Evidence for a Unified Theory of Structural and Lexical Priming
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I present evidence that structural priming and lexical priming may be due to the same underlying mechanism. Several studies have shown that lexical priming exhibits sensitivity to three key effects: the frequency of the prime, the neighborhood density of the prime, and the similarity between the prime and the target. Words are primed less by their high frequency orthographic and semantic neighbors than by low frequency neighbors (Scarborough etal. 1977; Thomsen etal. 1996). This effect is also found with less expected constructions (Jaeger&Snider07; Bernolet&Hartsuiker2007). Also, words with fewer orthographic and semantic neighbors prime more (Perea and Rosa 2000; Anaki and Henik 2003). Finally, the more similar the prime and target words, the greater the magnitude of the priming effect (Ratcliff and McKoon 1988). All of these effects have been argued to follow from an activation-based model (Anderson 1983; Kapatsinski 2006). Inverse frequency effects arise because less activation is left in the prime type when the prime is more token frequent because activation also spreads to the stored tokens. Similarly, primes in more dense neighborhoods have less activation left in the prime type because more activation spreads out to other similar types. Finally, more activation spreads between more similar types because of the greater resting activation between them due to their similarity. I present new evidence from corpus-based studies on spontaneous speech that syntactic priming exhibits the same three effects. This then argues that both lexical and syntactic priming can be reduced to the same source: the amount and spreading of activation associated with processing the prime.

A new study is presented that shows an effect of similarity on structural priming. Structural and semantic similarity of the prime and target structures are modeled using a database of passives extracted from the Switchboard corpus and a nearest-neighbor (NN) similarity metric. More similar prime and target exemplars are more likely to occur in the same construction ($p<.03$). This effect is in addition to the known similarity effect of verb identity (Pickering and Branigan 1998), which is controlled through simultaneous multiple regression and model comparison. This effect has also been found in priming the ditransitive (Snider 2007). These results mirror the similarity effects found in lexical priming.

Another new study is presented which shows that neighborhood density, defined as the number of constructions in which the verb appears in a large corpus, has an effect on the likelihood of priming. Using the same dataset, passive prime verbs that occur in fewer other constuctions are more likely to cause a passive to be produced in the target ($p < 0.03$). Structural priming seems to be affected by the same kinds of neighborhood density effects as lexical priming

In conclusion, both lexical and structural priming are affected by prime frequency, prime-target similarity, and prime neighborhood density. This suggests that lexical and structural priming could be the same process. I discuss the consequences for models of linguistic storage and specifically implications for exemplar-based models.