Intonational Meaning and Regional Indexing in Corsican French Listeners

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• **Background:**
  ○ Social-contextual information are part of linguistic representations

• **Specifically**
  ○ “Empirical test of exemplar-driven effects of social-indexical information on **prosodic** production and perception”

• **The case under study**
  ○ Regional variation of the intonation of French spoken in Corsica

• **Type of task**
  ○ Interpretation (off-line)
Theoretical background

- Production and perception systems rapidly adapt to contextual cues
- Production
  - Social features attributed to the listener (Bell, 1984; Coupland, 1984)
  - Social features attributed to a referee (Hay et al., 1999)
  - The topic of conversation (Rickford & McNair-Knox, 1994)
- Perception
  - Gender (Johnson, Strand & D’Imperio, 1999)
  - Social class (Hay, Warren & Drager, 2006)
  - Age (Drager, 2011)
  - Nationality (Niedzelski, 1999; Hay, Nolan & Drager, 2006; Hay & Drager, 2010)
Implicit contextual cues

- In some studies, the varied contextual cues were *implicit*.
- Perception
  - Hay and Drager (2010): stuffed toy kangaroos and koalas (Australia) or kiwis (New Zealand)
  - Influence of the *concept* of a region
  - Perceptual bias towards the primed variety although speaker explicitly identified as NZ
- Production
  - Mendoza-Denton, Hay & Jannedy, 2003: effect of the cultural group (Afro-American) of the topic of conversation on Oprah Winfrey “monophtongization” of diphtong /ay/
  - Sanchez, Hay & Nilson, 2015: effect of discourse topic (Australia) on NZ speakers production of vowels in a corpus and an experimental task
These findings call for a model of linguistic (phonological) representations that rapidly adapt to contextual variations: dynamic and context sensitive.

Exemplar approaches:

- Linguistic representations emerge from aggregates of stored experiences of speech, which are enriched with details about the social context in which they occurred (Goldinger, 1998; Johnson, 2006; Pierrehumbert, 2001)
Beyond phonetic variation

• Other levels of representation depend on speech experiences in a similar way
  ○ Syntactic parsing of word strings (Bod, 2009, 2006; Möbius et al., 2010)
  ○ Alignments between abstract phonological categories (German et al., 2013)
  ○ Morphological productivity (Racz et al. 2014): correlated with gender
  ○ Semantic interpretation of wordforms (Bybee, 2006)

• What about phonological representations of Intonation?
Research questions

- Are alignments between/among categorical units in the grammar (as opposed to those between continuous phonetic scales and phonemes) sensitive to implicit social cues?

- Does this sensitivity arise from differences within the set of specific linguistic experiences that a listener has encountered during his/her lifetime?

- Is intonational meaning analogous to wordform and syntactic representations in the sense that it emerges from aggregates of stored experiences involving specific pairings that are indexed with contextual information?
Intonation in Corsican vs “continental” French

- Working hypothesis:
  - A formal similarity but a pragmatic difference between two rising-falling intonation contours
  - Corsican French penultimate rise-fall (CorsPRF) conveys regular polar questions (a simple rise in Continental variety)
  - Continental French penultimate rise-fall (ContPRF) conveys a strongly committed assertion, and secondarily an incredulous confirmation request
Waveform, spectrogram and Fo contour of the declarative polar question “Jacques a taillé les amandiers?” (Did jack cut the almond tree?) realized with a final penultimate rise-fall by a speaker of Corsican French.

We use the tonal labeling of French ToBI (Delais-Roussarie et al., 2015)
Waveform, spectrogram and Fo contour of the sentence “La question de l’élargissement se posera beaucoup moins” (the question of the enlargement will be less relevant) realized with a final penultimate rise-fall by a speaker of Continental French.

