

## Variability in the perception of epistemic valence in Salerno Italian question tunes

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Intonation can express a wide range of linguistic information, such as sentence modality, information structure, speaker attitudes, and epistemic valence. However, one issue that still remains controversial is the stability of the relationship between intonational form and meaning, which suggests the absence of variability in the way intonation is used across speakers to express meanings. This position has been challenged by [1], showing speaker-dependent strategies in the tonal signalling of focus types in German, and by [2], arguing the absence of a one-to-one correspondence between tunes and linguistic functions. Recent studies have tried to model variability in production, by assuming that it is a systematic rather than a random phenomenon, linked to speaker-specific features (gender, age, dialect) [3]. Such features might also affect perception and shape the way listeners make inferences about speakers' intentions. Nevertheless, one uncontroversial point is the role of intonation in coding information regarding speaker epistemic attitude, which has been argued for several languages (English [4], French [5], Catalan [6], and Bari Italian [7]).

Our study intends to investigate how variability of polar question tunes is employed in the identification of epistemic modality in Salerno Italian (SI). The tunes used for SI polar questions are two phonologically distinct rise-falls, L\*+H L-L% and L+H\* L-L%, and a rise-fall-rise, L+H\* L-H% (see Figure 1), whose distribution appears to be highly dependent on individual speakers [8]. The hypothesis we test is that such variability depends on a complex interplay between the expression of speaker commitment and individual variability in terms of chosen intonational form on the part of the listener. We also hypothesise that such variability might be explained by listeners' exposure to other languages or dialects (for example, whether they lived in cities other than the native one), assuming that phonological traces from past experience with other systems might affect the perception of the native variety [9].

We performed a perception survey (submitted through Gorilla.sc) and asked 45 SI listeners to judge question utterances (24 items x 3 tune types) according to perceived degree of speaker certainty relative to the question response. Certainty scores were collected using a slider ranging from 0 ('She expects no') to 100 ('She expects yes').

Data were analysed using mixed effect linear regression models in R [10], using the packages *lme4* [11] and *afex* [12]. The model included Tune type (3 levels) and Other cities (having lived or not in another city for more than 12 months, 2 levels) as fixed effects. We also included Listeners and Items as random intercepts and slopes for the effect of Tune type.

Results show an effect of Tune type,  $F(2, 32.07) = 4.87, p < .01$ . Specifically, multiple comparisons among Tune type levels revealed that L\*+H L-L% received lower certainty values, however the only pair of tunes that yielded significantly different results was L\*+H L-L% vs. L+H\* L-H%, while the inspection of the other two contrasts revealed no significant difference. Also, an effect of Other cities was found ( $F(1, 47.32) = 5.89, p < .02$ ): listeners who lived in other cities globally rated all stimuli with a lower certainty value relative to all other listeners. Additionally, random intercepts for Listeners show that individual differences in response scores appear to be quite important (see Fig. 2, right).

As hypothesized, the significant effect of Tune type on the Certainty score show that epistemic valence can be tonally encoded in SI question tunes. On the other hand, listener's behaviour was influenced by sociophonetic (Other Cities) as well as by additional idiosyncratic factors, suggesting that the link between intonational form and pragmatic meaning cannot be uniformly modelled within a language community.

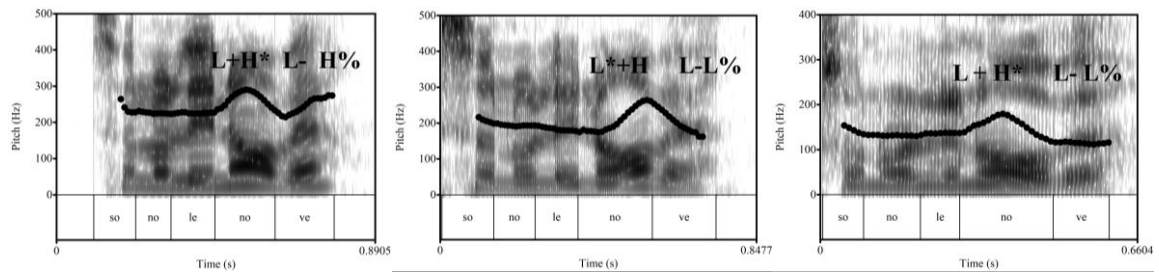


Figure 1. *F0* contours for the question *Sono le nove?* “Is it nine o’clock?” uttered with either the  $L^*+H$   $L-L\%$  (left),  $L+H^*$   $L-H\%$  (middle), or the  $L+H^*$   $L-L\%$  (right) tune.

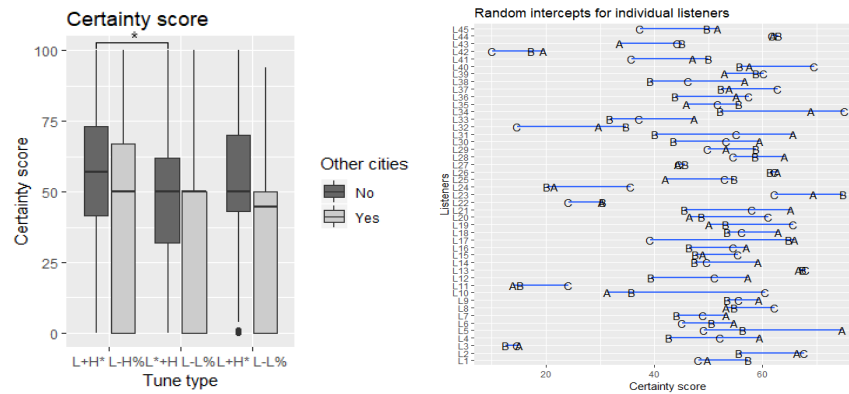


Figure 2. Response scores by Tune Type and Other Cities (left) and Individual Listeners intercept values, A:  $L+H^*$   $L-H\%$ , B:  $L^*+H$   $L-L\%$ , C:  $L+H^*$   $L-L\%$  (right).

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