

## Conceptual integration in creative sentences: Evidence from eye-tracking

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Creativity typically involves the combination of concepts in a way that is novel but appropriate (Runco & Jaeger, 2012). Applied to language, speakers can form creative expressions by assigning familiar words a novel meaning, as in the case of creative metaphor, or by using them in a grammatical structure in which they usually do not occur (Munat, 2015). One example of the latter is the phenomenon of “valency coercion”, where a verb occurs with arguments that do not form part of its prototypical syntactic frame (Audring & Booij, 2016; Goldberg, 1995; Lauwers & Willems, 2011). For example, in example (1), the verb *sneeze*, which is prototypically intransitive, is “coerced” into a structure with a direct object and a locative adverbial, thus acquiring a caused-motion meaning.

(1) *Sally sneezed the napkin off the table.* (Goldberg 1995: 6)

Previous research has largely focused on what factors determine the acceptability of coerced sentences (Busso et al., 2020; Perek & Hilpert, 2014). In contrast, the question of *how* speakers process instances of valency coercion has not been addressed experimentally. In this talk, we report an eye-tracking study that sheds light on how speakers integrate concepts during the real-time processing of creative language.

In the experiment, self-reported native speakers of English read 24 naturalistic text passages, such as (2). To ensure that they paid attention to the content, 25% of trials were followed by a comprehension question. The critical part of each passage (see the highlighted section) consisted of a caused-motion sentence that contained either (i) a prototypical caused-motion verb (*pushed*); (ii) a coerced verb (*sneezed*); or (iii) an anomalous control verb (*arrived*). To assess processing, we measured participants’ eye movements at the three regions after the verb: the noun phrase (NP), the prepositional phrase (PP), and the following two words as a spillover region.

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

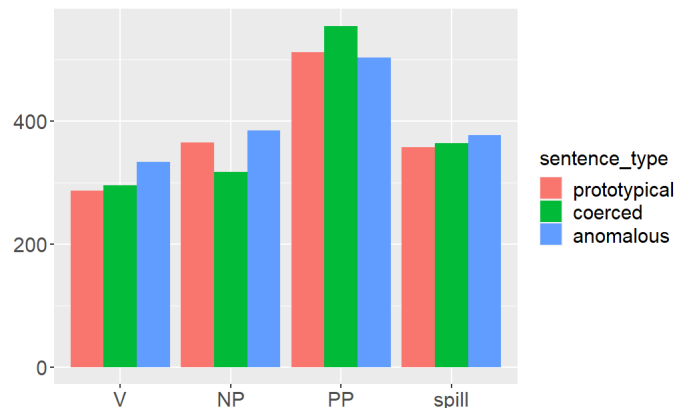
We predicted that, in the coerced condition, participants would encounter a combinatorial conflict at the NP (*his napkin*), thus leading to longer reading times or regressive eye movements back to the verb. At the subsequent PP (*off the table*) and/or the spillover region (*and knocked*), however, speakers should be able to reintegrate the sentence contents, thus leading to a speed-up in reading time in coerced sentences compared to anomalous ones.

Our preliminary results ( $N = 12$ ) tentatively support these predictions, even though we cannot conduct a full statistical analysis yet. As far as first-pass times are concerned (i.e., the time participants fixate on a region when they first read it), no clear differences are apparent between conditions (see Figure 1a). In contrast, re-reading times (i.e., the time participants spend re-reading earlier sentence regions once they reach a given point) show clear numerical differences between

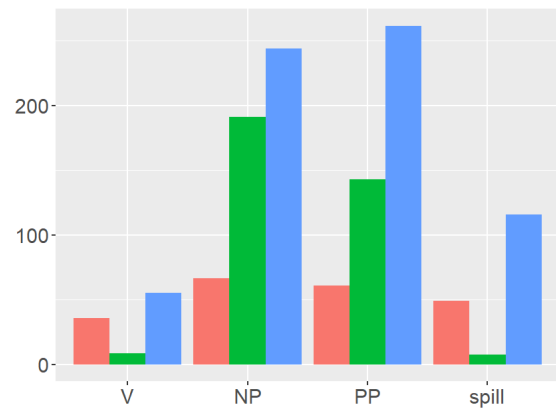
conditions (see Figure 1b). At the NP, participants spent considerably longer looking back to earlier sentence regions in coerced and anomalous sentences than in prototypical sentences. For coerced sentences, this effect appears to decrease at the PP and disappear at the spillover region. For anomalous sentences, meanwhile, re-reading times are still high at the PP and even seem to persist at the spillover.

Together, the regressive eye movements suggest that speakers try to arrive at a meaningful interpretation of both coerced and anomalous structures. In coerced sentences, the repair attempts are successful, thus allowing speakers to gradually re-integrate the verb with its unusual arguments. In anomalous sentences, meanwhile, repair attempts are less successful, thus resulting in persistent processing difficulty. These results are the first to illustrate how instances of valency coercion are processed in real time. They suggest that speakers are able to understand creative sentences through a gradual reintegration of seemingly incompatible concepts.

(a) First-pass reading time



(a) Re-reading time



**Figure 1.** First-pass and re-reading time (in ms) at four sentence regions in prototypical, coerced, and anomalous sentences

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