The predictive use of case marking in German: Evidence from visual-world eye-tracking

Judith Schlenter (Potsdam Research Institute for Multilingualism)

Previous eye-tracking studies on German found that native (L1) [1, 2] but not non-native (L2) speakers [2] could integrate case marking on a sentence-initial noun phrase and verb semantics to predict either a plausible Patient (accusative) or Agent (nominative), as illustrated in examples (1a) and (1b). Here the use of case marking was investigated by manipulating word order via object topicalization, resulting in a highly marked sentence structure (OVS).

(1a) Der Wolf tötet gleich den Hirsch. (SVO)
    The wolf \text{NOM} kills soon the deer \text{ACC}

(1b) Den Wolf tötet gleich der Jäger. (OVS)
    The wolf \text{ACC} kills soon the hunter \text{NOM}

Using the visual-world eye-tracking paradigm, we tested German L1 (n = 28) and highly proficient Russian L1-German L2 speakers (n = 25) on their ability to use case to predict an upcoming argument after ditransitive verbs in a design similar to previous experiments on Japanese [3, 4]. German allows for two alternative argument linearization patterns in double object constructions (DAT > ACC vs. ACC > DAT), as illustrated in examples (2a) and (2b), for the corresponding visual display see Figure 1.

(2a) Der Gärtner gibt der blühenden \{Pflanze eilig\} frisches Wasser.
    The gardener \text{NOM} gives the flowering \text{DAT} \{plant quickly\} fresh water \text{ACC}

(2b) Der Gärtner gibt die blühende \{Pflanze eilig\} dem Postboten.
    The gardener \text{NOM} gives the flowering \text{ACC} \{plant quickly\} the postman \text{DAT}

Dative marking indicates a Recipient argument and accusative marking a Theme, so that the case marking on the first postverbal noun phrase should trigger an expectation for either a Theme (2a) or a Recipient (2b). Parentheses indicate the critical window for anticipatory eye-movements, where we should see a higher probability of looks to a picture showing \textit{water} in the canonical (2a) compared to the non-canonical order (2b).

Results from growth curve analyses show that both groups anticipated the target argument, the Theme (\textit{water}) in (2a), and, over time, were less likely to fixate the Theme in (2b). However, differences emerged shortly after the onset of the final argument: The probability that the Theme was fixated by the L2 group further increased gradually over time, while the L1 group showed a clear effect of condition. Moreover, whereas the L1 group quickly recovered from the initial competition between the target (postman) and competitor (\textit{water}) in (2b) and correctly identified the final argument, the competition lingered in the L2 group (see Figure 2). Importantly, the different development for the word order conditions across groups, a linear increase for (2a) and non-linear decrease for (2b), indicates that the participants became aware that the target argument for (2a) was implausible in (2b) within the anticipation window. In a prior study on German [2], the English L1-German L2 group showed no difference between word order conditions (SVO, OVS) but relied on verb semantics only. A study on Japanese [4] found no predictive use of case for an English L1-Japanese L2 group.

We conclude from our results that case marking, if unambiguously marked, is a strong predictive cue in German for L1 speakers and can also be used by highly proficient L2 speakers, although it might be a less reliable cue for them. Although we found no between-group differences for the anticipation window, the L2 group needed more time to integrate incoming information and was affected by the non-canonical word order in (2b) to a greater extent than the L1 group. The last finding points to an over-reliance on word order, a surface-level cue, although here the effect spilled over into the post-critical window. Note that, unlike in previous
studies, our L2 group was familiar with case from their L1. Our results are in line with the assumption that L2 speakers show a different weighting of cues [5, 6] and rely more on surface-level and semantic cues, and less on grammatical information, than L1 speakers during real time processing.

Fig. 1. Visual display

Fig. 2. Time course showing the probability of looks to the Theme (water), starting at adjective offset 200 ms shifted forwards, for the canonical (a) and non-canonical (b) condition; the dashed vertical line marks the mean onset of the final argument

References:


