

„Question or Statement?“ Interpretation of truncated nuclear falling contours by L2 listeners compared to German natives

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Intonational research has revealed differences in how speakers of different languages and varieties accommodate suboptimal segmental contexts with little sonorant material [1-6]. Durational adjustments or adaptations to the contour (e.g., by truncating it or making it steeper) are common strategies. German speakers tend to cut-off nuclear falling contours when sonorant material runs short, such that underlying rising-falling contours may surface as rises (Fig. 1). This makes f_0 ambiguous as to a statement or question reading [7] and may hence provide challenges for listeners in inferring the intended meaning. In these cases, L1 German listeners use durational cues [8] or may rely on spectral information [9], but we do not yet know whether truncated contours present learners (L2 listeners) with difficulties in interpreting the intended linguistic meaning, particularly when L1 and L2 use different compensation strategies.

The present study starts filling this gap by comparing German L1 (5 f, 10 m, $\bar{O} = 26.9$) and L2 listeners on their ability to interpret the communicative function (statement vs. question) of German nuclear falling and rising contours in optimal (disyllabic) and suboptimal (monosyllabic) segmental contexts in a forced-choice perception experiment. If truncated falls are indeed difficult to be interpreted as statements, accuracy rate for falling contours in the suboptimal segmental context is expected to be lower compared to optimal contexts where all necessary information is available for listeners. We included proficiency-matched L2 listeners with different L1s to additionally assess cross-linguistic influence: so far, 11 Luxembourgish (9 f, 1 m, 1 d, $\bar{O} = 32.9$ yrs, \bar{O} DIALANG score [10] = 39.1) and 19 Syrian Arabic listeners (4 f, 15 m, $\bar{O} = 29.6$ yrs, \bar{O} DIALANG = 40.4); testing of L1 British English underway.

In the experiment [11], L1 and L2 listeners were presented with 36 German two-word strings of the sort *Herr/Frau Nachname?!* in which the surnames were short monosyllables ('suboptimal context' that leads to truncation in falling contours, e.g., *Schiff* [ʃɪf], *Saff* [zaf], *Kuss* [kus]) or disyllables ('optimal context' that allows the full intonation contour, e.g., *Schiefer* [ˈʃiːfɐ], *Safer* [ˈzaːfɐ], *Kußer* [ˈkuːsɐ]). The strings were recorded by a German speaker with falling (L+H* L-%) or rising intonation (L* H-^H%) to either match an immediately following statement ("Nice to see you!") or a question context ("Is it you?"). Listeners' task was to decide whether a given string (*Herr/Frau Nachname*) matched the statement or question context. If listeners' response matched the intended meaning, it was coded as "correct".

Figure 3 shows the proportions of correct responses for the three listener groups and conditions. Results around 0.5 reflect chance level; results close to zero a systematic use of available cues, with an opposite interpretation. Only few Germans were close to chance with monosyllables, suggesting that they do not have particular difficulties in interpreting the intended communicative function in suboptimal conditions. Luxemburgish listeners show a similar pattern, with only a few listeners exhibiting the systematic opposite interpretation for both monosyllabic and disyllabic names. For Arabic listeners, many responses are around chance, for both monosyllabic names and for falling contours in general, suggesting general difficulty in this group. To analyse the available cues in suboptimal contexts, we used the ProPer toolbox [12] to measure the shape of f_0 within syllabic intervals in terms of the Synchrony metric [13]. There are subtle yet reliable differences in the shape of the rising contours between the two conditions such that the rise is steeper in monosyllabic names when the intended contour is rising rather than falling (Fig. 2). We are currently designing a series of experiments and run further acoustic analyses to pinpoint the cues L1 and L2 listeners use for interpretation when the f_0 contour is ambiguous (Fig. 1-2).

Monosyllabic surname

Disyllabic surname

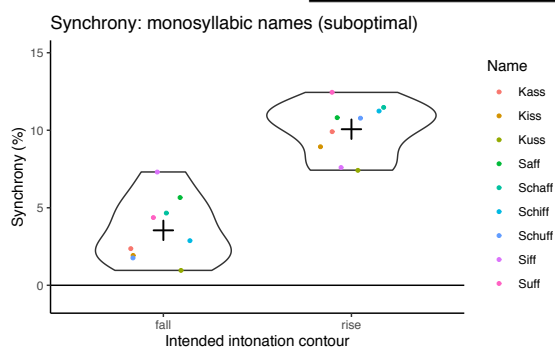
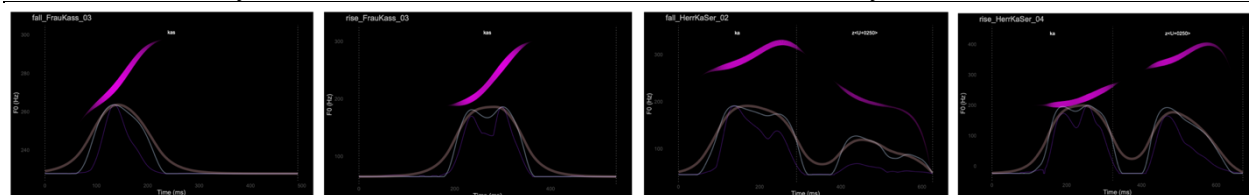


Figure 1 (above) shows *Periograms* [12] that present enriched f_0 contours in purple of 4 examples: 2 suboptimal contexts (monosyllabic surname, *Kass*, left half; truncated for falls, left most graph) and 2 optimal contexts (disyllabic surname, *Kaßer*, right half), in intended statement contour (falling, left) and question contour (rising, right).

Figure 2 (left) shows aggregated values of Synchrony measurements [13] of falling (left) vs. rising (right) contours with the 9 monosyllabic names in the stimuli.

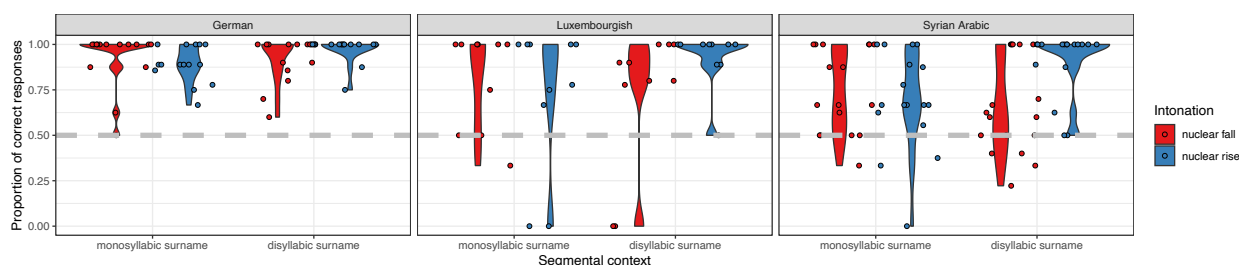


Figure 3 Proportion of correct responses for the three listener groups, split by *segmental context* and *intonation condition*.

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