BASQUE CENTER
ON COGNITION, BRAIN
AND LANGUAGE

International Morphological Processing Conference (MoProc)

When we tolerate a morphosyntactic error:

an ERP study on non-native accented speech

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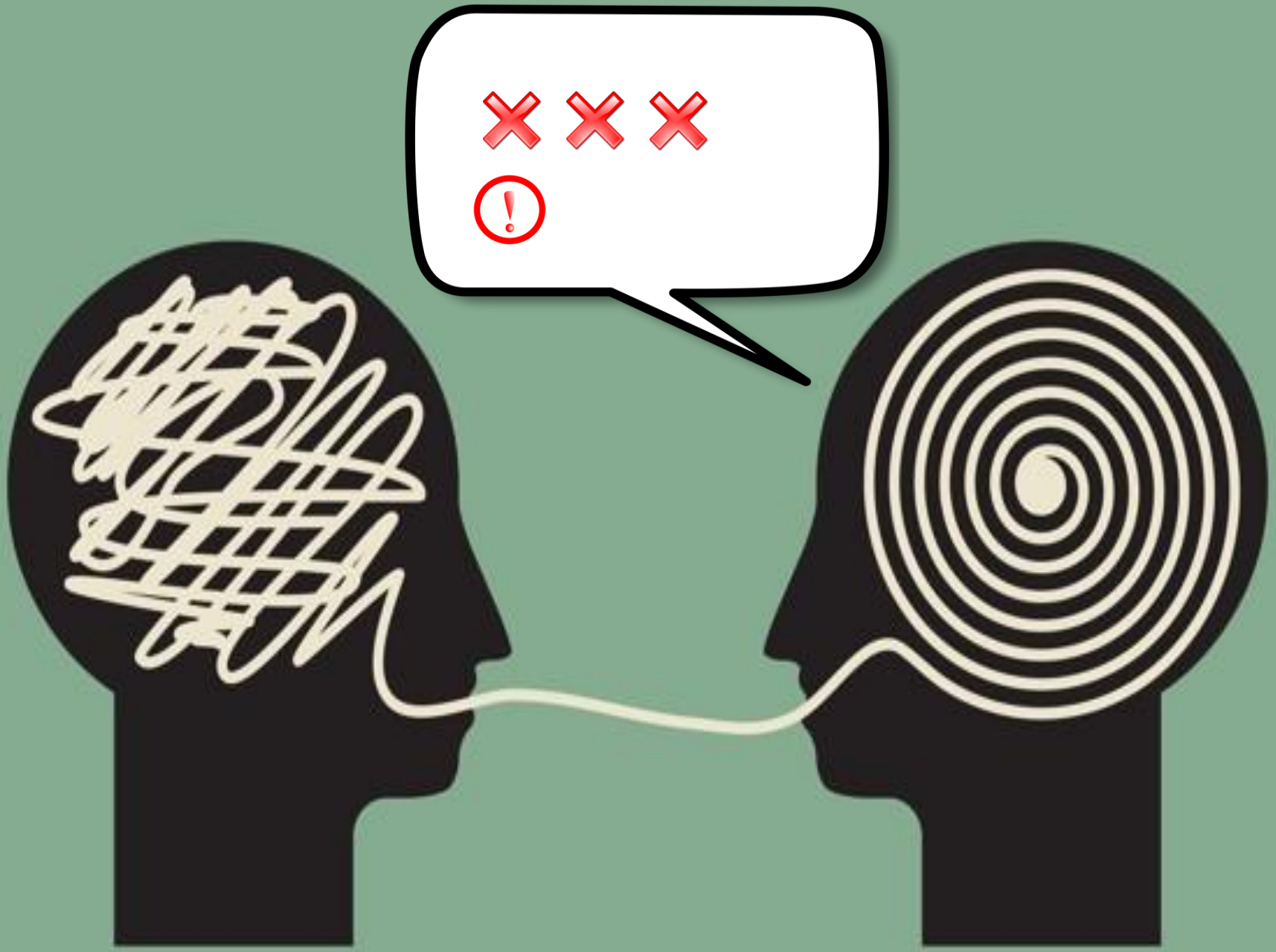

Native
Non-native

Native

RESEARCH QUESTION

How do native listeners deal with different types of morphosyntactic errors in non-native speech?

