

**Expecting the unusual:  
The prosodic interpretation of contextual information**  
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This paper investigates the influence of prior context, generating different expectations, on the prosodic expression of German utterances. In a production study we evaluated how speakers prosodically encode information that is intended to sound either unusual/exciting (1a) or ordinary/negligible (1b) to the listener. In a perception study, we investigated the effectiveness of the prosodic marking from the listeners' perspective.

- (1) (a) *Rate mal, was uns heute passiert ist!*      *Wir haben Milena getroffen.*  
      'Guess what happened to us today!'      'We met Milena.' (target noun = Milena)
- (b) *Heute ist nichts Besonderes passiert.*      *Wir haben Milena getroffen.*  
      'Today, nothing special happened.'      'We met Milena.' (target noun = Milena)

In the production study, fourteen German native speakers (mean age = 25.8 years, SD = 2.0) produced the second/target sentence as an appropriate continuation of the first sentence. The intention to make something sound unusual or exciting is reflected in a probabilistic distribution of discrete phonological pitch accent types on the nuclear target noun (see Fig.2): Unusual/exciting information triggers predominantly rising accents (L+H\*, H\*), while ordinary/negligible information triggers increasingly more falling accents (H+!H\*, H+L\*). Moreover, a quantitative analysis of one continuous phonetic parameter that captures the f0 movement towards the target for the pitch accent, the tonal onglide (measurement depicted in Fig.1; cf. [1]), revealed the following: Unusual/exciting information leads to higher tonal onglide values (greater rises) that were found in previous studies to be perceptually more prominent (e.g. [2]), while ordinary/negligible information leads to lower tonal onglide values (shallower rises or (steeper) falls) that are perceptually less prominent. This effect of the tonal onglide holds both across and within pitch accent categories (see Fig.2), e.g. as compared to the ordinary/negligible condition, L+H\* is found more often in the unusual/exciting condition, and the instances of L+H\* with greater onglides are found more often in the latter condition, too.

A perception study, with sixty German native speakers (mean age = 28.7 years, SD = 9.5) using web-based rating tasks, assessed possible interpretations/expectations in the manner of semantic differentials with visual analogue scales. Participants listened to and evaluated a selection of target utterances from the production study that were realized with either steep or shallow f0 rises and falls on the nuclear noun (see Fig.3). Results confirmed that a pronounced rising onglide (as in L+H\*) on the target noun leads to the interpretation of unusual/exciting information, although shallow rising onglides (H\*) do not. As expected, falling onglides (H+!H\*, H+L\*) also failed to evoke an unusual/exciting interpretation (see Fig.4).

In sum, we show that the choice of pitch accent type may also be related to expectations of speakers and listeners as to whether the information deviates from an "unmarked" standard, i.e. ordinary/negligible information, or not. While the unmarked standard commonly involves less prominent prosodic marking, an increase in the expectation for unusual/exciting information involves more prominent prosodic marking, suggesting that in German rising onglides participate in orienting attention (the greater the rise, the stronger the effect) and that there are less marked prosodic realizations for isolated (all-new, broad focus) utterances (e.g. H\* and H+H!\*/H+L\* accents) which do not have this attention orienting effect. However, individual speakers convey this information in different but systematically compatible ways supporting a view of intonational phonology that integrates qualitative pitch accent categories and quantitative phonetic parameters (see [3]).

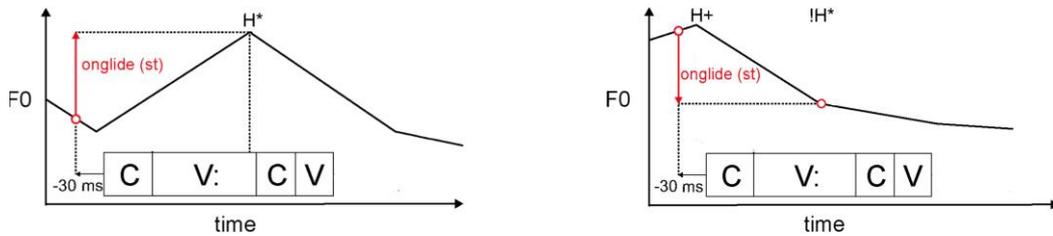


Figure 1. Schematic depiction of onglide measurements for (left) rising ( $L+H^*$  and  $H^*$ ) and (right) falling ( $H+!H^*$  and  $H+L^*$ ) pitch accents (adapted from [1:93]).

