

Disentangling incremental and top-down parsing: experimental evidence from VO/OV word order patterns in code-switching

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Introduction

Many studies show that the parser makes predictions for upcoming structure in a left-to-right fashion (i.e., 'look-ahead': e.g., Bakker 2005). However, it remains controversial whether syntactic structure is projected 1) incrementally (e.g., Phillips 2003); 2) in a strict top-down fashion; or 3) top-down, but on the basis of information encoded in specific syntactic nodes only. Most findings appear to be compatible with each of these accounts. In the present study, it is argued that bilingual code-switching data, specifically switched clauses in which the phonological content comes from one language while the syntactic structure comes from the other, can prove a useful tool for individually testing these alternative approaches.

Method & design

In an online Sentence Matching experiment, where participants have to judge whether two sequentially appearing strings of words are identical or not (e.g., Freedman & Forster 1985), bilinguals of English - a VO language - and Dutch - predominantly OV - were tested on several types of code-switched Subj-Aux-VO/OV sentences. The conditions varied with respect to: 1) word order: VO / OV; 2) switching point: no switch (tested on monolinguals) / after Subj / after Aux / after O; and 3) switching direction: Dutch > English / English > Dutch. For example, reaction times (RTs) to sentence pairs like (1a) were compared to RTs to sentence pairs like (1b), and pairs like (2a) to (2b):

- (1) English > Dutch:
 - a. The newspaper will **MELDEN** HET SLECHTE BERICHT. (x2)
 - b. The newspaper will HET SLECHTE BERICHT **MELDEN**. (x2)
- (2) Dutch > English:
 - a. DE OCHTENDKRANT ZAL the bad news **report**. (x2)
 - b. DE OCHTENDKRANT ZAL **report** the bad news. (x2)

Only correct responses and only RTs to identical pairs were included for analysis.

Results

- No differences were observed between monolinguals' behavior on sentences without a switch and bilinguals' behavior on strings in which the subject was expressed in one language while the rest of the sentence was realized in the other: Dutch Aux-OV yielded significantly faster RTs than Dutch Aux-VO, and English Aux-VO was highly preferred over English Aux-OV. Thus, the nature of the subject does not seem to affect the preferred word order in the switched clause.
- Results for sets of sentence pairs like (1) indicated that participants preferred the word order congruent with the language of the auxiliary (i.e., (1a)-pairs yielded significantly faster RTs than (1b)-pairs). A tendency in the same direction was obtained for the (2)-pairs: participants preferred (2a)-pairs over (2b)-pairs.
- RTs to switches after the object paired with the results of the (1) and (2) comparisons: varying the language of the object had no influence on OV vs. VO preference.

Conclusions

In conclusion, the present study shows that code-switching data can provide insight into parsing mechanisms: the results suggest that (empty) syntactic templates are projected 'ahead', in a top-down fashion; these projections, however, are triggered by information associated with the (phonological) content of specific syntactic nodes only (here: the inflected verb, as opposed to the subject, the object, or the main verb). These findings are incompatible with a 'static' top-down approach as well as a node-by-node incremental account of sentence comprehension.

References

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