Multilingual BERT has an accent

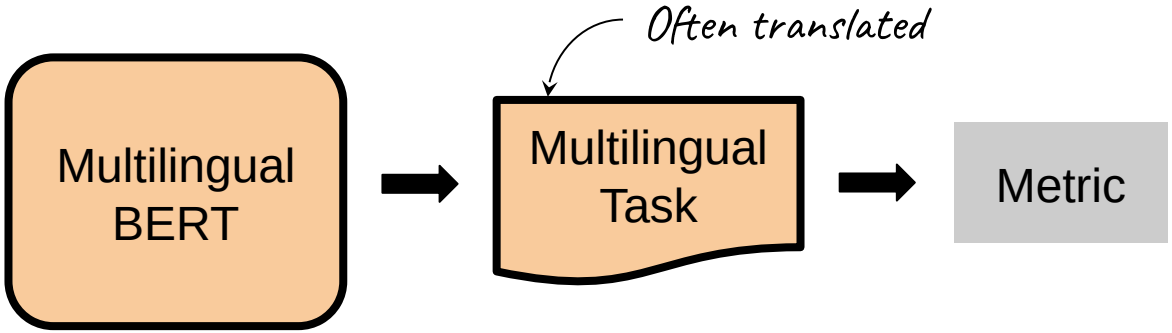
Evaluating English influences on fluency in multilingual models

Isabel Papadimitriou*, Kezia Lopez*, Dan Jurafsky

Stanford NLP

Multilingual Models

- Impressive, cross-language results!



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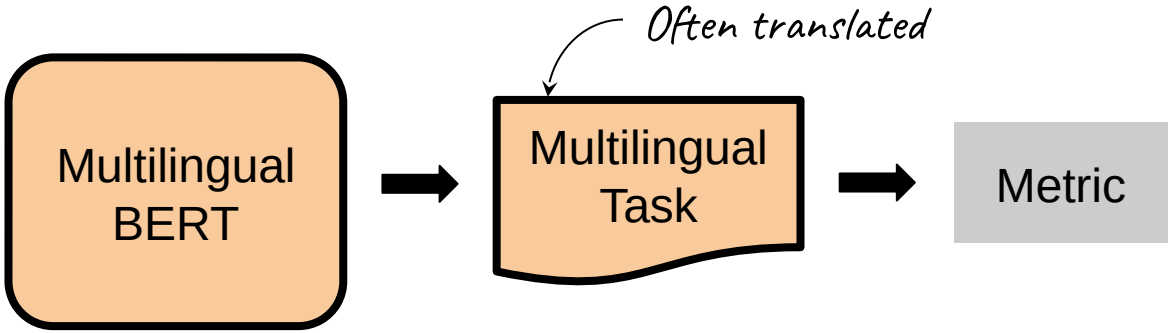

- This paper: **fluency evaluation,** the effect of English syntactic structure on co-trained languages.

Main idea: focus on constructions that are in free variation

Pick a construction in a language which has two forms: one which is parallel to English, one which is not

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Entonces	**ella**	**toma**	la	bandera	de	la	revolución
So	**she**	**take.3SG**	the	flag	of	DET	revolution

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Escribió	numerosas	obras	de	historia	
write.3SG.PST	numerous	works	of	history	

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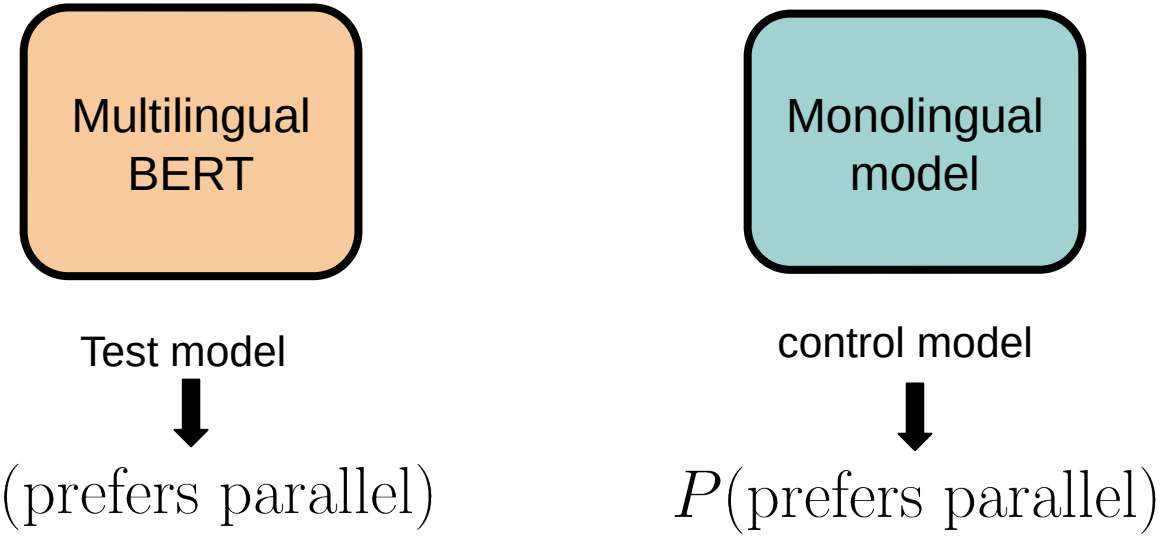
Greek: Subject-Verb order

