

Phonetic change in the grammaticalization of Brazilian Portuguese *tipo*

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Project background

- *Projeto Sociolinguístico Contemporâneo Brasileiro* ('Contemporary Brazilian Sociolinguistic Project')
- GOAL: Identify linguistic innovation in speech of teenagers in Rio de Janeiro
 - Forefront of linguistic innovation
- Fieldwork conducted in municipal public schools in Rio between 2015-2018
 - Mostly low and low-middle class students
 - Two schools on the island of *Ilha do Governador*

Project background

Rio de Janeiro, Brazil

- Sociolinguistic interviews
 - Modified version of Labov's (1984) sociolinguistic interview script
- Five field trips
 - 84 interviews ranging between 30 to 70 minutes in length (~57 hours of audio and video recorded data)
 - 178 participants



tipo

Tipo

- *Tipo* - a taxonomic masculine noun ('type', 'kind')
- Often used in binomial constructions (N1 of N2 – tipo + de ('of') + noun) - *tipo* is the head of N1
- Bittencourt (1999) - *tipo* might be undergoing a process of grammaticalization

Forms of *tipo*

Co-variants

- Three different *tipo* forms/constructions are regularly used by the participants
- Two are periphrastic – multi-word expressions which replace a single word (Haspelmath, 2000)
- The co-variants are interchangeable & found in similar syntactic constraints
- Any co-variant can be used with any function, aside from noun

Forms of *tipo*

Co-variant: bare *tipo*

- The most frequent form

Aí *tipo* a pessoa tá assim do seu lado e tá você escrevendo lá
then like a person is this way on your side and are you writing there
'Then, like, the person is right by your side, and there you are, writing.'

(RDJ_101_F_14)

Forms of *tipo*

Co-variant: ***tipo assim*** (*tipo* + adv of manner *assim* ‘this way, like this’)

- The periphrastic construction *tipo assim* was the second most frequent form found in the data
- May have been in use earlier than other forms

Não, mas tipo assim uma pessoa vim de fora e vai ouvir um funk
no but like one person coming from out and will listen a funk
'No, but an outsider comes and listens to funk music.' (RDJ_305_F_15)

Forms of *tipo*

Co-variant: *tipo que* (*tipo* + particle *que* ‘that’, ‘what’)

- The only form not previously identified, making this the first account of its use in vernacular Brazilian Portuguese
- Not as pervasive as *tipo* or *tipo assim*
- Highly favoured by male speakers

Tipo que eu tenho um quintal aqui aí tipo que tem um vizinho aqui morando no meio do meu quintal
like I have one yard here then like has one neighbor here living in middle of my yard

‘Like, I have a backyard here, then like there is a neighbour living in the middle of my backyard’

(RDJ_281_M_13)

Functions of *tipo*

- **Nominal**
 - Noun
- **Non-nominal (grammaticalized)**
 - Preposition
 - Conjunction
 - Quotative complementizer
 - Discourse marker
 - Discourse particle
- (See Thompson 2019 for functional analysis of *tipo*)

Grammaticalization

Grammaticalization

- Bittencourt (1999) first to propose that *tipo (assim)* is undergoing grammaticalization
- “The steps whereby particular items become more grammatical through time” (Hopper & Traugott, 2003, p.2)
- Synchronic perspective - patterns of language use

Grammaticalization

- Main mechanisms of grammaticalization (Heine, 2003)
 - *desemanticization* or *semantic bleaching*
 - *decategorialization*
 - ***phonetic reduction (erosion)*, i.e., “loss in phonetic substance”** (Heine 2014)
 - *context generalization*

Erosion

Loss of phonetic substance

- Phonetic reduction observed in more frequent words (Bybee, 2001, Zipf, 1929)
 - frequent words more likely to contain centralized vowels (Aylett & Turk, 2006)
- Acoustic analysis of erosion as a (main) process within grammaticalization:
 - Correlations between the variability in the degree of diphthongization and the function *like* performs; correlation between segment duration and function (Podlubny, Geeraert, & Tucker, 2005)
 - Dissertation perception study based on this corpus (Thompson 2021) shows that speakers can discriminate acoustically different uses of *tipo*

Research questions

- What erosion or reduction effects are present in the various forms and functions of *tipo* in our data?
- What can this tell us about what “erosion” actually entails?

Data and Methods

Token extraction and analysis

- 71 participants; 1,020 tokens manually tagged & segmented in Praat (Boersma & Weenink 2021)
- Acoustic data extracted:
 - Overall **token duration**
 - Duration of **vowels**, duration of stop/plosive **closure** and **burst** phases
 - Vowel **F1** and **F2** measured at 50% duration
- Each token classified for **form** and **function** of use

Participants

Age	Female	Male	Total
11	2	0	2
12	11	6	17
13	20	11	31
14	14	4	18
15	1	2	3
Total	48	23	N = 71

Results

Mixed effects models for vowels /i/ and /o/

variable ~ Form + Function + Gender + Age + (1|Speaker)

	/i/ F1 (Hz) <i>Estimates</i>	/i/ F2 (Hz) <i>Estimates</i>	/i/ dur. (ms) <i>Estimates</i>	/o/ F1 (Hz) <i>Estimates</i>	/o/ F2 (Hz) <i>Estimates</i>	/o/ dur. (ms) <i>Estimates</i>
Predictors						
(Intercept)	403.42 *	1823.75 ***	115.65 ***	513.16 ***	1541.41 ***	214.61 **
Form [tipo assim]	115.76 ***	-40.42	-19.17 ***	63.80 ***	344.89 ***	-20.10 *
Form [tipo que]	1.46	54.75	-14.11	125.67 ***	183.15	-60.93 **
Function [Conjunction]	68.27	-38.36	-9.95	72.03 *	-323.71 ***	28.82
Function [DM]	35.72	47.69	-4.08	75.69 *	-359.30 ***	31.14 *
Function [DP]	28.57	23.73	-11.07 *	76.69 *	-367.11 ***	43.38 **
Function [Preposition]	31.04	-53.69	-16.40 **	71.46 *	-351.50 ***	47.29 **
Function [Quotative]	77.03	-49.79	-7.60	54.77	-443.20 ***	36.33 *
Gender [M]	-34.09	-138.41 **	10.82 *	-44.08 *	-67.80	7.37
Age	1.60	19.43	-4.63 *	-4.34	7.22	-12.82 *

