

Information-seeking questions vs. incredulity questions in Catalan: a comparative study between dialects

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Summary

- Introduction
- Goals
- Method and Results
- Conclusions

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- In **Catalan**, information-seeking questions and incredulity yes/no questions have an identical syntactic surface structure.
- In English the contrast can be conveyed through the presence or absence of an auxiliary (and inversion). English incredulity questions are also called ‘declarative yes-no questions’ because they have the same word order as a statement.

Information-seeking question

- Do you have tangerines?
- Teniu mandarines?

Incredulity yes/no question

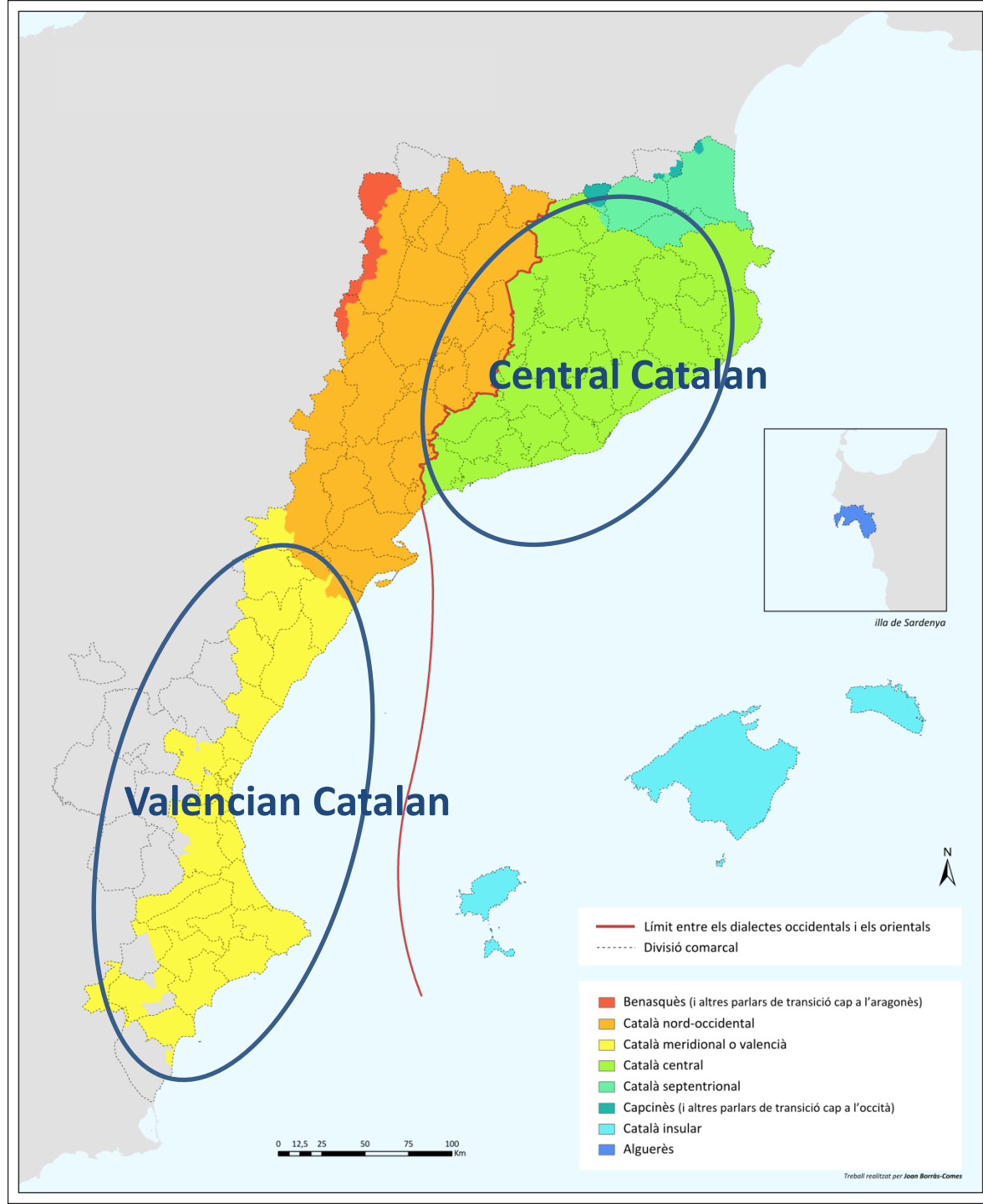
- You have tangerines?
- Teniu mandarines?

