

Online comprehension of object wh-questions: Eye-tracking evidence against syntactic gap filling

Olga Dragoy, Maria Ivanova, Anna Laurinavichyute (National Research University Higher School of Economics), Anastasia Ulicheva (University of Hong Kong), Svetlana Kuptsova & Lidia Petrova (Center for Speech Pathology and Neurorehabilitation)
odragoy@hse.ru

Available eye-tracking data have been seen as providing support for on-line gap filling during comprehension of object wh-questions. Based on the reactivation of the object NP referent (e.g., *the girl*) at the verb position in *Who did the boy kiss that day at school?*, it was argued that listeners signal a post-verbal trace of wh-movement, and thus use syntactic dependencies to identify the wh-filler referent (Dickey, Choy, & Thompson, 2007). In English, however, the subject NP (*the boy*) must be overtly mentioned in object wh-questions, which makes virtually impossible to identify the reason of the object NP reactivation at the verb. It could be driven either by the syntactic trace of the displaced constituent or by a contextually oriented processing strategy: an overt subject NP cannot be associated with a wh-filler, thus the referential choice is made in favor of another referent involved in an action.

Exploiting flexible word order and case marking of Russian, we carried out an eye-tracking-while-listening experiment to disentangle the effects of syntax and context. 36 native Russian speakers listened to 20 experimental and 20 filler stories presented in a quasi-randomized order. The first three sentences of an experimental story introduced a transitive action, the two critical referents involved in it and two distractor referents: *One day the girl and the boy were walking at school. Suddenly, the boy kissed the girl. The teacher was very surprised.* The story was finalized by a wh-question in either of the two conditions:

- | | | | | |
|----------|----------|------------|-----------|-------------------------------------|
| (1) Kogo | malchik | potseloval | v shkole? | |
| who-ACC | boy-NOM | kissed | at school | (‘Who did the boy kiss at school?’) |
| (2) Kto | devochku | potseloval | v shkole? | |
| who-NOM | girl-ACC | kissed | at school | (‘Who kissed the girl at school?’) |

Participants’ eye movements were recorded as they viewed panels with four drawings depicting referents of a story (two critical – *the boy* and *the girl*, and two distractors – *the teacher* and *the school*). The task required to answer the question at the end by fixating the relevant picture.

Condition (1) was used to replicate previous English results; the wh-word in it referred to the object NP (*the girl*) displaced from the post-verbal position. Thus, both syntax and context drove the same effect: reactivation of the object NP referent at the verb. In contrast, object scrambling in Russian made possible condition (2), in which the displaced constituent was again the object NP (*the girl*), but the wh-filler referred to the subject NP (*the boy*). If the resolution of syntactic dependencies is indeed at the core of object wh-question processing, reactivation of the object NP referent at the verb should be expected. Alternatively, if the processing is context dependent, the overt object NP preceding the verb precludes the possibility that it could be the referent of the wh-filler, and the reactivation of the subject NP referent should follow.

In line with previous findings on English, in condition (1) the proportion of fixations on the object NP referent (*the girl*) was significantly greater than on the subject NP referent (*the boy*) starting from the verb region, with the difference increasing over time. In condition (2), contrary to the syntactically oriented prediction, the proportion of fixations on the object NP referent at the verb was less than on the subject NP referent, and that difference increased over time as well. These results show that identification of the referent associated with the wh-filler is not syntactically constrained, but it is contextually fed: as soon as the context provides enough cues to exclude referents that cannot be linked to the wh-filler, the remaining referent is associated with it. This interpretation is consistent with the view that the wh-filler triggers an active search for its referent, which takes into account other overt referents and even involves an anticipatory mechanism (Sussman & Sedivy, 2003).