

# Intonational Variation and Social Meaning

## Categorical and Phonetic Aspects

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## The Social Meaning of Variation

- Sociolinguistic variables are regarded by many as resources for constructing social meaning (e.g., Eckert 2000, Zhang 2001, 2005).
- To what kind of linguistic material does social meaning attach?
- In the domain of sound, social meanings can attach both to phonological categories and to phonetic qualities.

## Two Types of Salience

### 1. Categorical Salience

Salience is determined by the frequency with which a given category of variant occurs.  
(Infrequent variants are more salient than frequent variants.)

### 2. Phonetic Salience

Salience is determined by the phonetic characteristics of a variant.  
(Variants exhibiting acoustic extremes are more salient than those with average acoustic values.)

## Intonational Variation: Previous Work

Although most variation studies deal with segmental variables, a few have examined intonational variation.

- Guy et al. 1986  
Rising intonation in statements as an innovation in Australian English.
- Lowry 2002  
Nuclear accent shape as a function of speaking style in Belfast English.
- Yaeger-Dror et al. 2003  
Pitch accent on negatives depends on register.

## Declaratives with Canonical Focus

### 1. Falling

It's pretty similar to a CAT-scan.

### 2. Rising

They didn't really make friends with, like, the Americans.

### 3. Level

So I felt kind of bad.

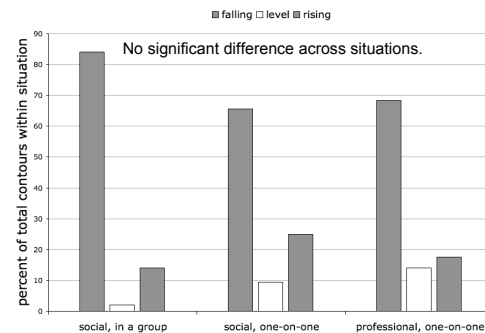
## Intraspeaker, Cross-Situational Design

- Part of a larger study on the speech of gay professionals
- 3 speakers
  - Heath: mid-20s medical school student from Long Island
  - Jack: mid-20s medical school student from the DC area
  - Regan: early-30s buyer from Southern California
- 3 situations each
  - social, in a group
  - social, one-on-one
  - professional, one-on-one
- 30 minutes per situation

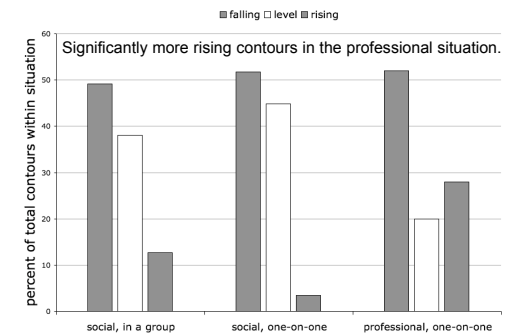
## Data Analysis

- Tokens were first coded as having falling, rising, or level contours (based on pitch tracks).
- Acoustic Analysis
  - Falling Contour**
    - f0 max
    - f0 min
    - f0 range of pre-fall rise
    - slope of pre-fall rise
    - duration of pre-fall rise
    - f0 range of fall
    - slope of fall
    - duration of fall
  - Rising Contour**
    - f0 max
    - f0 min
    - f0 range of rise
    - slope of rise
    - duration of rise
  - Level Contour**
    - f0
    - duration

## Frequency of Contours by Situation: Regan



## Frequency of Contours by Situation: Heath



## The Meaning of Rising Intonation

- Lakoff (1976)  
uncertainty, tentativeness
- McConnell-Ginet (1983)  
polite challenge, desire to continue discourse
- Heath in professional setting  
non-threatening to nervous patient

## Heath's Rising Contour Utterances

### Asking a Question

- There's been no change to it since then?

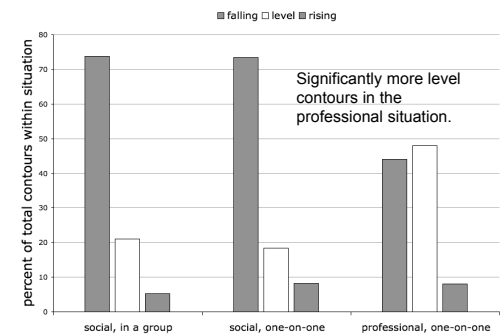
### Explanation

- Ahh, MRI stands for magnetic resonance imaging.
- What causes your tremors and stuff like that is the decreased dopamine in your brain, the decreased amount of that chemical.
- Um, bu-, so what we do is give you the Levidopa and Carbidopa.
- It checks your reflexes.

### Permission/Warning

- Alright, I'm gonna ask you some questions.
- Um, but I'm just gonna do a quick exam.

