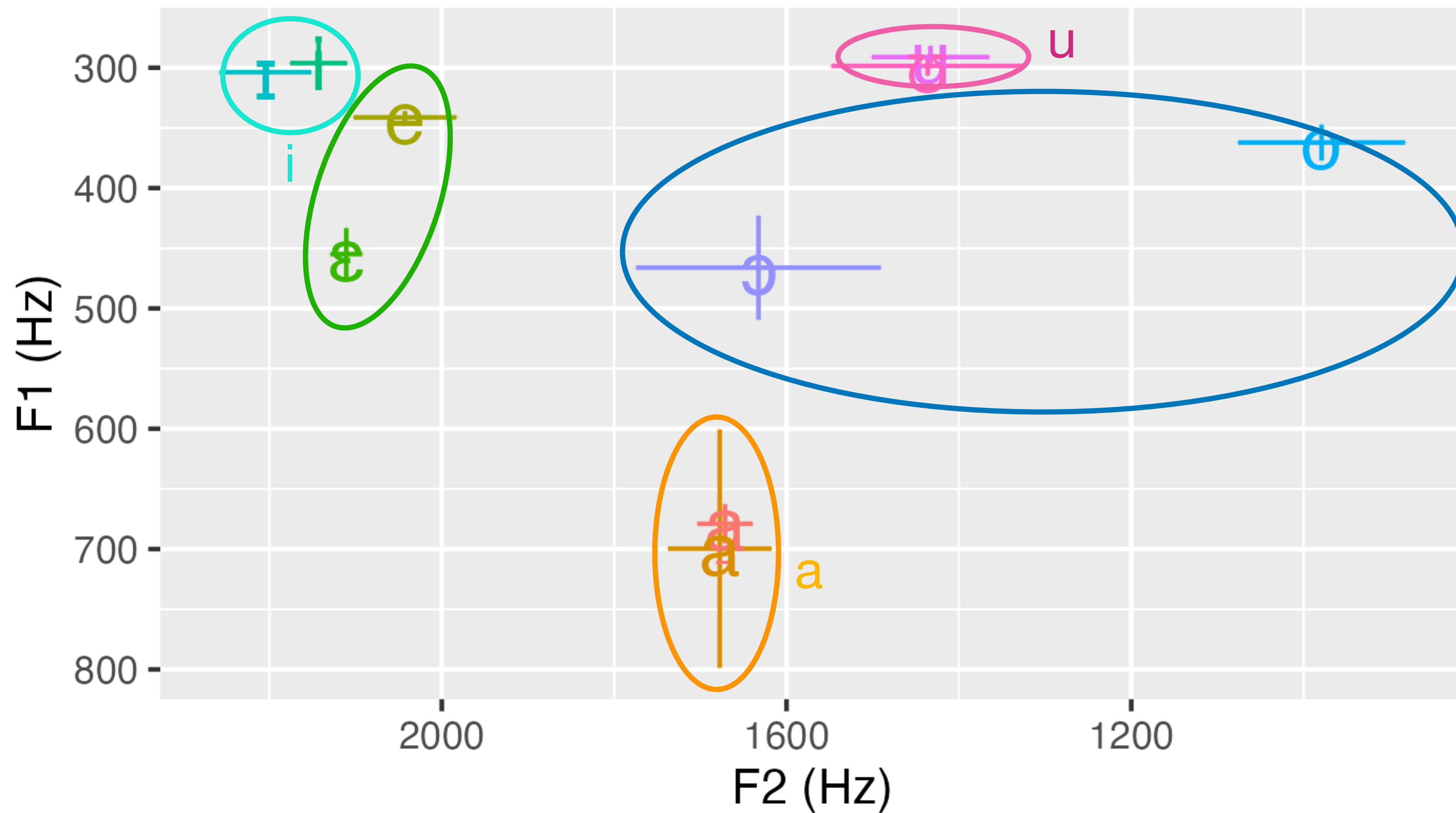
## Hantgan, Green, and Contreras Roa (forthcoming)

- Data from two male speakers of Bondu So; this study focuses on one speaker's productions
- 348 verb tokens analyzed for vowel quality
- 342 sonorant-final verb roots across 5 paradigms
- Duration
- F1, F2, F3 values [mean and 25/50/75% measurements]
- Center of Gravity (spectral mean)

