

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*

PSCB Corpus

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 binominal 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*

See Thompson (2019) for functional analysis of *tipo*

- *Nominal*
 - Noun
- *Non-nominal (grammaticalized)*
 - Preposition
 - Conjunction
 - Quotative complementizer
 - Discourse marker
 - Discourse particle

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 PSCB corpus (Thompson 2021) shows that speakers can acoustically discriminate different uses of *tipo*

Research questions

1. What erosion or reduction effects are present in the various forms and functions of *tipo* in our data?
 - Reduction of duration, vowel centralization, etc.
2. What can our results tell us about what “erosion” actually entails, and how to best investigate its occurrence?

Data and Methods

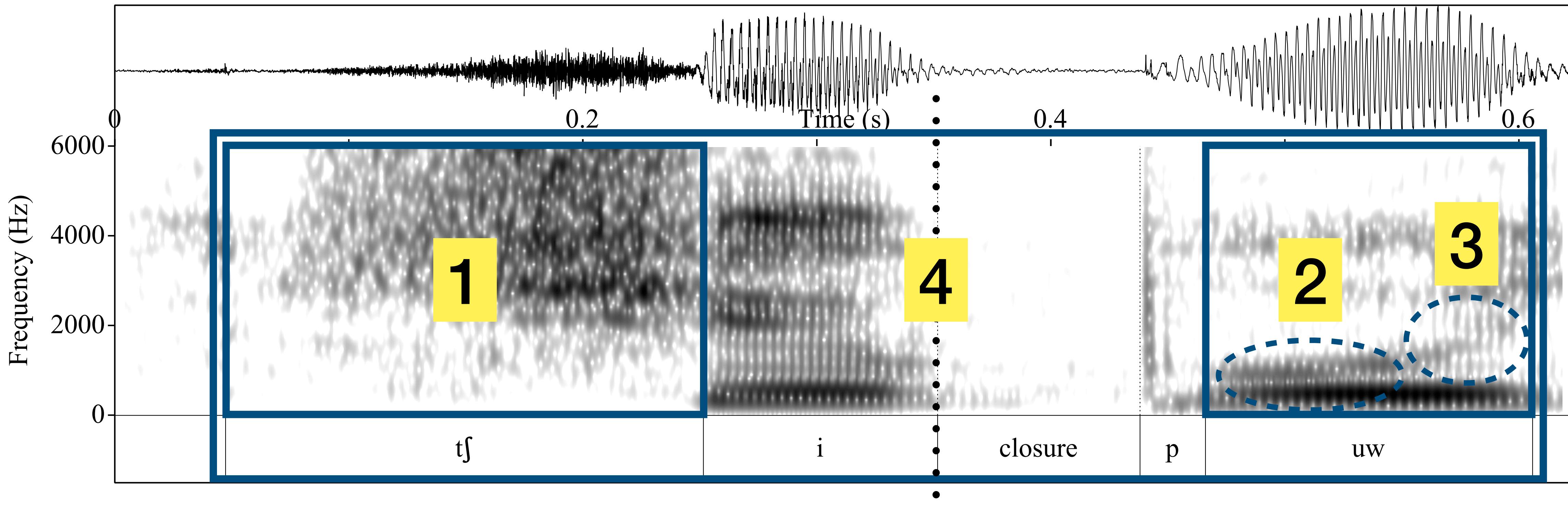
Token extraction and analysis

- 71 participants; 1,020 tokens manually tagged & segmented in Praat (Boersma & Weenink 2021)
- Acoustic data extracted:
 - Overall **token duration**
 - Duration of **vowels**, duration of plosive **closure** and **burst** phases
 - Vowel **F1** and **F2**
- Mixed effects linear regression models built to examine effects of **tipo Form** and **Function**, and speaker **Gender** and **Age**

Participants

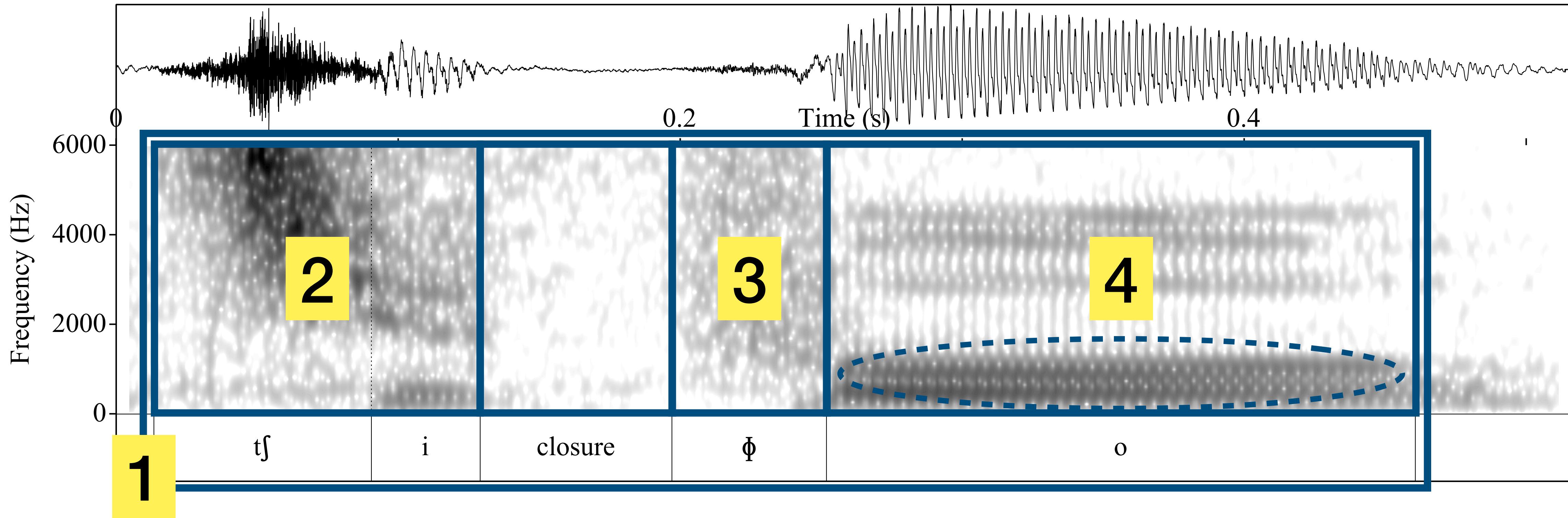
Age	Female	Male	Total
11	2	0	2
12	11	6	17
13	20	11	31
14	14	4	18
15	1	2	3
Total	48	23	N = 71

