

## **Rising pitch accents are more sensitive to context than falling pitch accents**

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Prosody is often used to highlight new or surprising information, making it more prominent, while given or expected information is prosodically attenuated, making it less prominent. For German it has been shown that pitch accent types differ in their degree of perceived prominence (Baumann/Röhr 2015) and that they play an important role in the marking of information status (Röhr/Baumann 2011). The pitch movement leading towards the target on the accented syllable ('on glide') is the major tonal cue for prominence (Ritter/Grice 2015), with rising on glides being perceptually more prominent than falling ones (Baumann/Röhr 2015). ERP data indicate that different pitch accent types are mapped onto information status in real-time: mismatches between accent type and information status evoked a more pronounced N400 followed by a late positivity (Schumacher/Baumann 2010; see Hruska/Alter 2004). One way to account for this pattern is that the negativity reflects the contextually driven detection of the mismatch between prosody and information structure, while the positivity reflects updating processes of mental representations. An open question is whether the latter process arises from conflicting information in the input (as suggested by Schumacher/Baumann 2010) or is tied to signal-driven attentional orienting.

The present ERP study aimed to investigate effects of expectation- and signal-driven processing of prosodic prominence. We investigated cases in which i) prior context generates an expectation for a particular prosodic realization and thus leads to correlates of expected or mismatching informational processing, and ii) pitch accents differ in their perceptual prominence.

We tested two types of contexts crossed with two pitch accent realizations. For example, the context sentence (1a) builds up an expectation for new, exciting information, which should be prosodically highlighted. In contrast, context (2a) generates an expectation for nothing new or unusual and thus builds up an expectation for neutral information with its appropriate prosody. Test sentence (1b), with a prominent accent appropriate for new, exciting information (rising on glide), matches context (1a) but not context (2a). Conversely, sentence (2b), with a less prominent accent (falling on glide), typically found on contextually derivable information, matches context (2a) but not (1a). We hypothesize that mismatches (incongruent combinations of prosody and context expectation) will result in an expectation-based error (negativity). Second, a late positivity will arise either as a repair of conflicting information or when a prominent pitch accent leads to mental model updating. Third, given that rising on glides are perceptually more prominent than falling on glides, we predict that the former will trigger more attentional orienting.

Twenty-four monolingual speakers of German participated in this ERP study. They listened to context and target sentences recorded by a trained phonetician (240 critical items + 120 filler items) and performed a word recognition task. We calculated regression-based ERPs (Smith/Kutas 2015a/b) and computed linear regression models with the factors prosody (rising/falling on glide) and context (exciting/neutral) and two continuous covariates pitch and intensity. Results indicate for both accent types a more negative deflection following the mismatching context (reflected in an interaction of prosody and context between 300-400ms). Furthermore, both accent types elicit a late positivity between 500-700ms following the exciting context. This may be tied to a mechanism of attention orienting (triggered by a highlighting effect of the exciting context) and cannot be accounted for on the basis of repair mechanisms. Rising compared to falling on glides also show an early positivity (100-200ms). Hence, the results provide evidence for discrete neurophysiological correlates of prosodic and contextual prominence: Unexpected accents yield an expectation error (N400) while a prominent rising accent consumes attentional resources and engenders updating processes (early positivity) which is also observed for contextual highlighting (late positivity) independent of the prosodic realization of the target name.

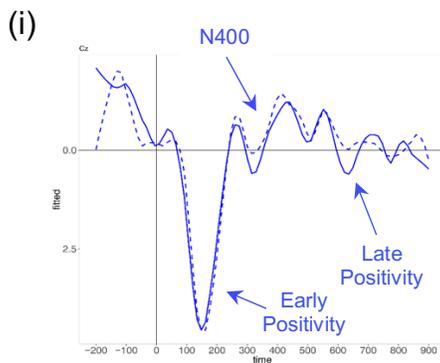
**Example stimuli:**

(1) (a) *Rate mal, was uns heute passiert ist!*  
 'Guess what happened to us today!  
 exciting context

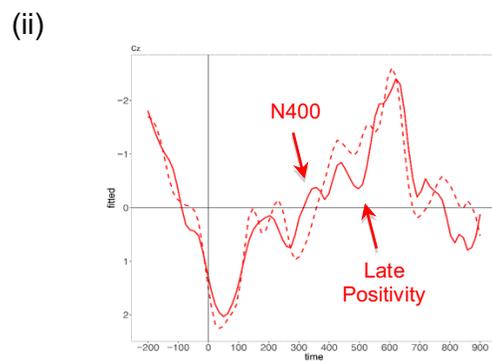
(b) *Wir haben MiLEna getroffen.*  
 We met Milena.'  
**L+H\* (rising onglide)**

(2) (a) *Heute ist nichts Besonderes passiert.*  
 'Today, nothing special happened.  
 neutral context

(b) *Wir haben MiLEna getroffen.*  
 We met Milena.'  
**H+L\* (falling onglide)**



— exciting context & L+H\* (match)  
 ..... neutral context & L+H\* (mismatch)



— exciting context & H+L\*(mismatch)  
 ..... neutral context & H+L\* (match)

**Figure 1.** Grand average rERPs at a selected electrode (CZ). (i) shows the rERPs for L+H\* accents (rising onglide), (ii) for H+L\* accents (falling onglide). Exciting (solid lines) and neutral contexts (dotted lines) yield different (mis)matches depending on target prosody.

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