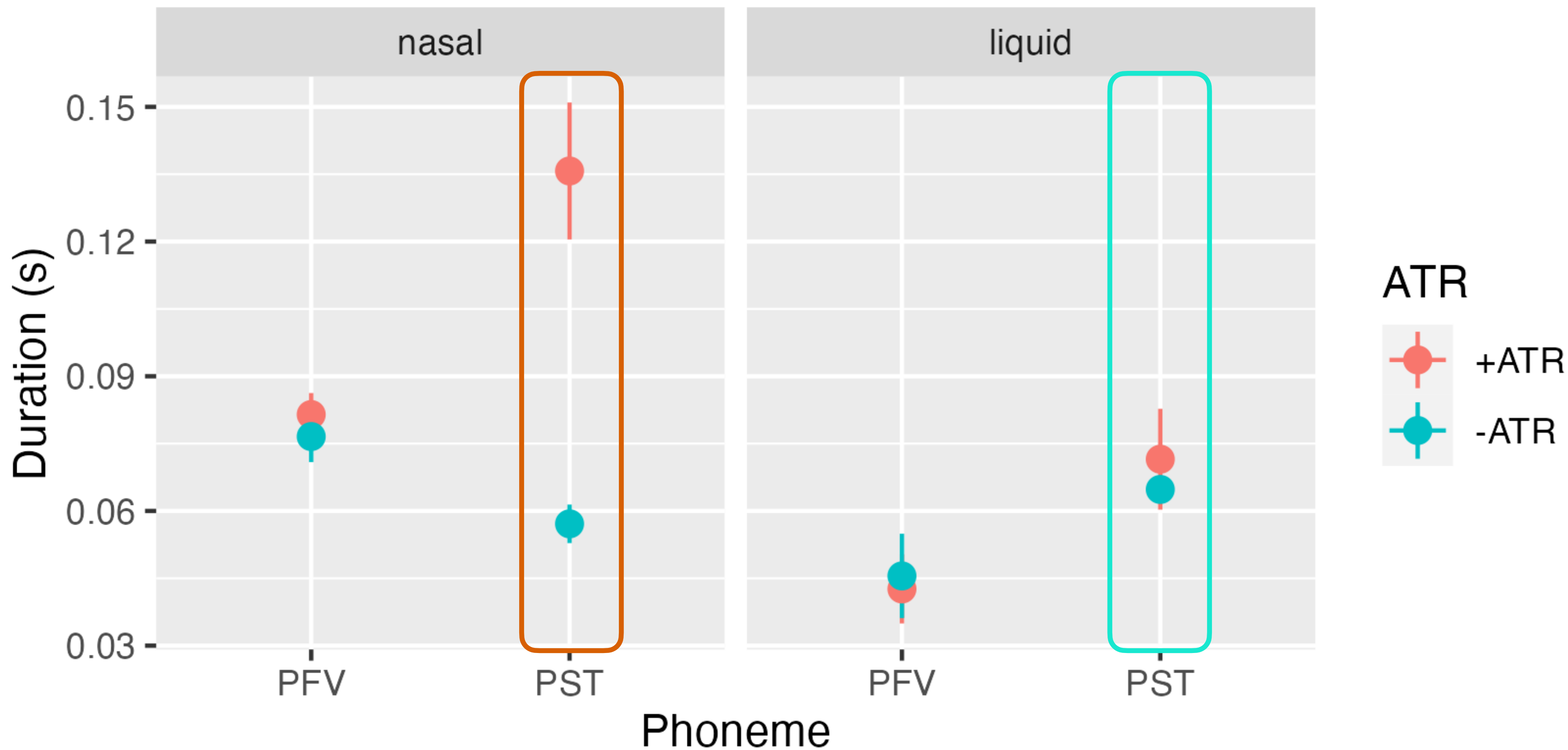
# Vowel space of CHN, PFV and PST root vowels



