

Empirical Investigations on Quantifier Scope Ambiguities in German

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Introduction In this paper, we present a novel systematic study on inverse scope readings in German which in the prior theoretical literature are either considered to be non-existent (cf. Frey 1993), or merely dispreferred (Pafel 2005, Bobaljik & Wurmbrand 2012). Our results suggest that inverse scope interpretations in German are available in *verum focus* contexts in which overt movement of the embedded QP is illicit, which is in line with Pafel 2005 and Bobaljik & Wurmbrand 2012. Moreover, the availability of the inverse reading is boosted when the context renders the surface reading implausible, a finding which is compatible with previous evidence suggesting that context plays an important role in scope interpretation (Kurtzman & MacDonald 1993, Villalta 2003, Reinhart 2006). These results contribute to a larger discussion on the cross-linguistic picture of inverse scope readings.

Background Whether inverse scope readings in German are structurally unavailable or merely dispreferred is an open question in the theoretical literature. German, unlike English, allows scrambling, and thus speakers can overtly and relatively freely change the surface word order to arrive at different scopal interpretations. Consequently, Frey (1993) claims that covert movement via Quantifier Raising (QR) is not available in a language like German to arrive at a different scopal reading, when additional factors such as QP-interpretation and accent are controlled for. By contrast, for Bobaljik & Wurmbrand (2012), QR is a universally available operation, and languages like German only have additional constraints that rule out inverse readings in particular structural configurations. The latter account predicts that inverse readings in German should be available in information structural configurations in which overt scrambling is impossible, for instance under *verum focus*, when both NPs in German are given and deaccentuated (Fanselow & Lenertová 2011, Lenerz 1977).

Against this background our research questions for this study were:

- Q1.** Is inverse scope available in German?
- Q2.** Does context have an impact on the availability of inverse scope?
- Q3.** Does embedding into a syntactic island render the inverse reading impossible?

Methods & Design We conducted an online study in which participants were asked to judge if it was possible to interpret a sentence containing two quantifier phrases (QPs) with either of two potential readings: surface reading (SR) vs inverse reading (IR). We used a 2x3x2 design with the factors *Plausibility* (2 levels: SR/IR PLAUSIBLE vs. SR IMPLAUSIBLE), *Island Embeddings* (3 levels: 0- vs. 1- vs. 2-EMBEDDINGS), and *Question Type* (2 levels: SR vs. IR). The subject was always a weak existential QP and the direct object a universal QP. Participants first read a short context introducing both NPs which was either plausible for both SR/IR or biased against SR, which was followed by the target sentence in one of the three embedding conditions, (see a–c). Finally, one of two yes-no question types, counterbalanced across conditions, targeted the availability of either SR (QI) or IR (QII). The following example (SR IMPLAUSIBLE) is translated from German:

Stimulus: *The police had warned before the storm that the access roads to the city center could be blocked by fallen trees, and in fact ...*

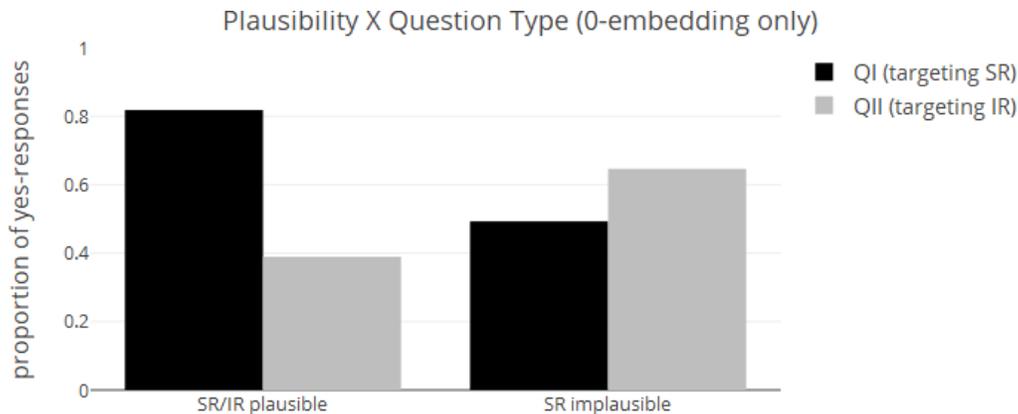
- a. ... *a/some fallen tree blocked every access road.* (0 embedding)
- b. ... *there was a/some fallen tree that blocked every access road.* (1 embedding)
- c. ... *there was a/some fallen tree that was lying in such a way that it blocked every access road.* (2 embedding)

Question Types: Can this sentence be understood to mean that ...

QI. ... only a single tree blocked the access roads? (SR)

QII. ... more than one tree blocked the access roads? (IR)

Results A preliminary analysis shows that in the 0-EMBEDDING with both SR/IR PLAUSIBLE vs. SR IMPLAUSIBLE conditions, shown in the graph below, participants responded ‘yes’ to the SR in 82% of the cases when the context was plausible for both IR/SR, which decreased to 49% when the context biased against SR in the condition SR IMPLAUSIBLE. Crucially, the question targeting IR was accepted in 39% of the cases even in the condition SR/IR PLAUSIBLE, which increased to 65% when the context biased against SR.



For the sake of space, the 1-/2-EMBEDDINGS conditions are not included in the graph. Nevertheless, the results show that with deeper embedding into islands, the availability of IR decreased (SR/IR-plausible: 39% > 21% > 16%, SR-implausible: 65% > 50% > 35%) while the availability of SR increased (SR/IR-plausible: 82% < 88% < 92%, SR-implausible: 49% < 71% < 81%). In an exploratory analysis, we also found evidence that not all participants adhere to the general pattern found, but instead can be grouped according to their individual interpretation strategy, varying systematically in (i) the general availability of IR and (ii) their preference for either syntactic or pragmatic consistency in the conflicting SR-implausible condition.

Discussion Our results suggest a positive answer to all three research questions Q1–Q3: there is a general preference for the surface reading when both readings are possible. The inverse reading is nevertheless available (Q1) and even preferred (Q2), when the context provides an IR bias. Embedding decreases the acceptance of inverse readings, as is expected under the theory of Quantifier Raising (Q3). However, there is also individual variability in participants with regards to all three questions. The results reported here do not support the assumption that inverse readings are impossible in German (Frey 1993), since they are available even in contexts in which the surface reading is plausible, i.e., when there is no pragmatic pressure for an inverse interpretation. By contrast, these results favor a multifactorial account in line with Bobaljik & Wurmbrand (2012): inverse readings are dispreferred in German, but still available when the scrambled alternative is blocked under givenness.

Selected References • Bobaljik, J. & Wurmbrand, S. (2012). *Word Order and Scope: Transparent Interfaces and the 3/4 Signature*. LI 43(3). • Frey, W. (1993). *Syntaktische Bedingungen für die semantische Repräsentation: Über Bindung, implizite Argumente und Skopus*. • Pafel, J. (2005). *Quantifier Scopep in German*.