

The production of code-switched concord and  
agreement structures:  
A new perspective on the mental representation of  
gender in the mind of the bilingual

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# Aim

To investigate the bilingual's use of gender in producing code-switched structures

- Concord

(1a) El libro<sub>M</sub>

(1b) \*La libro<sub>M</sub>

(2a) La casa<sub>F</sub>

(2b) \*El casa<sub>F</sub>

- Agreement

(1a) El libro<sub>M</sub> es negro<sub>M</sub>

(1b) \*El libro<sub>M</sub> es negra<sub>F</sub>

(2a) La casa<sub>F</sub> es bonita<sub>F</sub>

(2b) \*La casa<sub>F</sub> es bonito<sub>M</sub>



# Background

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- Achievement of a native-like representation of grammatical gender is problematic for both L2 and 2L1 speakers whose dominant language lacks this formal feature (i.e. White et al, 2004; Montrul et al, 2008)
- While the representation of grammatical gender is traditionally examined within a language, code-switching provides unique insight into the use of grammatical gender by bilinguals with different language dominance
  - gender concord/agreement can be “forced” in code-switching tasks

# Previous Research: Gender

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- Spanish dominant Spanish-English bilinguals:
  - assign English nouns the gender of the ‘translation equivalent’ in Spanish

analogical criterion<sup>1</sup>

*concord*

El<sub>[theM]</sub> book<sub>[libroM]</sub>

La<sub>[theF]</sub> table<sub>[mesaF]</sub>

*agreement*

The car<sub>[cocheM]</sub> es bonito<sub>[beautifulM]</sub>

The chair<sub>[sillaF]</sub> es bonita<sub>[beautifulF]</sub>

<sup>1</sup> term used by Otheguy & Lapidus (2005)

# Previous Research: Gender

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- English dominant Spanish-English bilinguals:
  - use/prefer masculine agreement as a default strategy

masculine as default

*concord*

El<sub>[theM]</sub> book<sub>[libroM]</sub>

El<sub>[theM]</sub> table<sub>[mesaF]</sub>

*agreement*

The car<sub>[cocheM]</sub> es bonito<sub>[beautifulM]</sub>

The chair<sub>[sillaF]</sub> es bonito<sub>[beautifulM]</sub>



# Previous Research: Structures

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- The use of gender has also been shown to vary by structure and by task:
  - Spanish dominant Spanish-English bilinguals
    - abide by the analogical criterion...
      - in both concord and agreement structures in **interpretation** (Valenzuela et al, 2012)
      - significantly more in agreement than concord structures in **interpretation** (Liceras 2013; Klassen et al, 2014)
  - English dominant Spanish-English bilinguals
    - show more native-like use of gender in agreement than concord structures in **interpretation** (Klassen et al, 2014; Liceras 2013; Liceras et al, 2008, 2013; Valenzuela et al, 2012 for Spanish Heritage speakers)
    - however, more native-like use of gender is shown in concord than agreement structures in **production** (Klassen et al, 2014)

# Research Questions

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1. Do English dominant Spanish-English bilinguals show more native-like use of gender in producing concord or agreement code-switched structures?
2. Do Spanish dominant Spanish-English bilinguals adhere to the analogical criterion significantly more in producing code-switched concord or agreement code-switched structures?
3. How can we account for the differences between the use of gender in concord and in agreement?

# Hypotheses

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**Q1:** Do English dominant Spanish-English bilinguals show more native-like use of gender in producing concord or agreement code-switched structures?

**H1:** Based on previous results in production (Klassen et al, 2014), we expect these bilinguals to show more native-like use of gender in concord than agreement structures.



# Hypotheses

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**Q2:** Do Spanish dominant Spanish-English bilinguals adhere to the analogical criterion significantly more in producing code-switched concord or agreement code-switched structures?

**H2:** Given that Spanish-dominant and English-dominant bilinguals pattern together in the use of concord and agreement structures in interpretation, we expect that Spanish-dominant bilinguals will pattern like English-dominant bilinguals in production as well (and thus will adhere to the analogical criterion significantly more in concord than agreement).

# Hypotheses

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**Q3:** How can we account for the differences between the use of gender in concord and in agreement?

