Testing context-dependency of scalar inferences using single words
An electrophysiological study of Stroop-like interference

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 context-dependent pragmatic computations delayed relative to semantic computations. Self-paced reading studies have shown that SIs are context-*sensitive*, that is, more or less available or salient depending on the linguistic context. However, strong SI context-*dependency* remains undemonstrated, probably owing to the fact that the context of an utterance can barely ever be neutral. Thus, in the present study, we elected to present the quantifier *some* in isolation in order to test the context-dependency of the SI 'not all' when context is kept maximally neutral.

We investigated event-related brain potential (ERP) amplitude modulations elicited by Stroop-like conflicts in English native speakers instructed to indicate whether strings of letters are printed with all their letters in upper case or otherwise. In a randomized stream of non-words and distractor words, the words *all*, *some* and *case* were presented either with all letters in upper case or as a mix of upper and lower case letters. As expected, we found a significant conflict-related N450 modulation when comparing e.g. aLl with ALL. Surprisingly, we also found a significant N450 effect when comparing SOME with e.g. SoMe, even though SOME could only elicit such a Stroop-like conflict when construed pragmatically, that is, considered incompatible with 'all'. No such modulation was found for e.g. CasE vs. CASE, the control neutral contrast.

These results suggest that *some* can appear incongruent with the concept of 'all' in the absence of strong contextual support. The lexical scale ⟨*all*, *some*⟩ and the contrast between *all* and *some* rendered salient by the task, or an implicit 'all in capitals?' question under discussion, that is, an implicit SI-supportive context, fail to account for the results obtained since they predict similar processing difficulty for SOME than e.g. SomE in the present task.

Interestingly, most of the participants of this study were deemed "logical responders" because they largely accepted as good descriptions sentences such as *Some circles are red* when all of the circles depicted were red in an off-line sentence-picture verification 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.

This study shows for the first time that the pragmatic meaning of *some* can be accessed in the absence of contextual support, and thus, that the SI 'not all' triggered by *some* is not entirely contingent upon the context. We thus favour a default, that is, predictive, rather than context-driven model of SI derivation.