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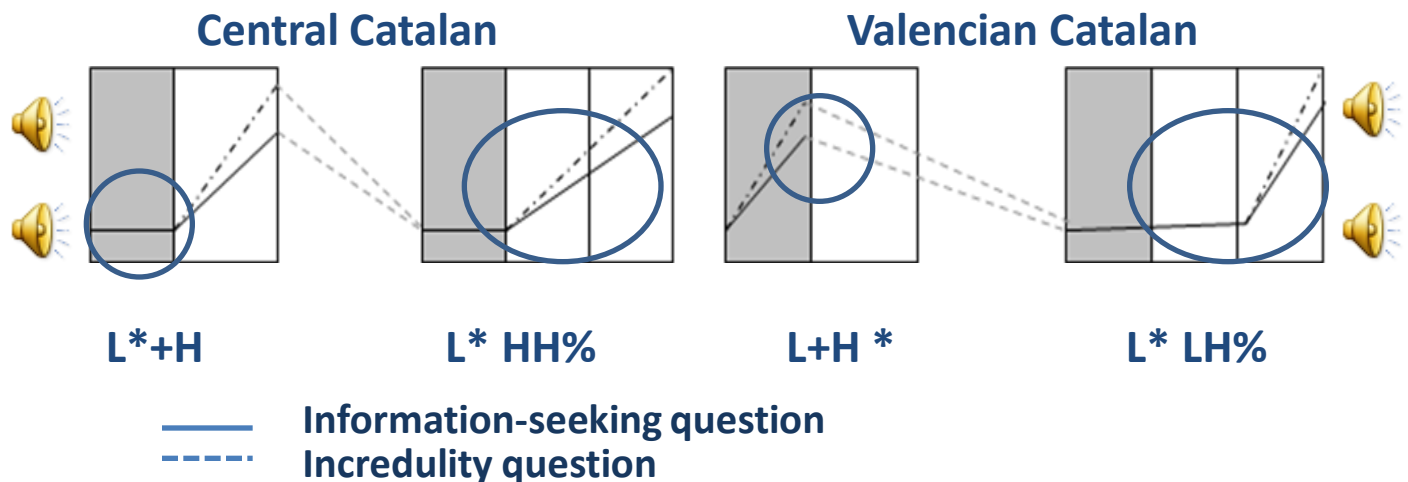
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- In Central and in Valencian Catalan, information-seeking questions and incredulity yes-no questions have been described with the same intonational contour for the two pragmatic meanings (Bonet 1986; Prieto 2002; Prieto & Rigau 2007; Crespo-Sendra et al. 2009, 2010a, 2010b).

- According to these studies, what distinguishes these two types of yes-no questions is the **global pitch range**.



Previous studies in Catalan

Central Catalan:

- Crespo-Sendra et al. (2010)

- Two identification experiments examined the potential contribution of **pitch height of the boundary tone** and **duration of the last syllable** as primary cues in distinguishing these sentence types.

- **Twenty** native speakers of Central Catalan between 20 and 45 years old participated.

- Conclusion: a difference in pitch scaling of the **boundary tone HH%** is the strongest cue for perceptually distinguishing between the two interpretations.

