Assignment of Grammatical Functions in Discourse Context and Word-Order Ambiguity Resolution

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INTRODUCTION

In German, noun phrases (NPs) can be ambiguously case-marked as nominative (Subject) or accusative (Object). When readers encounter such ambiguous NPs in scrambled word orders they can experience processing difficulties (e.g., Hemforth, 1993; Knöferle, Crocker, Scheepers, & Pickering, 2001). However, what if preceding discourse context provides information for establishing the grammatical function of NPs? This information could influence readers' interpretation of subsequent NPs. In principle, both the processing of sentences with scrambled and canonical word orders could profit from such contextual focus.

QUESTIONS

Can the interpretation of locally ambiguous word orders be influenced by focus in a preceding discourse context?

Can processing difficulties of scrambled word orders be overcome by context information about grammatical functions?

Does focus interact with syntactic structure of the context?

EXPERIMENT

42 German participants read sentences displayed on a computer screen while their eye movements were monitored.

Initial NPs of target sentences were ambiguous with respect to their grammatical function. Disambiguation took place at the second NP that was unambiguouslsy case-marked as either Object (SO) or Subject (OS).

Preceding context consisted of two sentences: a declarative sentence introducing 3 possible referents, followed by a focusing wh-question. The question particle was either *who* (NOM) or *whom* (ACC). In a baseline condition, a question that did not assign grammatical functions to subsequent NPs was used.

A memory test, testing sentence recognition, followed the experiment.

References:

Branigan, H., Pickering, M., & Liversedge, S. (1995). Syntactic priming: Investigating the mental representation of language. *Journal of Psycholinguistic Research, 24*, 489-506.

Hemforth, B. (1993). *Kognitives Parsing: Repräsentation und Verarbeitung sprachlichen Wissens.* Sankt Augustin: Infix.

Knöferle, P., Crocker, M., Scheepers, C., & Pickering, M. (2001). *Anticipatory eye-movements in initially ambiguous sentences: There's more to it than meets the eye.* Talk presented at the 8th AMLaP conference in Tenerife, Spain.

Example

(SO) Die Katze jagt gleich den Vogel mit großem Eifer.
The cat (NOM, ambiguous) chases in-a-moment the bird (ACC) with great eagerness.

(OS) Die Katze jagt gleich der Hund mit großem Eifer.
The cat (ACC, ambiguous) chases in-a-moment the dog (NOM) with great eagernes.

Preceding context for SO sentence:

Auf der Wiese sind eine Katze, ein Hund und eine Vogel. *On the field are a cat, a dog and a bird.*

- Wer jagt gleich den Vogel mit großem Eifer?
  Who (NOM) chases in-a-moment the bird with great eagerness?
- Wen jagt gleich die Katze mit großem Eifer?
  Whom (ACC) chases in-a-moment the cat with great eagerness?
- Was passiert gleich?
  What will in-a-moment happen?

Comparable questions were created for OS sentences.

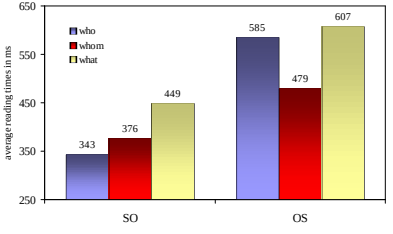

Figure 1. Total reading times in ms for the second disambiguating NP in SO and OS sentences after a focusing *who*- or *whom*-question, and a neutral *what*-question.

RESULTS

Results are based on total reading times for the second NP in target sentences.

Reading times were faster when sentences were preceded by focusing question (*who* or *whom*) than by baseline question (*what*). In planned comparisons this difference was significant for SO ($F_1(1,41)=11.21$, $p=.002$; $F_2(1,23)=7.69$, $p<.02$) and OS sentences ($F_1(1,41)=6.53$, $p<.02$; $F_2(1,23)=3.37$, $p=.07$).

OS sentences preceded by a focusing question were still harder to process than comparable SO sentences ($F_1(1,41)=55.22$, $p<.001$; $F_2(1,23)=20.84$, $p<.001$). However, OS sentences preceded by a *whom*-question did not differ from SO sentences preceded by a baseline question (F_1&$F_1 < 1$).

Sentences were easier to process when the syntactic structure of the focusing question was matching (e.g., Branigan, Pickering, Liversedge, 1995). In an ANOVA, the interaction between sentence type (SO, OS) and question particle (*who*, *whom*) was significant ($F_1(1,41)=8.50$, $p=.006$; $F_2(1,23)=7.04$, $p<.02$). When mismatching, SO sentences were still easier to process than in baseline condition ($F_1(1,41)=5.82$, $p=.02$; $F_2(1,23)=3.82$, $p=.06$). For OS sentences, no such difference was found (F_1&$F_1 < 1$). Syntactic mismatch seemed to outweigh the gain from information about grammatical functions.

CONCLUSION

Both locally ambiguous scrambled and canonical word orders profit from focus in a preceding discourse context.

Processing difficulties of scrambled word orders get weakened but are not fully overcome by context that provides information about grammatical functions.

Processing is facilitated if the syntactic structure of the context matches the target sentence. However, in the absence of syntactic matching processing can still be easier when information about grammatical functions is provided.