How *ornamental* are German prenuclear accents?

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Background and Motivation: The majority of studies on the relation between prosody and meaning restrict themselves to the form and function of *nuclear* accents, commonly defined as the last pitch accent in an intonation unit. The status of *prenuclear* accents – i.e. pitch accents that occur *before* the nucleus within the same intonation unit – is less clear, however. It has been claimed that prenuclear accents do not contribute much to the meaning of an utterance and that they are optional in many cases (cf. Büring's [1] *ornamental accents* on prefocal elements). Other studies found that prenuclear accents were placed consistently, even on textually given information in contrastive contexts [2] or on topics in topic-comment structures [3]. However, the accents displayed subtle changes in peak scaling [2,3] or peak alignment [3], which expressed meaning-related differences. The aim of the present study is to find out whether differences in the information status of a sentence-initial referent and the type of focus domain the referent is part of influences its prosodic realisation.

Methods: Twenty native German speakers (13f, 7m), aged between 23 and 69, were presented with four different mini-stories on a computer screen. For each story, two pre-recorded context sentences were played to the subjects, who were asked to read out only the last sentence (printed in bold face) at a natural but swift speech rate (primed by a training item). By varying the second context sentence we designed four conditions rendering the subject argument in the target sentence either *given*, *accessible*, *new* or *contrastive* (see (1) for the target word *Banane* 'banana'; expected prenuclear and nuclear accents are underlined). In the first three conditions the target words are in broad focus, while in the last condition the target word is a contrastive topic. Each participant was presented with only one condition per story. The classification of phrase breaks and accent types that entered our analysis was based on a consensus judgment of three trained phoneticians.

Results: We had to exclude one complete story and an additional 23.3% of the target sentence realisations, since subjects produced a phrase break after the target word, turning potentially prenuclear accents into nuclear accents. All remaining 46 utterances carried a prenuclear accent on the target word, i.e., surprisingly, we found no cases of deaccentuation. As to phonological accent type, L*+H was most frequent in all conditions. Generally, however, the distribution of accent types indicates a slight increase in prominence from the encoding of *given* referents through *accessible* and *new* to *contrastive* items (see Fig.1; accent types are arranged according to their perceptual prominence in German [4]). This is reflected by an increasing percentage of rising pitch accents (L*+H and L+H*) in relation to low and high accents from *given* to *contrastive* information. Among the gradual phonetic cues which make up the accents, *pitch excursion* turned out to be particularly important. Figure 2 shows the results for all (remaining) target words, grouped by accent type: All occurring accent types exhibit an increase in pitch excursion with increasing informativeness, except L+H*. Interestingly, this accent type – which generally is most prominent and shows the steepest pitch excursion for *given*, *accessible* and *new* referents – is expressed by a less pronounced rise in pitch when marking contrastive topics (unlike [3]).

Conclusions: The results suggest that the form of a *pre*nuclear accent – and not only of a *nuclear* accent – is systematically affected by the information structure of an utterance in German. In fact, our data show, at least in tendency, the expected distribution: The more informative a referring expression, the higher its prosodic prominence. Although the variation in the production of prenuclear accents is high, the emerging patterns do not seem to be random. They rather point to linguistically relevant differences challenging a view on prenuclear accents as being merely 'ornamental'.

(1)
Context 1: Johannes hat den ganzen Samstag an seinem Stand auf dem Markt verbracht.
(John spent all day Saturday at his produce stand at the market.)
Context 2a ('given'): Jeder schien Bananen kaufen zu wollen. Es gab allerdings ein kleines Problem.
(It seemed like everyone was asking for bananas. There was a little problem, though.)
Context 2b ('accessible'): Jeder Kunde auf dem Markt schien Obst und Gemüse kaufen zu wollen an diesem Tag. Es gab allerdings ein kleines Problem.
(It seemed like everyone at the market that day was asking for fruit and vegetables. There was a little problem, though.)
Context 2c ('new'): Es waren viele Kunden da und er schien einen wirklich guten Tag zu haben.
(There were a lot of customers and it seemed like he had a really good day.)
Context 2d ('contrast'): Es schien ein guter Tag für Obst zu sein. Ein Restaurant hat ihm alle Orangen abgekauft.
(It seemed to be a good day for fruit. A restaurant bought all the oranges.)
Target: Die Ba**na**nen wurden an den **Zoo** verkauft. *(The ba**na**nas were sold to the **zoo**.)*
[The other three two target words were *Superheld* 'superhero', *Neffe* 'nephew' and *Chamäleon* 'chameleon']