We use the tonal labeling of French ToBI (Delais-Roussarie et al., 2015)
• Boula de Mareuîl et al. (2012)
  ○ Production study of polar declarative questions comparing Corsican, Corsican French and Parisian French varieties

• Results
  ○ Corsican French polar questions (declarative syntax) = final rising-falling intonation with the f0 pic aligned with the penultimate syllable
  ○ An additional rise-fall on the subject NP
  ○ Parisian French items = final rising intonation

• Pragmatic function
  ○ No relevant literature
  ○ The claim that the PRF corresponds to polar questions in Corsican French is consistent with our informal observations during various visits in Corsica
Phonetics/phonology/Pragmatics of the ContPRF

- **Martin (1998, 1999):**
  - a rise-fall [+circumflex, -rising] with temporal alignment corresponding to a penultimate peak.

- **Post (2000):**
  - AM account of French intonation
  - bitonal H+H* combined with L%
  - H+!H*L% (Delais-Roussarie et al. 2015), or H+L*L% (Portes & Beyssade, to appear; Sichel-Bazin, 2015)

- **Pragmatic function**
  - Assertion with various attitudinal connotations:
    - statements of the obvious (Martin, 1999)
    - contradiction statements (Delais-Roussarie et al., 2015)
    - adamant statements (Sichel-Bazin, 2015; Portes & Beyssade, to appear)
Corsican speakers’ experience with varieties of French

- Corsican speakers presumably have significant experience in both varieties: Corsican French and Continental French

- Corsican living in Corsica
  - Corsican French is the usual variety
  - Substantial exposure to Continental French through media and tourism

- Corsican living in “continental” France
  - Close relationship with Corsica and Corsican relatives
  - Regular back and forth to Corsica during holidays and family events
  - Even if Continental French is used regularly, likely able to switch to the Corsican variety in a Corsican context

- Corsican speakers should be able to access either variety depending on the context and on the interlocutor
Specific hypotheses of the Corsican French study

If intonational phonological representations also are dynamic and sensitive to context:

- The interpretation of the penultimate rise-fall should depend on whether the concept of “Corsica” or “Continental France” is activated during processing of Corsican speakers

- Those who live or have lived in Corsica should be more sensitive to implicit contextual cues related to “Corsica” or “Continental France”
• Between-subject conditions involving a prime that is only in the background of the experiment and not suggestive of the identity of the speaker (following Hay & Drager, 2010)

• Forced-choice continuation of a dialogue that is consistent with interpreting the target sentence as either a question or an assertion (following Portes et al., 2015)
Implicit primes of the regional concepts
Forced choice interpretation task

- **Participants**
  - 48 native speakers of French
    - Born in Corsica
    - Spent most of their childhood in Corsica
    - Power: Based on pilot data (35% question responses), detects a change of 7% with $P(1-\beta)=0.8$

- **Task**
  - A binary forced-choice interpretation task
  - **Participants:**
    - read a short context visually presented
    - hear a sentence produced by one of the protagonist of the context
    - respond to the sentence as if they are the addressee by choosing the most natural response

- **Participants’ response tells us if they interpret the contour associated with the utterance as:**
  - a statement (Continental interpretation)
  - a question (Corsican interpretation)
### The visually-presented context preceding the utterance

<table>
<thead>
<tr>
<th>Social Prime</th>
<th>Context</th>
<th>Target utterance</th>
<th>Reaction 1: Consistent with statement</th>
<th>Reaction 2: Consistent with question</th>
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<tbody>
<tr>
<td>Corsican</td>
<td>« Antoine is cooking in the kitchen with his mother. He says to her...:</td>
<td>Il faut les mélanger.</td>
<td>Tu es sûr</td>
<td>Je crois que oui</td>
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<tr>
<td>Corsican</td>
<td>« Antoine is cooking in the kitchen with his mother. He asks her... »</td>
<td>« You have to mix them. »</td>
<td>« You sure? »</td>
<td>« I believe so. »</td>
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<tr>
<td>Corsican</td>
<td>Antoine cuisine avec sa mère. Il lui demande:</td>
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<tr>
<td>Parisian/Continental</td>
<td>Antoine cuisine avec sa mère. Il s’adresse à elle...</td>
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<tr>
<td>Parisian/Continental</td>
<td>« Antoine is cooking in the kitchen with his mother. He says to her...:</td>
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4th Variamu Workshop, Hong Kong Polytechnic University
A trained speaker produced the expected intonation contour
A native speaker of French naïve about the aim of the experiment was asked to imitate the trained speaker
Expected intonation contour:
- An f0 peak on the penultimate syllable
- A falling contour on the last syllable