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

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*

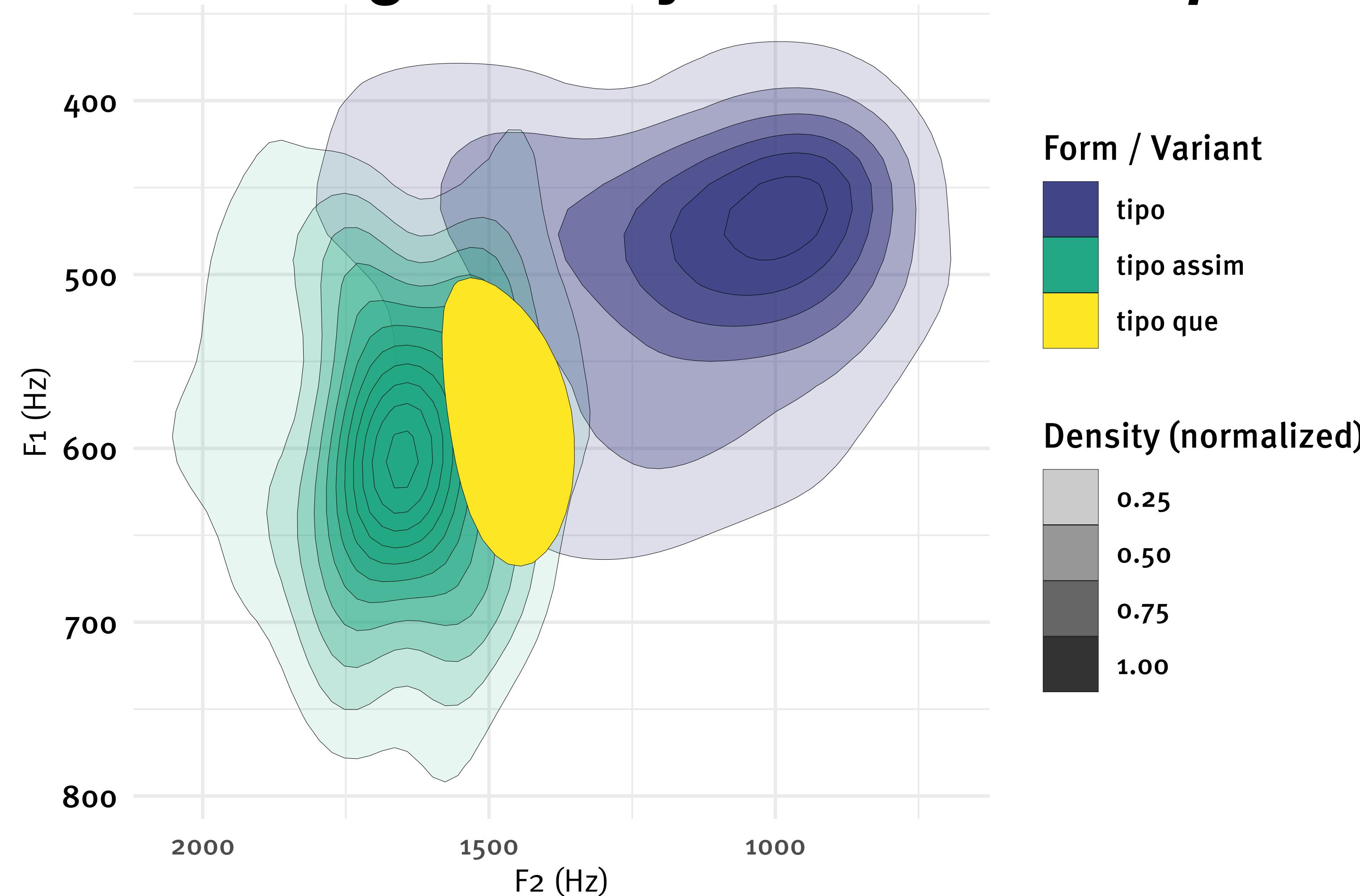
variable ~ Form + Function + Gender + Age + (1|Speaker)