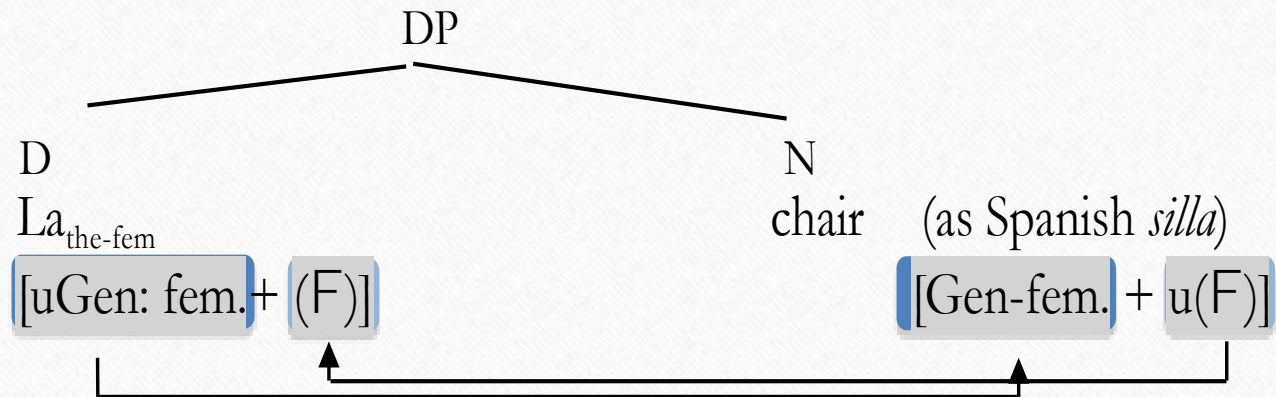
**H3:** **Syntactically**, according to the double-feature valuation analysis, concord and agreement structures differ with respect to complexity.

In terms of **lexical access**, psycholinguistic approaches have argued that accessing lexical categories is more problematic than accessing functional categories.



# Double-Feature Valuation

- Pesetsky & Torrego (2001): double feature valuation proposal  
→ nominative case [uT-f on D] and agreement [uD-f on T]
- Licerias et al. (2008): double gender feature valuation in concord structures  
→ Gender (Gen) and Gender Agreement ( $\Phi$ )

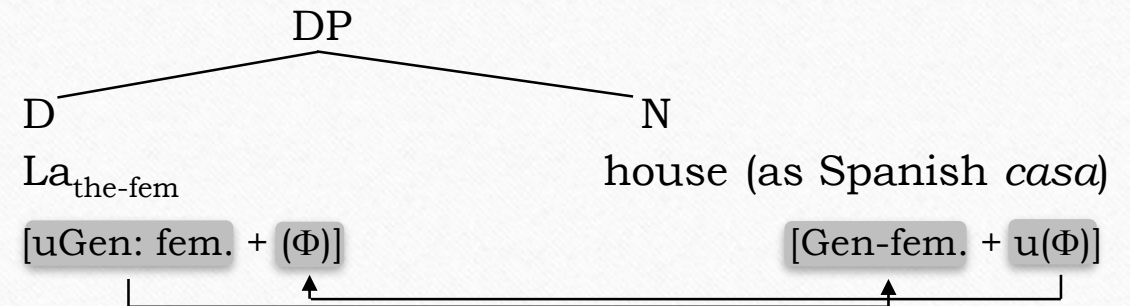


To account for L1 Spanish preference for the 'analogical criterion' in experimental data 14

# Double-Feature Valuation

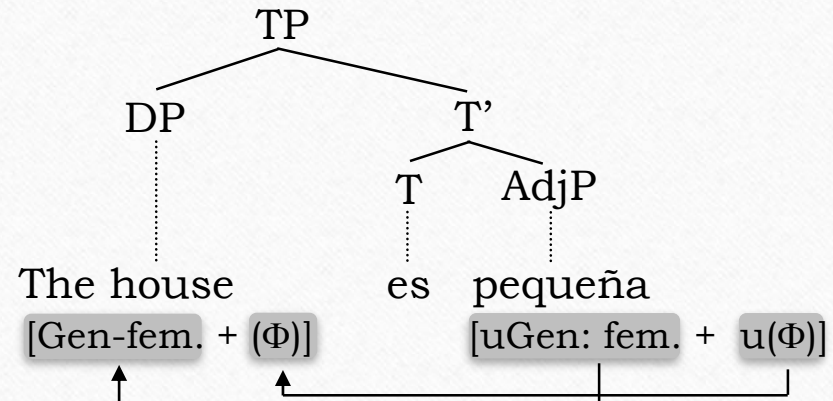
## concord

- *house* subsumes the features of the translation equivalent *casa*
- unvalued Gender feature on D is valued to the right, and the unvalued Agreement feature on N is valued to the left



