The ‘sense’ boost to dative priming: Evidence for sense-contingent verb representations
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It has been shown that the syntactic structure of dative sentences can be primed in production, and that this kind of syntactic priming is influenced by lexical factors. Syntactic priming effects are larger when the same dative verb has to be used in prime and target sentences than when a different verb has to be used (the lexical boost to priming, Pickering & Branigan, 1998). Additionally, the strength of priming varies according to the syntactic preference of the prime verb: The less expected a syntactic structure is, given the verb, the stronger its priming effect (the verb bias effect, Bernolet & Hartsuiker, 2010; Jaeger & Snider, 2008). It is, however, not entirely clear what the exact locus of these effects is: Do they occur at the level of the verb lexeme or at the level of the verb sense?

Many dative verbs have different senses, mostly depending on the abstractness of the arguments they take. The Dutch verb ‘bezorgen’ takes a concrete direct object (a hat) in sentences a and c, while it takes a more abstract object (a heart attack) in sentences b and d, making the latter two sentences more figurative. If different verb senses are represented separately in memory, it should be possible to observe sense-contingent modulations of dative priming. In order to investigate this, we selected 15 dative verbs with a concrete and a more abstract sense from the CONDIV corpus of written Dutch. Each of these verbs was presented to at least 36 students in a written sentence production experiment (Experiment 1). This pretest showed that 14 out of 15 verbs were used in both senses. Overall, in 43% of all dative sentences, the verbs’ more abstract sense was used. On the basis of these data, sense-contingent alternation biases were computed for each verb. Interestingly, 4 verbs had reverse syntactic preferences for both verb senses (e.g. ontfutselen [to diddle/worm something out of somebody] is biased towards a DO dative in its literal sense, but prefers a PO dative when it is used figuratively).

The same 15 verbs were then presented in a syntactic priming experiment (Experiment 2). The target pictures always depicted the concrete meaning of the verbs, and the dative primes always used the same verb as the one on the target picture. The primes were either double object (DO, examples a & b) or prepositional object (PO, examples c & d) datives. Crucially, half of the primes used the dative verb in the same sense (i.e. the concrete sense, examples a & c) as in the target picture, while the other half used the alternate sense (examples b & d). Transitive primes (e) were used as a baseline. The results of this experiment showed significant priming for DO (35%) and PO (8%) primes, and a significant ‘sense’ boost of dative priming: Priming effects were stronger (13%) when prime and target use the same verb sense than when they used different senses of the same verb. This effect is due to a large sense boost in the DO-conditions; the PO-conditions do not benefit from sense overlap (Figure 1). The biases corresponding to both verb senses were correlated with the syntactic choices in the baseline condition. The observed sense boost suggests that the different senses of a verb have separate memory representations and that verb bias and lexical boost effects are actually sense-contingent modulations of syntactic priming (cf. Roland and Jurafsky, 2000).
Figure 1: Priming effects (vs. baseline) for DO and PO primes in the same sense and different sense conditions of Experiment 2.