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

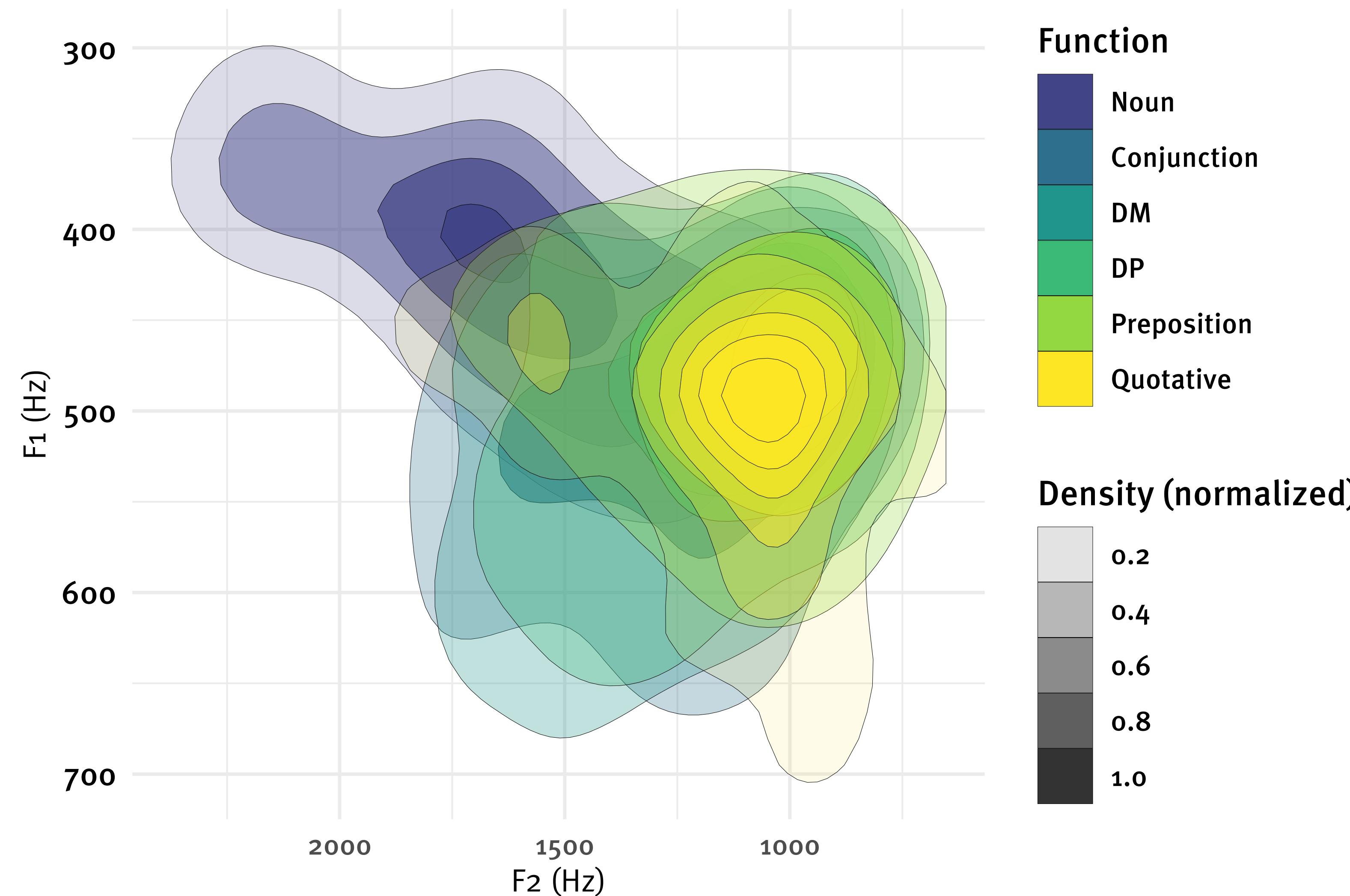
* p<0.05 ** p<0.01 *** p<0.001

Formants of /o/ by Form of *tipo*

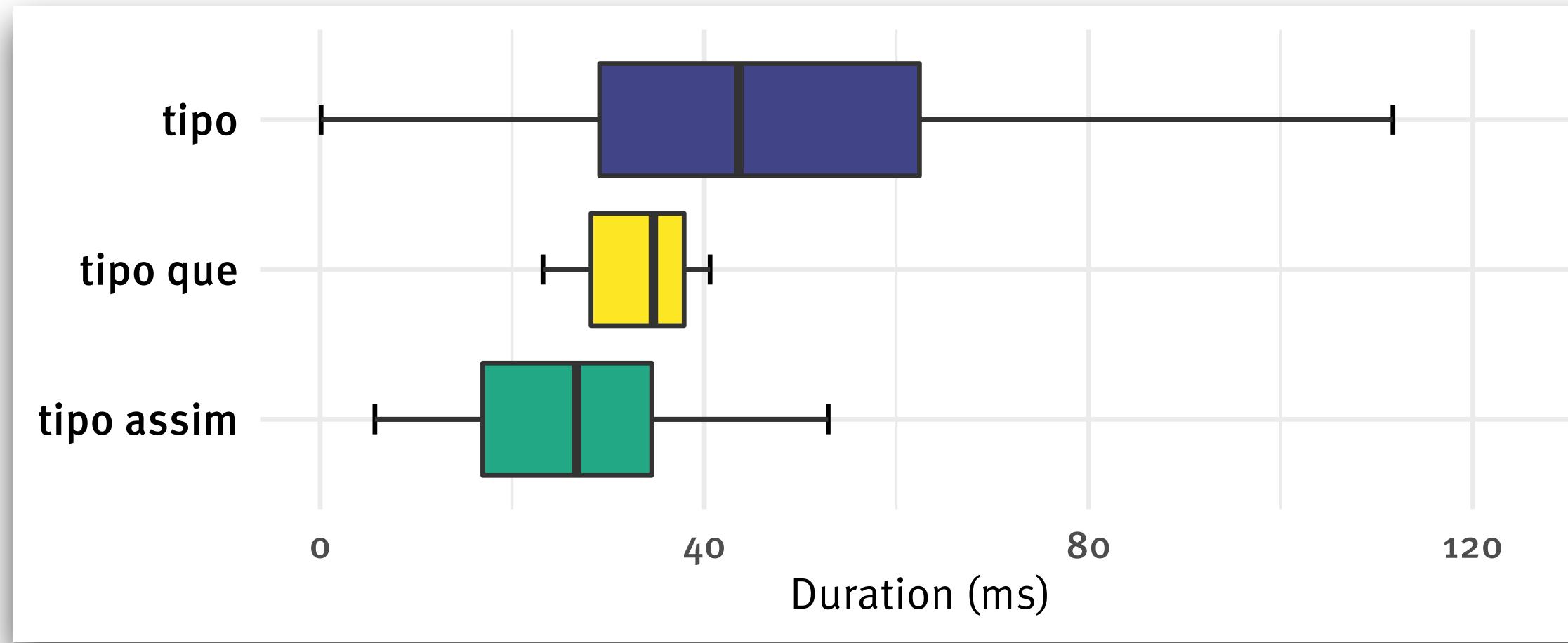
N.B. *tipo que* F2 not significantly different from *tipo*



