Complexity and Embedded Implicature

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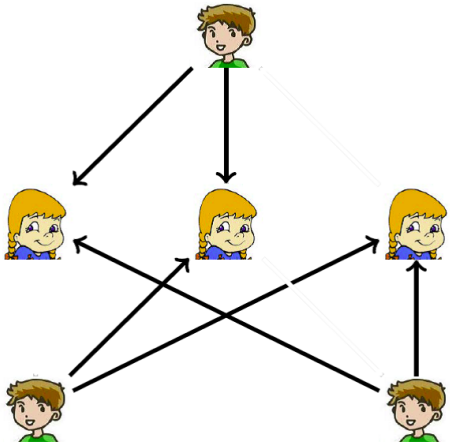
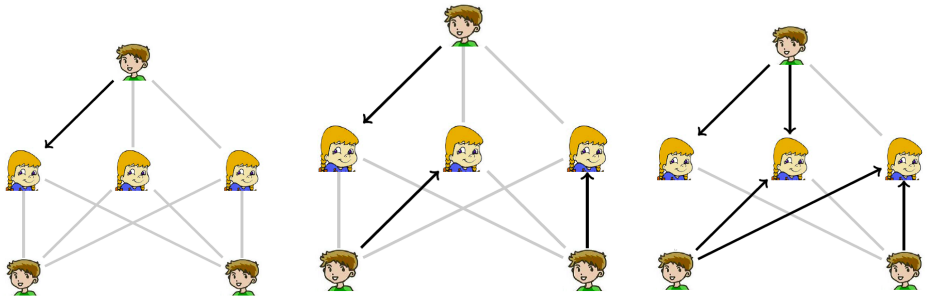
We present a design of an experiment that investigates how the inferential complexity of scalar implicatures influences the availability of those implicatures when they are embedded in complex sentences. Pragmatic theories dispute over whether quantifiers like *some* give rise to scalar implicatures under embedding. Especially controversial is the case when *some* is embedded in the scope of the universal quantifier *all*, e.g. "All boys called some of the girls". From a purely semantic perspective the sentence is true if there is at least one girl that each boy called. However, the implicature *not all*, normally triggered by the unembedded *some*, can be argued to arise in complex sentences as a so-called local or global implicature. According to localist theories (Chierchia, 2004; Chierchia et al., 2012), the *not all* implicature is generated locally at the occurrence of the quantifier *some*. Thus, our example sentence "All boys called some of the girls" implicates that no boy called all girls. Globalist theories (Sauerland, 2004) assume that the pragmatic interpretation follows the semantic interpretation, and that the scalar implicature is derived from negating the complete sentence containing the scalar alternative. The implicature of the example sentence is that there is at least one boy who did not call all the girls.

The idea of the planned experiment can be explained best with an example. In the following picture, the *semantic*, *globalist* and *localist* reading of the sentence "All of the boys called some girl" are true.



However, the verification of the different readings requires applying different strategies. A *semantic interpreter* only needs to check whether each boy is connected to at least one girl. A *globalist* knows that the sentence is true after finding one boy who has not called all girls, and a *localist* has to find for every boy a girl which that boy did not call. Thus, the complexity of the task is different for the different readings, since the verification of each of the readings requires

a different amount of information. In an experiment it is possible to control the amount of information people receive, e.g. by showing the arrows sequentially. i.e. the above picture will be shown as the last in a sequence of 9 pictures, each one revealing for some boy-girl pair whether the boy called the girl (each gray lines can either vanish or be replaced by a black arrow). The next figure shows the 1st, 3rd, and 6th picture in a possible sequence ending in the previous picture.



A semantic interpreter can verify at the 3rd step, a globalist at the 6th (at this step the gray line vanishes which indicates that that boy did not call the given girl), and a localist has to run through all 9 pictures in order to accept the sentence.

The goal of the planned experiments is, first, to find out how the different complexity influences the availability of readings, and, second, whether the different readings leave a mark on processing times. By manipulating the sequences, and using different conditions, we can make sure that the localist and globalist readings are verified or falsified in varying orders. Our test hypothesis is that pragmatic subjects have a strong tendency to take the first interpretation available. We hope that we can use the data as an indicator of how strong a confounding parameter complexity is in picture verification tasks.

References

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