## agreement

- translation equivalent of *house (casa)* is retrieved and concord takes place to form DP *la casa*
- *the house* is assigned the features of *la casa*
- unvalued Gender and Agreement features on Adj are valued to the left

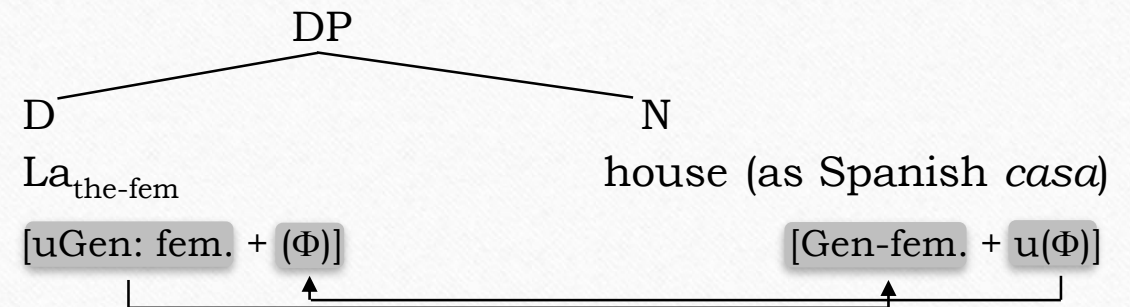




# Double-Feature Valuation: *complexity*

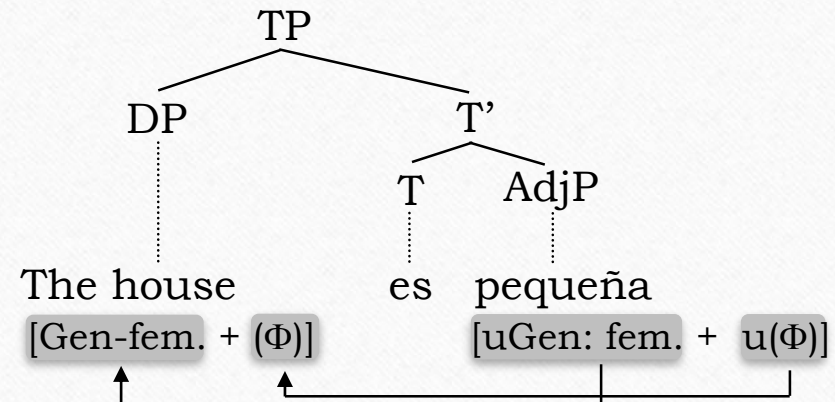
## concord

- two steps are required for concord:
  - house* receives features from *casa*
  - the features are valued



## agreement

- agreement requires three steps:
  - concord takes place in *la casa*
  - the house* receives the features of *la casa*
  - the features are valued



# Lexical Access

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lexical categories > functional categories

Concord

La **chair**<sub>[sillaF]</sub>

Agreement

The **chair**<sub>[sillaF]</sub> es **bonita**<sub>[beautifulF]</sub>



# Hypotheses

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**H3:** Agreement structures are expected to be more difficult to produce because they are more complex both **syntactically** and in terms of **lexical access**.

agreement > concord

# Sentence Completion Task

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# Sentence Completion Task

## TASK

- complete code-switched sentences containing concord and agreement structures by writing the Spanish determiner (concord) or the Spanish colour adjective (agreement)

- concord:  $\text{__D}_{\text{SP}}\text{__} + \text{N}_{\text{EN}}$  (\_\_\_\_\_ book<sub>libro-M</sub>)

- agreement:  $\text{DP}_{\text{EN}} + \text{es}_{\text{is}} + \text{__Adj}_{\text{SP}}\text{__}$  (the book<sub>libro-M</sub> es \_\_\_\_\_)

<b>rojo/a</b>	(red)
<b>amarillo/a</b>	(yellow)
<b>blanco/a</b>	(white)
<b>negro/a</b>	(black)

- opacity of gender marking on the Spanish translation equivalent noun was also manipulated:
  - gender-transparent nouns: masculine **-o** / feminine **-a**
  - gender-opaque nouns: ending in **consonant** or **vowel other than -o / -a**