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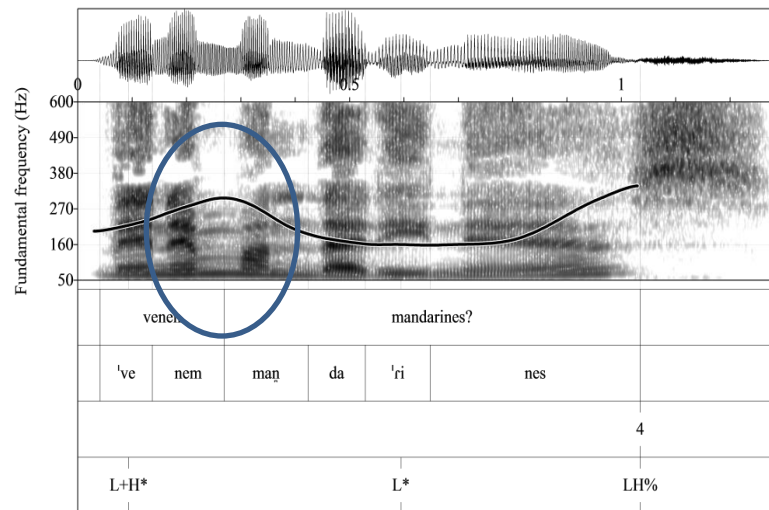
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Previous studies in Catalan

- Valencian Catalan:

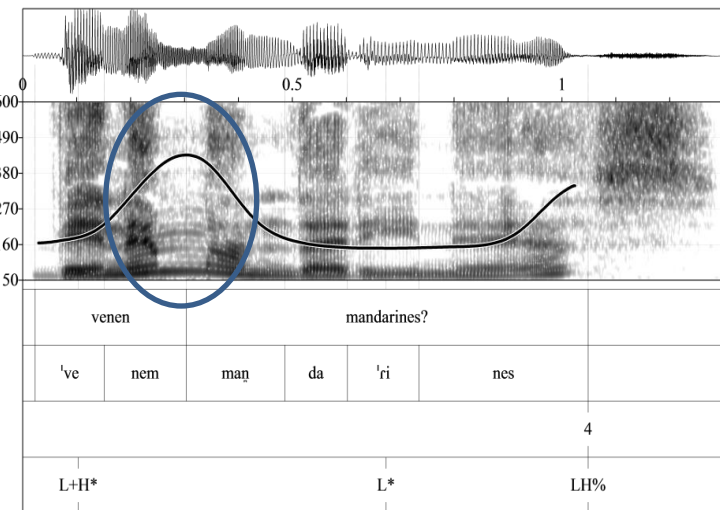
- Based on production data (*Atles interactiu de l'entonació del català* and a pilot experiment), we observe that an **important cue** to distinguish both question types is the height of the **prenuclear accent**.
- In contrast with Central Catalan, the height of the boundary tone is the same.

Information-seeking question



'Do you sell tangerines?'

Incredulity question



'You sell tangerines?'

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Previous studies about the role of prenuclear contour

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- Some studies have demonstrated the **relevance** of the **prenuclear configuration** in determining the meaning of a sentence.
 - Petrone & D'Imperio (in press) found that prenuclear contour carries enough information to distinguish Neapolitan Italian narrow focus statements and yes/no questions.
 - Petrone (2010) also demonstrated that Cosenza Italian listeners use the rise-fall prenuclear contour to identify the contrast between question and statements.
 - Other studies have also shown the important role of the prenuclear configuration (Face 2007, Ramírez et al. 2008, etc.).

GOAL: To investigate the cues that allow listeners to distinguish information-seeking questions and incredulity questions in Central and Valencian Catalan.

- To determine the role of the nuclear and prenuclear contours to the meaning of these questions.

- To test the influence of the global expanded pitch range in distinguishing both type of questions.

To this end...

Three perception experiments were carried out:

1. Congruity task
2. Gating identification task
3. Identification task

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General experimental procedure and subjects

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- Subjects were seated at a **laptop** in a quiet room and the stimuli were played back through **headphones**.
- The perception tests were played by means of **E-PRIME**.
- The test lasted approximately **50 minutes**.
- **20** native speakers of Central Catalan and 20 native speakers of Valencian Catalan between 16 and 35.

Congruity test

Subjects had to say whether they heard the intonation of two interrogative sentences as “congruent” or “incongruent” with the pragmatic context.


