**When some triggers a scalar inference out of the blue**
**An electrophysiological study of a Stroop-like conflict elicited by single words**

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Several studies in experimental pragmatics have concluded that scalar inferences (hereafter SIs, e.g. 'some X are Y' implicates 'not all X are Y') are cognitively costly context-dependent pragmatic computations delayed relative to semantic computations (see e.g., Bott and Noveck 2004; De Neys and Schaeken 2007; Huang and Snedeker 2009; but see e.g., Grodner et al. 2010; Degen and Tanenhaus 2015; Politzer-Ahles and Gwilliams 2015).

However, it still remains unclear whether strong contextual support is necessary to trigger such inferences. Here we tested if the SI 'not all' triggered by some can be evoked in the absence of any linguistic context. We investigated event-related potential (ERP) amplitude modulations elicited by Stroop-like conflicts in participants (27 native speakers of English) instructed to indicate whether strings of letters were printed with all their letters in upper case or otherwise. In a randomized stream of nonwords and distractor words, the words *all*, *some* and *case* were presented either in capitals or featured at least one lower case letter.

As expected, we found a significant conflict-related N450 modulation (see e.g., West 2003; Szucs and Soltész 2010; Tillman and Wiens 2011) when comparing e.g. `aLl` with `ALL`. Surprisingly, and despite the fact that most responses from the same participants in an off-line sentence-picture verification task were "logical" (the participants largely accepted as good descriptions sentences such as 'Some circles are red' when all of the circles depicted were red), we also found a similar modulation when comparing `SOME` with e.g. `SoMe`, even though `SOME` could only elicit such a Stroop-like conflict when construed pragmatically. No such modulation was found for e.g. `CasE` vs. `CASE` (the neutral contrast), see Fig. 1.

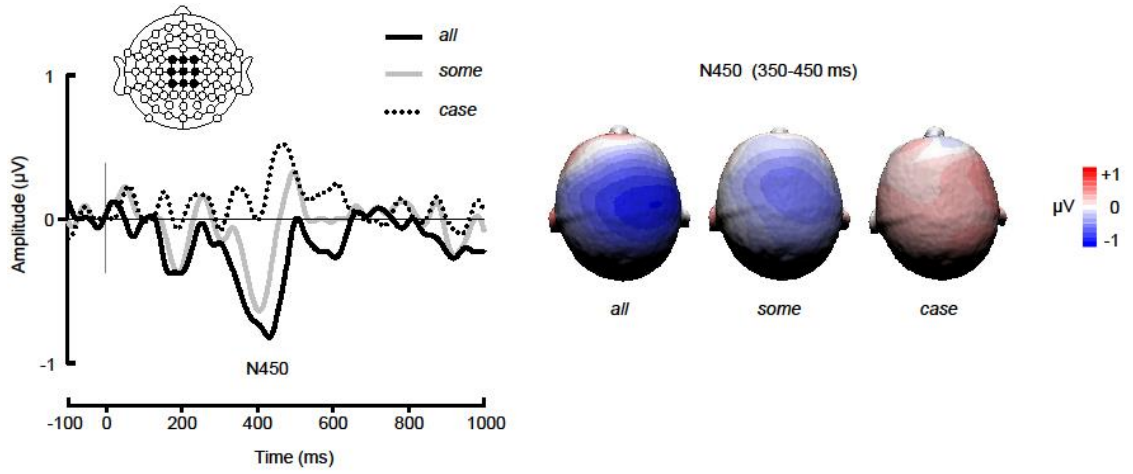


**Figure 1**. **Stroop-like conflict effect on ERPs corrected for physical differences**. *Left*, Grand-average difference (incongruent minus congruent) corrected ERP waveforms elicited over the central region (linear derivation of FC1, FCz, FC2, C1, Cz, C2, CP1, CPz, CP2) in the semantic test (*all*, solid black line), pragmatic test (*some*, solid grey line), and neutral control (*case*, dotted black line) conditions. *Right*, Topographies of the N450 effect for *all*, *some*, and *case*.

These results suggest that *some* can appear incongruent with the concept of 'all' in the absence of strong contextual support. Furthermore, there was no correlation between N450 effect magnitude (`SOME` minus e.g. `sOmE`) and pragmatic response rates recorded in the sentence-picture verification task. Interestingly, most of the participants of this study could be considered "logical" since almost 80% of the under-informative *some*-statements were considered good descriptions in the off-line task. Yet, the same participants exhibited a Stroop-like conflict when presented with the pragmatically

incongruent stimulus SOME in the ERP experiment. This seems to indicate that "logical" behaviour may stem from cognitive strategising rather than mere linguistic processing.

The N450 conflict effect observed for SOME is overall incompatible with a strong context-dependency view of the SI 'not all', given that in a situation of minimal linguistic context, SOME is not construed logically. This study shows for the first time that the pragmatic meaning of *some* can be accessed in the absence of linguistic support, and thus, that the SI 'not all' triggered by *some* should be construed as context-*sensitive* rather than context-*dependent*, that is, more or less salient depending on the context rather than contingent upon it.

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