(3)
Ο πρώτος **αγώνας έληξε** με σκορ 3:2
The first **match** **finished** with score 3:2

(4)
Το σκορ του αγώνα **άνοιξε** ο **Γουέν** Ρούνι
The score of match **opened** DET **Wayne** Rooney

Does mBERT prefer the English-like construction?

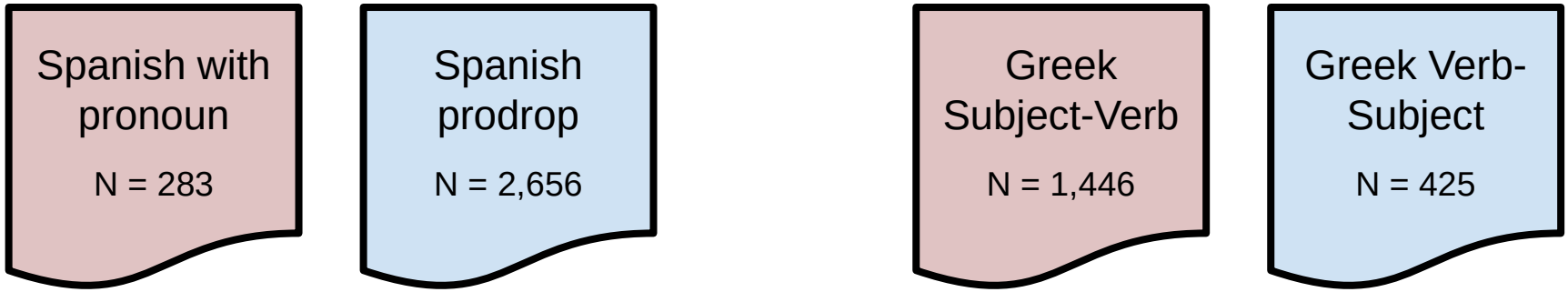


Method:

Getting an approximation for $P(\text{prefers parallel})$

Data

- Pick out sentences from UD to make the **parallel** and **different** corpora



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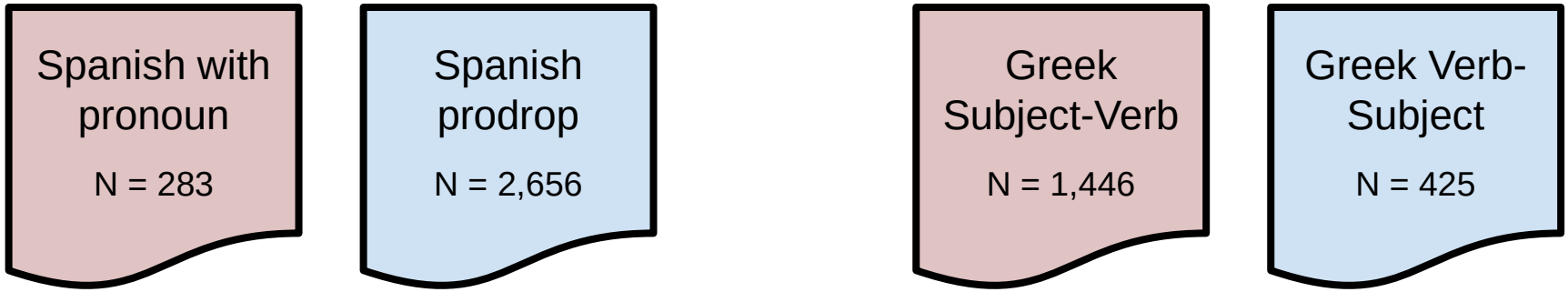
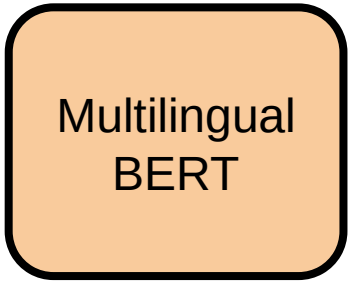
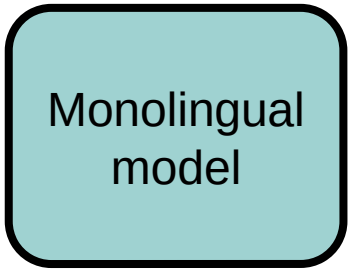


