

## CONTEXTUAL INFORMATION IS IMMEDIATELY AVAILABLE DURING COMPOSITION – EVIDENCE FROM EYETRACKING DURING READING

OLIVER BOTT, PROJECT *COMPOSITION IN CONTEXT*

Can contextual information be immediately used to resolve compositional conflicts during online interpretation? I addressed this question in an eyetracking during reading study focussing on the interplay between sentential and contextual information during the online resolution of temporary and global aspectual mismatch. Consider (1).

- (1) # Peter joggte in fünf Minuten.  
# Peter jogged in five minutes.

When uttered out of the blue, sentence (1) is hardly interpretable. The *in-adverbial* requires a telic event predicate of the accomplishment type (Vendler 1957, Dowty 1979), but *Peter jogged* expresses an atelic activity. However, if the sentence makes reference to a spatially bounded path argument (2), the sentence is perfectly interpretable.

- (2) Peter joggte in fünf Minuten durch den ganzen Park.  
Peter jogged in five minutes through the whole park.

German sentences of type (1) were embedded in a discourse context which introduced a bounded path argument in the preceding discourse. A translated sample item is provided in (3).

- (3) Half a year ago Peter started to jog a distance of four kilometers every day. When he started he was quite slow but he has become faster and faster.  
Als er es heute schaffte, in nur einer halben Stunde zu joggen, freute er sich sehr.  
When he it today managed in only half an hour to jog, he was very happy.

Based on the pragmatic literature (e.g. Recanati 2010) I formulated two alternative hypotheses regarding the nature of how compositional interpretation makes use of contextual information. The *Interactive Composition Hypothesis* predicts immediate availability of the path argument from the context and hence no difficulty when composing the verb of the target sentence with the adverbial. The Modularity Hypothesis, however, states that compositional interpretation is strictly local. The latter hypothesis predicts an initial semantic mismatch at the underlined critical region *to jog*, followed by contextually driven repair by aspectual enrichment of the activity into the accomplishment *jog a distance of four kilometers*. I thus expected to observe a slow-down relative to an aspectual control condition; cf. (4).

- (4) Half a year ago Peter started to jog every day. When he started he could barely jog for ten minutes but he is becoming better and better.

Als er es heute schaffte, eine ganze halbe Stunde zu joggen, freute er sich sehr.  
 When he today managed for half an hour to jog, he was very happy.

In order to compare aspectual enrichment with breakdown of compositional interpretation, a mismatch condition was included. Here, I combined the atelic context of the control condition (4) with the *in-modified* target sentence (3).

While the modularity and the interactivity hypothesis clearly differ with respect to their predictions concerning timing, both hypotheses predict that the coercion condition should eventually be repaired making use of contextual information. I ran two offline acceptability rating experiments showing that the discourses (Pretest 1) and target sentences (Pretest 2) in fact have the intended interpretations.

**Pretests:** 24 items were constructed in the aspectual enrichment, control and mismatch conditions. I ran two acceptability rating pretests with 30 and 20 participants, respectively. The first pretest elicited discourse sensicality judgments on a seven-point scale. The statistical analysis of the ratings revealed that the aspectual enrichment condition was fully acceptable. Mismatch, by contrast, was perceived as nonsensical at the same level as clearly nonsensical fillers. The interpretation data thus confirm that the contextual support in the aspectual enrichment condition is as strong as outlined in the introduction and that the telic target sentences do not fit an atelic context.

The second pretest confirmed that without supporting context the telic target sentences were not fully well-formed but required further contextual support. Decontextualized target sentences with *for-adverbials* were rated much better than sentences with *in-adverbials*. However, the target sentences with *in-adverbials* were still rated better than clearly nonsensical fillers suggesting that participants were well aware of the fact that the sentences with *in-adverbials* might turn out to be well-formed given appropriate contextual support.

**Eye-tracking Study:** 48 participants took part in the eye-tracking experiment. They read the pretested discourses and provided yes-no sensicality judgments after each trial while their eye gaze was monitored during reading the texts.

The analysis of acceptance rates did not reveal any reliable differences between coercion and control. Aspectual mismatch, by contrast, was rejected as uninterpretable equally often as were nonsensical fillers. Thus, participants perceived a clear aspectual mismatch in the mismatch condition and computed aspectually enriched interpretations of the target sentences in the coercion condition.

The analyses of first fixation durations, first-pass times and proportions of regressions out the critical verb region consistently revealed processing costs of the aspectual mismatch condition relative to the control and the coercion condition. Crucially, none of the analyzed eye-tracking measures related to first-pass reading indicated any difference between the coercion and the control condition. This is fully consistent with the *Interactive Composition Hypothesis* from above. However, coercion had significantly longer total times than the control condition suggesting that the integration of contextual information from the preceding context is in fact not cost free but requires building up a more complex discourse model than in the control condition. In my presentation I will discuss how these processes interact with inter-individual differences in working memory capacity of the individual comprehenders having participated in the study.