

The online application of binding condition C in German pronoun resolution

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The interpretation of cataphoric pronouns is thought to be constrained by binding condition C, which prohibits coreference between a pronoun and potential referents within its c-command domain. Evidence from self-paced reading indicates that condition C constrains the real-time resolution of cataphoric pronouns in English and Russian [1,2]. For English, condition C also appears to restrict the referent search in strong crossover configurations, where *wh*-movement has crossed a pronoun and needs to be mentally 'undone' prior to the application of condition C [3]. We report results from two eye-tracking experiments investigating the application of binding condition C as a constraint on cataphoric pronouns (Experiment 1) and in strong crossover configurations (Experiment 2) in German, using a gender-mismatch paradigm. Our results show that condition C constrains coreference independently of surface linear order, corroborating previous findings and providing cross-linguistic support for the real-time status of condition C.

Method & results. Experiment 1 examined the online application of condition C in sentences such as (1a) and (1b), in which a sentence-initial pronoun either c-commanded a following named referent or not. The materials for Experiment 2 included either strong (2a) or weak (2b) crossover configurations, again manipulating c-command. Both experiments had a 2x2 design crossing the factors Constraint (yes/no) and Gender (match/mismatch). Participants were mature native speakers of German (Experiment 1: $n=32$, Experiment 2: $n=30$).

(1a) *Cataphoric: c-command, gender match/mismatch*

Er wusste, dass mit {Sebastian/Alexandra} heute etwas nicht stimmte, ...

'He knew that something was not right with Sebastian/Alexandra, ...'

(1b) *Cataphoric: no c-command, gender match/mismatch*

Sein Bruder wusste, dass mit {Sebastian/Alexandra} heute etwas nicht stimmte, ...

'His brother knew that something was not right with Sebastian/Alexandra, ...'

(2a) *Strong Crossover: c-command, gender match/mismatch*

Bei {welchem Politiker/welcher Politikerin} in Rom er gute Chancen __ hatte, ...

'Which politician (masc/fem) in Rome he had good chances with, ...'

(2b) *Weak Crossover: no c-command, gender match/mismatch*

Bei {welchem Politiker/welcher Politikerin} in Rom sein Praktikant gute Chancen __ hatte, ...

'Which politician (masc/fem) in Rome his intern had good chances with, ...'

Coreference between the (underlined) pronoun and a potential sentence-internal referent is allowed in (1b)/(2b) but ruled out by condition C in (1a)/(2a). We thus expected gender effects to be restricted to the 'no c-command' conditions (1b)/(2b). Participants' reading times were analysed using linear mixed-effects models. In Experiment 1 we found an interaction between C-Command and Gender in total viewing times ($\beta=.04$, $SE=.02$, $t=2.02$) for the critical name region, with longer reading times for mismatching than for matching proper names in the 'no c-command' conditions, and no difference between the two 'c-command' conditions. In Experiment 2 we found an interaction between Constraint and Gender in first-pass reading times ($\beta=.03$, $SE=.01$, $t=2.11$), as well as a marginal interaction in first fixation durations ($\beta=.02$, $SE=.01$, $t=1.9$) and total reading times ($\beta=.03$, $SE=.02$, $t=1.91$) for the pronoun region, again with longer reading times in the gender-mismatch condition for the 'no c-command' pair only. This selective sensitivity to gender match suggests that speakers of German apply condition C online in both pronoun-initial and crossover configurations, that is, following their recovery of underlying phrase structure configurations.

References. [1] Kazanina et al. (2007). *JML* 56, 384-409. [2] Kazanina & Phillips (2010). *QJEP* 63, 371-400. [3] Kush et al. (2013). *Poster presented at CUNY 2013, Columbia, SC.*