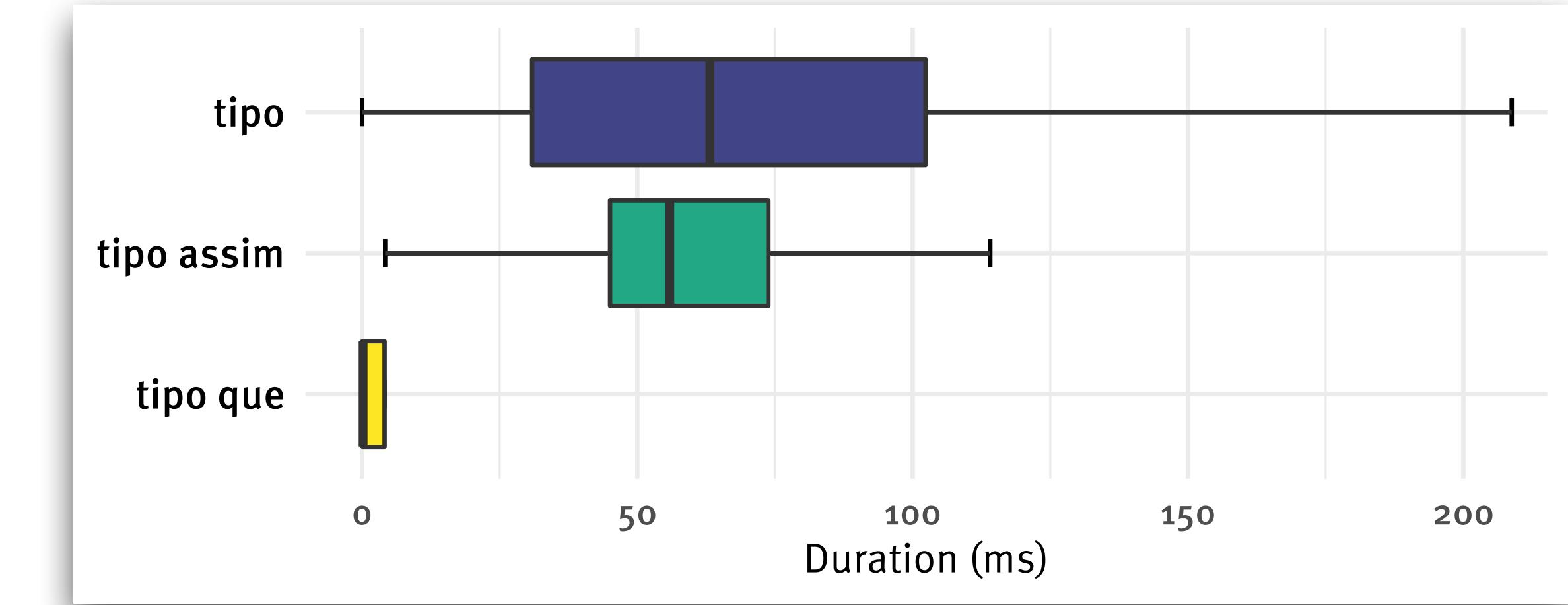
Formants of /o/ by Function of *tipo*



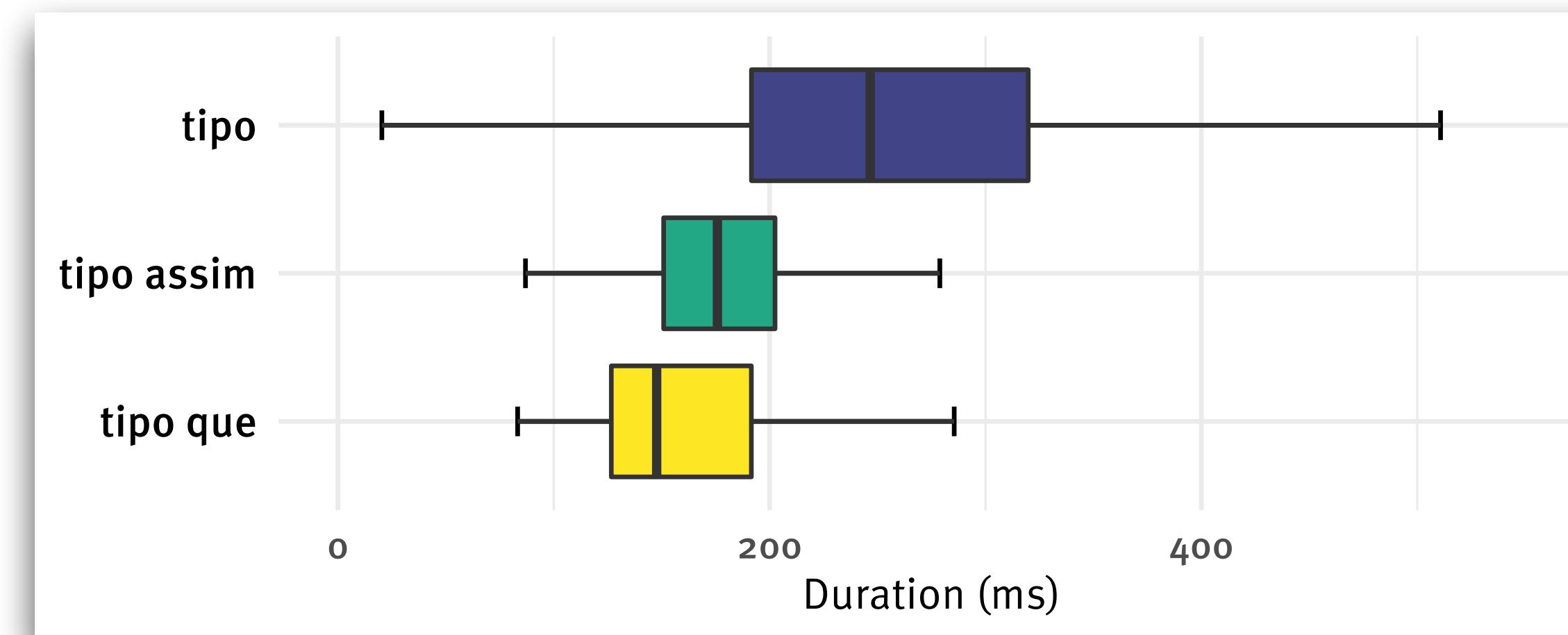
Vowel & token duration by Form of *tipo*



