Antilocality in Ungrammaticality: Nonlocal grammaticality violations are easier to process
Laura Staum Casasanto and Ivan A. Sag (Stanford University)
Contact: lstaum@stanford.edu

Are non-local violations more acceptable than local ones? If so, are they also easier to process than local ones?

Grammaticality violations can be more or less local depending on the distance between the elements that produce the violation. For example, the locality of violations that stem from repeated function words depends on the number of words intervening between the two instantiations of the function word. Grammaticality violations are known to incur processing costs; however, the relationships between grammaticality, acceptability and processing difficulty are far from straightforward. Local and non-local violations are equivalent according to most competence theories of grammar. However, if acceptability judgments are a combination of competence and performance factors, non-local grammaticality violations might be less noticeable and thus incur lesser penalties than local ones. If they do, then non-local violations should be easier to process.

Experiment 1 investigated a repeated function word phenomenon, preposition doubling, in a masked, self-paced reading time study of sentences with a pied-piped preposition in an extracted prepositional phrase. Half of the sentences also had an in-situ copy of the same preposition, and the two prepositions were separated by either nine or fifteen words:

1. asked from which teacher my son had gotten the bad grade at the end of the quarter at the new school he attended.
2. asked from which teacher my son had gotten the bad grade from at the end of the quarter at the new school he attended.
3. asked from which teacher at the new school he attended my son had gotten the bad grade at the end of the quarter.
4. asked from which teacher at the new school he attended my son had gotten the bad grade from at the end of the quarter.

The extra preposition made reading time for whole sentence significantly longer when the violation was local (p<.004), but not when the violation was non-local, yielding a marginally significant interaction between locality and grammaticality (p=.06).

The non-local violations were more acceptable than the local ones (p=.0004), but there was no difference in the corresponding one- that conditions, again yielding an interaction between locality and grammaticality (p=.003).

Staum and Sag (2007b) reported results of a masked, self-paced reading study of That-trace sentences. Each sentence contained an adverbial between the complementizer and the beginning of the complement clause that ranged in length from 0 to 8 words long; in addition, each sentence contained one THAT (before the adverbial) or two THATs (before and after the adverbial). Staum and Sag (2007a) reported results of a masked, self-paced reading study of the same sentences (reproduced here).

There is a penalty for extra THAT when the violation is local (p=.001), but a benefit from extra THAT when the violation is non-local (p=.02), yielding a significant interaction between locality and number of that’s (p=0.025).

Extra THAT creates more difficulty when the violation is local (p=.06), but not when the violation is non-local, producing a significant interaction between locality and number of that’s, (p=.05).

Grammaticality violations make structures harder to process, and when the violation is more local, it may be more noticeable, producing more difficulty. This is supported by both the interaction in the acceptability judgments for Multiple That sentences and the interaction in the reading times for all three phenomena (Preposition Doubling, Multiple That and That-Trace sentences). Locality influences both the acceptability and the processing difficulty of grammaticality violations. The existence of antilocality effects for grammaticality violations suggests that the process of responding to a violation is a combination of competence and performance factors.

For whole sentence