

Does syntactic priming speed up linearization?

Nomi Olschoorn & Gerard Kempen
Leiden University

Speakers tend to reuse syntactic structure in consecutive sentences. Explanations of this "syntactic priming" (SP) phenomenon revolve around reduction of processing effort (Levelt & Kelter, 1982; Bock, 1986). Reuse of recent syntactic materials during the production of a new sentence requires less effort than starting from scratch, thus facilitating fluency and reducing voice-onset RTs. Most SP experiments have focused on categorical effects: They explored how SP influences the probability (preference) of reusing particular structures. Recently, several studies also found priming effects on RTs. Smith & Wheeldon (2001) report that, with coordinated versus non-coordinated response-initial NPs, syntactically related primes speed up onset latencies to subsequent spoken target responses. In a written DO-PO sentence completion task, Corley & Scheepers (2002) also found latency differences between primed and unprimed conditions.

Many sentence production models (e.g. Garrett, 1975; Kempen & Hoenkamp, 1987; Bock & Levelt, 1994) distinguish between a functional and a positional level of syntactic processing -- between assembling the hierarchical structure of a sentence and determining the linear order of constituents. This raises the question whether SP affects both these levels. The aforementioned studies cannot provide the answer because they used prime-target pairs that differ at both levels.

Word order variation in Dutch clause-final verb clusters provides a suitable testbed. Order of past participle (PastP) and auxiliary verb (Aux) is arbitrary and semantically neutral. In grammar formalisms honouring the hierarchical/positional distinction, it does not involve hierarchical differences. Furthermore, Hartsuiker & Westenberg (2000) have reported that SP indeed affects the linearization of Aux and PastP during speaking.

We conducted three experiments to test the effort reduction hypothesis at the positional level. In Experiment 1, we confirmed Hartsuiker & Westenberg's categorical SP effect on linearization. In Experiments 2 and 3, we registered voice-onset RTs to target completions under slightly varying conditions. Filler items ascertained that residual priming from previous trials could not obscure the SP effect. Although we again found the categorical priming effect (and a main effect of target order: AuxPastP < PastPAux), no priming effect on voice-onset RT obtained.

Given these (and related) findings, we propose to split SP effects into two parts: BIASING (increased probability of selecting the primed syntactic alternative, i.e. raising its priority) and SPEED-UP (faster preparation/assembly of the selected hierarchical structure). Apparently, SP exerts both biasing and speed-up effects on the assembly of syntactic hierarchies, but only a biasing effect on the selection of a constituent order.

References

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