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



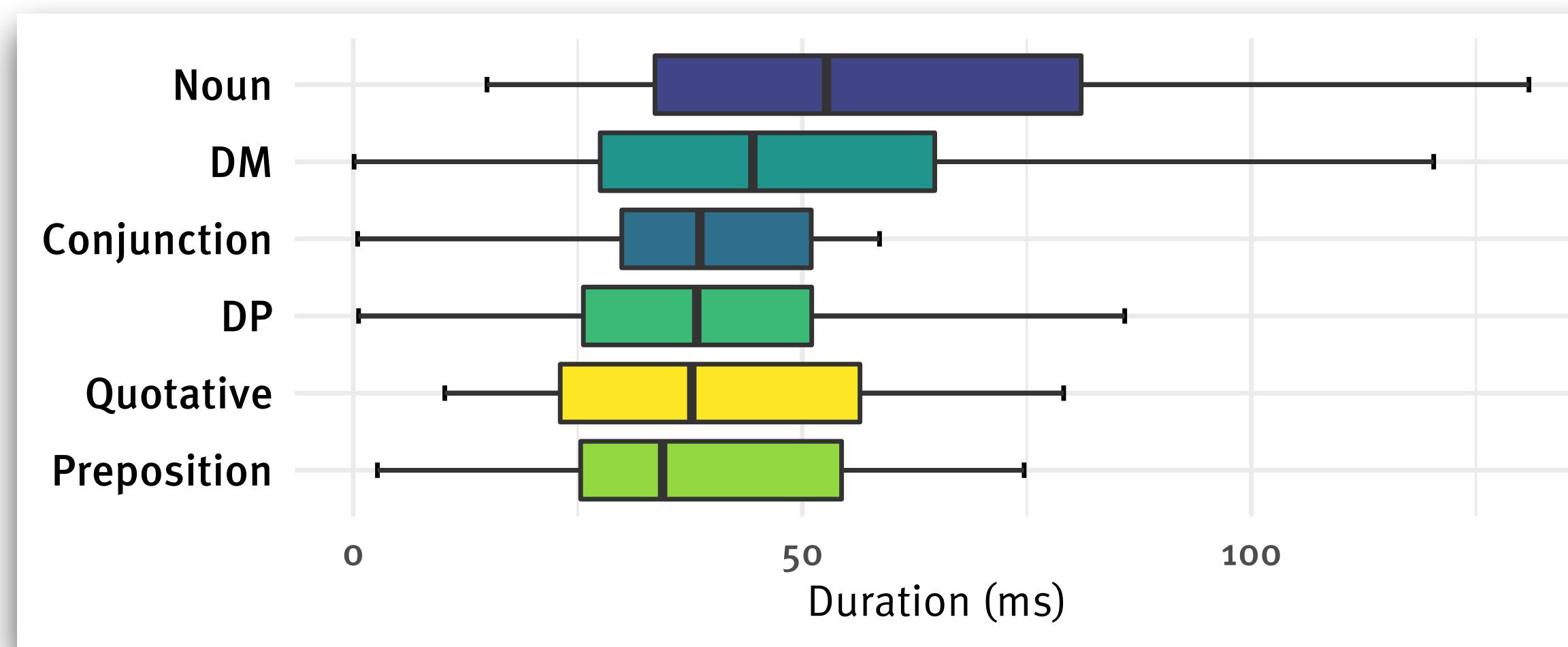
Duration of /o/ by form of *tipo*



Full token duration of *tipo* by form

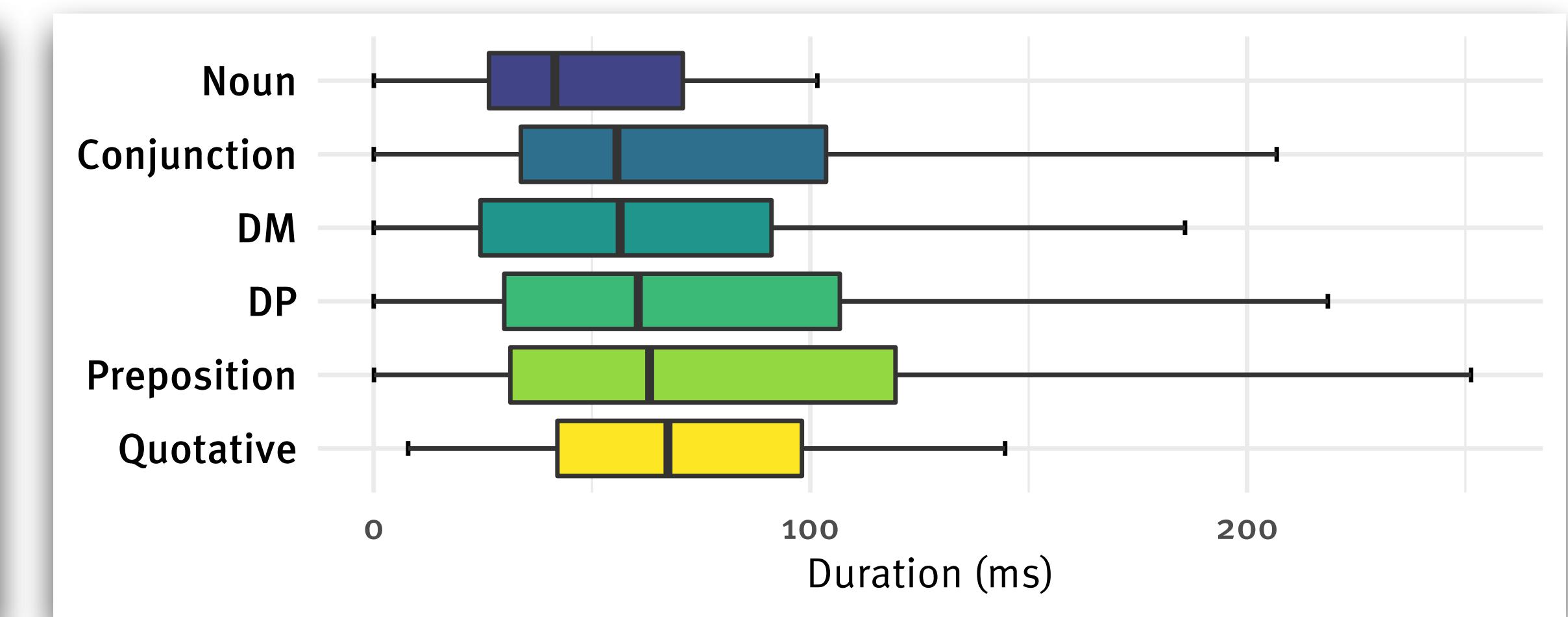