* p<0.05 ** p<0.01 *** p<0.001

Mixed effects models for /t/ & /p/ and full form of *tipo*

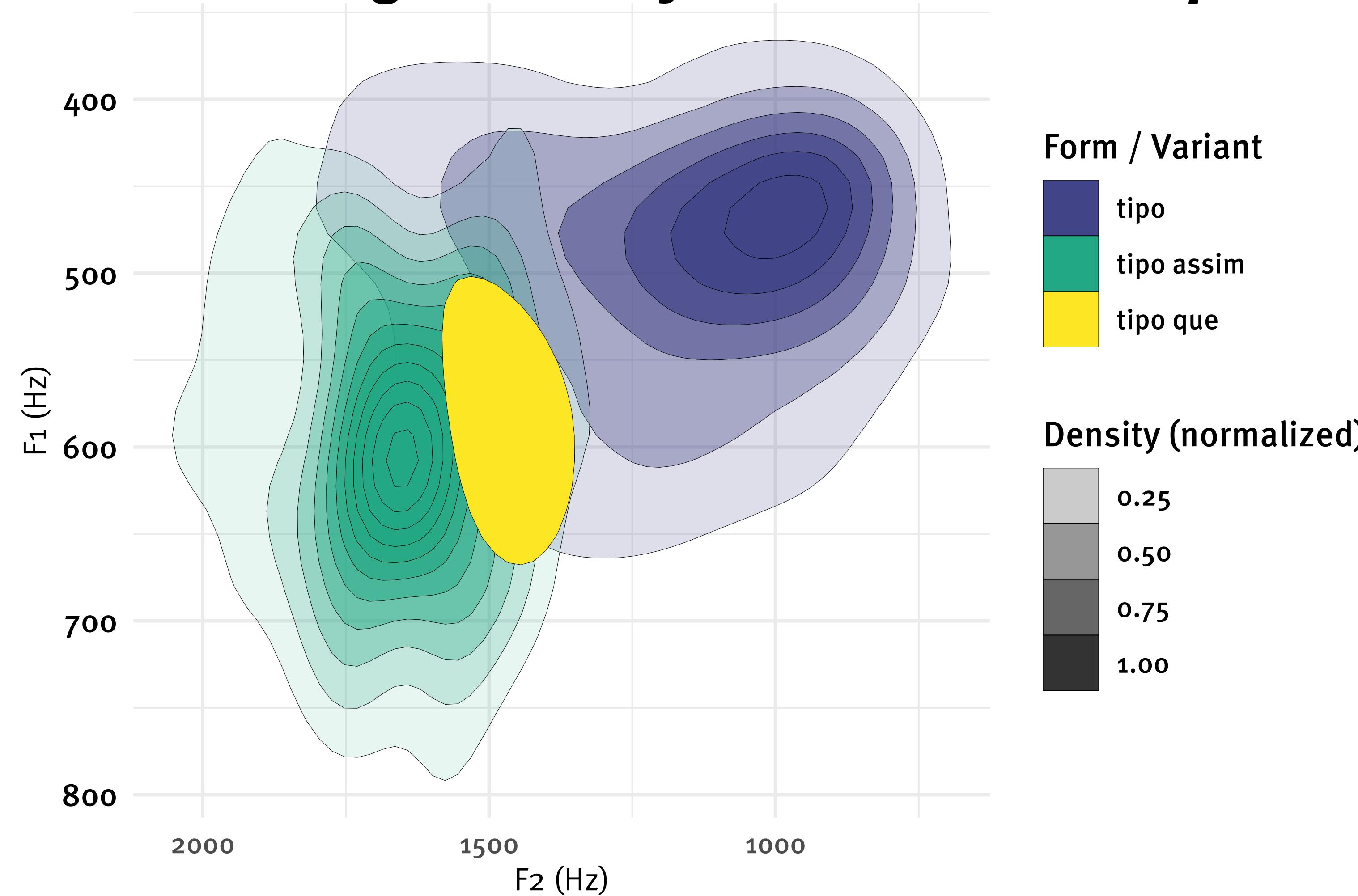
variable ~ Form + Function + Gender + Age + (1|Speaker)

Predictors	/t/ rel. (ms) Estimates	/p/ clos. (ms) Estimates	/p/ rel. (ms) Estimates	/tipo/ dur. (ms) Estimates
(Intercept)	102.50 ***	39.51	64.98 **	451.24 ***
Form [tipo assim]	-11.13 ***	-19.68 ***	-15.33 ***	-81.18 ***
Form [tipo que]	7.83	-12.14	-6.41	-70.87 **
Function [Conjunction]	-15.25 **	2.04	-11.66	-38.59
Function [DM]	-18.65 ***	-4.44	-4.08	-20.73
Function [DP]	-18.99 ***	-1.70	-3.92	-17.04
Function [Preposition]	-19.41 ***	4.61	-6.36	-13.92
Function [Quotative]	-20.07 ***	-0.96	-7.25	-23.49
Gender [M]	6.57 *	6.35	4.17	31.45 *
Age	-1.26	2.09	-1.89	-12.64