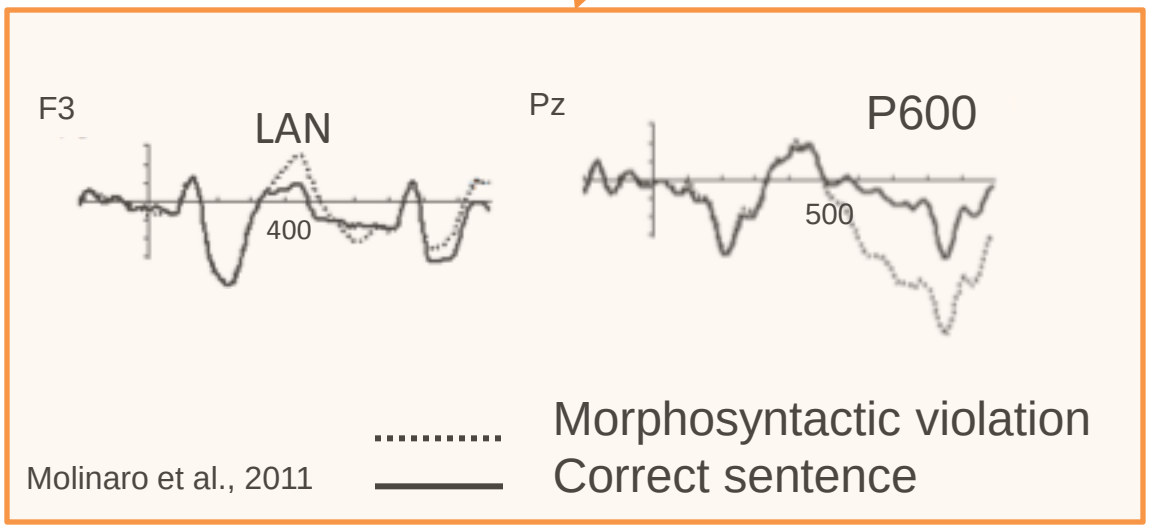
Are they sensitive to the error typicality in non-native accented speech?

THEORETICAL BACKGROUND

Morphosyntactic error

De repente *la color del cielo cambió.

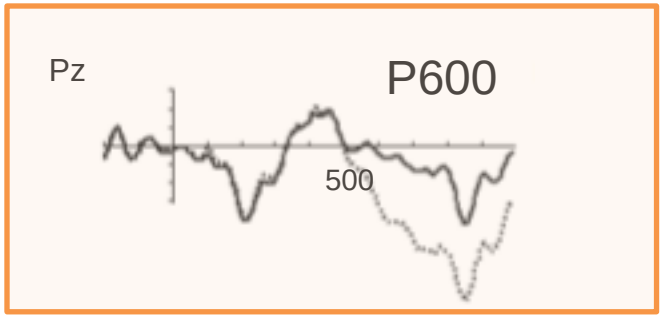
Suddenly *the$_{SF}$ color$_{SM}$ of the sky changed.



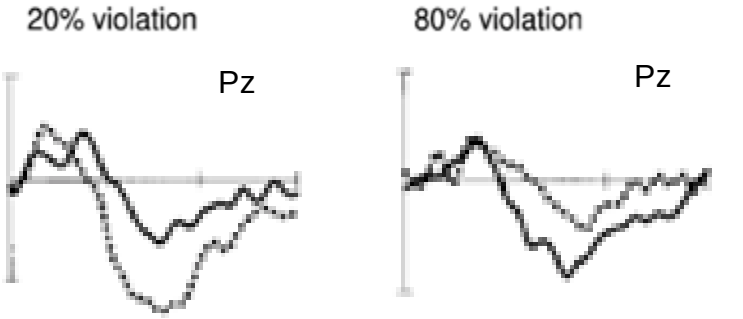
Molinaro et al., 2011

THEORETICAL BACKGROUND

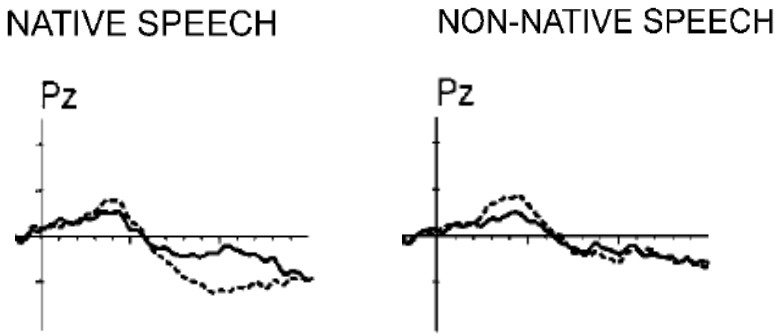
Reduced P600 amplitude:



- with high exposure to the error
  (Hahne & Friederici, 1999)



- in non-native accented speech
  (Hanulikova et al., 2011)



THEORETICAL BACKGROUND

In non-native accented speech:

- native listeners reduced attempts to repair grammatical errors.
  (Hanulikova et al., 2011)

- not all the morphosyntactic errors are equally frequent.

