

Quantifier Binding Across Sentence Borders

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ABSTRACT

Objective Investigating the impact of discourse relations on the acceptability of cross-sentential quantifier-variable binding (*quantificational subordination*).
Method Online acceptability rating.
Conclusion Discourse relations play a crucial role for the acceptability of quantificational subordination. In particular, *causal* discourse relations allow for quantificational subordination, in contrast to non-causal discourse relations.

BACKGROUND

Irene Heim (1982): *The Semantics of Definite and Indefinite Noun Phrases*. PhD dissertation, UMass Amherst. Amherst: GLSA.

British National Corpus, Oxford University Computing Services

BNC A0J: *Health promotion and education leaflets*

BNC A0X: *Woodworker*, Hemel Hempstead: Argus Specialist Publications, 1991

Peter Sells (1985): *Restrictive and Non-Restrictive Modification*. CSLI Report No. CSLI-85-28.

Carminati, Maria Nella, Lyn Frazier, and Keith Rayner (2002): *Bound Variables and C-command*. *Journal of Semantics* 19.1: 1-34.

CURRENT STUDY

The aim of this study is two-fold.
 First, the study is supposed to show whether quantifier-variable binding across a sentence boundary is equally available in German.
 Second, I want to argue that grammatical instances of quantificational subordination must satisfy specific discourse requirements. In particular, I'm investigating whether a causal discourse relation allows for a quantifier to bind a pronoun in a following sentence.

MATERIALS

The materials used in this study were two-sentence discourses that differed with respect to two conditions: *causality* and *antecedent type*.

Causality described whether there was a causal connection between the first and second sentence. Discourse relations are not overtly encoded and have to be inferred from the discourse content and context. However adverbs such as 'thus' or 'lately' were used to indicate a particular discourse connection, e.g. causal or temporal respectively.

Antecedent type classifies the nominal phrases in the first sentence that serve as binders or antecedents for the pronouns in the second sentence. Antecedent NPs were either *referential* — for instance 'my friend Chris', or 'the janitor in our school' — or *quantificational* — for instance 'every patient' or 'every janitor in the area'.

These conditions led to four types of two-sentence discourses that were constructed from sentences as illustrated in (6) below.

(6) Jeder unserer Patienten, /der sich im letzten Jahr ein Bein brach, / every our.GEN patients who self in.the.last year a leg broke
 hatte Ärger mit der Krankenversicherung.
 had trouble with the health.insurance
 'Every patient of ours who broke a leg during the last year experienced trouble with his health insurance.'

Mein Freund Christian, / ...

my friend Christian ... (continued as above)

Er musste sich deswegen / mit viel Papierkram / herumschlagen.
 he needed self therefore with much paper.stuff beat.around
 'For that reason, he needed to bother with a lot of paper work.'

Er hatte aber / auch schon vorher / viel Pech mit Versicherungen.
 he had but also already before much bad_luck with insurances.
 'In addition, he had already had lots of trouble with insurance companies.'

Both quantificational and referential context sentences were continued with either causal or non-causal continuation sentences. For instance, a referential / non-causal discourse from the examples above would for be

'My friend Christian, who broke his leg last year, experienced trouble with his health insurance. In addition, he had already had lots of trouble with insuance companies.'

