

## Processing temporality: Syntactic position determines interpretation

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The present study addresses whether the syntactic position of a temporal adverbial affects the temporal interpretation of a sentence. In the semantics literature it has been noted that time-frame adverbials in German, e.g., *in dreißig Minuten* (“in thirty minutes”), are ambiguous (Zybatow, 2001). With one reading, which we shall call *egressive*, given in (1a), the event takes place in the time interval specified by the adverbial. With the other *ingressive* reading, given in (1b), the event will start after this time interval; note that the German present tense can express future tense as well. It has also been noted that the position of the adverbial might trigger one of the two readings (Engelberg, 1994; Trautwein, 2005). There seems to be a preference for the egressive reading with a late adverb, as in (2a), and for the ingressive reading with an early adverb, as in (2c). If the ingressive reading is triggered by the early adverb, it should not be compatible with past tense in (2d), because the event expressed by the verb and its complements must be located in the future. Therefore, an interaction between the factors adverb position (early/late) and tense (present/past) is predicted.

This prediction was tested in two experiments. With an acceptability rating task on a five-point scale, Experiment 1 found the predicted interaction. Sentences with an early adverb and past tense were rated lower than the ones with present tense (2.3 vs. 3.3). No difference was found for sentences with late adverb (4.1 vs. 4.2). The overall low ratings for sentences with an early adverb reflect the markedness of this position. In a further experiment, we are currently testing the adverb preceding and following the object. With a self-paced reading task in Experiment 2, again an interaction of adverb position and tense was found: Longer reading times on the verb were found for sentences with an early adverb and past tense compared to those with present tense (768 vs. 712 ms). No significant difference was found for sentences with a late adverb (750 vs. 773 ms). In a third experiment, participants had to rate sentence paraphrase pairs (scale 1–5). We used sentences like (2a) and (2c) in combination with paraphrases like (1a) or (1b). The results revealed an interaction of adverb position and paraphrase. With an early adverb, the ingressive reading was rated higher than the egressive reading (3.1 vs. 2.3). In contrast, with a late adverb the ingressive reading was rated lower (2.4 vs. 3.3). Surprisingly, an interaction was also found for sentences with punctual verbs like *abschalten* (“to switch off”) for which the egressive reading is implausible. This means that syntactic position influences interpretation even in unambiguous sentences.

To sum up, the results of all three experiments show that the syntactic position of a temporal adverbial influences interpretation. The results can be explained within a *scope approach* that assumes one (underspecified) semantic representation for time-frame adverbials. The two interpretations arise from a difference in the syntax-semantics-mapping, i.e., the mapping from different modifier positions to different semantic domains. The early adverb has scope over the *event-external* domain whereas the late adverb composes with the *process* domain (e.g., Haider, 2000; Ernst, 2002; Rawlins, 2008).

### Examples

- |     |  |                               |
|-----|--|-------------------------------|
| (1) | Der Chefkoch bereitet die Tomatensuppe in dreissig Minuten zu.<br><i>The chef prepares the tomato soup in thirty minutes.</i>                                    |                               |
|     | a. Preparing the tomato soup takes thirty minutes.   | <i>Egressive reading</i>      |
|     | b. Preparing the tomato soup will start in thirty minutes.   | <i>Ingressive reading</i>     |
| (2) | Maria sagt, dass<br>“Mary says (that)”   |                               |
|     | a. der Chefkoch die Tomatensuppe in dreissig Minuten zubereitet.   | <i>Adverb late / Present</i>  |
|     | b. der Chefkoch die Tomatensuppe in dreissig Minuten zubereitete.  | <i>Adverb late / Past</i>     |
|     | c. in dreissig Minuten der Chefkoch die Tomatensuppe zubereitet.   | <i>Adverb early / Present</i> |
|     | d. in dreissig Minuten der Chefkoch die Tomatensuppe zubereitete.<br><i>(in thirty minutes) the chef the tomato soup (in thirty minutes) prepares / prepared</i> | <i>Adverb early / Past</i>    |
|     | “(in thirty minutes) the chef will prepare/prepared the tomato soup (in thirty minutes).”  |                               |