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

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Summary

• Introduction

• Goals

• Method and Results

• Conclusions
• 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?
1. Introduction

2. Goals

3. Method & Results

4. Conclusions
• 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**.

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**Central Catalan**

- L*+H

**Valencian Catalan**

- L* HH%
- L+H *
- L* LH%
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.
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

\[ \text{`Do you sell tangerines?'} \]

Incredulity question

\[ \text{`You sell tangerines?'} \]
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
General experimental procedure and subjects

- 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.

**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
-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 ($p<0.000$).

-Listeners know very well in which context both interrogatives can or cannot be produced.
The materials for the gating task consisted of four gates from original stimuli of an info-seeking and an incredulity question.

Subjects had to say whether they heard an info-seeking question or an incredulity question (“s” (“surprise”) or “n” (“neutral”).
- Central Catalan listeners are able to identify the meaning of the question when they listen to the third gate.

- 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 materials for the identification task consisted of five continua in which three different parameters were manipulated. The base stimulus was the information-seeking question.

Parameters:
- Duration of the last syllable, 10 steps of 5.5 ms
- Scaling of the boundary tone, 10 steps of 12.5 Hz
- A combination of duration and tonal scaling of the boundary tone.
- Scaling of the prenuclear accent, 10 steps of 12.5 Hz
- A combination of the tonal scaling of the prenuclear accent and the boundary tone.

Subjects had to say whether they heard the question as "surprise" (incredulity) or "neutral" (info-seeking).
Identification Task

Duration

- C.C \( p < 0.426 \)
- V.C. \( p < 0.626 \)

Boundary Scaling

- C.C \( p < 0.000 \)
- V.C. \( p < 0.447 \)

Duration & Scaling

- C.C \( p < 0.000 \)
- V.C. \( p < 0.243 \)
Identification Task

**Prenuclear Scaling**

C.C p<0.020  
V.C. p<0.000

**Prenuclear & Boundary Scaling**

C.C p<0.000  
V.C. p<0.000
### Identification Task

**Slope Values (calculated by logistic regression)**

<table>
<thead>
<tr>
<th>Continua</th>
<th>Dialect</th>
<th>Valencian Catalan</th>
<th>Central Catalan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>0.811</td>
<td>0.936</td>
<td></td>
</tr>
<tr>
<td>Boundary Scaling</td>
<td>0.879</td>
<td>0.679</td>
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<tr>
<td>Duration &amp; Boundary Scaling</td>
<td>0.795</td>
<td>0.600</td>
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<tr>
<td>Prenuclear Scaling</td>
<td>0.589</td>
<td>0.724</td>
<td></td>
</tr>
<tr>
<td>Prenuclear &amp; Boundary Scaling</td>
<td>0.589</td>
<td>0.544</td>
<td></td>
</tr>
</tbody>
</table>
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.
- 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.
- 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.
References


Petrone, C. At the interface between phonetics and pragmatics: Non-local F0 effects on the perception of Cosenza Italian tunes. Submitted to Speech Prosody 2010.

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Thank you for your attention!

Gràcies per la vostra atenció!