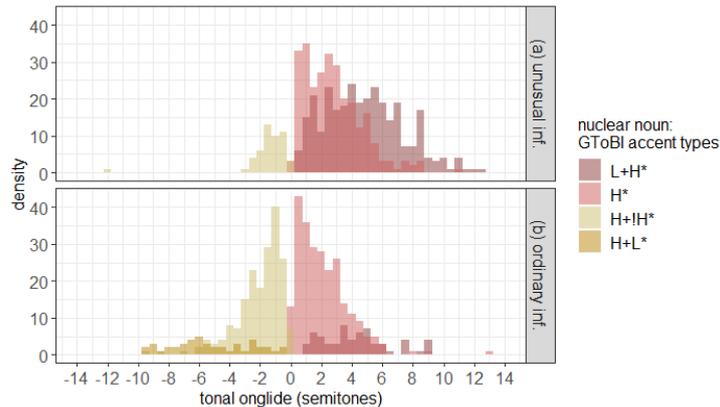


Figure 2. Distribution of GToBI accent types and tonal onglides on the nuclear target noun as a function of context, all speakers.

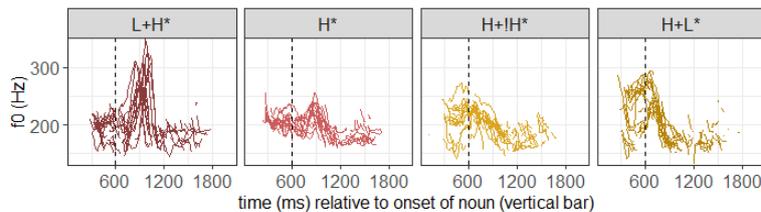


Figure 3. Individual  $f_0$  contours of perception stimuli per condition, superimposed and temporally aligned with the onset of the nuclear target noun (onset at vertical bar).

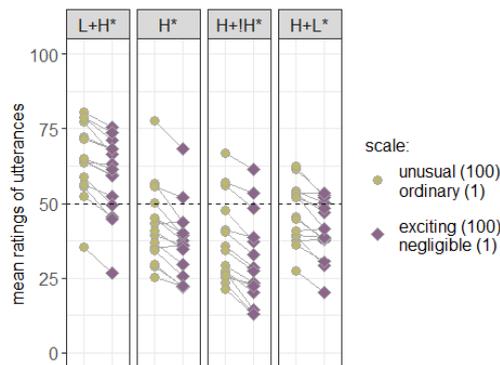


Figure 4. Mean listener ratings of each stimulus on two scales per prosodic condition.

[1] Grice, M., Ritter, S., Niemann, H., & Roettger, T. 2017. Integrating the discreteness and continuity of intonational categories. *Journal of Phonetics* 60, 90-107.

[2] Baumann, S., & Röhr, C. T. 2015. The perceptual prominence of pitch accent types in German. In *Proceedings of the 18th International Congress of Phonetic Sciences (ICPhS XVII)*, vol. 298, pp. 1–5. Glasgow, UK: The University of Glasgow.

[3] Cangemi, F., Krüger, M., & Grice, M. 2015. Listener-specific perception of speaker-specific productions in intonation. In Fuchs, S., Pape, D., Petrone, C., & Perrier, P. (Eds.), *Individual Differences in Speech Production and Perception*. Frankfurt: Peter Lang, 123–145.