

(At Least) Two Members of the Rise-Fall-Rise Family

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All descriptions of English intonational grammar identify a family of contours with the (rise)-fall-rise shape. How many formally distinct contours or meanings reside therein, however, has long been unclear. Emblematic of this analytic ambiguity is a well-known pair of meanings associated with (rise)-fall-rise, Hirschberg and Ward's (1992) (HW) Uncertainty and Incredulity. (Examples below.) While traditional British accounts identify three distinct contours with these meanings (Wells 2006), HW present perceptual evidence suggesting that both meanings map to one phonological string, L^*+H $L-H\%$, differing primarily in pitch-accent peak height. From this lack of categorical phonological distinction, HW deduce a further semantic unity, the two meanings occupying different ends of a single semantic scale. Our aim is to reconcile these conflicting analyses by developing a methodology to elicit maximally-naturalistic, contextually-appropriate intonation contours from sufficient subjects that solid generalizations about the language use of individuals can begin to emerge.

We sought to elicit (rise)-fall-rise contours for both Uncertainty and Incredulity meanings, without inducing bias in phonetic implementation. Aside from peak height, we examined how f_0 turning-point alignment might distinguish contours used for these two contexts, owing to our own suspicions that late vs. early peak may be a crucial phonological distinction. We recorded two monosyllables: an unambiguously late-peak (L^*+H $L-H\%$) and an unambiguously earlier peak ($L+H^*$ $L-H\%$), judged to sound Uncertain and Incredulous, respectively. From these, we created new synthetic versions using intermediate values for turning-point alignment and f_0 . We hypothesized that subjects would categorize these ambiguous exemplars according to their expectations in context. During two recording sessions, subjects were given scenarios prompting them to express either Incredulity or Uncertainty, after presentation of the ambiguous (rise)-fall-rise model. Subjects read short dialogs, designed to set first one context and then the alternative context, one week later, using the same ambiguous training. 14 subjects participated, reading each of 35 target phrases twice for each context.

The use of phonetically-ambiguous training stimuli was successful: all subjects displayed systematically-different response patterns for Incredulity and Uncertainty, despite identical training stimuli. Only 2 (14.3%) produced contours with identical rise/peak alignment, but peak height differences as per HW. A further 3 (21.4%) produced (rise)-fall-rise for both contexts, but with systematically distinct pitch accents for the two: Incredulity was realized with earlier rises and peaks than Uncertainty, suggesting ToBI $L+H^*$ and L^*+H respectively. We take this to mean that these subjects map these meanings to categorically-distinct phonological strings. While the contrast between the two contours may be semantically and phonologically gradient for some speakers, it is also clearly grammaticalizable. Surprisingly, 9 subjects (64%) demonstrated marked resistance, sometimes explicit, to the production of (rise)-fall-rise in the Incredulity context. (All realized it readily for uncertainty). Most defaulted to low rise (L^* $H-H\%$). Apparently, these subjects too map Uncertainty and Incredulity to distinct phonological strings, in this case less similar than above. These results have important consequences not just for the analysis of American English intonation, but also represent an important methodological contribution to the analysis of intonation systems in general.

1. Incredulity: Expressing shock/scorn to an interlocutor's assertion

A: When I asked for a 10-letter word for a fruit, Bob said “There’s lemon”.

B: “**There’s lemon**”!? That’s absurd!

2. Uncertainty: reflects speakers’ uncertainty about their contribution to the discourse

A: Can you think of a 5-letter word for a yellow fruit?

B: **There’s lemon.** Would that work?