# Sentence Completion Task

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## **POST TASK**

- following the sentence completion task, participants provided the Spanish translations for each of the English nouns

## **ANALYSIS**

- responses were coded as target or non-target (as defined by the analogical criterion)
- items for which participants provided unanticipated Spanish translations were discarded

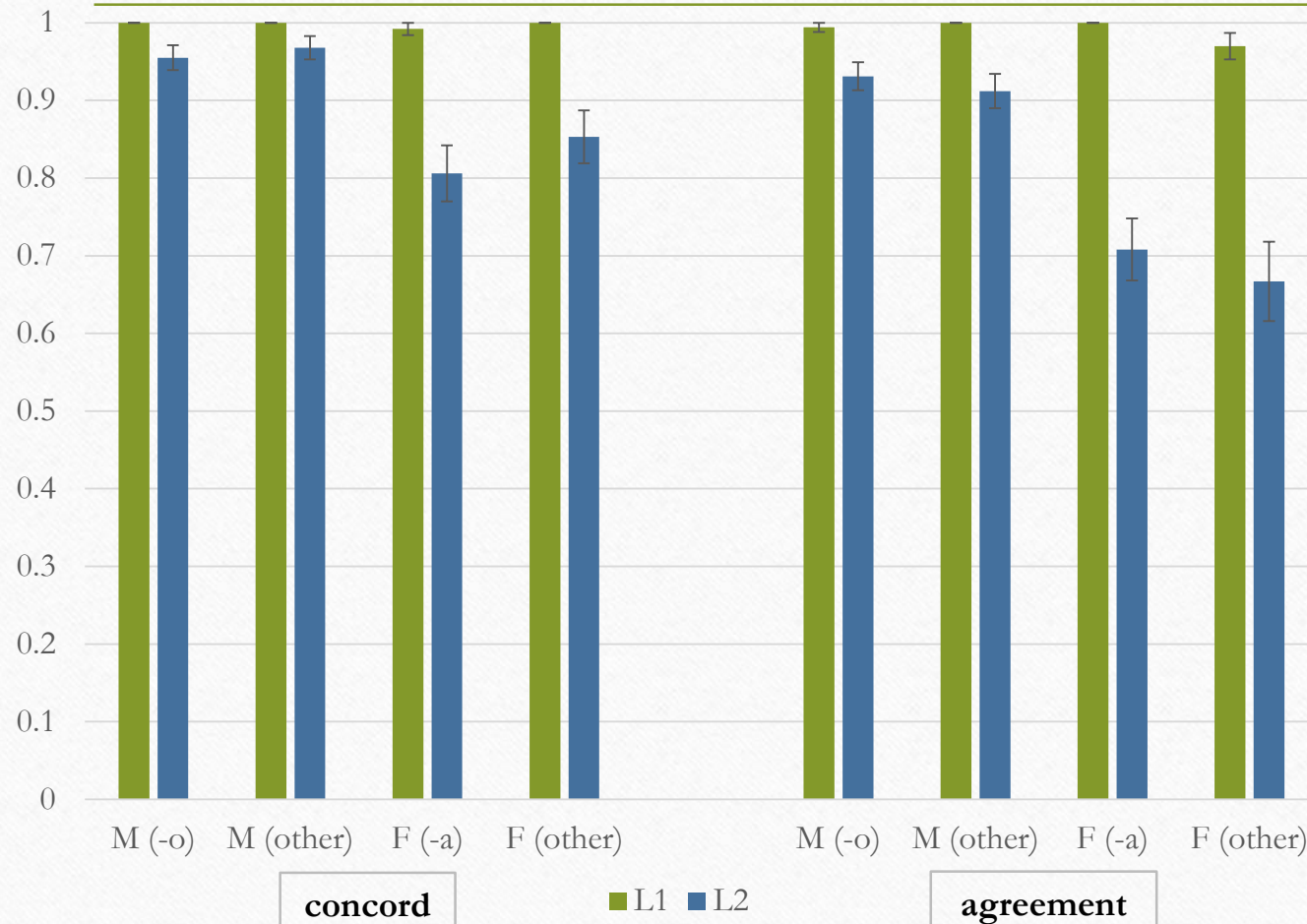
## **PARTICIPANTS**

- 33 Spanish dominant Spanish-English adults bilinguals living in Spain
- 81 English dominant Spanish-English adult bilinguals living in Trinidad & Tobago





