Towards an explanation for why German children do not have problems interpreting object pronouns: An eye-tracking study

A lingering question in language acquisition is why German children interpret object pronouns correctly [1], whereas Dutch (and English) children frequently make mistakes by allowing object pronouns like *him* to refer to the sentential subject (see (1), Delay of Principle-B Effect (DPBE); e.g., [2]). This difference between children may be explained by the different behavior of pronouns in Dutch/English, compared to German [1]. A Dutch or English pronoun in a locative PP can refer back to the sentential subject, whereas a German pronoun cannot (2).

(1) The hedgehog$_i$ takes a picture of *him*$_j$

(2) De man$_i$ legt het boek naast *hem*$_i$ neer
The man$_i$ puts the book next-to *him*$_i$
*Der Mann$_i$ legt das Buch neben *ihn*$_i$

This suggests that pronouns in Dutch and English are functionally more ambiguous than in German, in the sense that the reference assignment of Dutch and English pronouns is not only based on a structural rule (i.e. 'pronouns cannot bind locally', cf. Principle B, see [3]), but also on discourse rules (e.g., Rule I, [4]). In contrast, reference assignment of German pronouns is more reliably based on this structural rule. Learning that pronouns sometimes, but not always, bind locally may be difficult for Dutch (and English) children.

As a first step for investigating this hypothesis, we compared whether adults in German and Dutch use discourse differently when interpreting object pronouns. The influence of discourse context on pronoun processing in Dutch was tested by Van Rij et al. [5], who found that conditions that differed in antecedent prominence, i.e. differed in preceding discourse, indeed influenced adults' processing of sentences like (1) as measured by gaze data.

We replicated this study in German, presenting 39 German adults with an auditory truth-value-judgment task. The first sentence contained one of three context conditions (3a-c), differing in antecedent prominence. The second sentence contained an object pronoun (4). A picture that was either congruent with the second sentence or not (i.e. reflexive interpretation) was presented and participants had to indicate whether the sentence correctly described the picture. Eye gaze was measured during processing.

(3a) Context Agent-Patient (AP): Hier siehst du Herrn Igel und Herrn Maus.
Here you see Mr. Hedgehog and Mr. Mouse.

(3b) Context Patient-Agent (PA): Hier siehst du Herrn Maus und Herrn Igel.
Here you see Mr. Mouse and Mr. Hedgehog.

(3c) Context Patient (P): Hier siehst du Herrn Maus.
Here you see Mr. Mouse.

(4) Test sentence: Herr Igel fotografiert ***ihn*** mit einem Fotoapparat.
Mr. Hedgehog takes a picture of him with a camera.

Our data show that as in Dutch, adults look at the agent (*Mr. Hedgehog*) before pronoun onset, but move their gaze to the patient (*Mr. Mouse*) after hearing the pronoun (Figure 1). Contrary to Dutch, however, no significant differences were found between the context conditions.

From these results we conclude that context is not used the same way by German adults as by Dutch adults when interpreting pronouns. The results support the idea that German pronouns are functionally less ambiguous, and that for a German sentence like (1) it is immediately clear that the pronoun cannot refer to the subject of the sentence. We argue that these findings are a first step towards explaining why Dutch children have more problems interpreting object pronouns than German children.

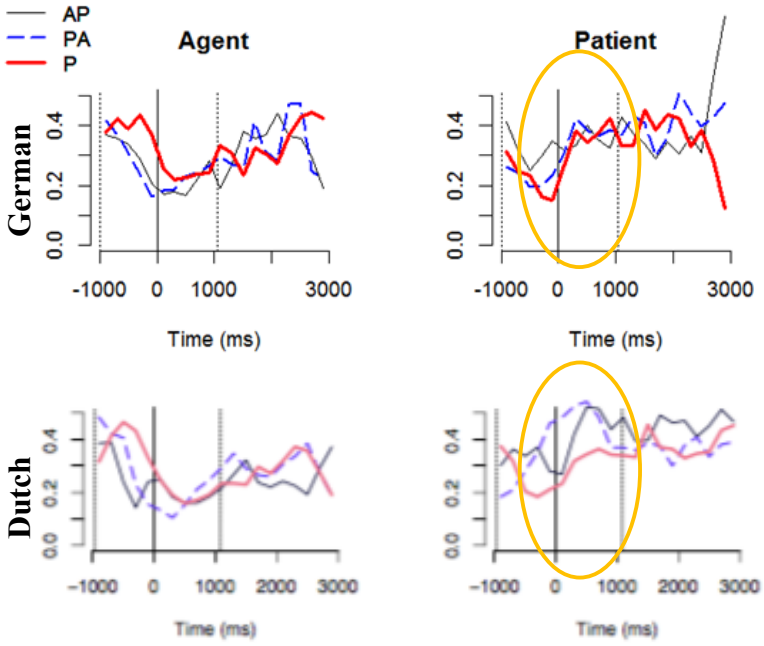

Figure 1. The average proportion of looks towards the agent and the patient in the different context conditions. We selected only congruent items, in which the test sentence correctly described the picture, for German (top row) and Dutch (bottom row). Dutch data taken from Van Rij et al. [5] with permission. The vertical line at Time=0 indicates the onset of the pronoun. The dotted vertical lines indicate the onset and offset of the test sentence.

References

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