Category	Gender errors	Number errors
Adjective	77.3	22.6
article	94.2	5.8
pronoun	100	0
demonstrative	97.7	2.30
Total	93	7

Franceschina, 2001

THE RESEARCH QUESTION

Does native listeners' syntactic analysis change depending on the error typicality in non-native accented speech?

- They should reduce their attempts to repair the error as their exposure to that type of error increases (Hahne & Friederici, 1999).

THE PRESENT STUDY

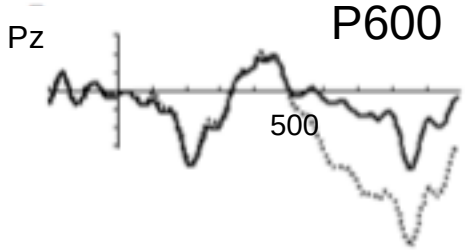
THE PRESENT STUDY

	Sentence example		Translation
Correct	De repente el <u>color</u> del cielo cambió.		Suddenly the$_{SM}$ <u>color</u>$_{SM}$ of the sky changed.
Gender	De repente *la <u>color</u> del cielo cambió.	✗	Suddenly *the$_{SF}$ <u>color</u>$_{SM}$ of the sky changed.
Number	De repente *los <u>color</u> del cielo cambió.	!	Suddenly *the$_{PM}$ <u>color</u>$_{SM}$ of the sky changed.

Native accent

Non-native accent

Predictions



	LAN	P600
Native accent		
		
Gender errors	✓	✓
Number errors	✓	✓
Non-native accent		
		
Gender errors	✗	-
Number errors	!	-

METHODS

Participants:
36 Spanish native listeners familiar with English-accented Spanish, who identified gender errors as a common mistake in Spanish L2 speech.

Stimuli:
22 % gender violations (60)
22 % number violations (60)
56 % correct sentences (60 + 160 fillers)
Low-constraint sentence context.

Native or non-native accent
(3 speakers/ accent type)

Ratings:
Sentences in native and non-native accent were equated for intelligibility and differed in accent strength. Morphosyntactic errors were easily detected in both accents.

Online Task:
comprehension questions (20% of the trials)
High accuracy for both accents (native: 94%; non-native: 93%; $t(35)<1$).

RESULTS

NATIVE ACCENT

NON-NATIVE ACCENT

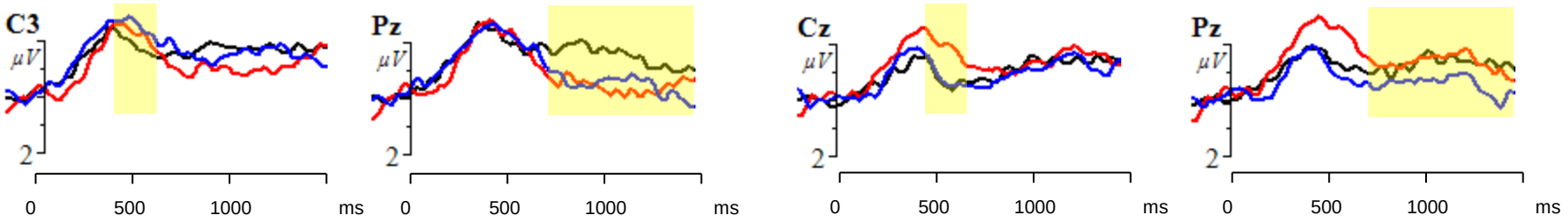
Correct
Gender violation
Number violation