# Results



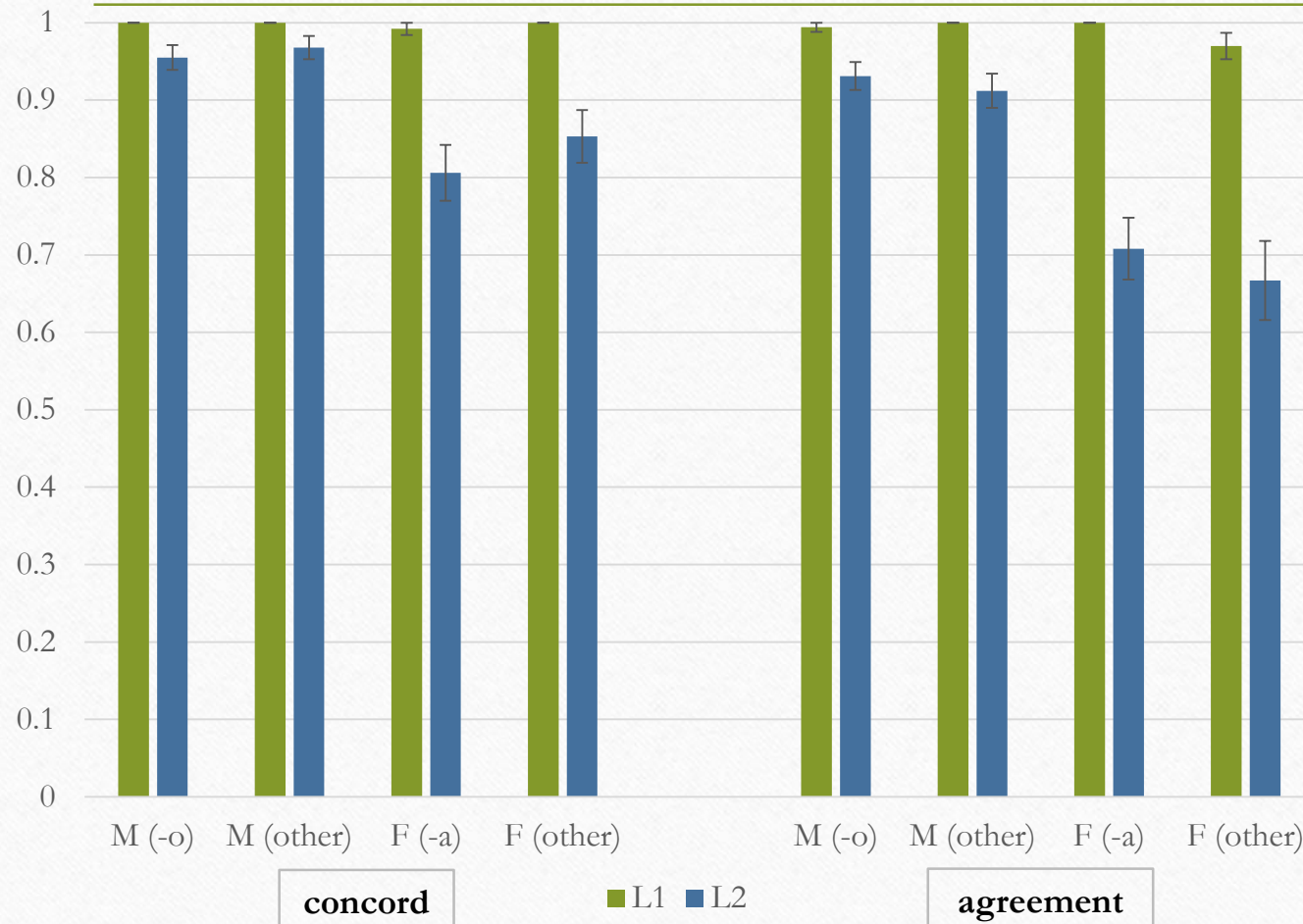
**Proportion of target responses  
(analogical criterion)**