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Information-seeking question meaning

You enter a store that you have never been in before and ask if they have tangerines. ✓ 


Speaker A: Good morning, do you sell tangerines?

Speaker B: Yes, I've just arrived from Mercabarna and I've bought some. ✗ 

Incredulity yes/no question meaning

You enter a garage to repair your car and you see that there is a shelf with lots of tangerines. ✓ 

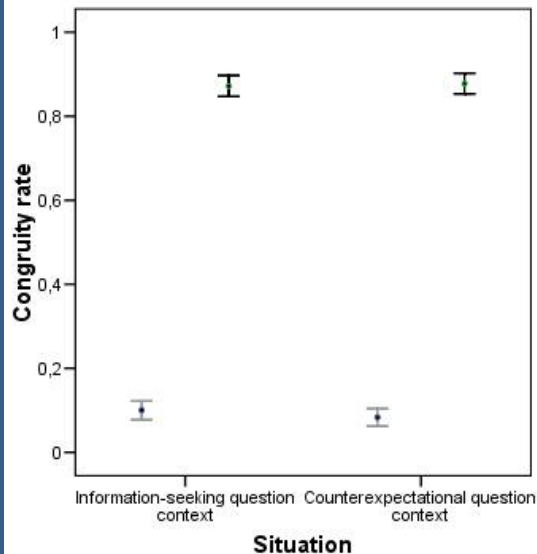
Speaker A: You sell tangerines?!

Speaker B: Yes, it's strange but my parents have an orchard so I sell them to my customers. ✗ 

2 contexts x congruous/incongruous x 5 repetitions x 2 blocks= 40 trials

Congruity test

Central Catalan

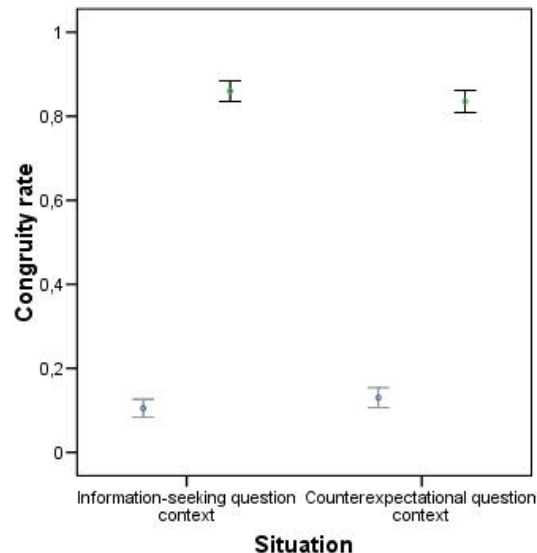


0 congruous situation
1 incongruous situation

-Results are the same in both varieties.

-An ANOVA test confirms that the differences between the two groups (congruous situation and incongruous situation) in both contexts are significant ($p < 0.000$).

Valencian Catalan



0 congruous situation
1 incongruous situation

-Listeners know very well in which context both interrogatives can or cannot be produced.

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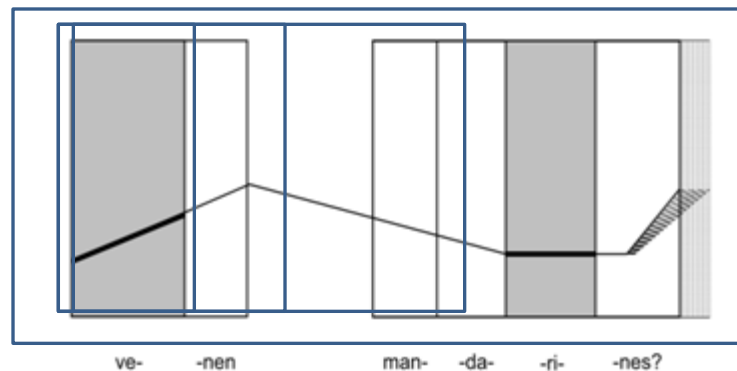
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Gating task

The materials for the gating task consisted of four gates from **original stimuli** of an info-seeking and an incredulity question.



ve- venen venen man- venen mandarines?