Early negativities

P600 window

Early negativities

P600 window



Gender ✓ ✓

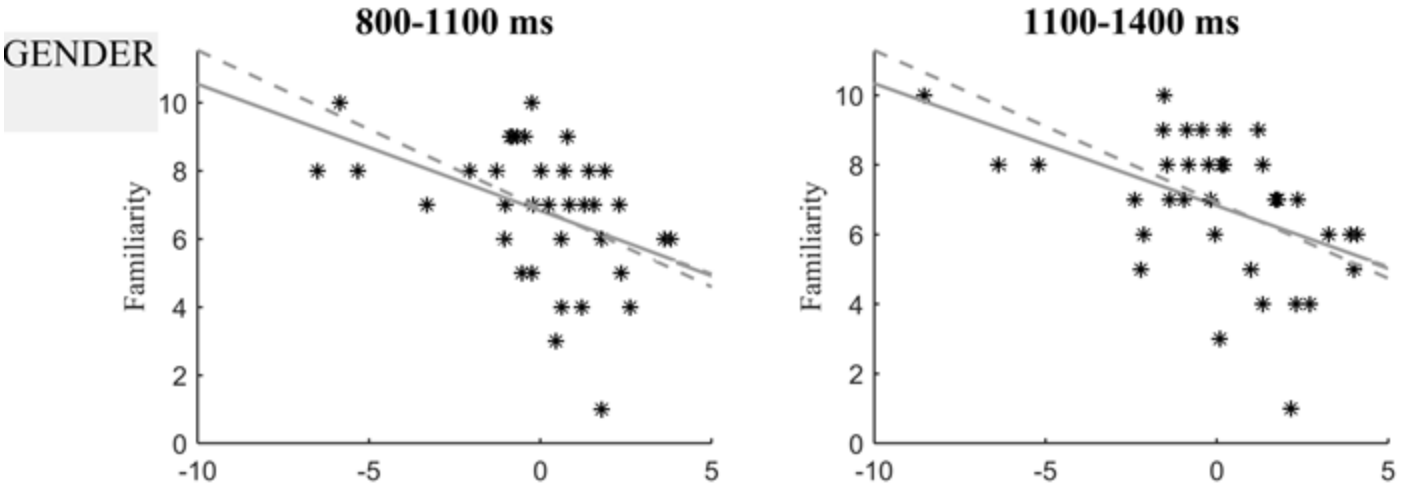
Number ✓ ✓

Gender ? -

Number ✓ ✓

RESULTS

NON-NATIVE ACCENT
Gender errors



P600 a

P600 b

The higher the familiarity with the accent the smaller the P600 effect in response to gender errors (P600: r=-0.48, p<0.01). No significant correlations with the responses for number errors.

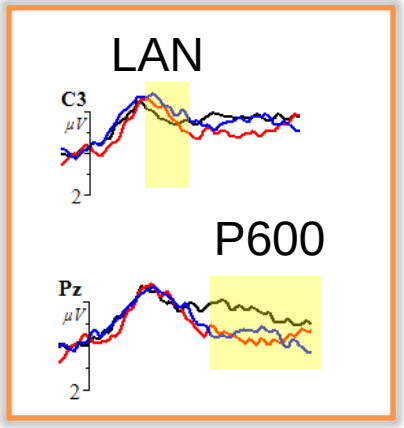
DISCUSSION

Functionally distinct processes of syntactic analysis as a function of accent type.

<u>Native Accent</u>

- First detection of the error followed by re-analysis and repair (Barber & Carreiras, 2005; Carreiras et al., 2003; Molinaro et al., 2011).

<u>Non-native accent</u>

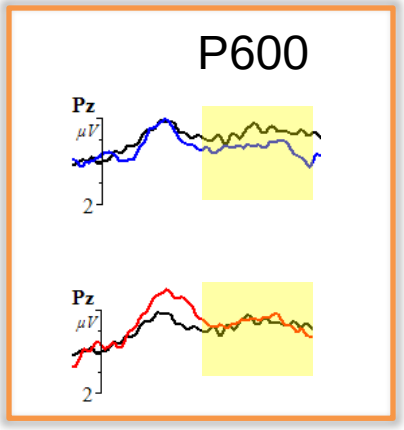


Functionally distinct processes of syntactic analysis as a function of error typicality.

- **Number**: less-common errors are repaired/integrated

- **Gender**: frequently-heard errors are not

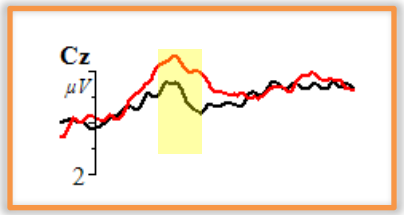
The attempts to repair gender errors (reflected by the P600) in non-native accented speech are reduced as the familiarity with the non-native accent increases.



DISCUSSION

Non-native accent

N400-like effect for gender errors



Difficulties during lexical retrieval of the target noun (Grey & van Hell, 2017).

Overreliance on contextual cues (i.e., determiner) in non-native accented speech (Goslin et al., 2012; Lev-Ari, 2014; Moreno-Rivas et al., 2016).

Gender: *De repente la…* //→
Number: *De repente los…* →
Control: *De repente el…* →

TARGET

color

The target word recognition will be more difficult after a gender-disagreeing determiner, which provides a misleading lexical cue.

CONCLUSION

Does native listeners' syntactic analysis change depending on the frequency of errors in non-native accented speech?

- Native listeners' syntactic analysis changes depending on the type of error encountered in non-native accented speech.
- The time course of the parsing depends on input error typicality in non-native accented speech.

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THANK YOU!

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