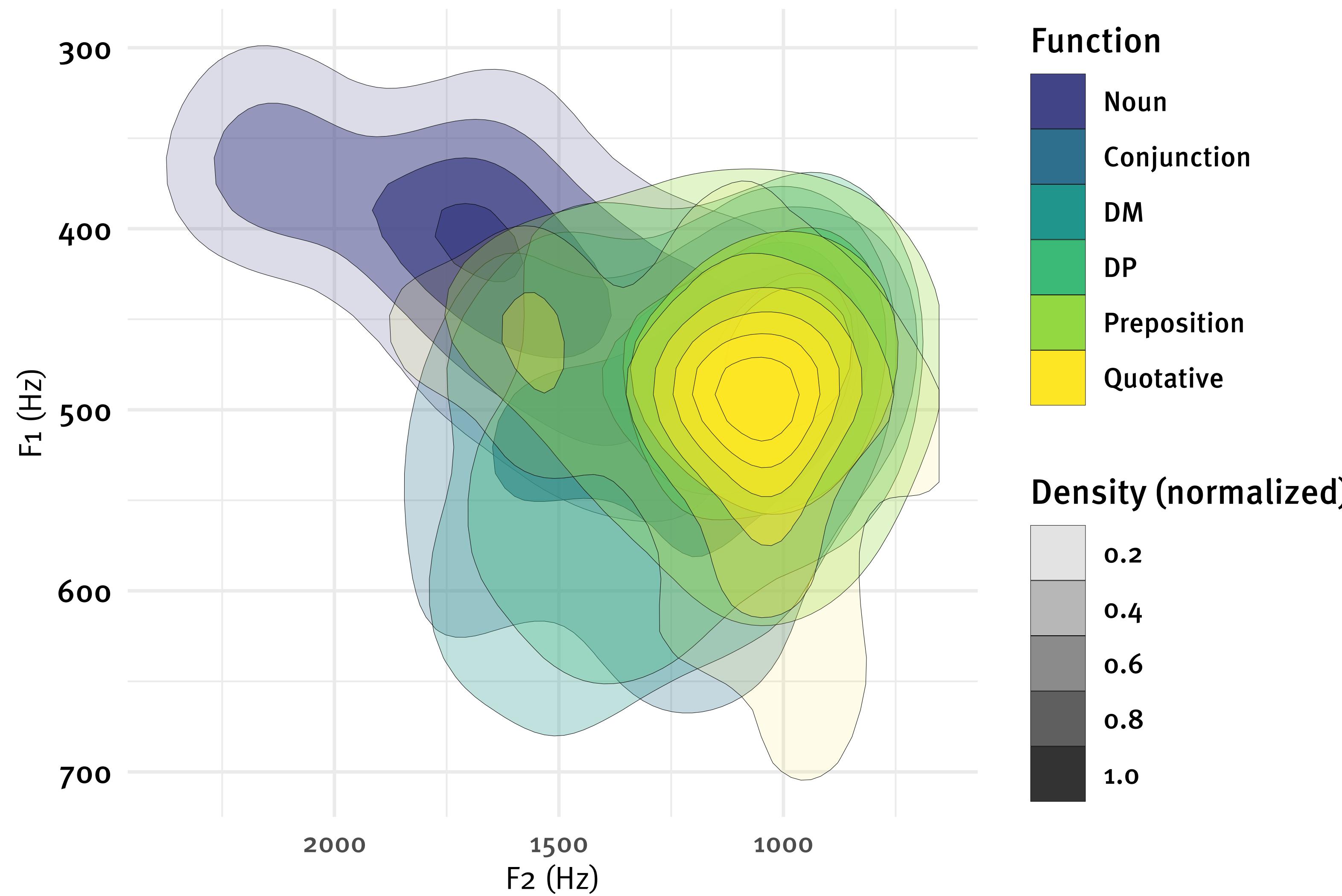
* p<0.05 ** p<0.01 *** p<0.001

Formants of /o/ by form of *tipo*

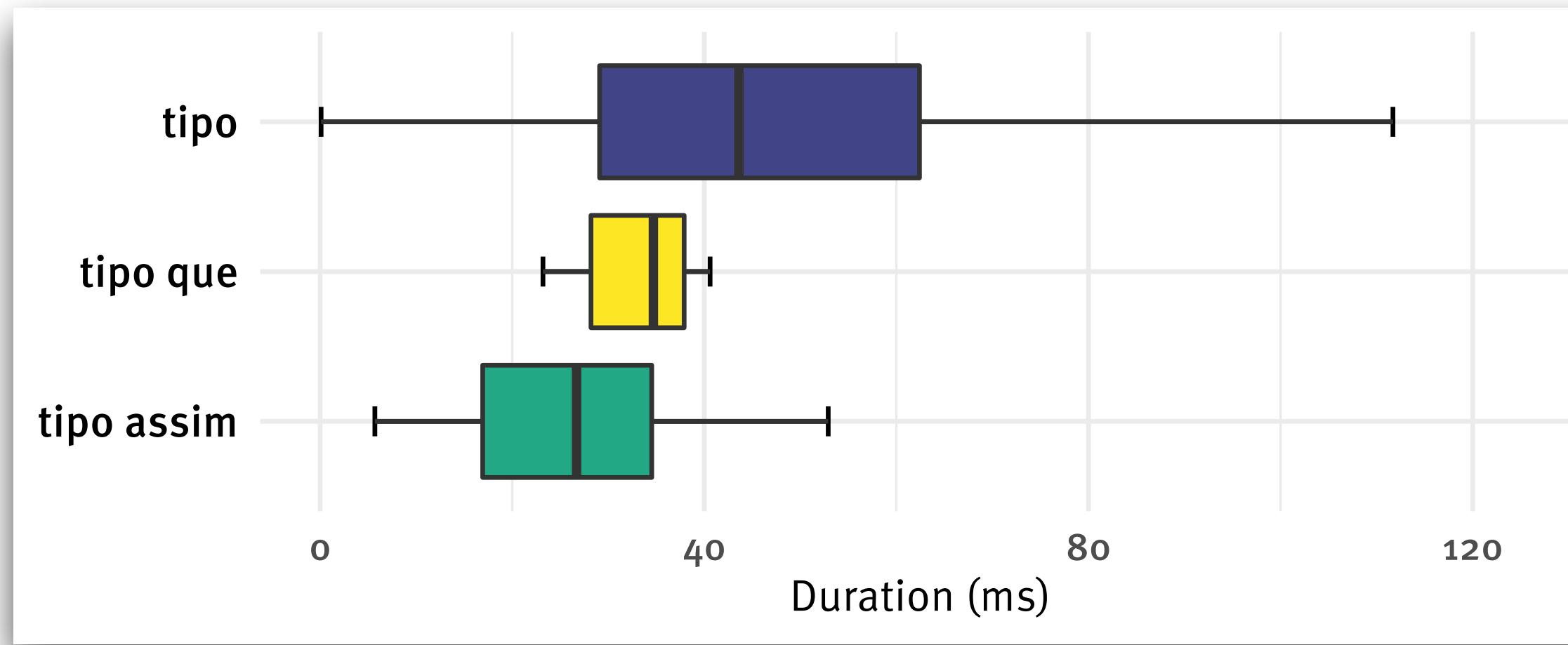
N.B. *tipo que* F2 not significantly different from *tipo*



