SYNTACTIC PRIMING: A LEXICAL BOOST, CUMULATIVITY, AN INVERSE PREFERENCE EFFECT AND... A POSITIVE PREFERENCE EFFECT

Katrien Segaert (MPI for Psycholinguistics) and Peter Hagoort (MPI for Psycholinguistics)
katrien.segaert@mpi.nl

Introduction. Syntactic choices are sensitive to priming. The following factors have been repeatedly identified to modulate priming of choices: the lexical boost (lexical repetition boosts priming), cumulativity (multiple primes increase the effect) and the inverse structure preference effect (less preferred structures prime more). Priming does not only influence syntactic choices however, it also affects production latencies. Interestingly, studies investigating syntactic priming of latencies recently demonstrated a *positive structure preference effect*: preferred structures prime more[1,2]. The positive preference effect for latencies is stable across experiments and is demonstrated for transitives[1] and ditransitives[2]. In two experiments we examined whether syntactic priming of latencies is sensitive to the same factors known to influence priming of choices (the lexical boost, cumulativity and structure preference). If all these phenomena indeed influence priming of both choices and latencies, it supports that latencies are a valid syntactic priming measure and that syntactic priming theories should include mechanisms to explain latency effects.

Method and results. We investigated active/passive voice alternation using a picture description paradigm simultaneously measuring production choices and latencies. We analyzed the data using logit and linear mixed models.

Experiment 1 (N=45) investigated if syntactic priming is affected by the cumulative effect of the number of immediate primes (1 vs. 3 primes) and the cumulative effect of all preceding target productions within the experiment (i.e. the proportion of passives out of total active and passive response productions in the experiment so far, hereafter: CumPassProp). In the baseline measure, fewer passives (8.2%) than actives were produced ($p<.001$). *Response choices* were not affected by active primes (1 prime: $p>.3$, 3 primes: $p>.5$) but were affected by passive primes (1 prime: $p<.001$, 3 primes: $p<.001$). More passive productions followed 3 passive primes than 1 ($p<.006$). Also, the higher CumPassProp, the more passives produced ($p<.004$). *Response latencies* for active structure choices were predicted by syntactic repetition ($p<.003$) and this effect marginally interacted with CumPassProp ($p<.08$): the higher CumPassProp (i.e. the smaller the cumulative proportion of actives), the smaller the priming effect for actives. Latencies for passives were unaffected by priming ($p>.3$).

Experiment 2 investigated if priming is modulated by verb repetition and by CumPassProp (N=45). In the baseline measure, fewer passives (7.8%) than actives were produced ($p<.001$). *Response choices* were not affected by active primes (novel verb: $p>.4$, repeated verb: $p>.1$) but were affected by passive primes (novel verb: $p<.001$, repeated verb: $p<.001$) and by CumPassProp ($p<.001$). Also, more passives were produced following a passive prime with the same verb than a different verb ($p<.001$). *Response latencies* for active structure choices revealed a syntactic priming effect ($p<.001$). For passives there was only latency priming when aided by verb repetition and a high CumPassProp value (3-way interaction syntactic repetition x verb repetition x CumPassProp: $p<.04$).

Conclusion. Syntactic priming in choices and latencies is modulated by the same factors: the lexical boost, cumulativity and structure preference. However, while structure choices show inverse structure preference effects, latencies show positive preference effects.

Well-established syntactic priming accounts with an implicit learning component[3-5] focus on syntactic choices and explain cumulativity and the inverse preference effect, some of these also explain the lexical boost. This cannot be the full story however: latencies reveal that preferred structures benefit from priming as well. A mechanism able to explain this -a competition[1,2] or other mechanism with the same explanatory power- could be incorporated in existing accounts of syntactic priming[3-5] which so far have only focused on choices.

[1]Segaert et al. (2011) *PLoS One*, 6(10), e24209. [2]Segaert et al. (2014) JEP:LMC, doi:10.1037/a0036796. [3]Chang et al. (2006). *Psychological Review, 113*(2), 234-272. [4]Jaeger et al. (2013) *Cognition, 127*, 57-83. [5]Reitter et al. (2011) *Cog. Sci., 35*(4), 587-637.