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<thead>
<tr>
<th>Neutral context</th>
<th>Question context</th>
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<tbody>
<tr>
<td><img src="image1.png" alt="Neutral context waveforms" /></td>
<td><img src="image2.png" alt="Question context waveforms" /></td>
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Tu es sûr?

Je crois que oui.

Are you ready to do the task?

Paul participe à une compétition d'athlétisme. Son frère Antoine s'adresse à leur père:
Materials

- **32 target phrases**
  - × 2 contexts (neutral vs. question-biased)
  - × 2 primes (Corsican vs. Continental)

- **60 filler items**
  - No Y/N questions
  - No

- **4 counterbalanced lists**
  - 75% neutral contexts, 25% question contexts
  - No repeated experimental targets
  - × 2 response orientation
  - 8 blocks, randomization between/within blocks
At the end of the experiment, participants were asked to fill a questionnaire to report:

- Basic demographic information
- Language use background
- Attitudes toward Corsica and Corsica-Continental relations

Declarations:

1. La Corse devrait être une nation séparée, entièrement indépendante de la France.
   - accord très clair
   - désaccord
   - 1 2 3 4 5

2. La Corse devrait rester une région française.
   - accord très clair
   - désaccord
   - 1 2 3 4 5

3. Le gouvernement français ne traite pas correctement la Corse.
   - accord très clair
   - désaccord
   - 1 2 3 4 5

4. Le gouvernement français respecte suffisamment l'identité culturelle Corse.
   - accord très clair
   - désaccord
   - 1 2 3 4 5

5. Les français continentaux se sentent supérieurs aux français de Corse.
   - accord très clair
   - désaccord
   - 1 2 3 4 5

6. Les français continentaux considèrent les français de Corse comme leurs égaux.
   - accord très clair
   - désaccord
   - 1 2 3 4 5

Avez-vous des remarques complémentaires concernant ces questions ou d'autres aspects de ce questionnaire?
SgE sensitivity to pronoun accentual status in reference resolution depends on self-reported exposure to AmE/BrE/AusE.
SgE speakers imitating AmE intonation contours:
- Success depends on self-reported exposure to AmE
Initial results

Proportion "Question" responses

Context
Neutral
Question

Corsican
Continental
Preliminary findings

- The Corsican and French contours are phonetically equivalent
  - All participants believe the (Parisian) speaker is Corsican

- Target contour reliably interpreted as question in the Corsican system
  - In a pilot version involving a Corsican speaker and pre-nuclear rises, bias towards question interpretation was >90%

- Corscian listeners can access both systems in the interpretation of the target contour
  - Overall question bias in current version is ~45%

- Overall bias in current design lies in a favorable range
  - Power analysis suggests that 48 participants is sufficient to detect an effect size of ~7%
Social Indices in Hybrid Models

Wordform

Phonemic Parse

Abstract Subphoneme

Exemplar Space

Detailed Phonetic Percept

Abstract

Social Indices

\[ r \]

\[ s + t + l + t \]

\[ c i t y \]
Social Indices in Intonational Meaning

- Discourse Meaning
- Phonological Parse
- Abstract Subcategories
- Exemplar Space
- Detailed Phonetic Percept

Assertion

Y/N Question

H+ !H* L%

Social Indices
Merci de votre attention!

Il y a des questions dans la salle?