Info-seeking



Incredulity

Subjects had to say whether they heard an info-seeking question or an incredulity question (“s” (“**surprise**”) or “n”(“**neutral**”).

Introduction

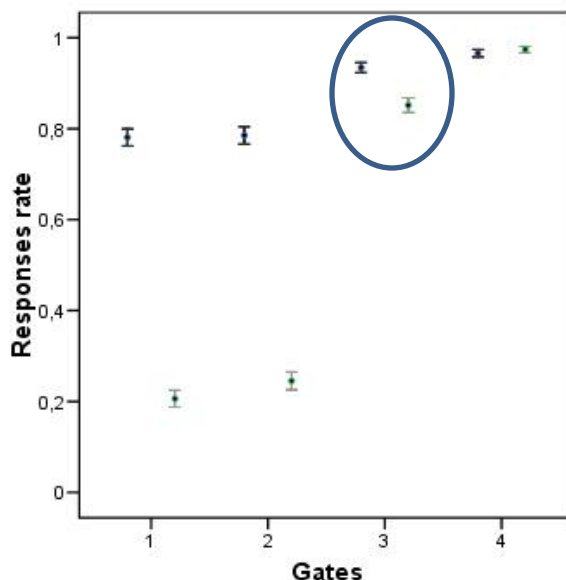
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Gating task

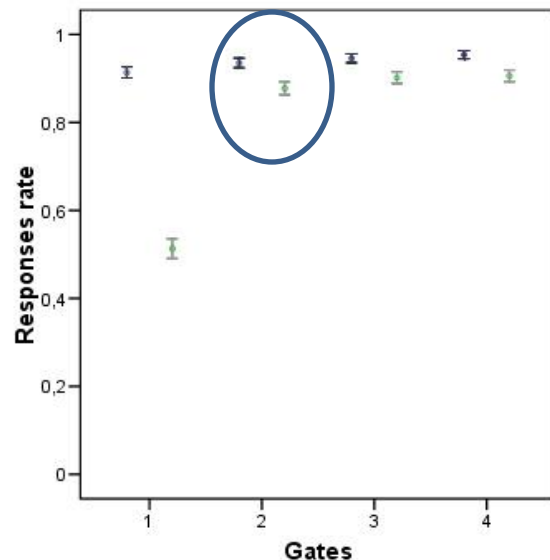
Central Catalan



I 1 Info-seeking question
I 2 Incredulity question

-Central Catalan listeners are able to identify the meaning of the question when they listen to the **third gate**.

Valencian Catalan



I 1 Info-seeking question
I 2 Incredulity question

-Valencian Catalan listeners are able to identify the meaning of the question when they listen to the **second gate**. (The peak occurs earlier in this dialect)

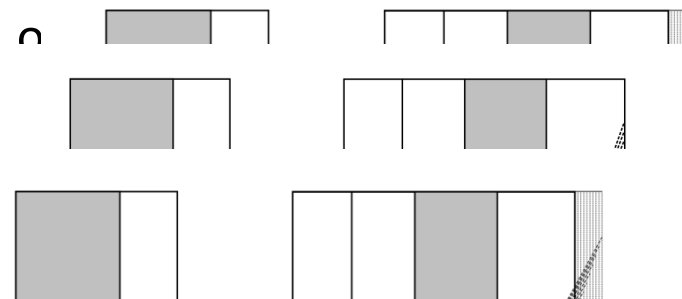
Identification Task

The task consisted of five continua in which the parameters were manipulated. The base stimulus was a question.

The rest of the parameters were neutralized in all continua.

Parameters:

- Duration of the last syllable, 10 steps of 5.5 ms
- Scaling of the boundary, 10 steps of 12.5 Hz
- A combination of the boundary tone.
- Scaling of the frequency of the boundary tone.
- A combination of the boundary tone and the boundary frequency.



