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Project report of the meeting held on November 24-25 in Utrecht

In this last project meeting, we analyzed and discussed the results of the processing and acquisition experiments carried out by the two teams. We also planned the two publications that are now ready to be finalized.

Processing by adult speakers: Traxler, Sanford, Aked & Moxey (1997) have shown that the processing of epistemic relations takes longer than the processing of content relations, when both are conveyed with the connective *because*. In Dutch, Canestrelli et al. (submitted) have shown that connectives have an impact on processing. Namely, the use of a connective dedicated to convey epistemic relations implies that no regression is necessary at the end of the sentence, contrary to sentences conveyed with another connective. Our study started from the observation that French is in an intermediate position between English that has only one causal connective and Dutch that has two equally-used ones. Indeed, in French both *car* and *parce que* exist, but only the latter is used in speech. In a first offline experiment, we compared the way users chose the two connectives to fill in content and epistemic sentences. We confirmed that while the choice of connective was clearly related to the sentence type in Dutch, in French the difference was much more reduced. We hypothesized that this evolution in usage would have an impact on processing. To test this, we conducted an eye-tracking study to compare the way readers process content and epistemic relations with *car* and *parce que*. We found that *car* has an impact on processing, by delaying the reader at the region immediately after the connective. A similar effect was found in Dutch. However, contrary to Dutch, the French connective *car* did not prevent regressions at the end of the sentence. We hypothesized that the delay provoked by *car* was due to the fact that it is now perceived as a formal connective, less commonly encountered in neutral contexts. To test this, we asked 40 French speakers to fill in content and epistemic sentences with *car* and *parce que* in formal sentences taken from speeches at the European parliament and sentences with an oral tone taken from children's books. This experiment confirmed the register effect: in formal sentences, speaker overwhelmingly chose *car*, even when *parce que* was used in the original sentence while the reverse was true for children's stories. A paper relating these results will be submitted to the *Journal of applied psycholinguistics*.

Acquisition by normally-developing children: several studies have shown that content relations are acquired before epistemic relations. These studies also indicate that children can produce both kinds of relations by the age of 3. In this study, we tested whether older children's knowledge of these relations would extend to cases where the causal relation is not expected and has to be understood from a text. We also tested the impact of connectives for this acquisition: in Dutch content and epistemic relations were conveyed by a different connective while in French only one connective was used (*parce que*), on the grounds that it is the only connective young children hear in the input. We tested 20 children of 4, 5, 6, 7, and 8 y.-old in French and in Dutch. Our results indicate that the clues provided by children's mother tongue did not have an impact on this acquisition. We also showed that epistemic relations remain much more difficult for children than content relations and that it is only by the age of 8 that children reach adult-like performance on this task. These results will be submitted to the *Journal of Child Language*.