

Wh-questions and the nature of D-linking: a processing perspective

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The notion Discourse (D)-linking originates from a syntactic-theoretic background (Pesetsky, 1987). In certain wh-constructions the so-called D-linked “whichN” elements tend to behave differently from bare wh-items (e.g. “who”) on the basis of what is predicted by syntactic theory; “whichN” tends to behave more freely, or is less constrained in its potential movements. Syntactic theories are formulated to account for these observations (Cinque, 1990; Rizzi, 1990 among others).

The notion D-linking itself, however, is not syntactic at all. It is generally agreed that “who” and “whichN” differ in their ability to relate to referential sets pre-established in the discourse. “WhichN” particularly demands an answer out of a specific set determined by the head noun of the wh-phrase, present in the discourse context. In contrast, the interpretation of “who” is less restricted and, secondly, less dependent on a pre-existing set.

- (1) *Who is funny?*
- (2) *Which comedian is funny?*

Although D-linking is defined as being a discourse property, it does not become clear, however, how exactly the relationship to discourse context could influence syntactic structure.

In addition to syntactic observations, differences between D-linked and non D-linked wh-items are not limited to the domain of linguistic theory; they have been observed in processing and comprehension studies as well (e.g. Kaan, Harris, Gibson, and Holcomb, 2000; Avrutin, 2000; Shapiro, 2000). These empirical data show that “whichN” items tend to be more difficult than questions with a bare wh such as “who”. More specifically, it seems that this pattern is confined to non-canonical structures. This may suggest that the underlying syntactic process is different, but again the relationship to discourse processing is unclear. Therefore, three experiments have been designed to find out how, when and - most importantly - why D-linked wh-questions differ from non-D-linked equivalents.

Experiment 1

This self-paced reading (SPR) study in Dutch included “who” and “whichN” wh-questions.

To be able to address which aspects of set-processing (which is assumed to underlie D-linking) are relevant to wh-question processing, a generic “which” condition “which person” was included to determine the influence of set-restriction. This construction is syntactically identical to standard “whichN” questions but resembles “who” in set size. Additionally an appropriate preceding context was provided in order to determine whether differences in processing are due to (the lack of) an existing set. Furthermore the context served to disambiguate the subject vs. object reading, as wh-questions are structurally ambiguous in Dutch.

Results

For all filler types the subject-first questions were read faster than object-first questions from the point where the structure became evident. There was, in addition, an interaction of syntactic structure by question type. Comparable to previous research, differences between the question types were only found in the object-gap questions. Importantly, a significant difference was observed between the standard “which” questions on the one hand, and the “who” and generic “which” conditions on the other hand, with the standard “which” questions being read more slowly. This suggests that the difference between “who” and “which” does not depend on an available discourse set but is possibly due to set-restrictiveness. Before we can conclude this, it is important to contrast question processing with and without context.

Experiments 2a and 2b

In the next two Dutch SPR experiments identical wh-questions were tested with (2a) and without (2b) a preceding context introducing a complete and appropriate discourse set. Similar to experiment 1, “who”, “whichN” and “which person” conditions were used, both in subject- and object-first constructions. All questions were disambiguated semantically to be able to present them in isolation.

Results and discussion

Again, in both experiments 2a en 2b subject-first questions were read significantly faster than object-first structures at the point of disambiguation. Similarly, there was an overall effect of question type, with the standard “whichN” type questions being read more slowly than those with “who”. Although there was no significant interaction, post-hoc t-tests confirmed the results of the previous study for experiment 2b

(without context). Again, there were no significant differences between “who” and “which person whatsoever, compared to standard “whichN”. In contrast to previous studies, this effect was apparent in both canonical and non-canonical questions.

For experiment 2a (with context) the processing of generic “which” differed. Here, post-hoc t-tests showed differences between the two “who” on the one hand, versus both “which” conditions on the other hand. This might be taken to argue against our tentative conclusion that set processing is the primary explanation for “who” / “whichN” differences. However, the effect for generic “which” found in the current results may be explained by the presence of a particularly (and unintended) strong contrast in the preceding context, possibly evoking a forced-choice “which” question.

Overall Discussion

From these results it can be concluded that “which” questions are not necessarily always more difficult than “who” questions, as predicted by accounts of the processing of D-linking which appeal to syntactic theory. In experiments 1 and 2b no processing difficulty was observed for the non-restrictive “which person” items. This outcome could thus be directly related to the process of set-restriction, an inherent property of standard “whichN” questions. Set-restriction effects which are seen both with and without context are apparently not alleviated by an existing set within the context. However, context (or: a pre-existing set) does appear to play a role in the sense that D-linking effects do emerge in the relatively simple subject questions when no context is available.

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