



Four rising tunes in English we know something about:

- 1 Contradiction Contour (CC; Liberman & Sag, 1974; Ladd, 1980)
- 2 Rise Fall Rise (RFR; Ward & Hirschberg, 1985; Wagner, 2012; Constant, 2012)
- 3 Incredulity Contour (Hirschberg & Ward, 1992)
- 4 Polar Question Rise (YNRise; Pierrehumbert & Hirschberg, 1990; Bartels, 1999; Gunlogson, 2001; Truckenbrodt, 2012)

What we don't know:

- 1 How frequently do speakers actually produce these tunes in the contexts said to license them?
- 2 Which other tunes can be used in those contexts?
- 3 Are the tunes unacceptable in other contexts?
- 4 What do they sound like? (How can we be sure what tune a researcher had in mind?)

Example contexts and 'stage directions':

- (1) **Contradiction:** [Context: Your friend Emma spent the whole day with John yesterday and you know for a fact that she likes him. So you're very surprised by what Emma says, and your answer should reflect that.]
Emma: So yesterday Sarah asked me if I was going to John's Birthday party and I said no, I don't even like him.
Participant's response: You like John
- (2) **Incomplete Response:** [Context: You know your friend John is attending the party, and you know Emma knows and likes him, but you're not sure whether she'll like anyone else, and your answer should reflect that.]
Emma: I don't feel like going to this party tonight, I have the feeling I might not like any of the people there.
Participant's response: You like John
- (3) **Incredulity:** [Context: Just the other day your friend Emma was bad talking John, so you know for a fact that she doesn't like him. So you're very surprised by what Emma says, and your answer should reflect that.]
Emma: Yesterday Sarah kept saying mean things about John and I was really uncomfortable because John's a nice guy, I really like him.
Participant's response: You like John

- Participants read the entire dialogue, then responded to Emma's pre-recorded utterance.
- Participants were instructed to say the response as naturally as possible.

Production Methods

- 28 native English speakers in Montreal
- Recorded using a USB Logitech headset in a sound-attenuated booth
- 3 conditions × 9 items = 27 trials
- 27 trials × 28 participants = 756 observations
- Three RAs and both authors annotated which tune was used in each observation

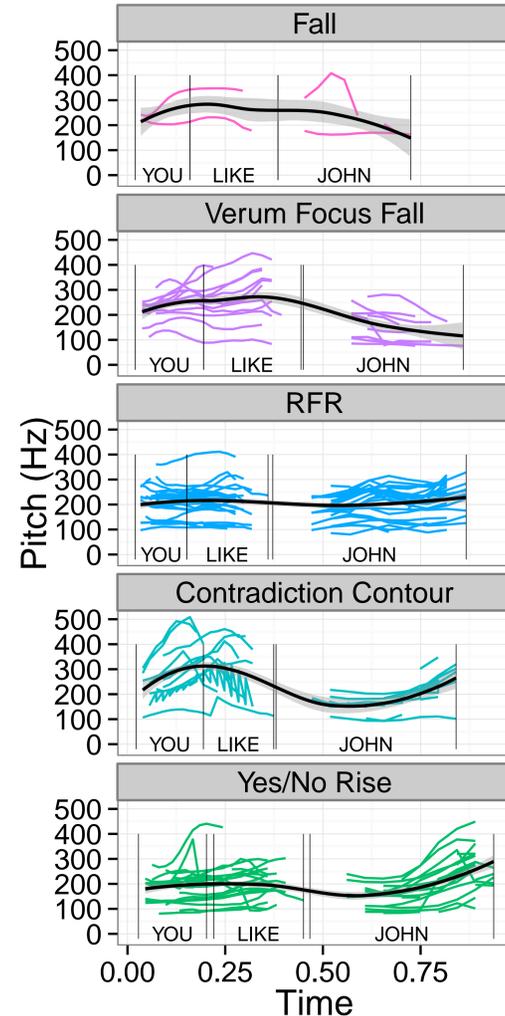


Figure 1: Average contours in black, individual observations in color.

Semantic characterization of six relevant tunes

- Declarative fall asserts *p* and marks *p* as new information
- Verum focus fall asserts *p* and says the speaker is certain that *p* should be added to the common ground
- RFR asserts *p* and insinuates alternatives
- CC asserts *p* and acknowledges evidence for *not-p*
- YNRise questions *p*
- Incredulity questions *p* and acknowledges evidence for *p*