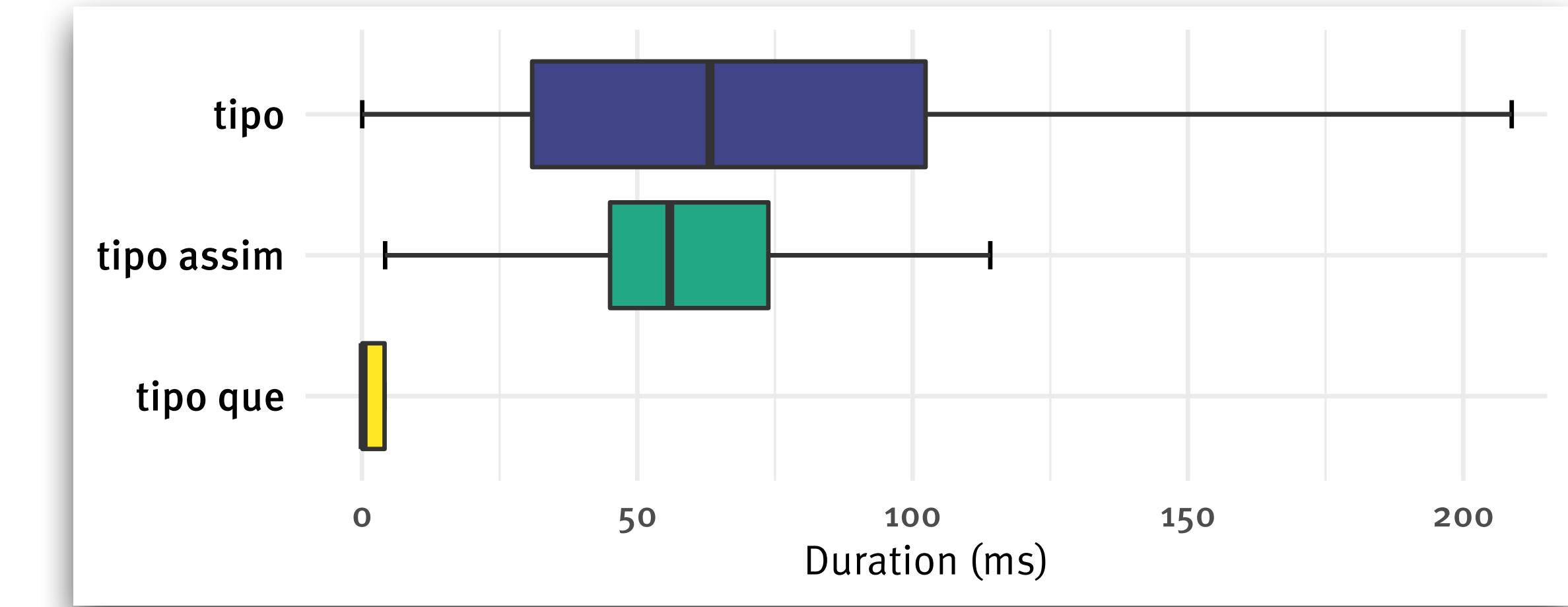
Formants of /o/ by function of *tipo*



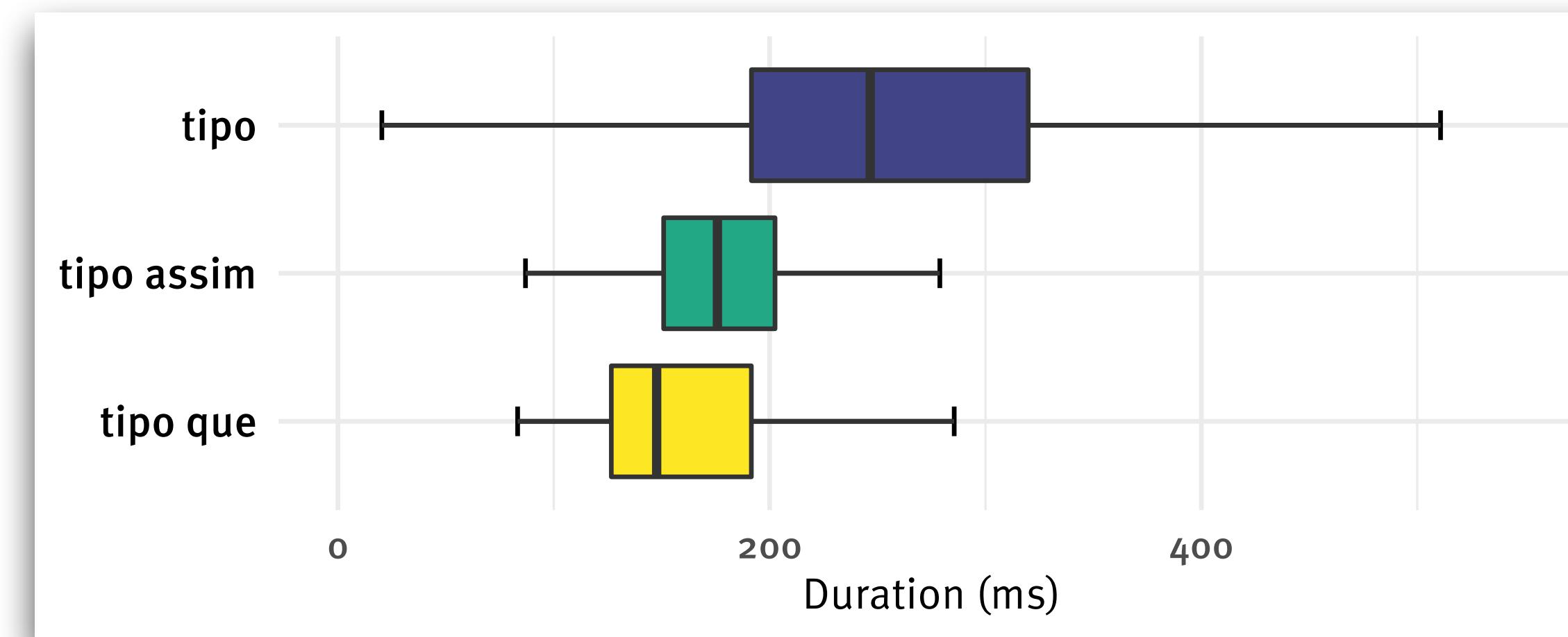
Vowel & token duration by form of *tipo*



Duration of /i/ by form of *tipo*;
N.B. only *tipo assim* sig. diff. from bare *tipo*