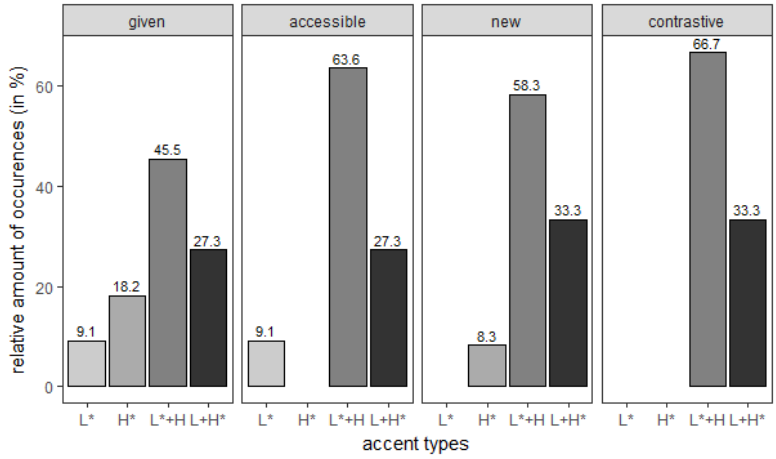

Figure 1. *Distribution of prenuclear accent types as a function of a sentence-initial referent's information status. Perceptual prominence of accent types increases from left (L*) to right (L+H*).*

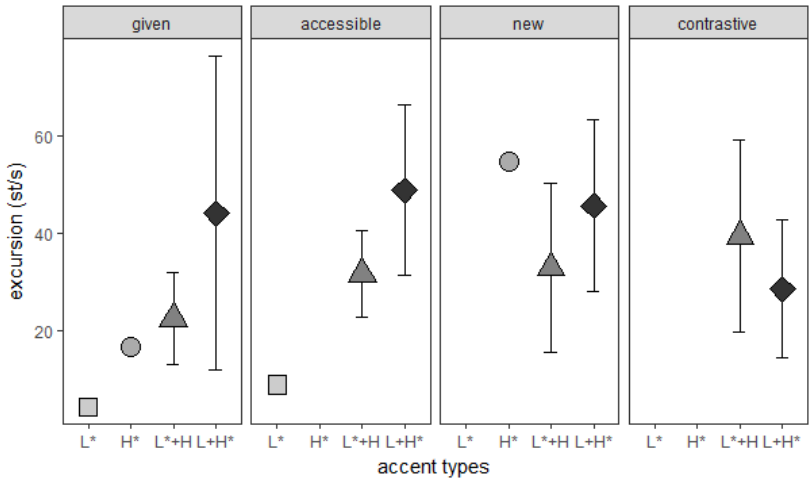

Figure 2. *Pitch excursion of prenuclear accents on all test words and for all accent types as a function of their information status.*

[1] Büring, D. 2007. Intonation, Semantics and Information Structure. In Ramchand, G. & Reiss, C. (Eds.), *The Oxford Handbook of Linguistic Interfaces*. Oxford University Press, 445-474.
[2] Féry, C., & Kügler, F. 2008. Pitch accent scaling on given, new and focused constituents in German. *Journal of Phonetics* 36(4), 680-703.
[3] Braun, B. 2006. Phonetics and phonology of thematic contrast in German. *Lang. and Speech* 49(4), 451-493.
[4] Baumann, S., & Röhr, C. 2015. The perceptual prominence of pitch accent types in German. *Proceedings of the 18th International Congress of Phonetic Sciences*, (Glasgow), Paper number 298, 1-5.