Researcher Annotation

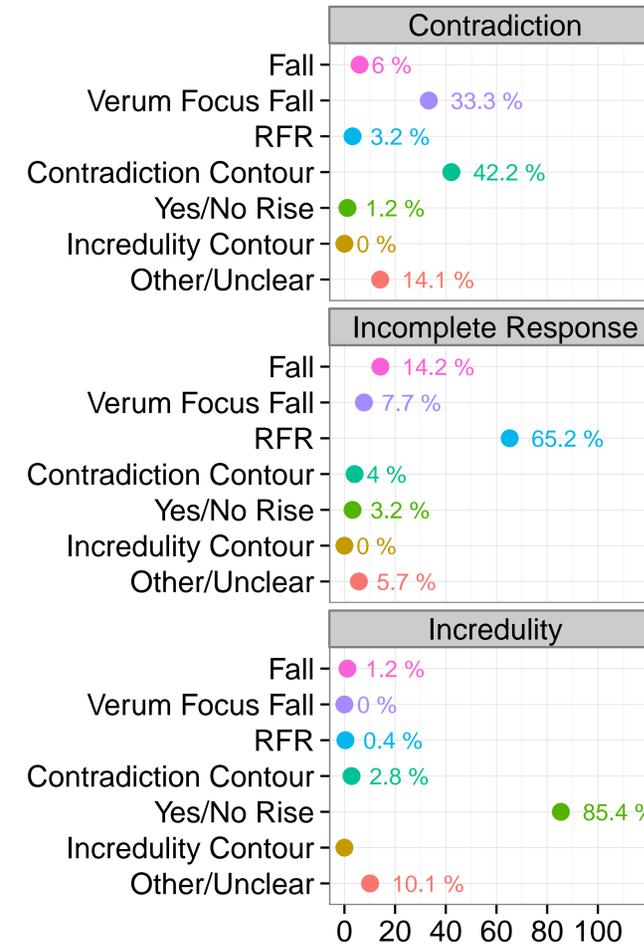


Figure 2: Percentages of contours produced for each condition

Discussion of production

- Verum is the only falling tune found with frequency.
- All rise fall rises (RFR) had object focus, therefore the rise, fall and rise all occurred on the object/third word.
- Incredulity contour was elusive: either the contour is infrequently used or the context that licenses it hasn't been pinpointed yet.
- Many of the "other" tunes in the contradiction condition seem to be a sort of falling contradiction contour, perhaps providing evidence that the CC can be decomposed. (See interactive plots at link below.)
- The YNRise category may contain more than one contour (some very emphatic and surprised, others with a lower final rise), all of them nevertheless distinct from the incredulity contour.

Don't buy it?

We obtained consent from our participants to release this data as a corpus. Listen to files and get more information here:

<http://prosodylab.org/research/bestiary/>.

Naturalness Rating in Context by Naive Listeners

- 15 native English speakers in Montreal
- Listened to each of four contours (CC, RFR, YNRise and Verum) in all three contexts
- They rated how natural the response sounded given the question on a scale of 1 to 8

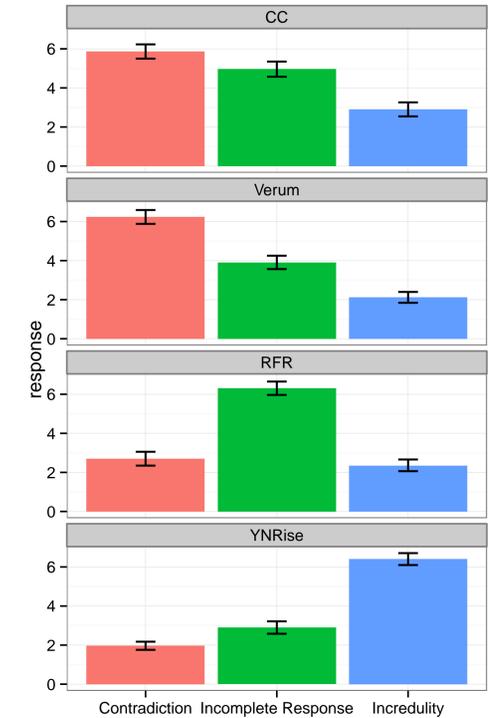


Figure 3: Naturalness Ratings

Some things we have learned

- 1 CC and RFR are the rising contours that appear most frequently in the contexts said to license them.
- 2 - Verum can also appear in contradiction contexts, at least here.
 - Incredulity conveyed by YNRise, not by Incredulity Contour, at least here.
- 3 - RFR and YNRise are highly acceptable only in the contexts in which they were produced.
 - CC is highly acceptable in Incomplete Response contexts arguably because additional assumption necessary for contradiction can be accommodated.
- 4 To hear the tunes we are discussing, please visit the link at the bottom of column 3.

Bibliography

- Bartels. 1999. The intonation of English... Constant. 2012. English rise-fall-rise.
 Gunlogson. 2001. True to form. Hirschberg & Ward. 1992. The influence of pitch range...
 Ladd. 1980. The structure of intonational meaning. Liberman & Sag. 1974. Prosodic form and discourse function. Pierrehumbert & Hirschberg. 1990. The meaning of intonation...
 Truckenbrodt. 2012. The interface of semantics with phonology and morphology. Wagner. 2012. Contrastive topics decomposed. Ward & Hirschberg. 1985. Implicating uncertainty.
 Westera. 2013. 'Attention, I'm violating a maxim!'