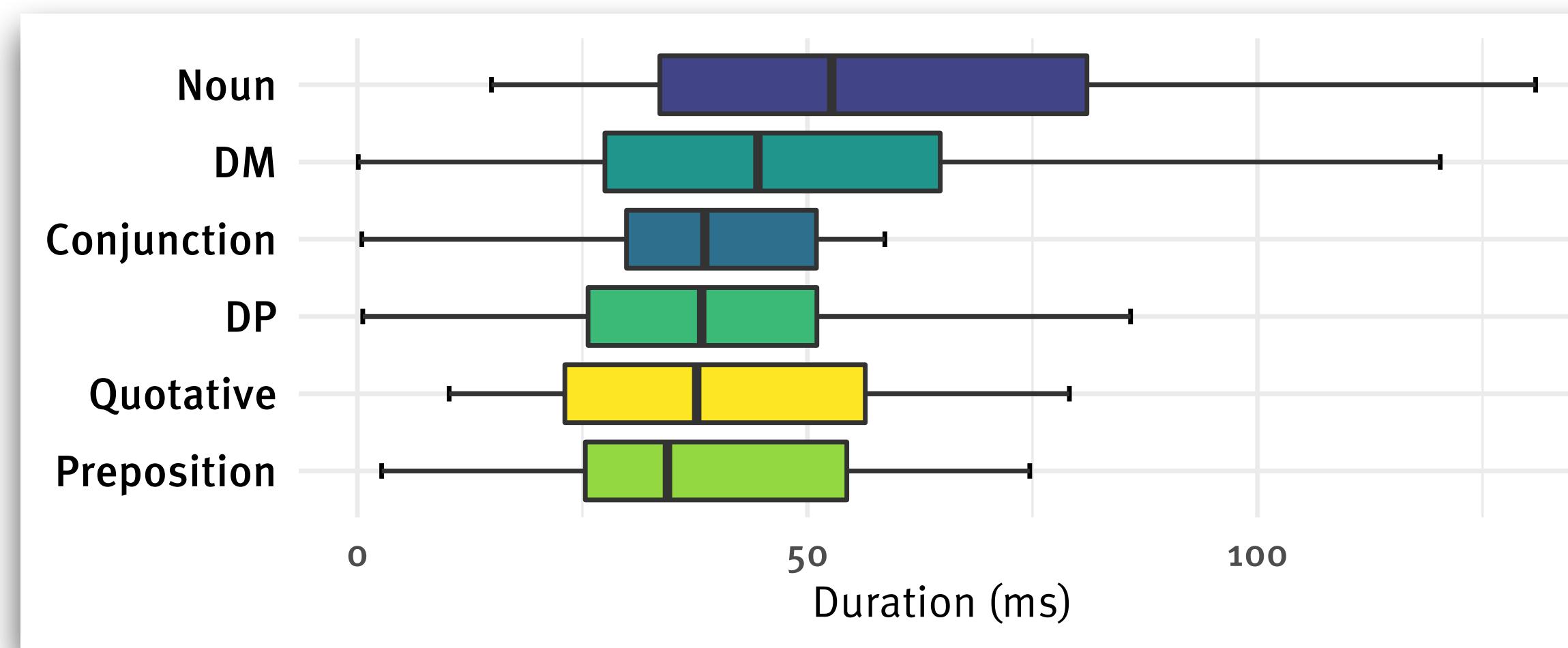
Duration of /o/ by form of *tipo*



Full token duration of *tipo* by form

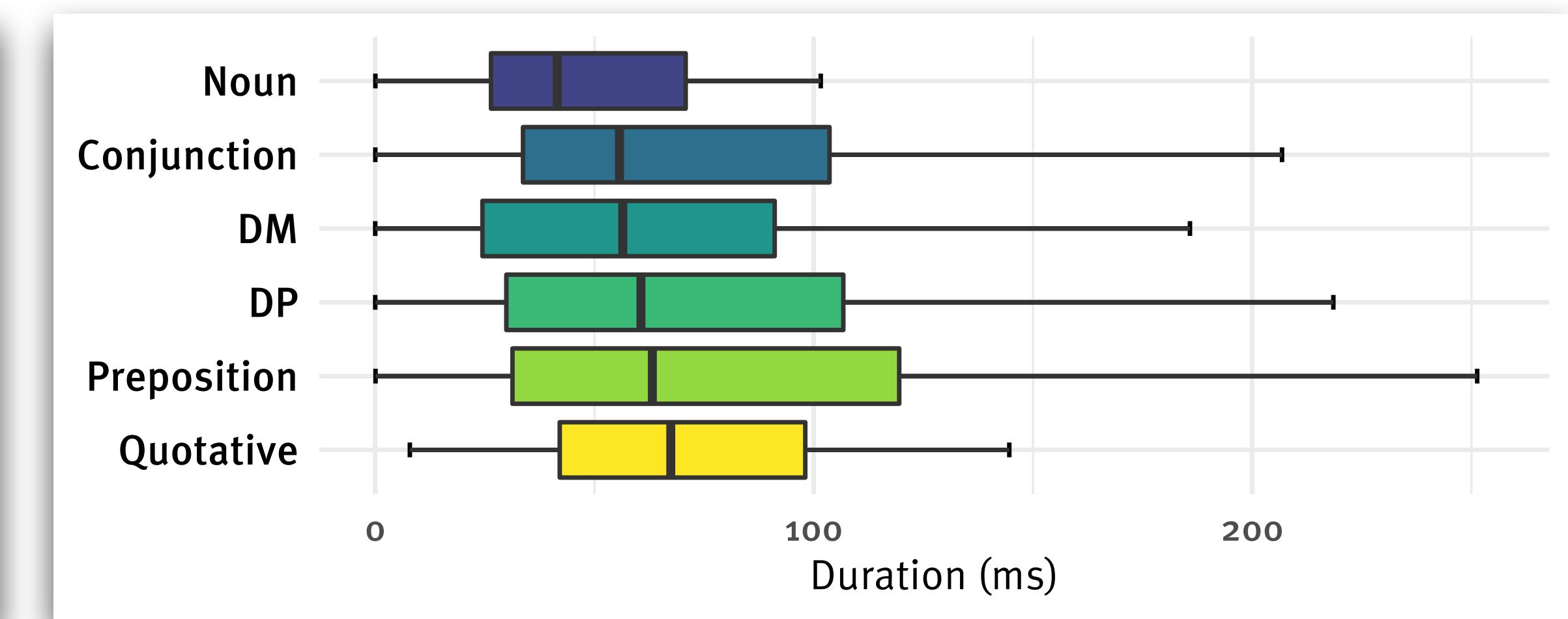
Vowel duration by function of *tipo*

N.B. full form *tipo* duration not significantly different by function



Duration of /i/

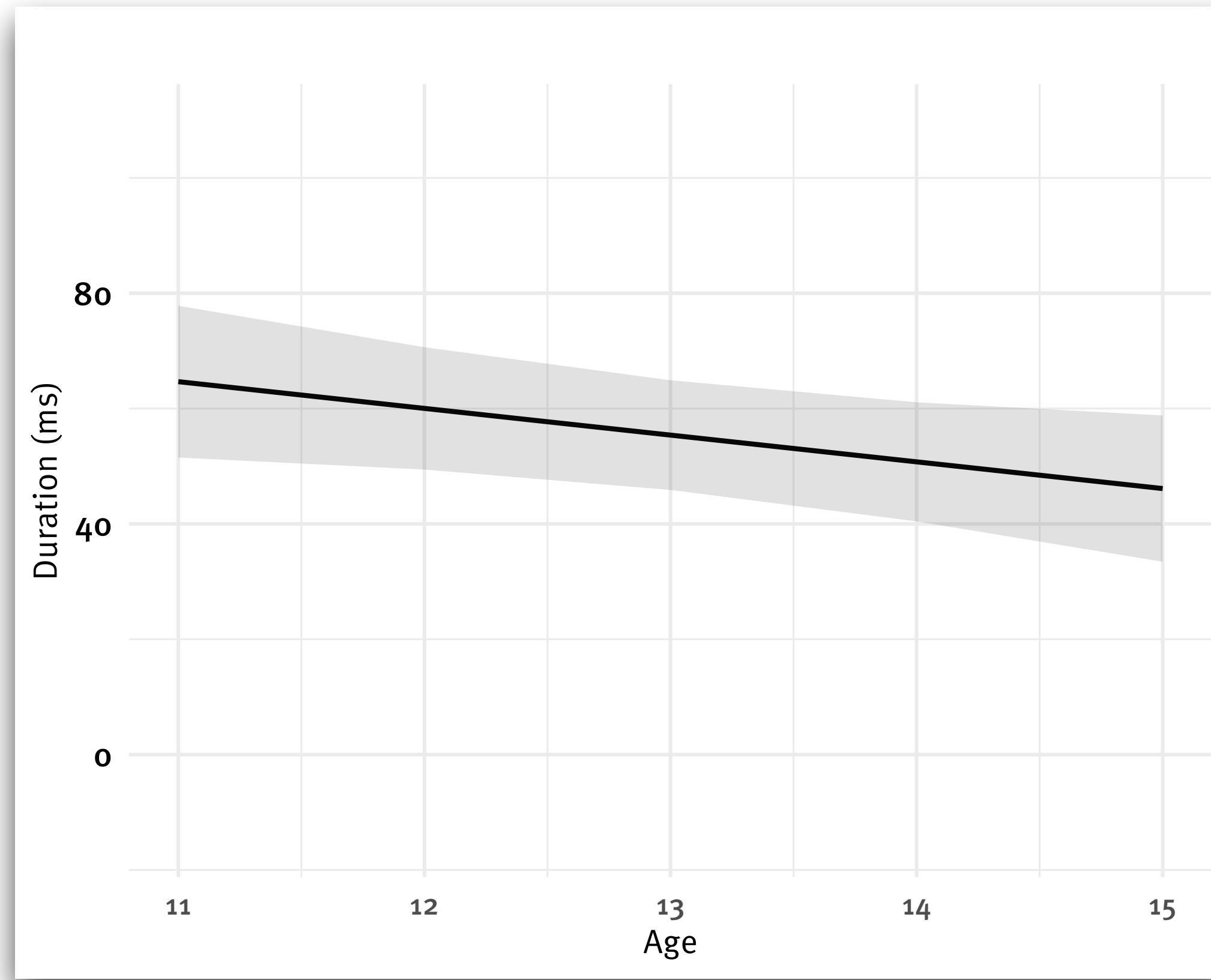
N.B. only *DP*, *Preposition* sig. different from *Noun*



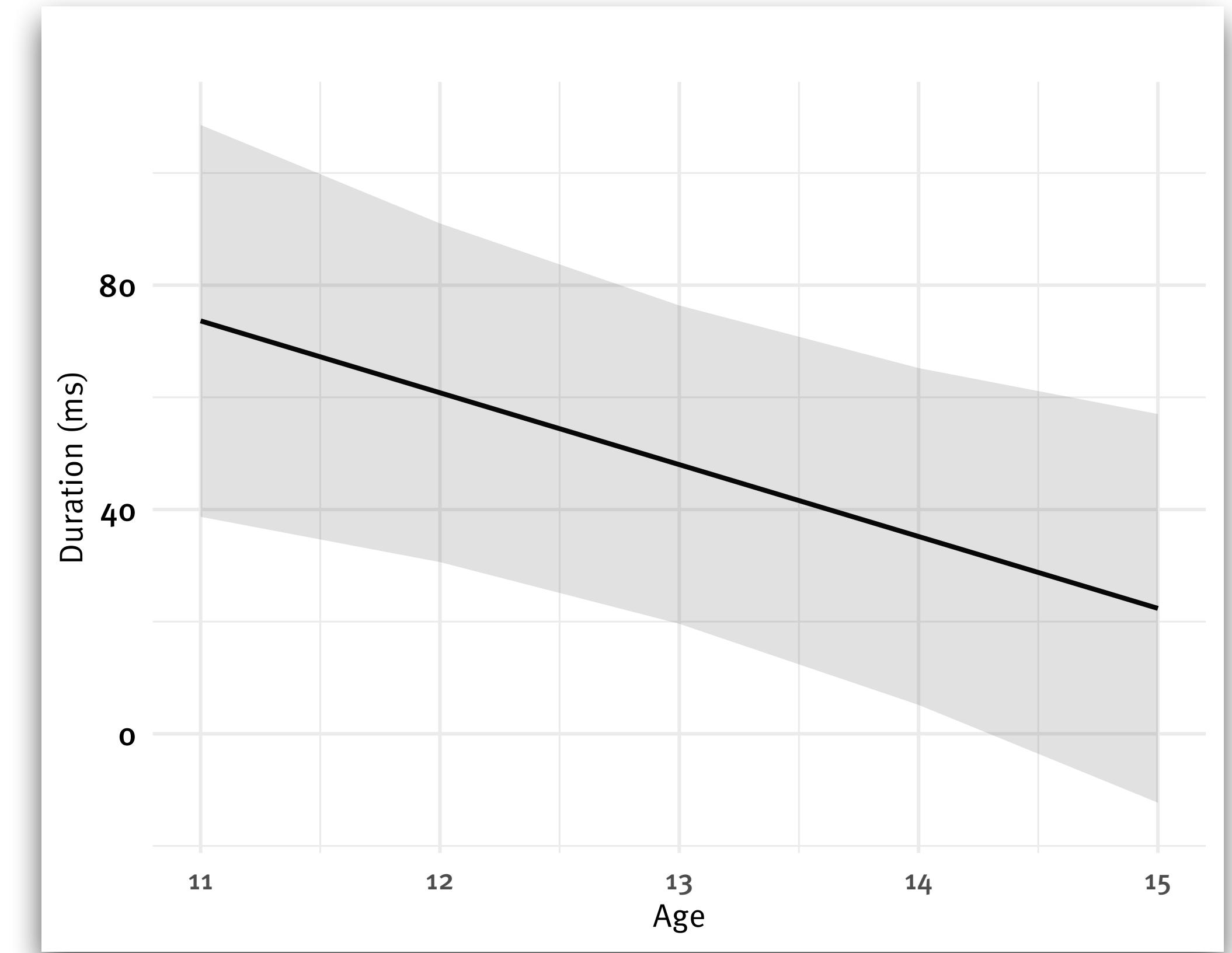
Duration of /o/

N.B. *Conjunction* not sig. different from *Noun*

Vowel duration by age



Duration of /i/
-4.63 ms/year



Duration of /o/
-12.82 ms/year

Discussion

Forms of *tipo*

- Significant differences occur more often between ***tipo forms*** vs. between ***tipo functions***
- *Tipo* in both periphrastic variants is reduced (on several measures) vs. bare *tipo*
- *Tipo assim* is different from bare *tipo* on **all measures** except F2 of /i/
- *Tipo que* shows fewer differences, but also has fewer tokens; it trends similarly to *tipo assim*