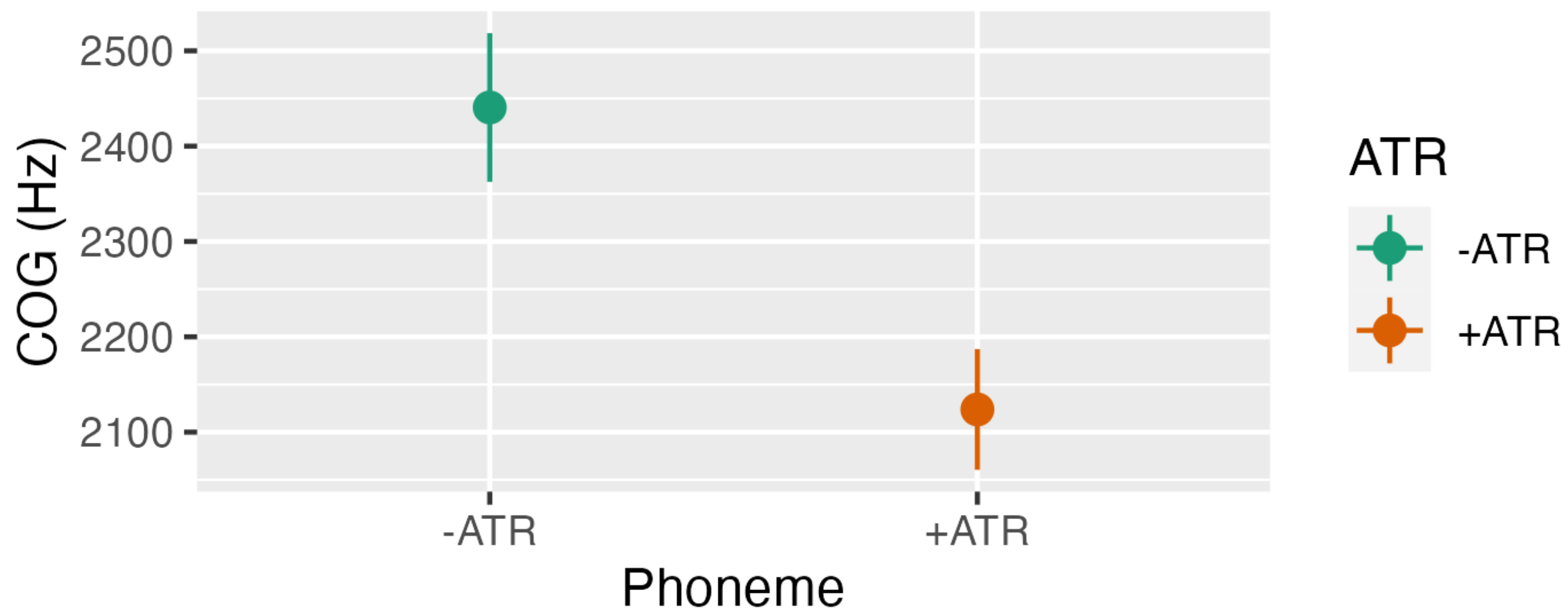
# F1/F2 means and standard errors of root vowels in CHN, PFV and PST paradigms