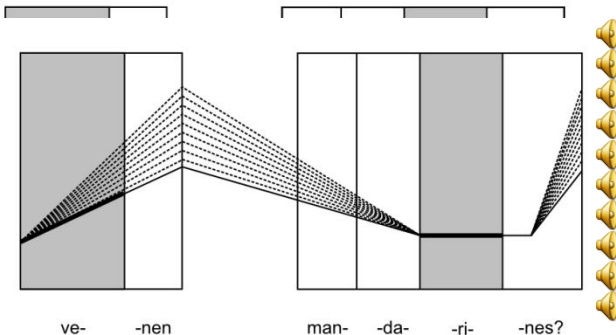
the boundary

Hz

ear accent and

Subjects
"surprise"

10 stimuli



ve- -nen

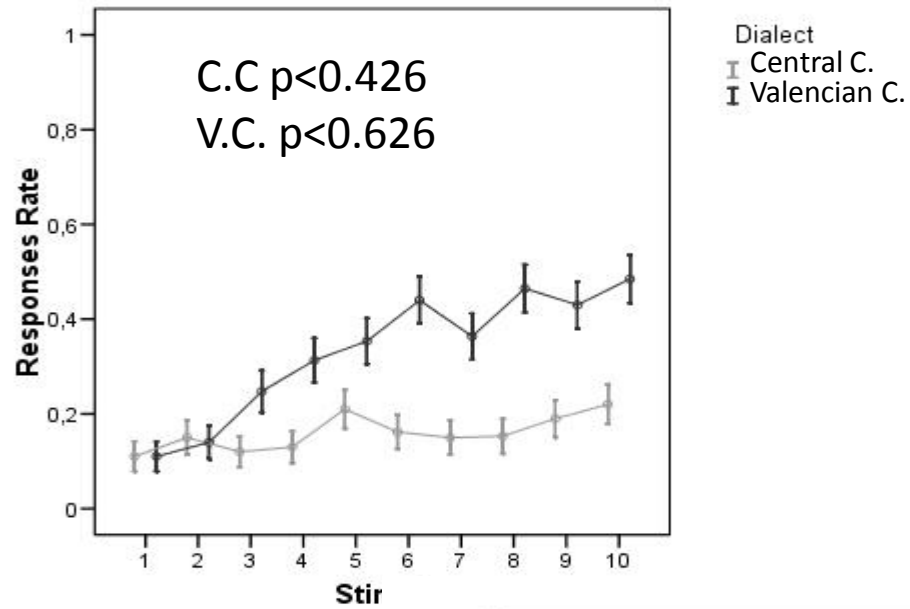
man- -da- -ri- -nes?

question as
(g).

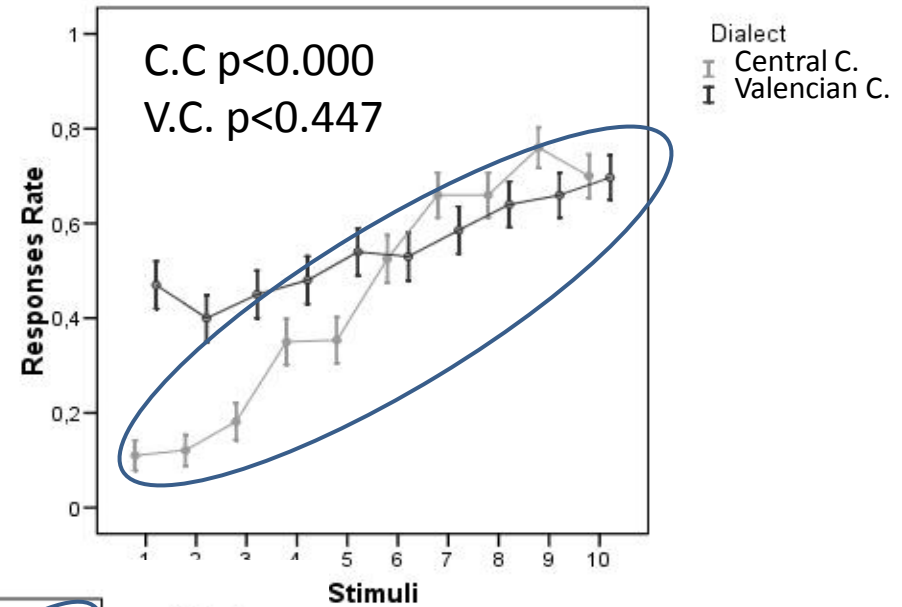
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Identification Task