Functions of *tipo*

- Differences concentrated in /t/ and /o/
- Full *tipo* duration is **not different** across functions
 - Vowel duration differences counterbalance each other: /i/ is shorter, /o/ longer; overall, **no difference** in duration
- Differences only become visible when investigating single phonemes or sub-phonemic detail

Speaker age

- Vowel durations negatively correlated with age; reduction ***increases*** towards older speakers
- Possible evidence for adaptation over time of younger speakers' productions when entering new social environment?
 - School in study is a specialized school with catchment area across several neighbourhoods
 - Students join from grade 6 and leave after grade 9
 - Differences may progress over this course of time (although we only have one such piece of evidence)

Implications of our results

1. The investigation of erosion

- Differences in larger word (e.g. overall duration) may not always be readily apparent
- Examination of phonetic detail (e.g. individual phonemes or sub-phonemic elements) can reveal differences otherwise overlooked
- Speakers may be encoding contrast between nominal and non-nominal functions at the segment level

Implications of our results

2. The pathway of change/grammaticalization for *tipo*

- Incorporation of *tipo* into periphrastic construction *tipo assim* (Bittencourt 1999 but probably earlier) may have led to both reduction and semantic bleaching
 - Discursal use of *tipo assim* attested much earlier than similar use of bare *tipo* (example from 1980s on next slide)
- Usage in *tipo assim* construction provides a likely/possible path for bare *tipo* to be used in the same manner, with attendant phonetic reductions and semantic bleaching

Example of *tipo assim* and bare *tipo* in 1985



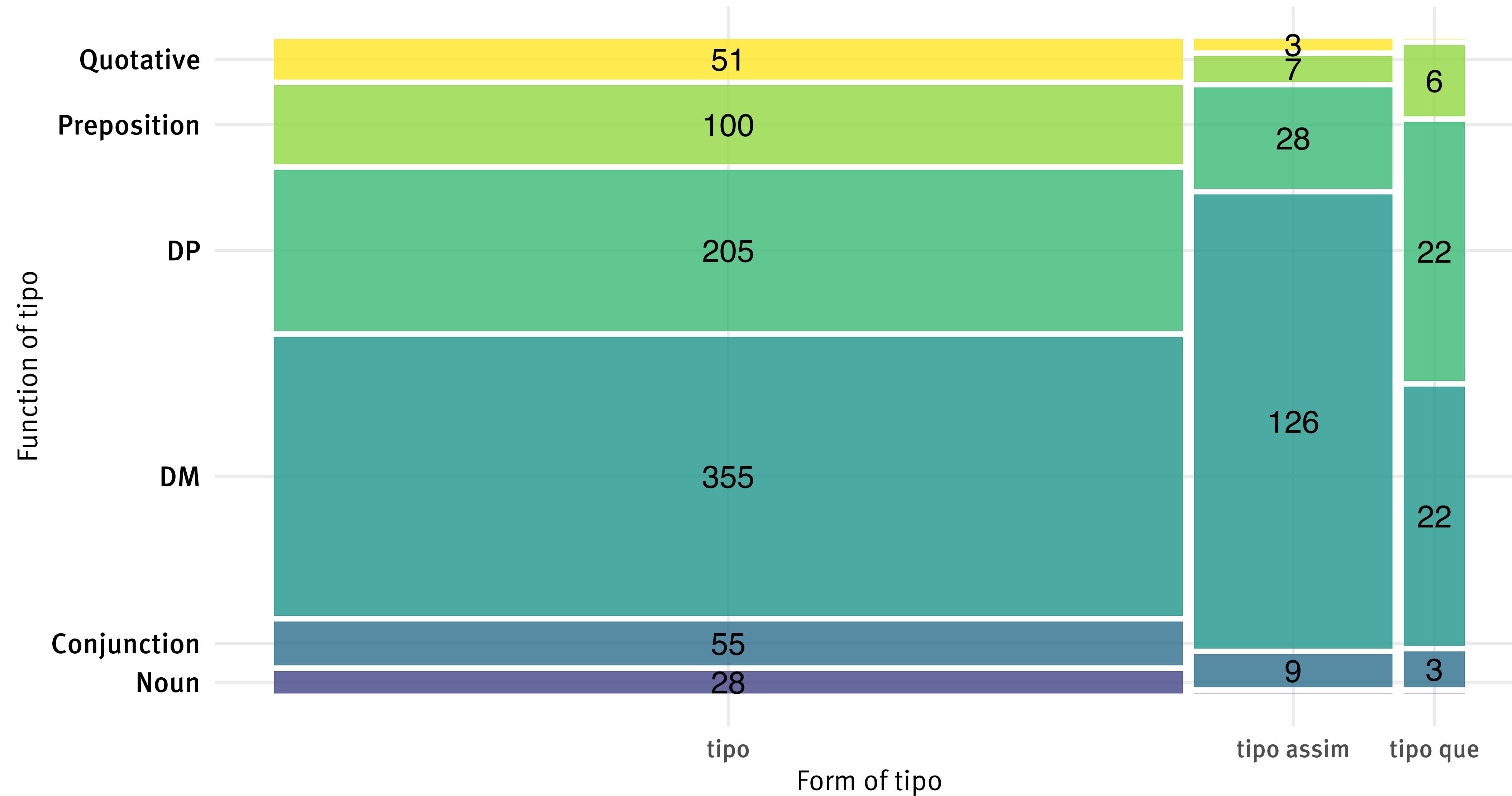
Renato Russo with Legião Urbana (1985)
<https://www.youtube.com/watch?v=FFbYKDi7TqE>

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- Zipf, G. K. (1929). Relative frequency as a determinant of phonetic change. *Harvard studies in classical philology*, 40, 1-95.

**Not presented during talk:
Examples of functions of *tipo***

tipo tokens



Functions of *tipo*

Noun

- Masculine noun ('kind,' 'type,' 'class,' 'model')
- Can be inflected for number and is often found in NP1 of NP2 (NP1 de NP2) constructions (*tipo* + *de* +NP2).

Ah, vários tipos.

oh many type-PL

'Oh, several types.' (RDJ_115_F_12)

Functions of *tipo*

Preposition

- Indicates similarity and comparison (can be paraphrased as 'such as' or 'for example')
- Can introduce an exemplification of what has been previously said
- Is followed by a nominal element that functions as its complement

Eu acho que é tipo uma explicação.