- Important that we don't construct data – we're looking for fluency


Multilingual
BERT

Spanish with
pronoun
N = 283


Monolingual
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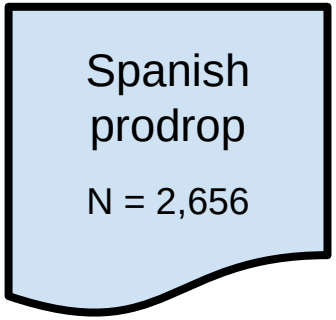
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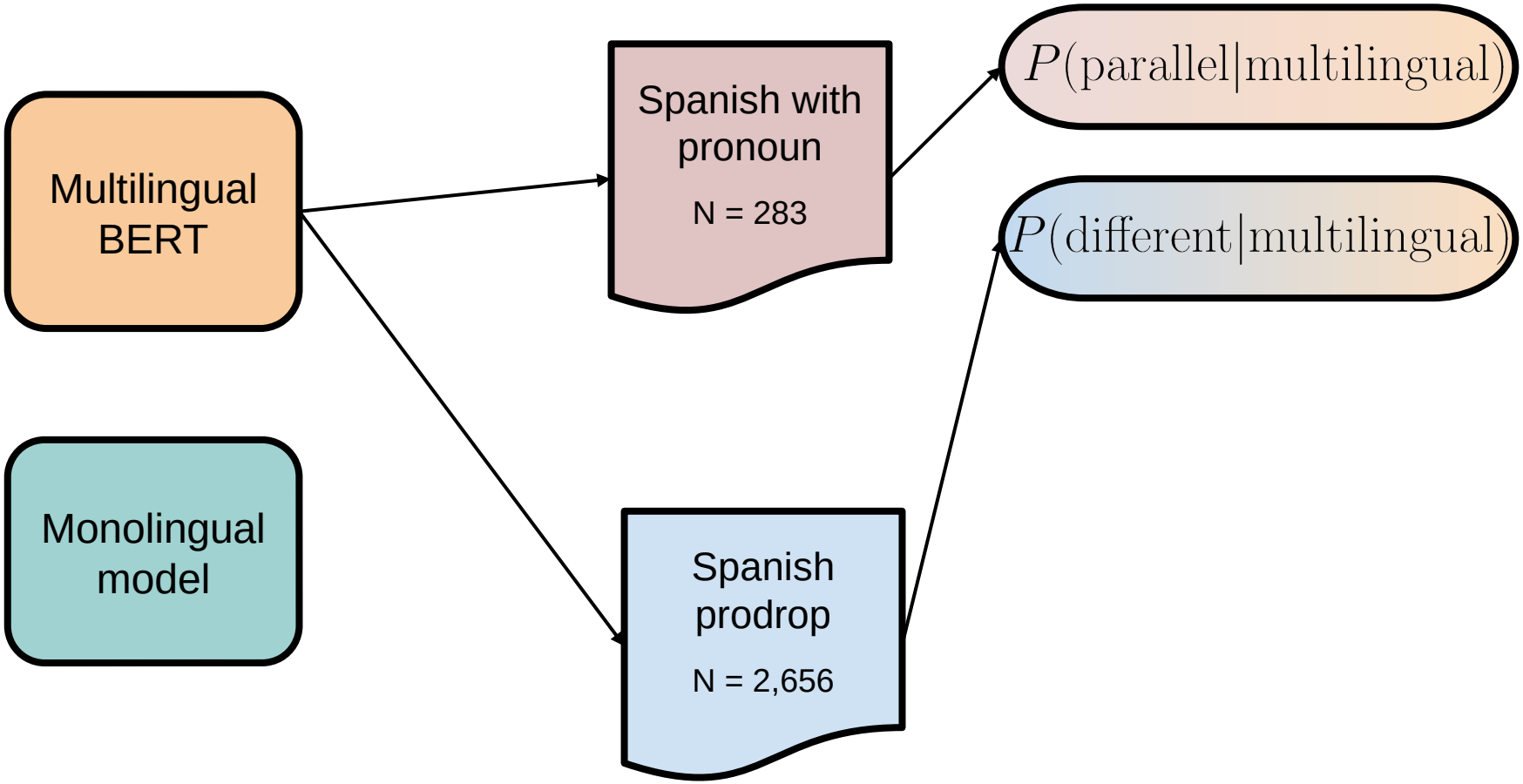
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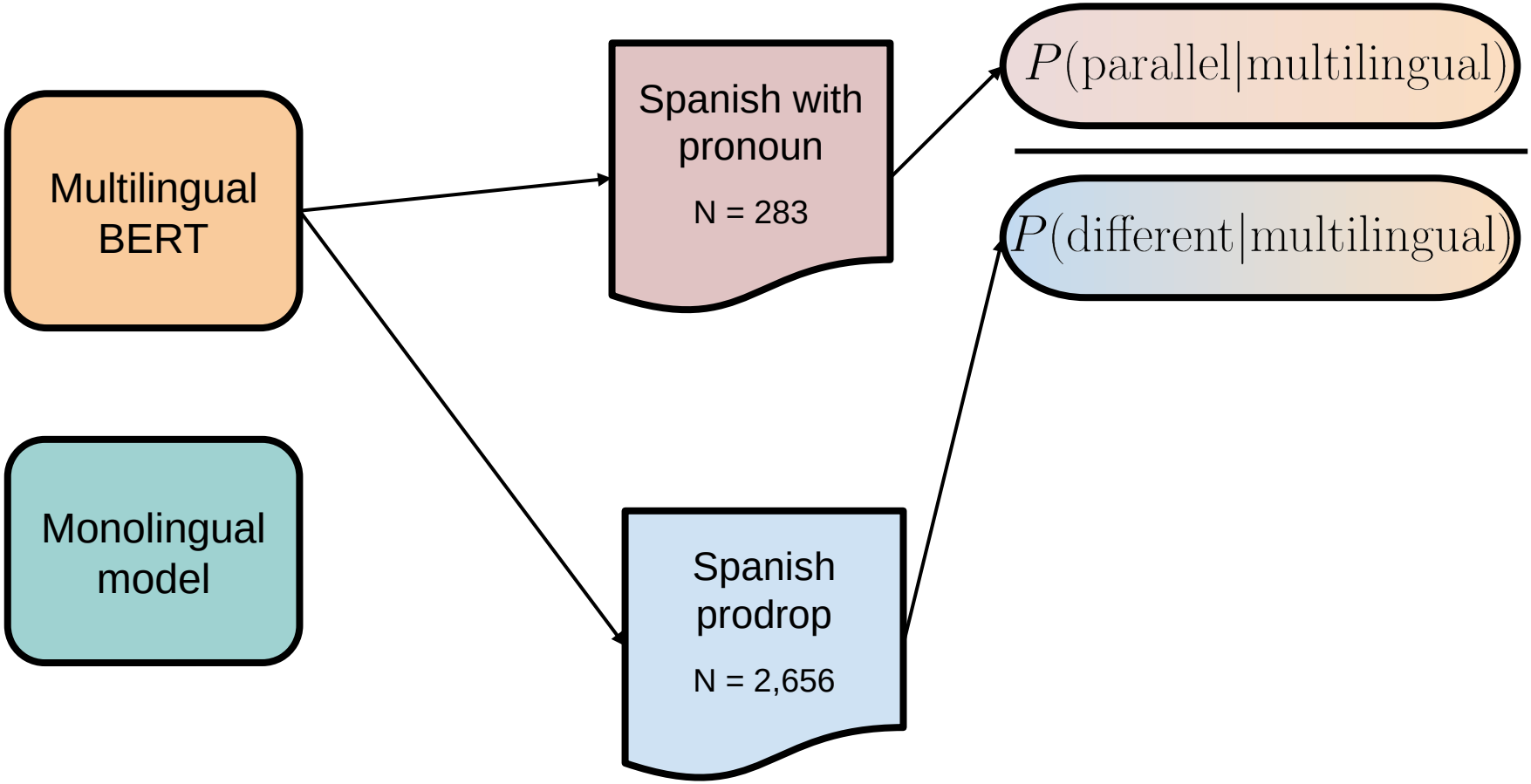
