Conventions in Prosody for Affective Meanings: Non-canonical Terminal Contours in English Polar Interrogatives

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Introduction

• Intonation serves a variety of linguistic and social functions (Vaissière 2005)
  
  – Signaling the emotional and affective state of the speaker
  
  – Signaling the communicative intent of the speaker (speech act)

• Connections between different functions of intonation
Introduction

• A potential connection between the two functions of intonation


Intonation (+ sentence type)

“Do you have a problem?” (!H* L-L%)

Marked speech acts

Non-genuine question, accusation

Affective meanings

Speaker is annoyed, authoritative

Context
Introduction

• How does intonation mediate the connections between the two types of meanings?
  – Intonational conventions for both?
  – One derivative of the other?

• How does context influence different functions of intonation?
  – Context dependence (Cutler 1977, Cauldwell 2000)
  – Context independence (Ward and Hirschberg 1985)
Introduction

- Non-canonical terminal contours in **English polar interrogatives** (mainstream American variety)
  - Non-genuine questions such as *rhetorical questions, assertions, requests, etc.* (Hedberg and Sosa 2002)
  - Negative affects: **being challenging** (Scherer et al. 1984)
  - Mismatch between tune and sentence type
    cf. HRTs (uptalks)
The study

• A perception experiment using an English polar interrogative sentence

  – Manipulated in terminal contours

  – Embedded in different contexts

How does context influence the association between intonation and different types of meanings (affective, illocutionary, etc.)?
Methods: stimuli

*Do you wanna do the laundry?*

– Chosen based on a separate pilot experiment

– Spoken by a Caucasian male native English speaker from the Midwest region of the U.S.
Methods: stimuli

Do you wanna do the laundry?

Pitch (Hz) vs. Time (s)

- Rising (*2.2)
- Level
- Falling (*0.6)

L* H-H%
L* H-L%
H* L-L%
H* H-L%
H* H-H%
## Methods: stimuli

- **Contexts for the stimuli**

<table>
<thead>
<tr>
<th>Context</th>
<th>Conversation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No context</td>
<td>M: Do you wanna do the laundry?</td>
</tr>
</tbody>
</table>
| Invitation context     | F: I just bought a new batch of fabric softener and it smells so good. I can’t wait to try it out.  
                          | M: Do you wanna do the laundry? |
| Command / request context | F: I’m going outside to hang out with my friends.  
                              | M: Do you wanna do the laundry? |
Methods: sample trial

(Spoken stimulus played) Listeners responded to:

• Q1: What did the speaker say?

• Q2: How well do the following paraphrases capture the utterance that you’ve just heard?
  
  – I want to know whether you want to do the laundry. (genuine question)
  – Let’s do the laundry together. (invitation)
  – Do the laundry. or You should do the laundry. (request)

• Any other interpretations about the utterance?
Methods: sample trial

• Q3: Now answer the following questions (rate from 0-100).
  
  – Q3-1: How annoyed does the speaker sound?
  – Q3-2: How authoritative does the speaker sound?
  – Q3-3: How polite does the speaker sound?
  – Q3-4: What kind of attitude does the speaker have towards the listener (from very negative to very positive)?

• Any other impressions about the speaker?
Methods: experiment design

• Conditions: 3 terminal contours * 3 contexts
  – 9 conditions

• Between-subjects design
  – Each participant participated in a single condition
  – 35 ~ 50 participants for each condition

• A total of 437 participants recruited from Amazon Mechanical Turk
Results: annoyance

Level > Falling > Rising

- No context
- Invitation
- Command
Results: authoritativeness

Falling > Level > Rising

No context  |  Invitation  |  Command

authoritative

condition
- Falling
- Level
- Rising
Results: politeness

- Rising > Falling > Level

- Conditions: No context, Invitation, Command
- Politeness scores for Rising, Falling, and Level conditions
Results: positive stance

Rising > Falling > Level

No context  Invitation  Command

condition
- Falling
- Level
- Rising

stances:
- pos
- no_int
- int_1
- int_2
Results: affective meanings

• A series of regression models with:
  – Each of the **affective meanings** as the main dependent variables
  – Two factors, **intonation** and **context** manipulations, as independent variables

• Intonation: significant for all affective meanings; three-way distinctions for all

• Context: marginally significant for some affective meanings (e.g. invitation: higher positive stance)
Summary: affective meanings

- Annoyance, impoliteness, negative stance:
  - Level > Falling > Rising

- Politeness, positive stance, non-annoyance:
  - Rising > Falling > Level

- Authoritativeness:
  - Falling > Level > Rising

- Weak effects of contexts
Results: invitation interpretation

Rising > {Level, Falling}

Interaction: invitation context * rising intonation

<table>
<thead>
<tr>
<th>condition</th>
<th>Falling</th>
<th>Level</th>
<th>Rising</th>
</tr>
</thead>
<tbody>
<tr>
<td>No context</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invitation</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Command</td>
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</tr>
</tbody>
</table>
Results: command interpretation

Level > \{Falling, Rising\}
Results: speech acts

• A series of regression models with:
  – Each of the **speech acts** ratings as the main dependent variables
  – Two factors, **Intonation** and **context** manipulations, as independent variables

• Intonation: significant but less graded distinctions; smaller effect sizes

• Context: significant; large effect sizes
Summary: speech acts

• Command interpretation:
  – Level > {Falling, Rising}

• Invitation interpretation:
  – Rising > {Falling, Level}
  – Interaction with invitation context

• Heavily influenced by context manipulations
Discussion

• Conventionalized nature of intonation in signaling affective meanings
  – No simple generalization between affect and F0
  – Sentence type may be relevant (Scherer et al. 1984)

• Close connection between affective meanings and speech acts
  – Invitation & politeness, positive stance
  – Command & authority, annoyance
Discussion

• Intonational conventions on affective meanings remain consistent across different contexts

• Intonational effects on speech acts are less stable, and are constrained by (and interact with) context
Conclusion

• The existence of intonational conventions on affective meanings
  
  – Make reference to sentence types in their operations
  – May disambiguate speech acts by giving additional contextual cues

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Intonation (+ sentence type)
“Do you have a problem?” (!H* L-L%)

Affective meanings
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Marked speech acts
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Context
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Thank you!

Full references and acknowledgements can be found in the paper. Questions, comments, and feedbacks are always welcome:

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Appendix: no context, level
Appendix: no context, rise