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Thursday, 25. 02. 2016, 11:30-12:00, Raum: G 309

The acquisition puzzle: Schönenburger (2001, 2008) describe a detailed longitudinal study of the spontaneous productions of 2 Swiss German (SG) children between ages 3;10-8;01. Early in the study, the children make systematic errors in the placement of the finite verb in embedded clauses. In contrast to the adult grammar, which places the finite embedded verb clause-finally in (1a), in the children’s productions of such an embedded clause, the finite verb appears in a non-final position (1b).

(1)  
a. Adult: [Complementizer S O V]…
    b. #Wenn du trinksch öppis...(M: 4;01)
       ‘When you drink something…’

After a period of near ceiling error rates, the error rates gradually decline as the children approach adult-like performance. The puzzle is: why do the SG children make such errors, which differ from the input they hear? I present a probabilistic learning model that arrives at the errors in a principled way: the errors result from a grammar that is compatible with a majority of the input, which is ambiguous and underdetermines the correct structural analysis. The model also has the potential to capture variability in error rates across German-learning children.

'Outline of proposal' Schönenburger proposes that the SG children raise the verb to some head-initial phrase, whereas adults do not. Such verb raising would account for the errors, but it remains unclear what would cause the errors in the first place. I build on this analysis in proposing that the SG children initially misanalyse T as head-initial and raise the verb to this position (2a). They then gradually reset the parameter to T-final, as in the adult grammar (2b).

(2)  
a. #T-initial: [CP dass [TP V+T [VP Subj [VP Obj V ] ] ] ]

The misanalysis crucially relies on the ambiguity of matrix clauses for T-init/final. Matrix clauses are the primary source of German input (85%; cf. Sakas 2003). Moreover, a majority of the grammars compatible with matrix clauses are in fact T-initial, thus favoring T-initial. These grammars are constrained in the model by the 5 basic parameters in (3), which determine verb placement.
Parameters:

- [±V-to-T]
- [±T-to-C]
- [V-init/fin]
- [T-init/fin]
- [C-init/fin]

The majority of the schematic corpus used for the learning model strongly favors T-initial. (The input types represent a diverse range of declarative matrix and embedded clauses.) For example, given SVO input and a grammar that raises the verb to T but not to C, T must be head-initial in order for the verb to precede the object. Further, although embedded clauses favor T-final, they are still compatible with T-initial given a non-verb raising grammar.

I propose a probabilistic learning model implemented in Church (Goodman et al. 2008) that adopts a grammar of best fit, which at first is T-initial. In such a learning model, each parameter value is associated with some probability. When presented with some input, the model will sample a grammar from these probabilities and reinforce them if the sampled grammar is compatible with the input (cf. Yang 2002). Early in the learning process, on average we expect the model to sample and reinforce T-initial more than T-final. Further, there is robust unambiguous evidence (35.46% of the input) for verb raising. Thus the model is pushed toward a non-target [+V-to-T, T-init] grammar, which results in the embedded clause production errors. The effect of unambiguous evidence is to push the learner even more strongly toward [+V-to-T] than the ambiguous evidence pushes toward T-initial. Once the model has learned [+V-to-T], then, a new grammar of best fit emerges: embedded clauses can be taken as evidence for T-final. As embedded clauses are a relatively small proportion of the input, the switch to T-final (and thus the adult grammar) is gradual.

Results and Discussion: 50 simulations were run, and in 13 (26%) we see development like the SG children. As expected, we see nearly ceiling error rates for [+V-to-T, T-init] grammars (striped segments), which are gradually displaced by the adult grammar. These non-target parameter settings successfully account for verb placement errors in embedded clauses. Unexpectedly, the errors are partially due to a [–T-to-C] grammar. We thus expect to see errors in matrix clauses with a verb third position verb. Indeed, such errors are attested in the SG corpus, though rare (4).

(4) #[Näml ich] [ned alli Lüt] händ di gliiche Schtimm. (M: 4;11)
‘Not everybody has the same voice.’

Support for these results comes from Waldmann (2011) who reports such errors are relatively frequent in Swedish before 3;6, but then become rare. Gawlitzek-Maiwald et al. (1992) report similar errors in Standard German around age 3:0. This is consistent with the SG corpus, which begins later at 3;10. A further strength of the model is the possibility to capture variability in error rates across children learning a variety of German dialects. Note that the simulations do not always have high error rates, and that the input types in Figure...
1 are found across German varieties. The results are also consistent, then, with reports of low (Clahsen 1982; Standard German), intermediate (Penner 1996; Bernese), and high error rates (Gawlitzek-Maiwald et al. 1992; Standard German) of finite embedded verb placement reported in the literature. The model thus mis-sets a parameter, recovers, and sheds further light on SG acquisition.