## Frequency of Contours by Situation: Jack



## The Meaning of Level Intonation

Jack in professional situation

- Meeting with professor to practice interpreting EKGs
- Informal testing situation in which the professor is asking a lot of questions
- Jack does not know many of the answers

Attractive alternative to the falling and rising contours.  
Using the falling contour could make Jack sound more certain than he really is, and using the rising contour could make Jack sound too unsure of his answers.

## Jack's Level Contour Utterances

### Admission of Uncertainty

- I don't know.
- I made it up.

### Answer to a Question

- Normally the standardization is two blocks.
- So it's not LBH.
- Two is the one to look for.
- I think that was the same patient you saw a little earlier.
- We can still interpret the prechordials.

## Summary of Categorical Variation

- None of the speakers use the most frequent variant – the falling contour – with different frequencies across situations.
- Heath uses the rising contour, and Jack the level contour more often in their professional situations, taking advantage of some of the social meanings they index.
- Because the other two variants appear less frequently in general, they can be used stylistically to do social work.

## What about the phonetic properties of the contour?

One might hold the a priori expectation that the phonetic character of a contour simply mirrors its phonological (categorical) patterns.

i.e. Heath  
more frequent rising contour in professional setting  
∴ rises have a higher f<sub>0</sub>, more dramatic rise in f<sub>0</sub>

Jack  
more frequent level contour in professional setting  
∴ level contours have a lower f<sub>0</sub>

## The phonetic properties do not follow the phonological patterns.

### Heath

The acoustic properties of the rising contour (f<sub>0</sub> max, f<sub>0</sub> min, range of rise, slope of rise) did not differ across situations.

### Jack

Although the level f<sub>0</sub> was lower in the professional situation than the one-on-one social situation, it was not lower than the level f<sub>0</sub> in the group situation.

The phonetic properties do not simply recast the categorical variation patterns. The categorical patterns are able to take on stylistic meaning because they are salient (due to their relatively infrequent use). The production of acoustic extremes is unnecessary.

## Variation in Phonetic Character

Where might we expect stylistic phonetic variation?

In common variants.

- cannot be categorically salient
- can be phonetically salient (only)



Falling Contour

## Regan: Falling Contours by Situation

	social in a group	social one-on-one	professional one-on-one
f0 max (Hz)	224	191	150
f0 min (Hz)	163	136	112
f0 range (Hz)	60	56	38
slope (Hz/ms)	0.431	0.413	0.237

Regan uses significantly higher f0 levels in the group social situation than the other two situations. The range and slope of the f0 fall is higher in the group social setting than the professional situation.

## Heath: Falling Contours by Situation

	social in a group	social one-on-one	professional one-on-one
f0 max (Hz)	190	119	128
f0 min (Hz)	121	95	93
f0 range (Hz)	69	24	35
slope (Hz/ms)	0.408	0.153	0.156

Heath uses significantly higher f0 levels, wider f0 ranges, and steeper f0 slopes in the group social situation than the other two situations.

## The Meaning of Extreme Falls

- The results suggest that both Regan and Heath are performing in their group social situations.
- How do we look into what the extreme falls mean?
- The conversational context of the outliers, under the assumption that the amount of phonetic substance indexes the strength of the meaning.

## Regan - Falling Contour Outliers

Performing his 'life of the party' persona:

- They had a tequila bar. It's like all different kinds of tequila. It was so classy . you know?

Expressing surprise:

- That [train] service is pretty nice, that non-stop one....I was pretty surprised. Like, I could commute that way.

Offering an opinion, referring to an upcoming trip:

- It'll be fun.

## Heath - Falling Contour Outliers

Performing his 'diva' persona:

- It'll survive with salon quality hair gel in it.
- You wanna rotate your shampoos.

Expressing surprise:

- Ooh, ooh, a little vent thing. Oh cool. I like it. I'm so excited by your little vent thing.

Offering an opinion:

- I like it.
- There's a cute little park.

## The Meaning of Extreme Falls

- In their group social situations, both Regan and Heath exhibit falling contours with higher f0 levels, wider f0 ranges, and steeper f0 slopes.
- Extreme falls are not a necessary part of group interactions, as Jack's falls are acoustically less distinct in group settings than one-on-one settings.
- The extreme falls may aid Regan and Heath in constructing and maintaining their 'life of the party' and 'diva' personae.
- These personae may be built by drawing on a more general meaning of acoustically extreme falls, such as 'expressiveness.'

## Conclusions

- In order to tap into a variable's full range of social meanings, both categorical and phonetic aspects of the variable should be considered.
- Future directions: additional speakers, more detailed conversational analysis, perception experiment
- Whereas merely using a (categorically) salient rising contour is sufficient for indexing social meanings like cooperativity, doing other kinds of social work with falling variants requires phonetic creativity.