

The effects of Focus Association and of Contextual Focus on Discourse Coherence

Background. Information Structure reflects the way information is organized within a sentence with respect to the communicative needs of the interlocutors, therefore the distinctions between *given/new* information, *topic/focus* of a sentence are not only predicted to be found cross-linguistically, but also to have the same formal semantic properties (irrespective of how they are realized in the syntax and phonology of a given language). Focus indicates the presence of contextually relevant alternatives and this interpretation contributes to both pragmatic uses of focus (e.g. question-answer congruence) and semantic ones (e.g. focus effects on quantifiers) (Krifka 2005, 2008, Rooth 1992, 1996, von Stechow 1994, a.o.). Crucially, the way focal alternatives enter into the computation of the meaning of a sentence depends on the range of available syntactic configurations in a language. An empirical question arises: when semantic effects of focus are possible, but not obligatory, will they have an effect on coherence on par with pragmatic focus?

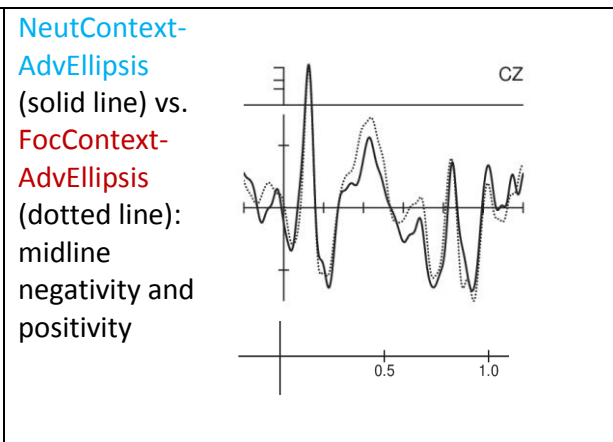
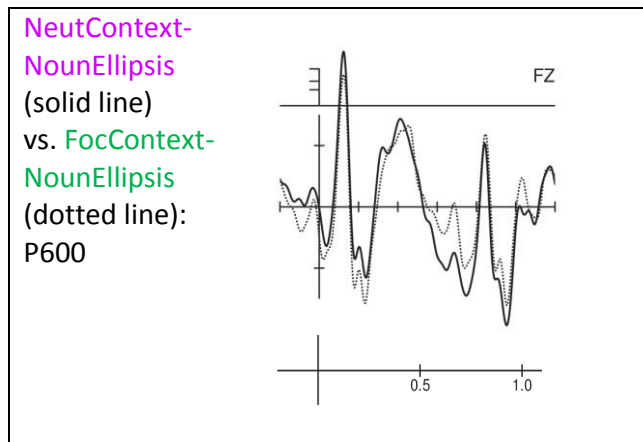
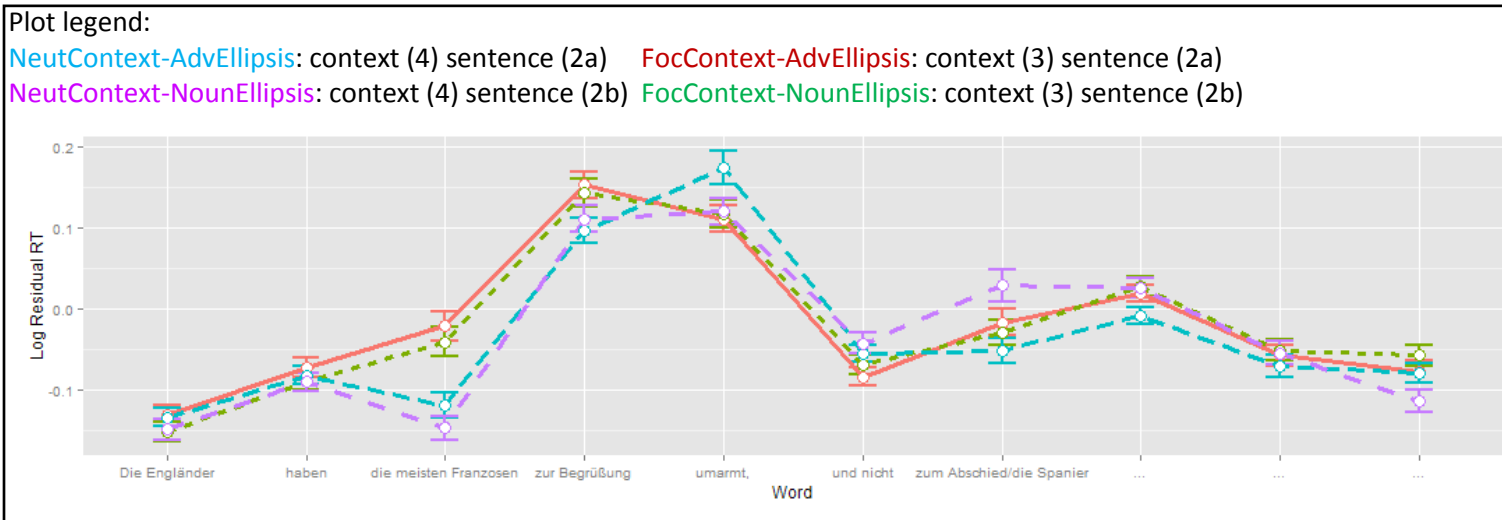
Our Study. We conducted two real-time processing experiments comparing the effects of the German quantifier *meisten* which optionally associates with focus (Heim 1999, Hackl 2009, see also Beaver & Clark 2008) and the effects of question-answer congruence on discourse coherence. The sentence in (1) can be interpreted in the absence of focus: it receives the reading (1a). If there is a focus in location F1 or F2, *meisten* can, but does not have to, associate with it (yielding the readings 1b, 1c). During silent reading, when the sentence is followed by replace ellipsis (McCawley 1991, Drubig 1994, Toosarvandani 2010), the processor will encounter difficulty if no matching narrow focus has already been processed (Stolterfoht et al. 2007). If *meisten* does create an expectation for a focus downstream, we expect that the adverbial in the ellipsis (2a) will be easier to process than the noun (2b). This possible effect of optional focus association on coherence should be modulated by the presence of contextual focus. When the context in (3) precedes (2), the contextual focus (green) might facilitate (2b) vs. (2a). We contrast the context in (3) with that in (4), which has no facilitating effect on ellipsis.