Vowel duration by Function of *tipo*

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



Duration of /i/

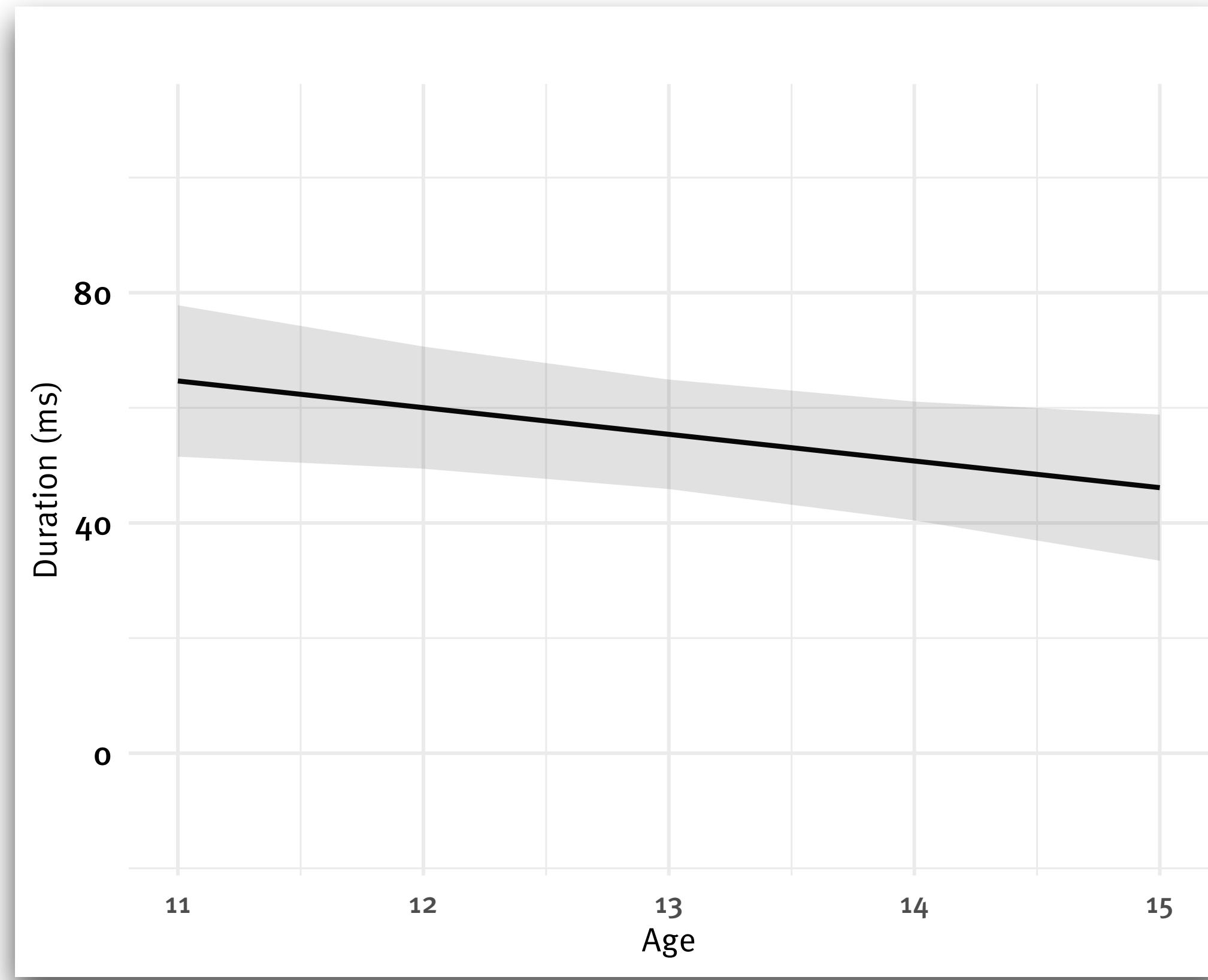
N.B. only *DP*, *Preposition* sig. different from *Noun*