METHOD

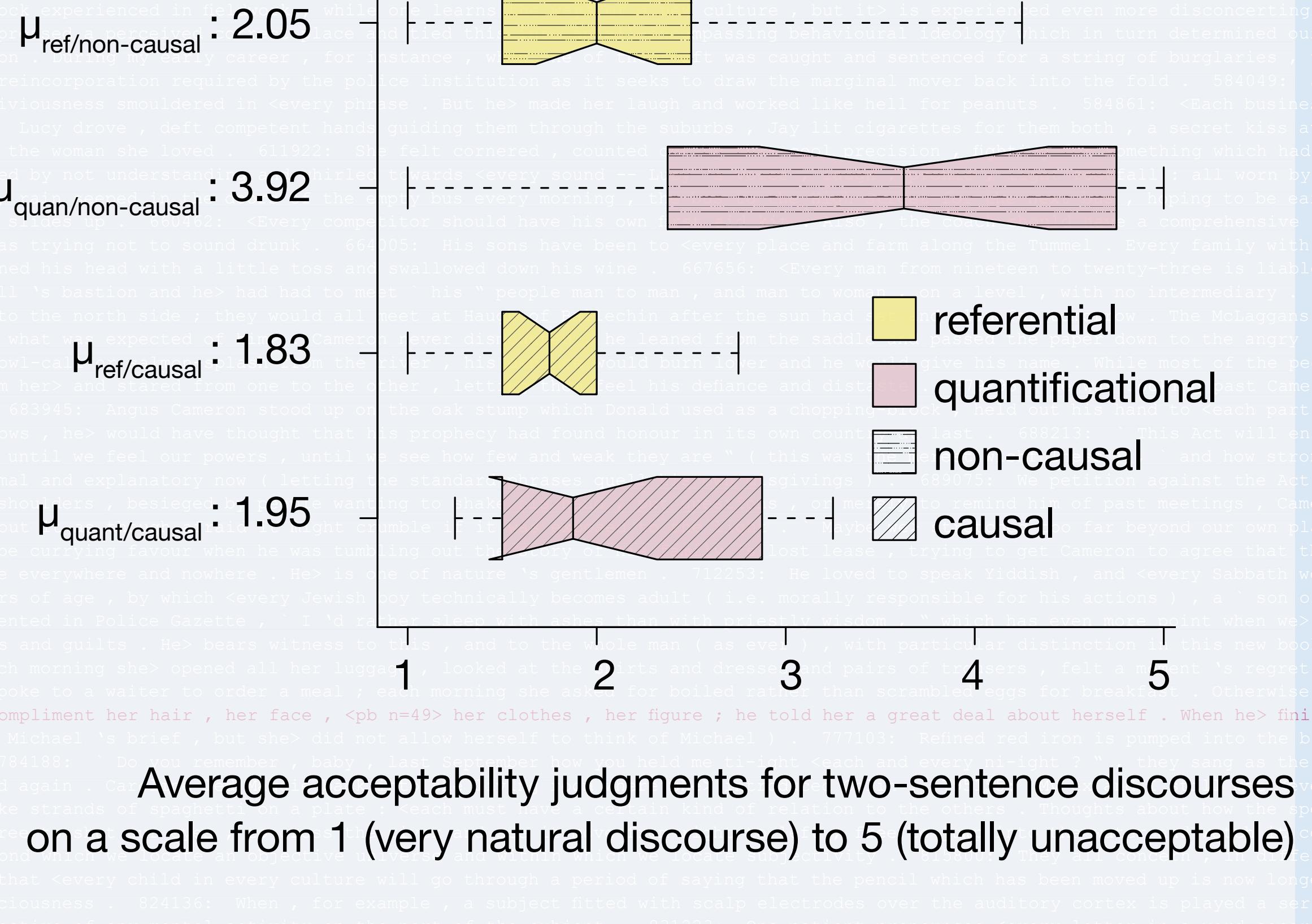
24 native speakers of German were presented 4 discourses of each type and 38 filler discourses in randomized order on a computer screen in a frame by frame fashion. Immediately following the last frame, the participants were asked to rate the naturalness of the discourse on a scale from 1 to 5, where a response of 1 indicated a fully natural sounding discourses and 5 an unacceptable one.

RESULTS

antecedent type:
 subject: $F(1,84)=18.54, p<.001$
 item: $F(1,62)=26.75, p<.001$
 subject: $F(1,94)=17.45, p<.001$
 item: $F(1,62)=28.2, p<.001$
 subject: $F(1,94)=8.53, p<.005$
 item: $F(1,62)=12.95, p<.001$

causal/non-causal for quantified antecedents:
 causal/non-causal for referential antecedents:
 T-TESTS
 p<.001
 p=.12

Main effects of both factors were found (2x2 ANOVA). However, while there was a highly significant effect of causality for the quantificational sentences, only a numeric effect of causality could be found for the referential items (t-tests). This difference is reflected in a highly significant interaction.



The graph illustrates the vast impact that non-causal discourse connections have on the acceptability of quantifier binding across sentence borders.

DISCUSSION

That the unsacceptability of the quantificational / non-causal sentences is due to a general incompatibility of discourse relations has been proposed in Linton Wang, Eric McCrady, Nicholas Asher (2003): Information Dependency in Quantificational Subordination presented at: *Where Semantics meets Pragmatics*. First International Workshop on Current Research in the Semantics-Pragmatics Interface. UMICHIGAN, July 2003.

Conclusions:

Quantifiers have the potential to bind pronouns in the following sentence, both in German and English.

Not just any discourse relation allows for cross-sentential binding — while non-causal discourse continuations are fully acceptable for context sentences with referential antecedents, they are almost ruled out for sentences that contain a quantificational antecedent.

Speculations:

Causal discourse relations are only one type of discourse relations that allow for quantificational subordination. In order to account for examples of *telescoping*, I think the more general notion of a *non-accidental generalization* is needed.

The notion of a non-accidental generalization might be related to a semantic account of quantificational subordination involving generic quantification over possible events.

Thank you.*

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