Morphological boost in structural priming: Evidence from Czech

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Today's research shows that structural priming effects are often supported by non-structural aspects of language. E. g. Ziegler and colleagues (2019) suggested that solely abstract structure is not sufficient to elicit syntactic priming and that other factors are usually needed, e.g. effects of animacy, semantic structure, information structure, shared phonology or others.

These findings suggest that morphology could also play some role in syntactic priming. However, to our knowledge, this issue has been addressed only in two studies, which yield contradictory results. Santesteban and colleagues (2015) did not find the evidence that case endings in ergative Basque language contribute to structural priming. On the other hand, Chung and Lee (2017) successfully primed the use of case markers in Korean. In Czech the same case can be encoded with different endings in different nouns. We can therefore address the question whether the repetition of the same morpheme used for marking a grammatical function can enhance the priming more than the using different morpheme coding the same case.

We executed two experiments masked as memory tests, in which participants read prime sentences and described following target pictures for later recall. We modified two independent variables in primes – type of the sentence and noun case endings. Sentence type had three levels – double-object construction with dative-accusative order or with accusative-dative order, or a neutral intransitive prime sentence. Case endings for nouns in accusative and dative had two conditions – in same-suffix condition the prime nouns had suffixes identical to suffixes used in the target nouns. In the different-suffix condition, the dative and accusative nouns in the target were inflected using different suffixes. In Experiment I (N=59), primes with four different dative markers were used.

Prime:
Same suffix: Kráva olizuje ovečc-*e* hlav-*u*/Cow licks sheep-DAT head-ACC –
Different suffix: Průvodce popisuje návštěvník-*ovi* ulic-*i*/Guide describes visitor-DAT street-ACC
Target: Klaun nabízí baletc-*e* žvýkač-*u*/Clown offers ballerina-DAT chewing gum-ACC

Generalized linear mixed-effect model with random intercepts for subjects and items revealed that in different-suffix sentences, no significant effect of priming against the neutral condition, neither acc/dat (p=0.239) nor for dat/acc sentences (p=0.527) was found (Table 1). In same-suffix sentences we found significant effect of acc/dat primes compared to dat/acc (p=0.005, Table 2). The results suggest that effect like lexical boost exist also on morphological level, and that the ordering of case forms is easier to prime if these forms share case-marking suffixes.

In Experiment II (N=60), only two dative markers in primes were used (*-ovi* and *-e*). The results show similar pattern as the first experiment but are not significant. For different-suffix sentences, we again did not observe any significant effect against the neutral condition for acc/dat (p=0.284) nor for dat/acc sentences (p=0.454) (Table 3). For same-suffix sentences we found marginal effect of acc/dat structures compared to dat/acc (p=0.068) (Table 4). When tested for interactions between prime word order and marker agreement, it was marginally significant in Experiment 1 but not significant in Experiment 2.

Together, the experiments do not confirm that repeating the same case markers enhances priming, but they are suggestive of this possibility. However, the effect appears to be weak and perhaps limited to some markers.

Table 1
Model estimates in different ending condition in Experiment 1

Parameter	Est.	SE	P-value
Intercept (neut.)	-0.298	0.308	0.333
DA	0.154	0.243	0.527
AD	-0.288	0.245	0.239

Table 2
Model estimates in same ending condition in Experiment 1

Parameter	Est.	SE	P-value
Intercept (DA)	0.683	0.432	0.114
AD	-1.395	0.495	0.005 **

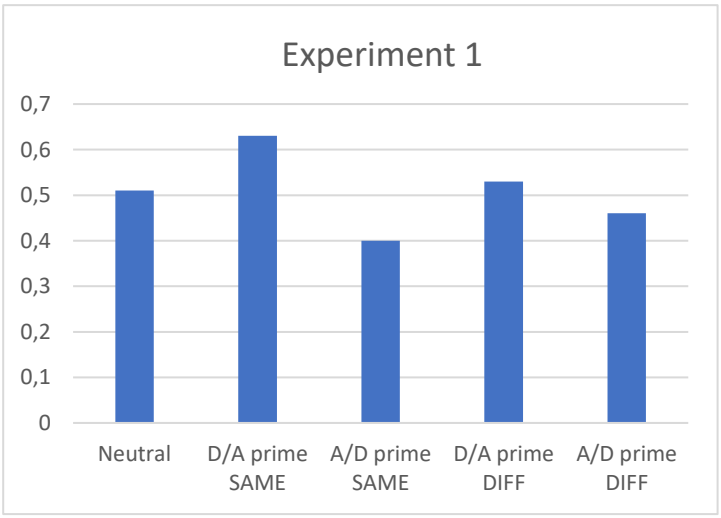
Table 3
Model estimates in different ending condition in Experiment 2

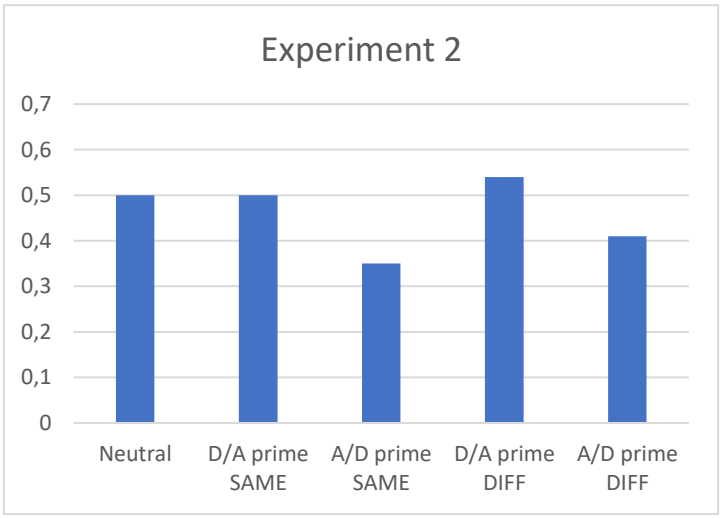
Parameter	Est.	SE	P-value
Intercept (neut.)	-0.040	0.304	0.896
DA	0.223	0.297	0.454
AD	-0.325	0.303	0.284

Table 4
Model estimates in same ending condition in Experiment 2

Parameter	Est.	SE	P-value
Intercept (DA)	-0.350	0.594	0.555
AD	-1.182	0.648	0.068

Graph 1
Relative frequency of dat/acc targets following different type of primes





(D/A = prime where dative precedes accusative, A/D = prime where accusative precedes dative SAME = sentences with same suffixes for accusative and dative nouns, DIFF = sentences with different suffixes for accusative and dative nouns)

References

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