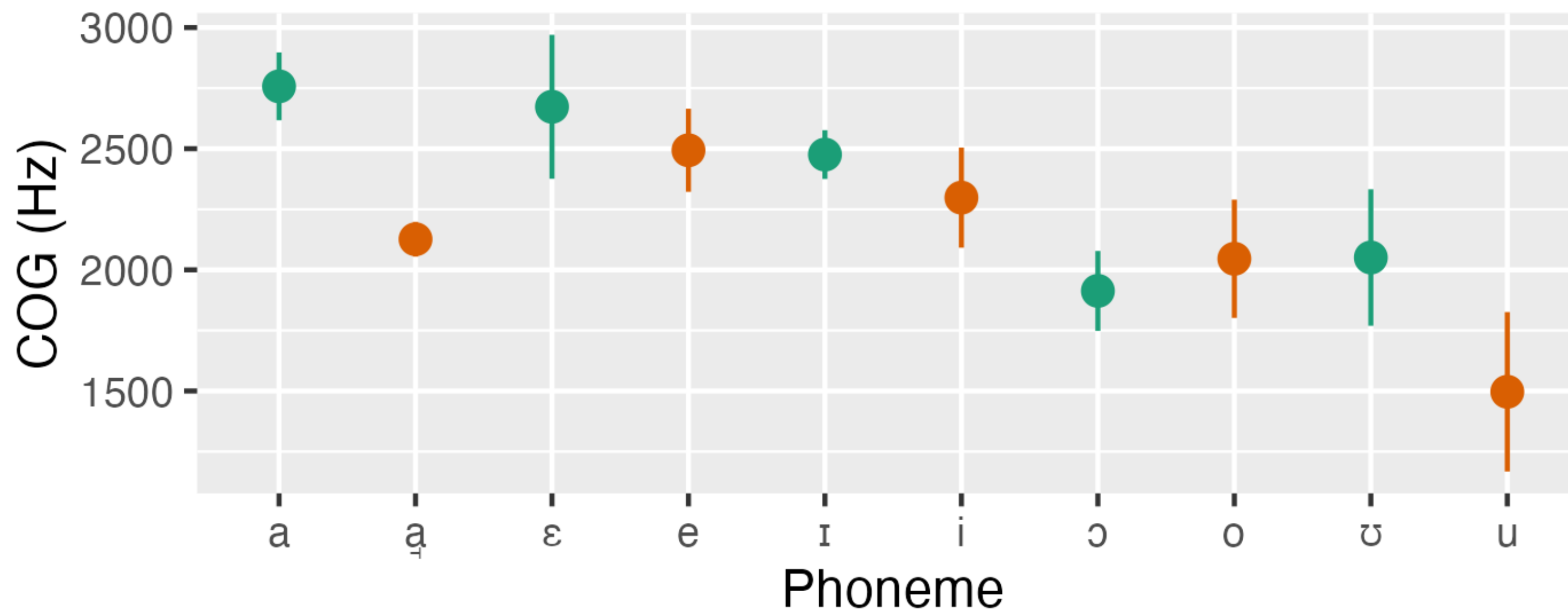
# Duration of root-final nasals and liquids by +/- ATR (means and SE) in PFV and PST paradigms



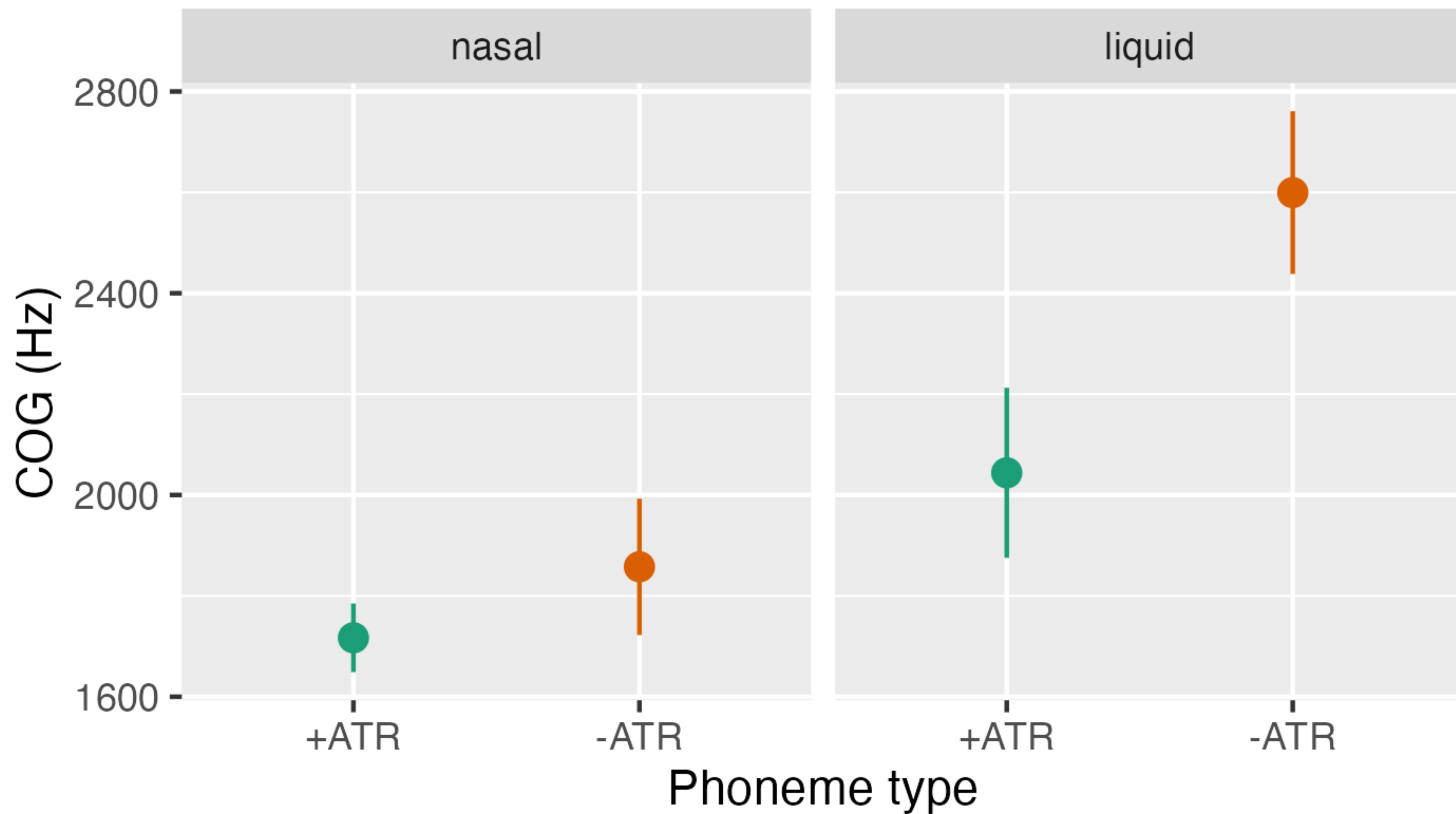
**A** Center of gravity of all root vowels  
(means and SE)



