Children's Interpretation of Relative Clauses with Multiple Cues: What does case add?

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Purely structural accounts of sentence processing, such as the Active Filler Strategy (Frazier & Clifton, 1989), predict that German relative clauses (RCs) without clear case marking or agreement, such as "die Kuh, die das Pferd füttert" (the cow that feeds the horse/the cow that the horse feeds) will be interpreted as subject RCs (the cow that feeds the horse) (c.f. Schriefers et al., 1995). However, it has also been shown that children and adults use multiple, and not just structural, cues in their parsing decisions (e.g., Bates & MacWhinney, 1987; Seidenberg et al., 1999). In the current study, we have investigated how German-speaking children interpret ambiguous RCs, and whether they integrate case marking when it is available and the form of the non-relativized NP.

We tested 24 three-year-olds and 16 six-year-olds on ambiguous RCs and 24 three-year-olds and 24 six-year-olds on RCs with case marking, signaling either a subject- or object RC reading. In both the ambiguous and case-marked RCs, the non-relativized NP was expressed either by a pronoun or a lexical NP. This resulted in 6 conditions, with four test sentences in each condition for the case-marked sentences and 8 sentences in each condition for the ambiguous sentences (see table). The pre-recorded sentences were presented together with two movies that were played simultaneously and only differed in semantic role assignment (e.g., cow feed horse in movie A - horse feed cow in movie B). The children were asked to point to the still picture that matched the sentence.

The six-year-olds almost exclusively interpreted the ambiguous RCs as subject RCs (90%), and they showed ceiling effects in the conditions with the (case-marked) subject RCs (98% correct). Both the six-year-olds and the three-year-olds performed at chance on the (case-marked) object RCs. The three-year-olds did not show a default interpretation for the ambiguous sentences. They pointed to the picture supporting the subject RC reading (37%), the object RC reading (37%), or to both pictures (26%). They only interpreted those RCs as subject RCs that were clearly marked as such by case (66%). The form of the non-relativized NP had no influence on the children's interpretation in any condition, for either age group.

The results from the older children seem to support a purely structural account for sentence processing. The younger children, however, seem to require multiple cues. Taken together, these results can be interpreted as support for experience-based accounts (e.g., Wells et al., 2009) and the coalitions-as-prototypes approach (Bates & MacWhinney, 1987). The older children prefer an SOV reading of the ambiguous sentences because the vast majority of sentences a German child hears have a subject-object order (SVO or SOV). The younger children, having less linguistic experience, need more than one cue to arrive at a clear interpretation. Finally, children's failure to correctly interpret the case-marked object RCs – even when that interpretation is supported by the form of the non-relativized NP - is probably due to the fact that one cue, namely animacy of the head NP, points to a subject-RC reading (cf.

Kidd et al., 2007), and that children have difficulty activating more than one interpretation for (locally) ambiguous sentences (Booth et al., 2000).

References

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Conditions and test sentences*

	Lexical NP	**Pronoun**
Ambiguous	Das Pferd, das die Kuh füttert. the horse that the cow feeds *the horse that is feeding the cow/* *the horse that the cow is feeding*	Das Pferd, das die jetzt füttert. the horse that she/her now feeds *the horse that is feeding her now/* *the horse that she is feeding now*
Subject RC	Der Hund, der den Löwen füttert. the dog that-NOM the-ACC lion feeds *the dog that is feeding the lion*	Der Hund, der den jetzt füttert. the dog that-NOM him-ACC now feeds *the dog that is feeding him now*
Object RC	Der Hund, den der Löwe füttert. the dog that-ACC the-NOM lion feeds *the dog that the lion is feeding*	Der Hund, den der jetzt füttert. the dog that-ACC he-NOM now feeds *the dog that he is feeding now*

*The forms *das* and *die* function as determiners and demonstrative pronouns and can stand for both nominative and accusative.