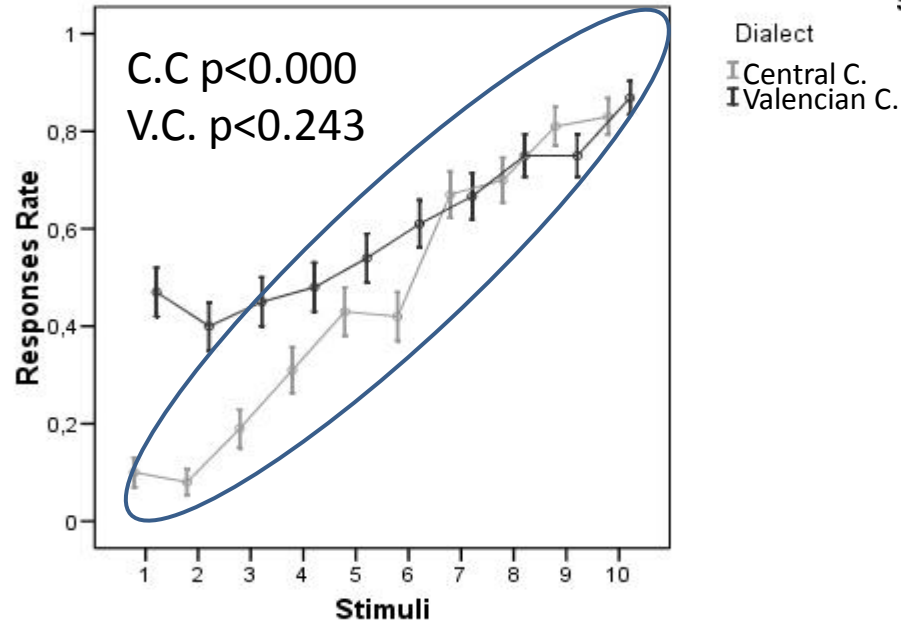
Duration



Boundary Scaling

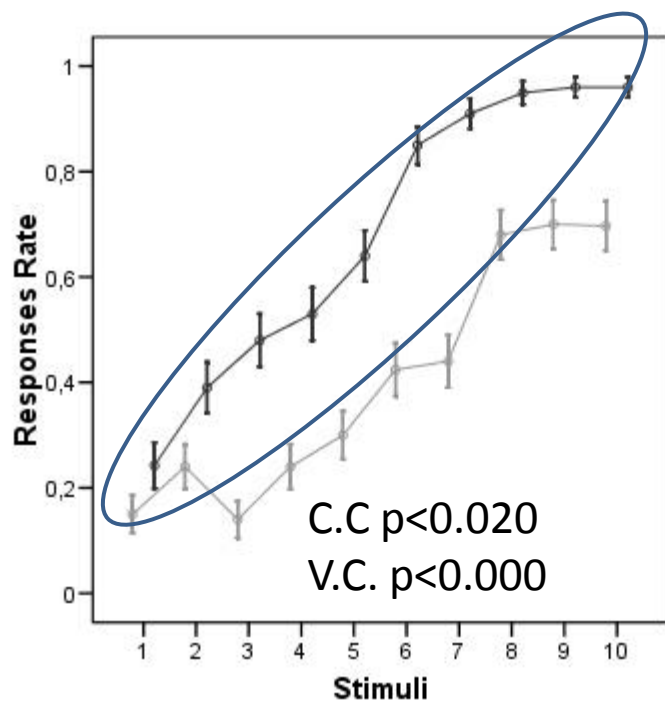


Duration & Scaling

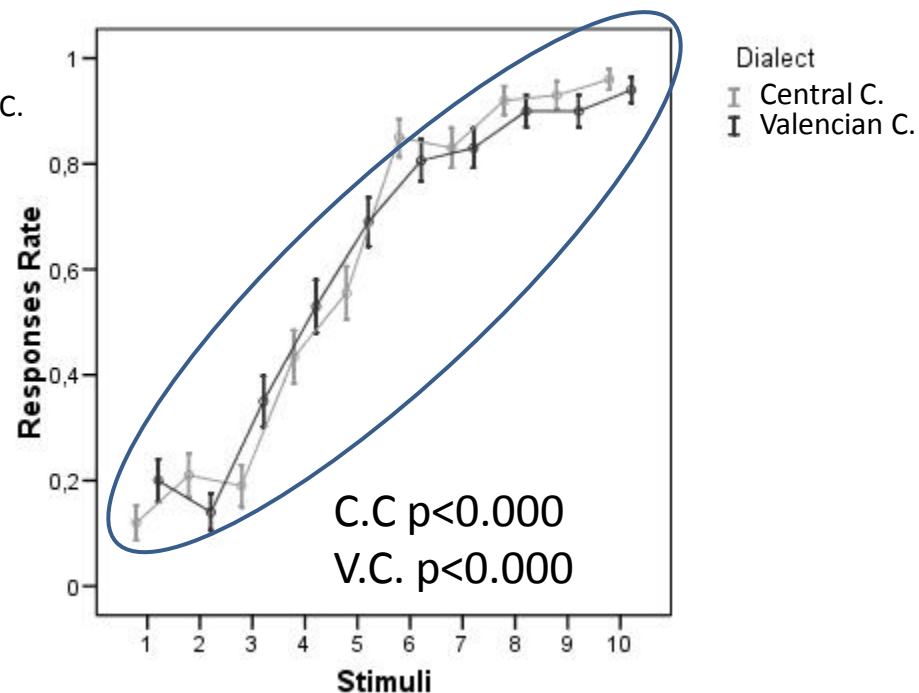


Identification Task

Prenuclear Scaling



Prenuclear & Boundary Scaling



Identification Task

Slope Values (calculated by logistic regression)

Continua \ Dialect	Valencian Catalan	Central Catalan
Duration	0,811	0,936
Boundary Scaling	0,879	0,679
Duration & Boundary Scaling	0,795	0,600
Prenuclear Scaling	0,589	0,724
Prenuclear & Boundary Scaling	0,589	0,544

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Two different strategies

- **Central Catalan:**

- A difference in pitch scaling on the **boundary tone** HH% seems to be the most relevant cue in causing listeners to change the interpretation of the question. Thus, an extra-high boundary tone signals that the speaker is surprised when s/he asks. When this cue appears combined with prenuclear scaling and duration it enhances the identification.

Relevance of the **nuclear configuration**

- The duration of the final syllable and prenuclear scaling alone act as secondary cues.

- **Valencian Catalan:**

- A difference in pitch scaling on the **prenuclear accent** is the main cue that helps listeners to change the interpretation of the question. Thus, an upstepped prenuclear H signals that the speaker is surprised when s/he asks.

Relevance of the **prenuclear configuration**

- However, the scaling of the boundary tone also acts as a secondary cue.

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- There is an **asymmetry** between Central Catalan and Valencian **Catalan**.

In **Central Catalan** → the scaling of the **boundary tone**. (This corroborates Crespo-Sendra et al. 2010)

In **Valencian Catalan** → the scaling of the **prenuclear accent**.

→ Importantly, perception results agree with production data.

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- Regardless of this difference, the two dialects need the **integration** of a set of **cues** to trigger a complete change in the identification curve.

- The results of these set of experiments show that two varieties of a language assign **different weights** in perception and production to the **prenuclear** and **nuclear** pitch movements.

- This confirms the results of recent studies (Petrone & D'Imperio in press, Petrone 2010, Face 2007, Ramírez et al. 2008, etc.) highlighting the importance of studying the **entire contour as a whole**.

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Thank you for your attention!

Gràcies per la vostra atenció!