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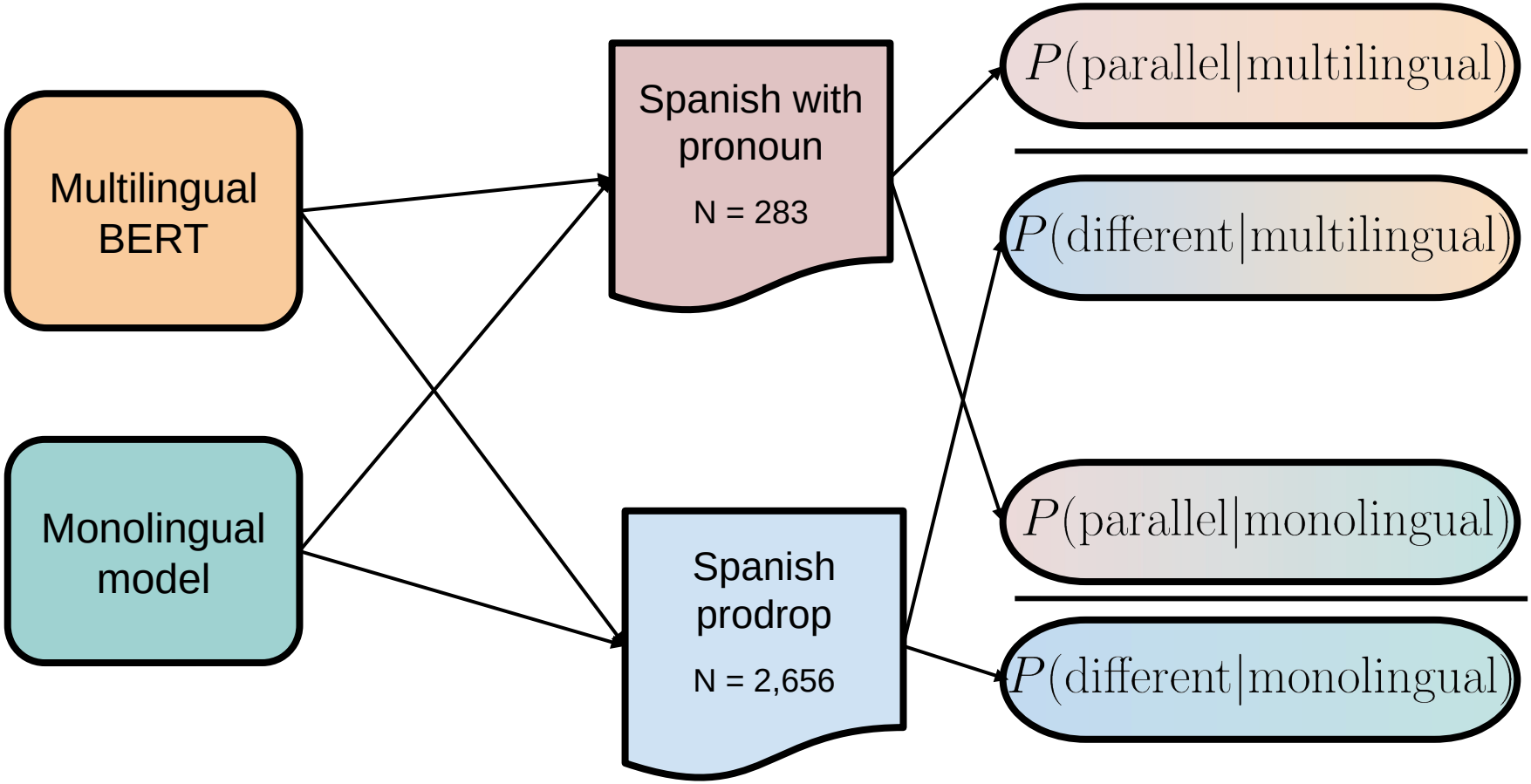
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How to approximate probability of construction?