Spanish dominant bilinguals perform consistently at ceiling

English dominant bilinguals produce target responses higher than chance



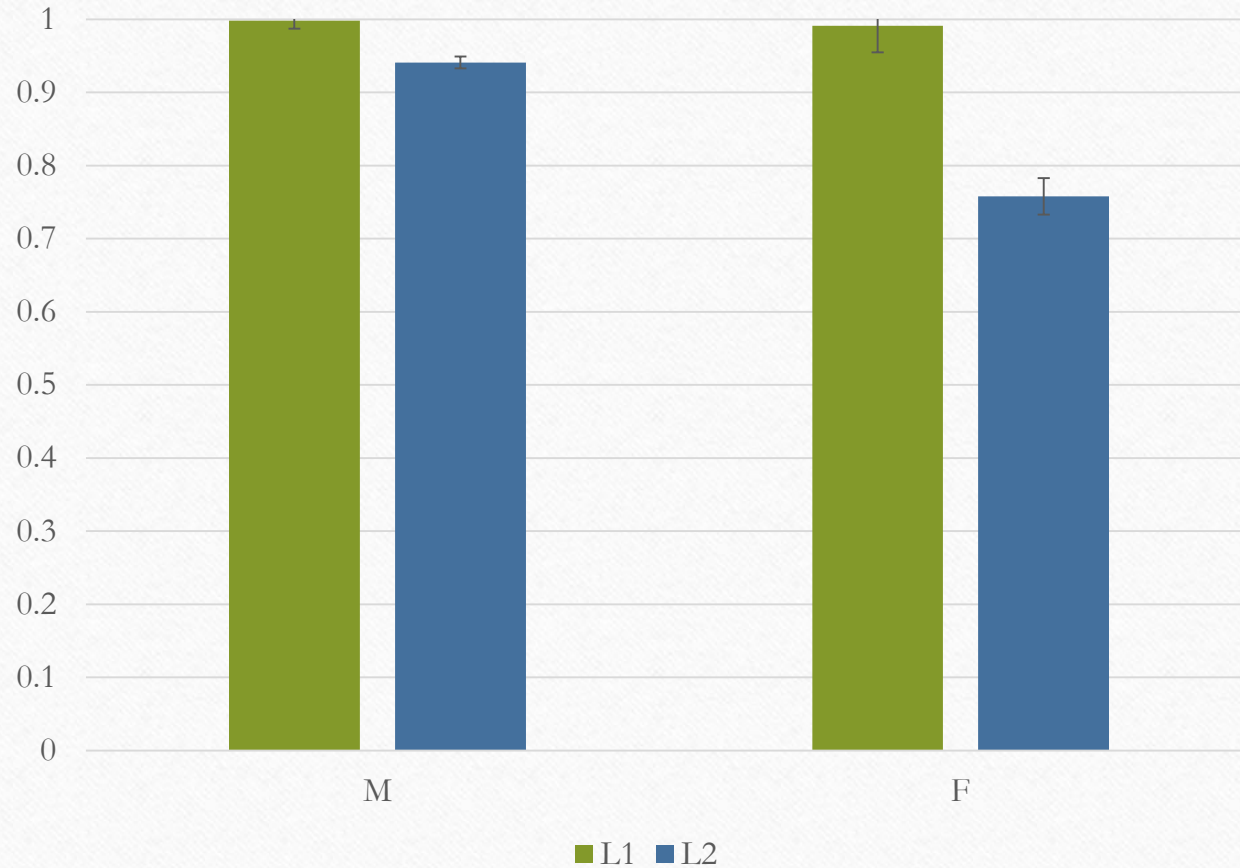
# Results



**Proportion of target responses  
(analogical criterion)**

no significant effect of gender marking  
(transparent vs opaque) on the noun  
( $p=.845$ )