I think that (it) is like an explanation

'I think that it's like an explanation.' (RDJ_209_M_15)

Functions of *tipo*

Conjunction

- Connects two clauses: a main clause and a comparative clause that is explanatory or illustrative
- As a conjunction, *tipo* can be replaced by the word *como* ‘as’

Mas, tipo, é uma coisa tipo briga e volta a se falar.
but like is one thing like argue and return to REFL speak

‘But, like, it is something, like [you] argue and go back to talking to each other.’ (RDJ_154_F_14)

Functions of *tipo*

Quotative Complementizer

- Often introduces a direct quote that reflects an approximation of what was uttered rather than a reproduction of the utterance verbatim -> functions as a signal of a close approximation of what was said
- May also introduce direct quotes that seem to report the speaker's thoughts or inner monologue

No meu aniversário foi engraçado porque eu fiquei muito inquieta e ela ficou, tipo, “O que você tá fazendo?”
on my birthday was funny because I was very uneasy and she was like the what you are doing

‘On my birthday it was funny because I was very restless, and she was like, ‘What are you doing?’’ (RDJ_215_F_13)

Functions of *tipo*

Discourse Marker

- Guides the interpretation of the upcoming utterance within the context of the foregoing discourse
- Identified by position as clause-initial

Tipo, eles brigam, aí uma semana depois esqueceram.

like they fight then one week after forgot

‘Like, they fight, then a week later they have forgotten about it.’ (RDJ_164_F_15)

Functions of *tipo*

Discourse Particle

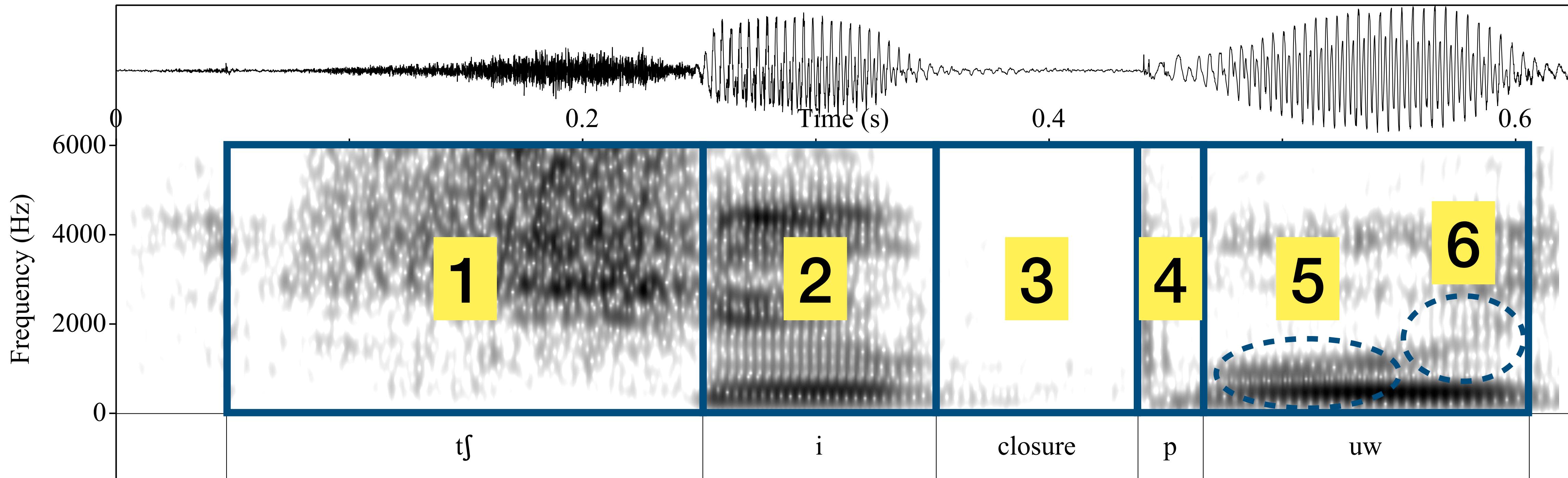
- Performs discourse-pragmatic and interpersonal functions
- Identified by non-clause-initial position

*E meu pai, tipo, já chega do trabalho tarde, aí quando eu acordo meu pai já saiu,
and my dad like already arrives from work late then when I wake up my dad already left
então eu quase não vejo ele.
so I almost not see him*

‘And my dad, **like**, already gets home from work late, then when I wake up, my dad has already left, so I barely see him.’ (RDJ_262_F_14)

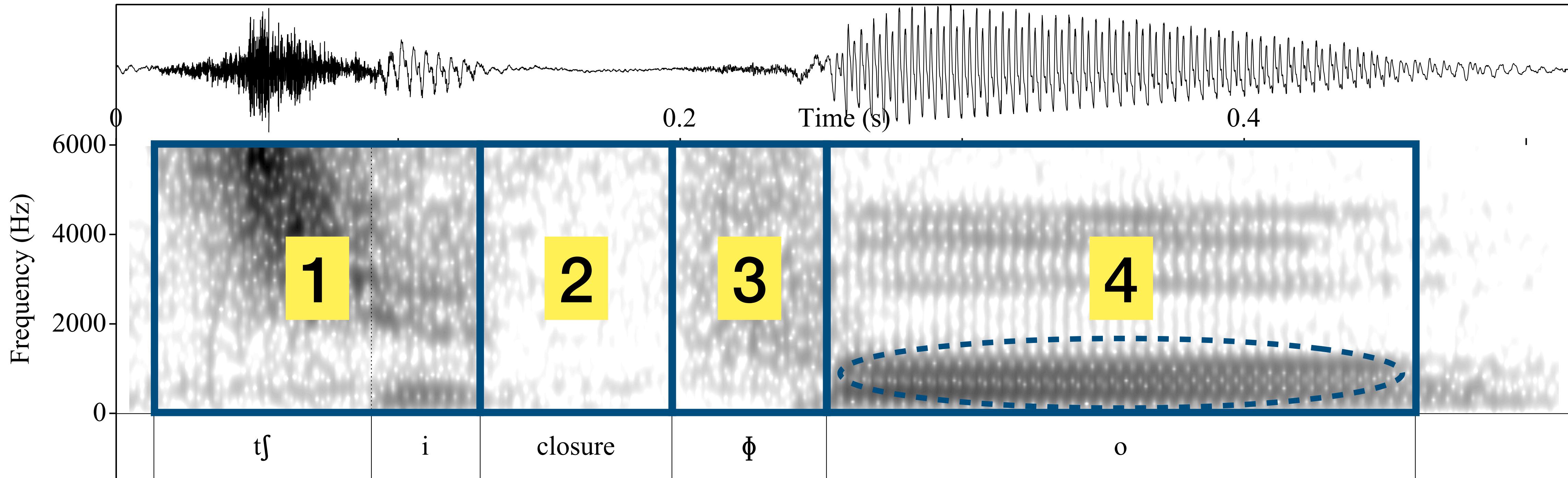
**Not presented during talk:
Examples of token segmentation**

Nominal *tipo*



Segmentation of *tipo*_[NOUN]; source file RDJ_168_M_12

Non-nominal *tipo* (discourse particle)



Segmentation of *tipo*_[DP]; source file RDJ_148_F_13