- Pick one word in each construction to represent it

Spanish: the verb

Entonces **ella** **toma** la bandera de la revolución

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Greek: first word of subject/verb

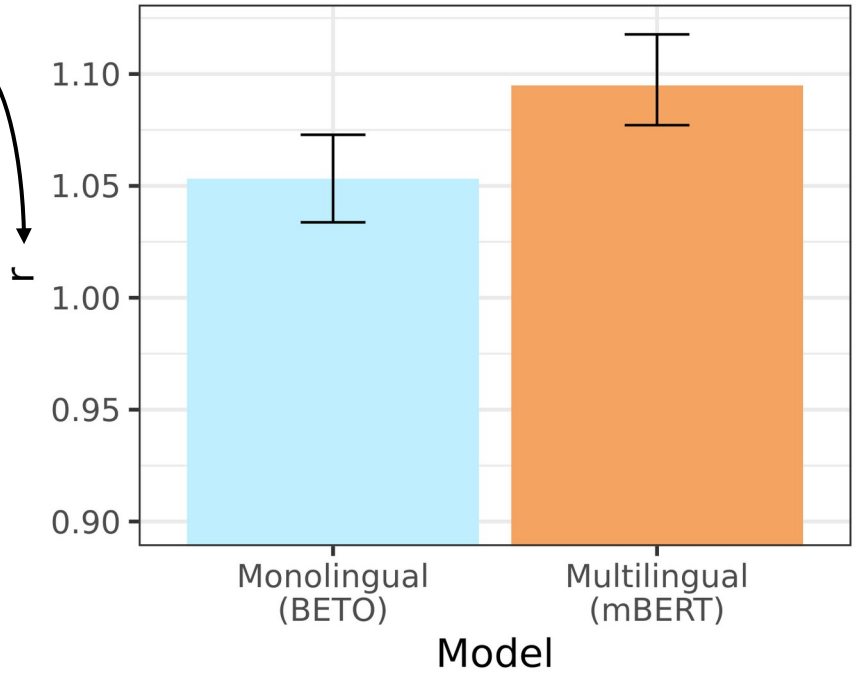
Ο πρώτος **αγώνας** **έληξε** με σκορ 3:2

Στις 3_Σεπτεμβρίου **ξέσπασε** **επανάσταση**

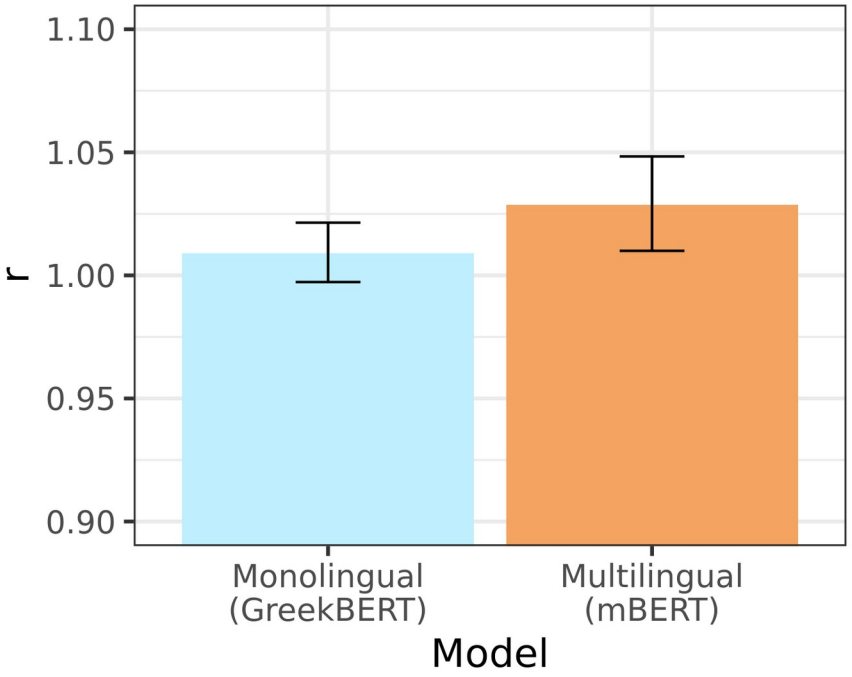
Results

$$P(\text{prefers parallel}|\text{model}) = \frac{P(\text{parallel}|\text{model})}{P(\text{different}|\text{model})}$$

Spanish pro-drop



Greek subject-verb order



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Thanks!