# Results: Gender

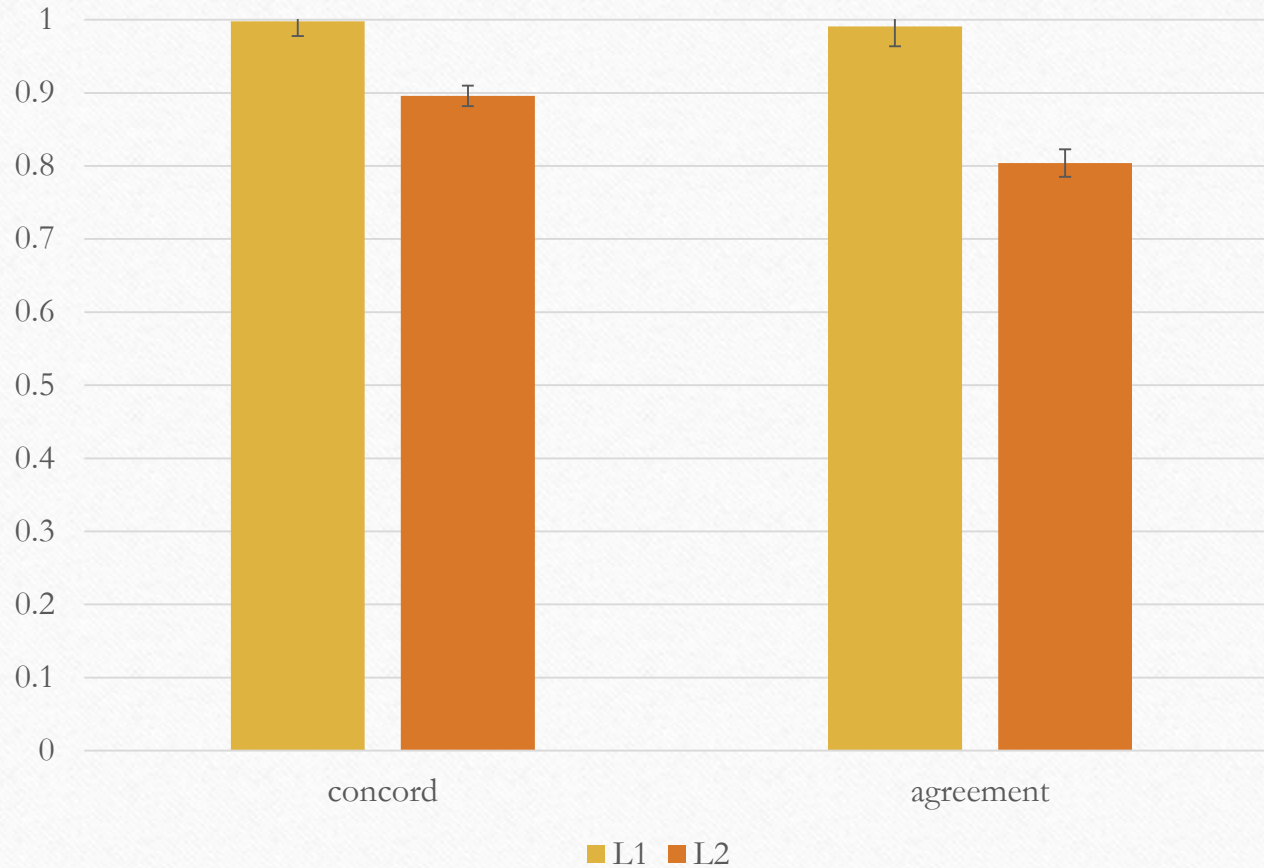


English dominant bilinguals are significantly more target-like in their use of gender with M nouns than F nouns ( $p < .000$ )

	mean (L2)
M	0.94
F	0.76



# Results: Structures



proportion of target responses is significantly higher for concord than agreement for English dominant bilinguals ( $p=.008$ )

	mean (L2)
concord	0.90
agreement	0.80

# Conclusions

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**H1:** Based on previous results in production (Klassen et al, 2014), we expect the English-dominant bilinguals to show more native-like use of gender in concord than agreement structures.

**confirmed**

Production of target responses for the English-dominant bilinguals was significantly higher for concord than agreement structures.

# Conclusions

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**H2:** Spanish-dominant bilinguals will adhere to the analogical criterion significantly more in concord structures than agreement structures.

**not confirmed**

Spanish-dominant bilinguals performed consistently at ceiling and thus there was no difference between the two structures.



# Conclusions

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**H3:** Agreement structures are expected to be more difficult to produce because they are more complex both **syntactically** and in terms of **lexical access**.

**agreement** > concord

Lower production of target responses with agreement structures than concord ones but only for the English-dominant bilinguals.

We propose a model that incorporates both types of complexity.

