Sneezing the napkin off the table: Online comprehension of grammatically creative sentences

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Language is a hoard of creativity: Speakers frequently use words and phrases in new and unfamiliar ways to express novel meanings. Compared with novel metaphors and creative morphology, which have been studied in detail by psycholinguists (e.g., Arzouan et al., 2007; Cardillo et al., 2012; Meßmer et al., 2021), little research has addressed how speakers process instances of *grammatical creativity*, such as (1). Sentences of this type have been referred to as cases of "valency coercion" (Busso et al., 2020) since a verb is "forced" into an argument structure (or valency) pattern in which it usually does not occur.

(1)   *Frank sneezed his napkin off the table.*

Using two complementary comprehension methods, we provide some of the first evidence of how speakers process such grammatically creative sentences in English, in real time. In Experiment 1 (N = 80), participants read 12 text passages that consisted of a naturalistic context (2a) and a target sentence that contained a caused-motion clause (2b). The critical segment featured either a prototypical caused-motion verb (*pushed*) or a creatively used verb (*sneezed*), as determined by a norming study. The critical sentence was presented in the "maze" variant of self-paced reading (Forster et al., 2009): Participants read the sentence word by word, but at every step, they had to choose between the correct sentence continuation and an incorrect distractor.

(2)   a.   Frank swallowed a red chili pepper at the dinner table. Tears streamed from his eyes, and he reached blindly for his napkin.
        b.   Unable to control himself, **Frank pushed/sneezed his napkin off the table** and knocked over a few of the wine glasses.

As shown in Fig. 1, grammatically creative sentences initially slowed down responses at the object noun phrase (*his napkin*) and the locative preposition (*off*), but these differences gradually decreased and largely disappeared at the final words of the clause. This suggests that speakers rapidly integrated the contents of the sentence, and that they may have derived a sensible interpretation before reaching the end of the clause.

In Experiment 2 (N = 55), we used eye tracking to gain further insight into how speakers reanalyze the unusual structure of grammatically creative sentences. Participants read 24 passages like (2) at their own pace while their eye movements were recorded. We also included an additional control condition of anomalous sentences (e.g., *Frank arrived his napkin off the table*), which could not be sensibly interpreted.

While the sentence types differed little in first-pass reading time, clear differences emerged in the proportion of regressive eye movements (i.e., how often participants looked back from a given sentence region to earlier regions). As depicted in Fig. 2, participants showed a greater proportion of regressions from the postverbal noun and prepositional phrase regions in creative sentences than in prototypical sentences, but fewer than in anomalous sentences, particularly at the prepositional phrase. This suggests that participants attempted to repair the unusual structure of both creative and anomalous sentences, but that they did so more successfully in creative sentences, while anomalous sentences caused persistent difficulty.

We will also discuss how our findings can inform theories of argument structure. Our results suggest that speakers' processing of verbal arguments is governed by a close interaction between lexical properties of the verb and grammatical properties of the clause-level construction.
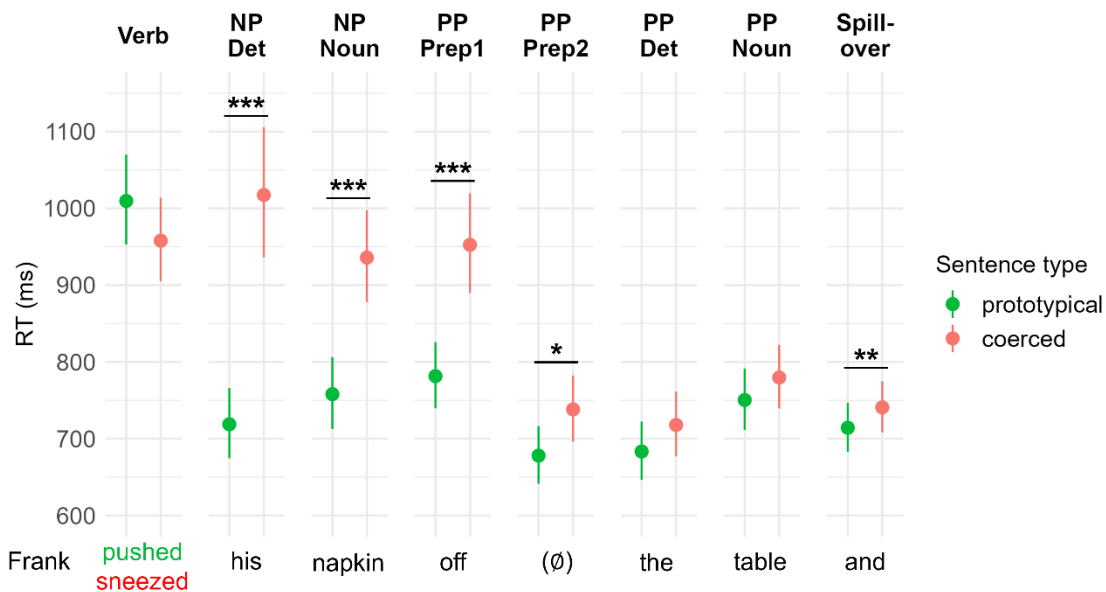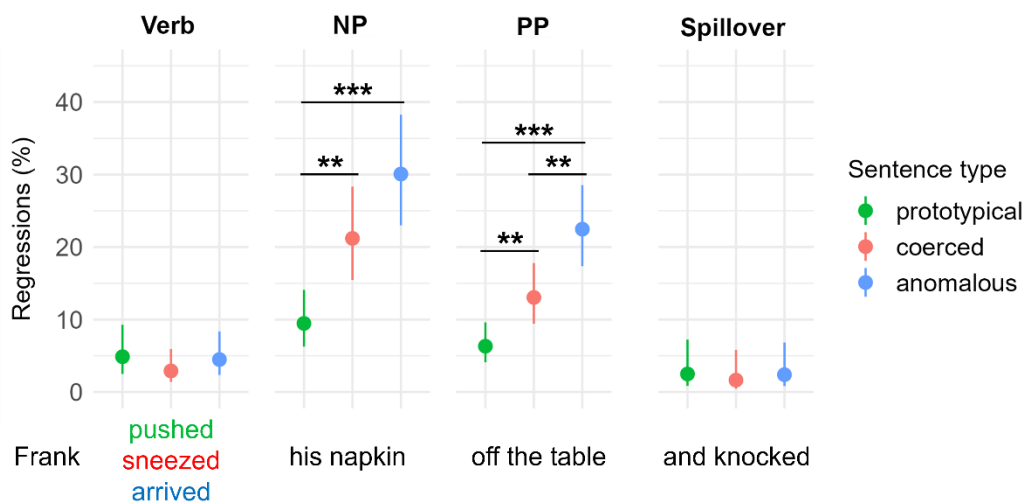
Fig. 1. Response times at each word in Experiment 1.

Fig. 2. Proportion of (outgoing) regressive eye movements in Experiment 2.

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