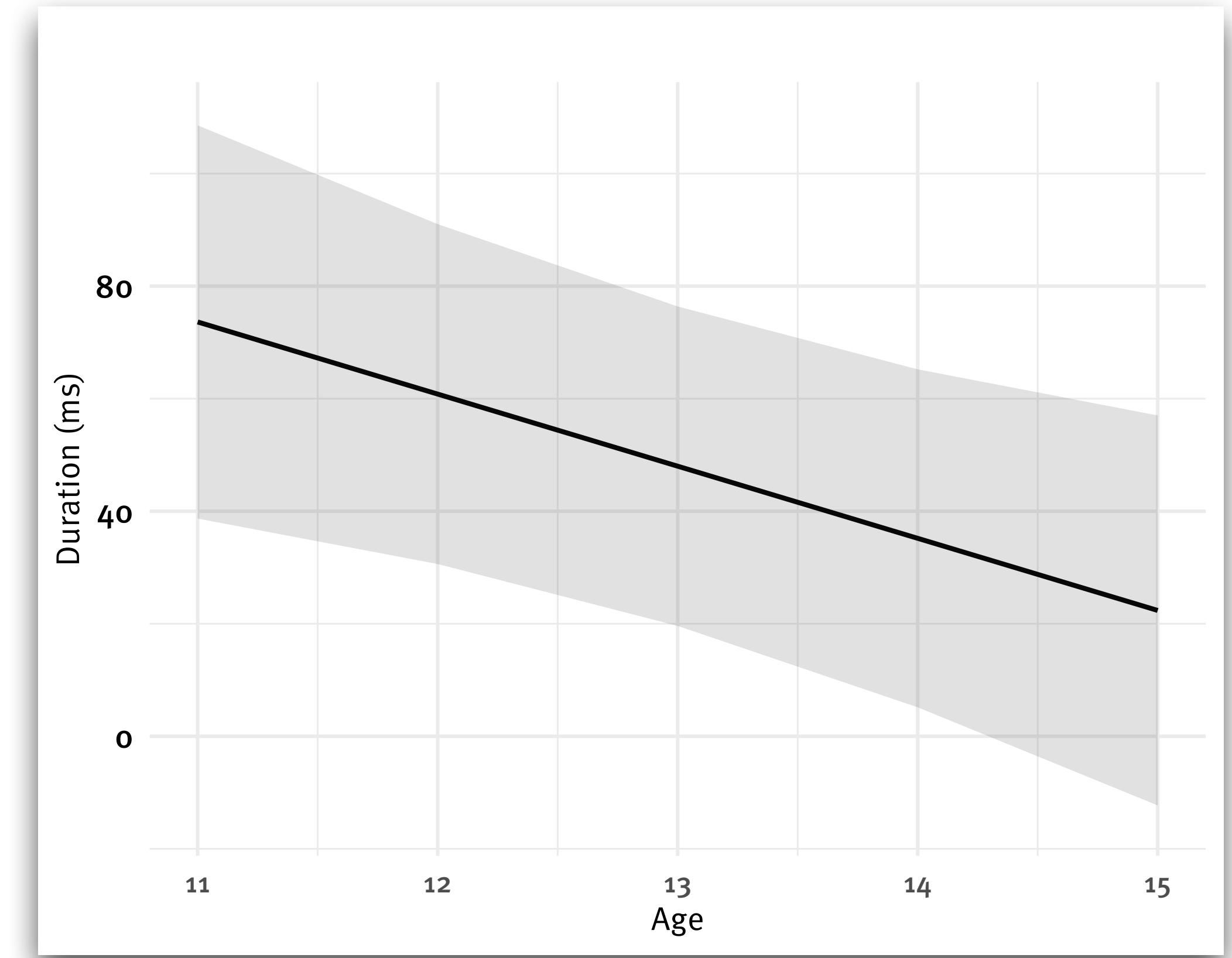
Duration of /o/

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



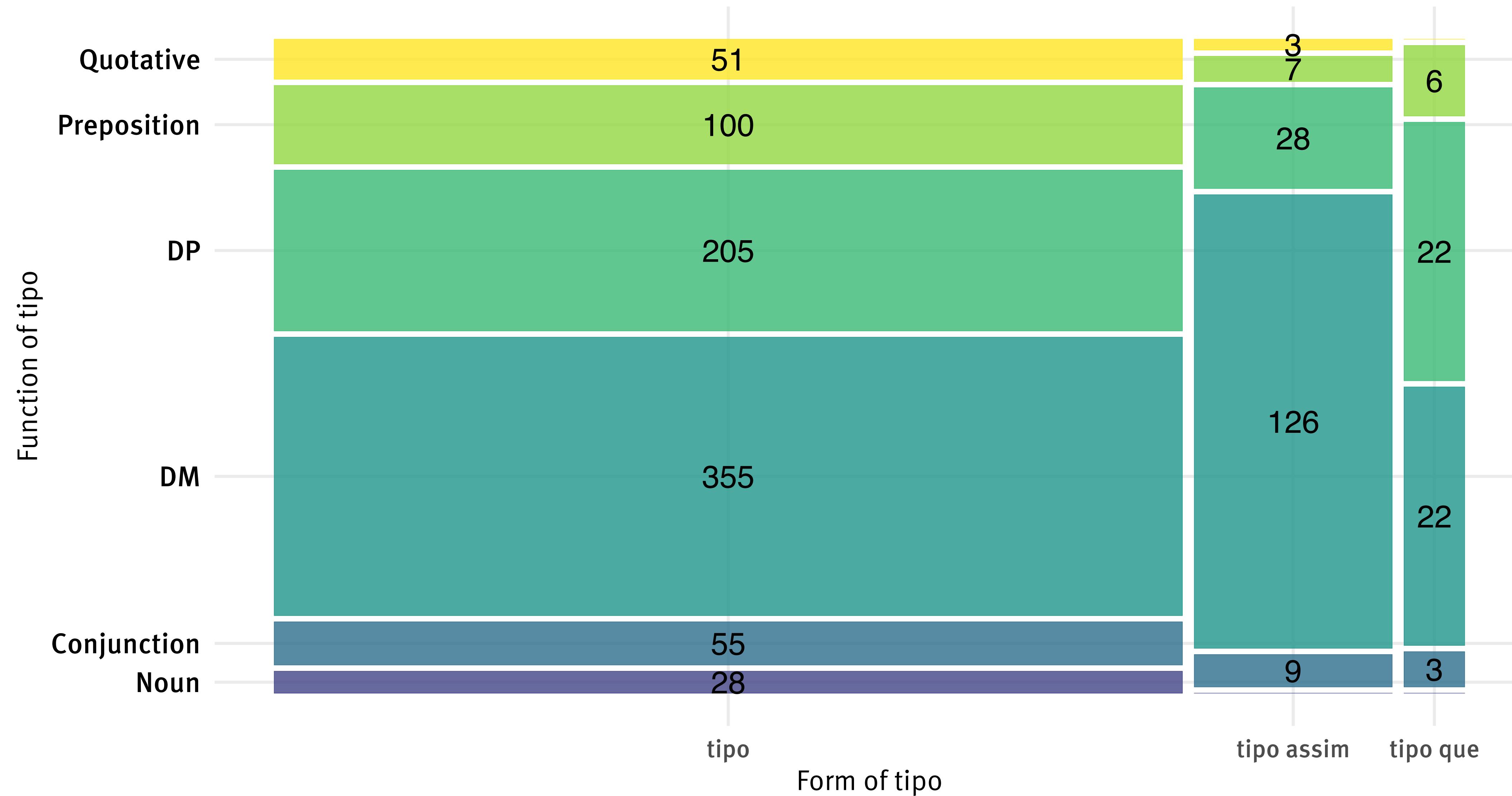
Renato Russo with Legião Urbana (1985)
<https://www.youtube.com/watch?v=FFbYKDi7TqE>

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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)