**B** Center of gravity of root vowels  
by individual vowels (means and SE)



# Center of gravity of root-final nasals and liquids by +/- ATR (means and SE)



# Implications



# Implications for phonological theory

## Contextual weight from a different angle

- Weight by position (Hayes 1995)
- Inherent moraicity (Hyman 1985)
- Weight by sonority (Zec 1995)
- ....Weight by [ATR] and/or length

# Implications for phonetics of Bondu So

## Support of phonological hypotheses

- Merge between antagonistic [ $\pm$ ATR] vowels
- Sonorants (especially nasals) consistently longer in [+ATR] environments
- [ATR] appears to be gesture rather than tense/lax

# Implications for other Dogon languages

## Comparison of morphological exponents

Bondu So (Najamba, Heath 2017)			Dogul Dom (Heath 2016: 150)		
Perfective	Bare Stem	Gloss	Perfective	Bare Stem	Gloss
ìn-è	ín	go	kán-è	kán-è	do
nàl-è	nǎl	give birth	nál-è	nàl-é	give birth
tàr-è	tár	look	bár-è	bár-è	add

# Selected References

Archangeli, Diana, Jeff Berry, Andrew Carnie, Muriel Fisher, Nicole Hunt, Sunjing Ji & Keisha Josephs. 2011. ATR in Scottish Gaelic tense sonorants: a preliminary report. In Andrew Carnie (ed.), *Formal approaches to Celtic linguistics*, 283–306. Newcastle upon Tyne: Cambridge Scholars.

Green, Christopher & Abbie Hantgan. 2019. A feature geometric approach to Bondu-so vowel harmony. *Glossa: a journal of general linguistics* 4(1). 1–29. DOI: 10.5334/gjgl.793.

Heath, Jeffrey. 2017. A grammar of Najamba (Dogon, Mali). *Language Description Heritage Library* (online). DOI: 10.17617/2.2397771.

Hantgan, Abbie & Stuart Davis. 2012. Bondu-so vowel harmony: a Descriptive Analysis with Theoretical Implications. *Studies in African Linguistics* 41(2). Heath (2017)

Abbie Hantgan, Christopher R. Green & Leonardo Contreras Roa. (forthcoming). Coerced weight and its consequences in Bondu So verbs.

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**Please get in touch!**