# Production model of concord



*recognition of written word (given in task) increases activation*

*task: \_\_\_\_\_ house*  
*target: \_\_la\_\_ house*

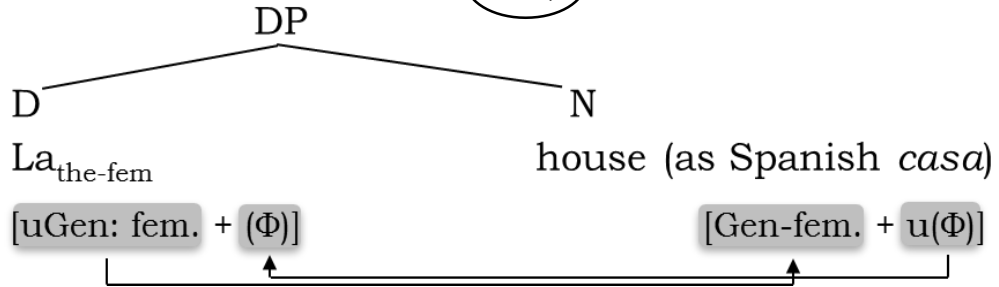
The picture of the house activates the concept which then activates the word HOUSE and the translation equivalent CASA including the gender information. HOUSE receives further activation from the written word in the task.

syntactic level

conceptual level

CASA HOUSE

FEM



\_\_\_\_ **DET<sub>SP-F-SG</sub>** \_\_\_\_ **house**

phonological level

\_\_\_\_ **LA** \_\_\_\_ **house**

recognition of written word (given in task) increases activation

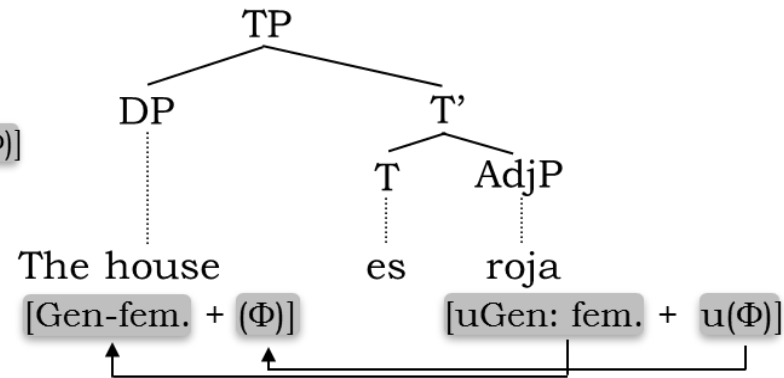
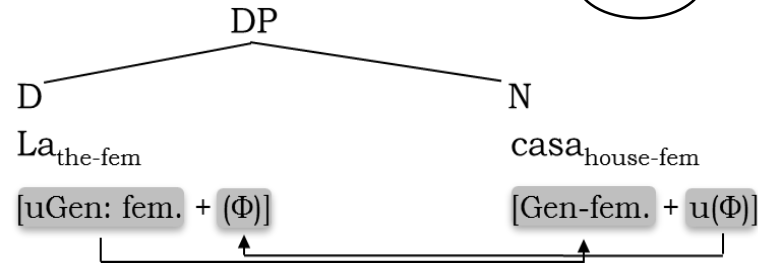
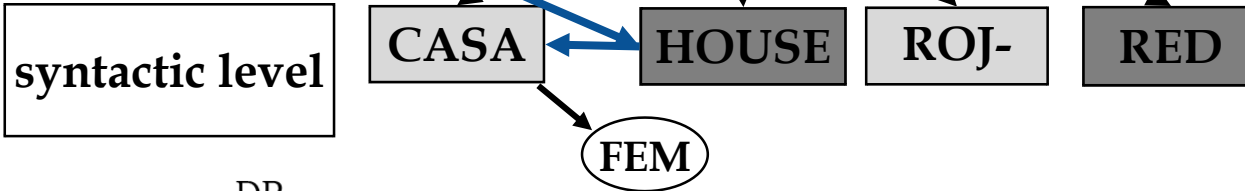
**Production model of agreement**

task: The house es \_\_\_\_\_.

target: The house es roja.



conceptual level



The house es \_\_\_\_\_ROJ-<sub>SP-F-SG</sub>\_\_\_\_\_

phonological level

The house es \_\_\_\_\_ROJA\_\_\_\_\_

The picture of the house activates both concepts which in turn activate HOUSE and CASA as well as ROJ- and the translation equivalent RED



# Future Directions

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These code-switching data seem to shed light on the status of gender in concord and agreement structures, allowing us to provide an explanation for a difference that had not previously been accounted for.

More data is needed to strengthen these results and to further test whether complexity also plays a role for Spanish dominant Spanish-English bilinguals...

- using reaction time and eye-tracking data to provide a different perspective that may offer more insight into this bilingual group

Online methodologies would also allow us to further test our model.

Thank you!

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¡Gracias! - ¡Grazie!