Effects of information structure, syllable structure, and voicing on the tonal realization of nuclear falling pitch accents in German

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We investigate the effect of information structure on the tonal realization of nuclear falling accents in German. In a production experiment, the factors of syllable structure (± open syllable), voicing of following consonant (± voice), and number of pitch accents in the intonation phrase were systematically varied in four different information structure contexts: wide focus, narrow focus, contrastive focus and givenness. Previous studies suggest that (i) the appearance of a pitch peak depends on a distinction of focus (late peak) and givenness (early peak) (Kohler 1991, Niebuhr 2007), and (ii) the scaling of accentual high tones is raised under focus (Baumann et al. 2006, Féry & Kügler 2008). In general, it is assumed that tones align relatively stable with segmental landmarks (e.g. Atterer & Ladd 2004 for German, and in general Ladd 2008), which has been mainly shown for prenuclear pitch accents.

In this study, we use four different target words as listed in (1) that were embedded in carrier sentences of different sentence length in order to vary the number of accents in the intonation phrase. Stressed syllables are underlined in (1). We recorded 10 speakers of Standard German realizing 96 sentences each (2 syllable structure x 2 voicing contexts x 3 sentence length x 4 information structure contexts x 2 repetitions). We analysed the alignment and scaling of nuclear falling pitch accents. Results show that tonal alignment and scaling depends on information structure contexts. However, the phonetic effects of syllable structure, and voicing of following consonants account for considerable variation in the alignment and scaling patterns. This suggests that fine-phonetic details matter for the transcription of intonation, and untrained transcribers should be aware of these facts when relying on the F0-curve as an additional criterion for the decision of the transcription of tonal categories.

(1) Target words embedded in carrier sentences of different length
   a. Karina   [open syllable, following voiced consonant]
   b. Corinna  [closed syllable, following voiced consonant]
   c. Lolita    [open syllable, following unvoiced consonant]
   d. Melitta   [closed syllable, following unvoiced consonant]

References