In **Exp 1, self-paced reading** (n=24), we predicted that the reading times in the **NeutContext-NounEllipsis** condition should be slower than in **FocContext-NounEllipsis**. If *meisten* creates an expectation for focus on the adverbial, then **NeutContext-NounEllipsis** should also be slower than both **NeutContext-AdvEllipsis** and **FocContext-AdvEllipsis** (due to structure (5) vs. (3a)). If *meisten* does not create an expectation for focus, then there should be a mismatch and longer RTs in the **FocContext-AdvEllipsis** (due to (3a)). We find no evidence for such a mismatch. We find a main effect of ellipsis type $p = .035$, and, as shown in the plot, **NeutContext-NounEllipsis** is significantly slower than **NeutContext-AdvEllipsis** ($\beta = -.073$, $SE = .026$, $t = -2.84$, $p = .0046$) and **FocContext-NounEllipsis** ($\beta = -.052$, $SE = .026$, $t = -2$, $p = .045$), as well as marginally slower than **FocContext-AdvEllipsis** ($\beta = -.048$, $SE = .026$, $t = -1.88$, $p = .06$) (which should not be the case if this last condition contained a mismatch).

In **Exp 2, an ERP study** (n=24), we tested the same materials and found that the mismatch in **NeutContext-NounEllipsis** vs. **FocContext-NounEllipsis** elicits a P600 effect (anterior frontal sites, $p = .012$, $p = .02$, $p = .036$; see waveform), which is associated with syntactic reanalysis. The absence of a mismatch in **NeutContext-AdvEllipsis** vs. **FocContext-AdvEllipsis** is supported by the absence of P600 (instead we find both negativity, $p = .008$, and positivity at the midline, $p = .47$).

Conclusion. The optionally associating German quantifier *meisten* creates an expectation for focus in online sentence processing and facilitates the processing of replace ellipsis on par with contextual focus. In line with the properties of German (definiteness) the location of that focus downstream is on the adverbial, in contrast to Polish where indefinite *most* allows for both adverbial and head-noun focus association, thus facilitating noun ellipsis as showed in the self-paced reading experiments of Tomaszewicz & Pancheva (2016).

- (1) [Die Engländer]_{F1} haben die meisten Franzosen [zur Begrüßung]_{F2} umarmt.
 The Englishmen have the most Frenchmen for greeting hugged
 a. The Englishmen hugged most of the Frenchmen for greeting.
 b. The Englishmen hugged more the Frenchmen for greeting than for any other occasion.
 c. The Englishmen hugged more the Frenchmen for greeting than anybody else did.
- (2) Die Engländer haben die meisten Franzosen [zur Begrüßung]_{F?} umarmt,
 a. ...und nicht [zum Abschied]_F. b. ...und nicht [die Spanier]_F.
- (3) Sabine fragt sich, **wen** die Engländer bei der Party umarmt haben. FOCUSING CONTEXT
 'Sabine wondered who the Englishmen hugged at the party.'
 Die Engländer haben [die meisten Franzosen]_F zur Begrüßung umarmt,
 a. ...und nicht [zum Abschied]_F. b. ...und nicht [die Spanier]_F.
- (4) Bei der Party sind die Engländer und die Franzosen spät erschienen. NEUTRAL CONTEXT
 'At the party, the Englishmen and the French arrived late.'
- (5) Die Engländer haben [die meisten Franzosen]_F [zur Begrüßung]_F umarmt, und nicht [zum Abschied]_F,



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