

Immediate processing costs for place-for-institution metonyms appearing as subjects

Most of what we know about the processing of metonymy comes from experiments in which the target metonym is embedded in a sentence context designed to point the comprehender toward either the literal or figurative meaning of the word (Bott et al., 2016; Frisson & Pickering, 1999; Lowder & Gordon, 2013). In contrast, few studies have examined the processing of metonyms appearing as sentence subjects where there is no preceding context to point the comprehender toward a literal or figurative interpretation. One exception is Fishbein and Harris (2014), who examined the processing of producer-for-product metonyms, as in (1). Their results showed greater processing difficulty on the verb when the metonym was used in its figurative sense (1b) versus its literal sense (1a), suggesting a bias to immediately assign sentence subjects the thematic role of agent. In the case of producer-for-product metonyms, this bias leads to selection of the literal, animate sense of the metonym, over its figurative, inanimate sense.

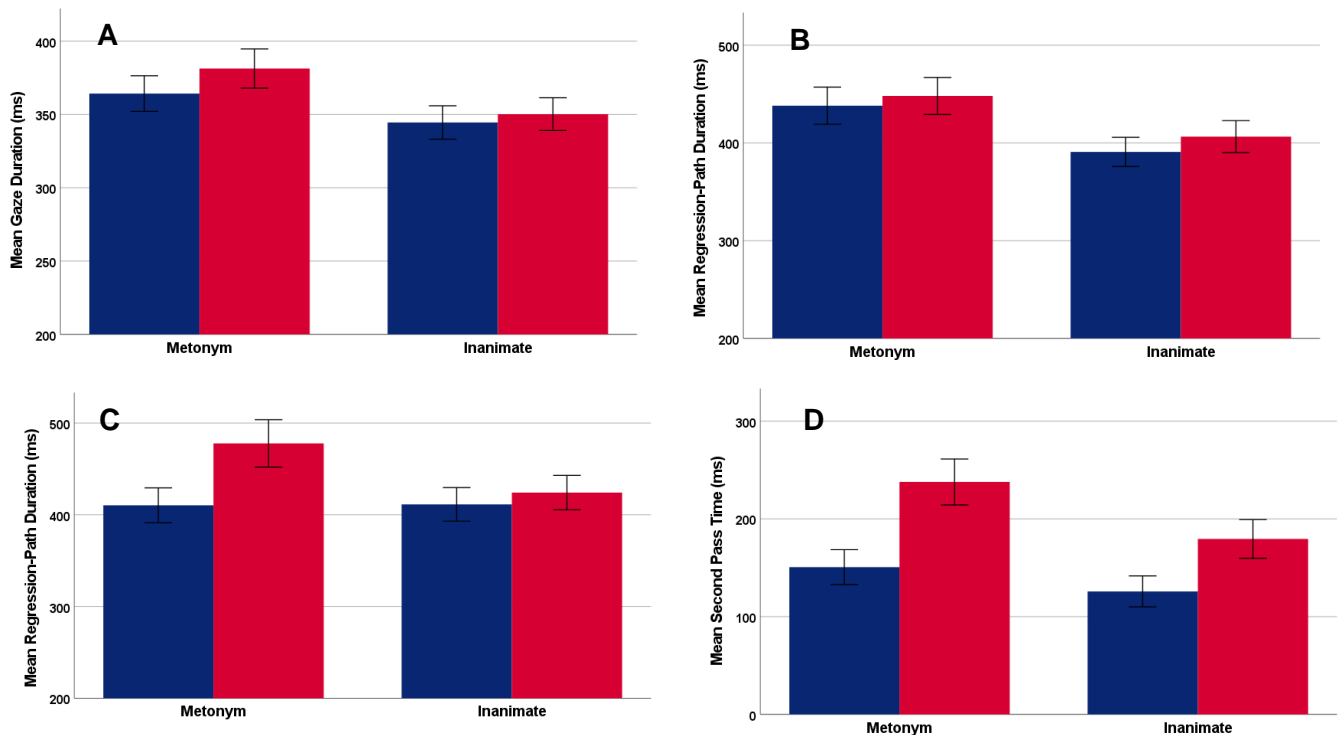
In contrast to producer-for-product metonyms, place-for-institution metonyms are inanimate in their literal sense but animate in their figurative sense. Thus, if comprehenders have a bias to interpret place-for-institution metonyms in subject position as agents, they should experience difficulty if the structure later indicates that the metonym should be assigned the role of patient (i.e., a garden-path effect). Indeed, we have recently conducted a set of experiments exploring this possibility using English sentences like those in (2) (Names redacted, under review). We observed larger garden-path effects for sentences where the subject was a metonym (2a vs. 2b), compared to sentences where the subject was an inanimate control noun (2c vs. 2d). The results support the idea that comprehenders have a bias to access an agentive sense of the sentence subject, if one is available, and revise this interpretation if necessary.

One question we could not adequately address in our previous work was whether there were differences in early reading times for metonyms versus inanimate control nouns. Finding longer reading times for metonyms versus control words would suggest that comprehenders experience an immediate processing cost associated with accessing the figurative sense of the metonym. We could not appropriately address this question given the design of our previous study because the subject noun phrase was always at the beginning of the sentence, which was where the participants' eyes were upon presentation of the trial. The goal of the current study ($n = 64$) was thus to replicate and extend our previous work. To this end, we employed the same experimental items we had used in our previous experiment, but we inserted an introductory clause at the beginning of each sentence, as in (3). The metonyms and inanimate control nouns did not differ in length, frequency, orthographic neighborhood size, or concreteness.

First-pass reading times on the subject noun phrase revealed a robust main effect of subject type, such that reading times were longer for metonyms than inanimate control nouns. This effect was also significant in regression-path duration. Analyses at the disambiguating by-phrase as well as the two-word spillover region revealed significant interactions, such that there was a larger garden-path effect when the sentence subject was a metonym compared to when it was an inanimate noun without a figurative sense. These interactions replicate our previous work in demonstrating that language comprehenders have a bias to initially adopt the figurative sense of a place-for-institution metonym, as the figurative sense allows the metonym to serve as the agent of the verb. This interpretation is rendered incorrect at the disambiguating by-phrase, which leads to garden-path effects, reflecting the time needed to revise thematic roles. The novel contribution of this work is the finding that reading times are longer for place-for-institution metonyms appearing as sentence subjects versus inanimate control nouns that were equated on a range of other lexical factors. Considering these findings together, the pattern suggests a strong bias to assign an agent thematic role to sentence subjects if one is available. Although such a sense is available in the case of place-for-institution metonyms, it involves accessing the figurative sense of this word, which imposes an immediate processing cost.

- (1a) As planned, Kafka was contacted by the publisher shortly after the... (Literal)
 (1b) As planned, Kafka was printed by the publisher shortly after the... (Figurative)
- (2a) The hospital requested by the doctor was not... (Metonym, Ambiguous)
 (2b) The hospital that was requested by the doctor was not... (Metonym, Unambiguous)
 (2c) The equipment requested by the doctor was not... (Inanimate, Ambiguous)
 (2d) The equipment that was requested by the doctor was not... (Inanimate, Unambiguous)
- (3a) As usual, the hospital requested by the doctor was not... (Metonym, Ambiguous)
 (3b) As usual, the hospital that was requested by the doctor was not... (Metonym, Unambiguous)
 (3c) As usual, the equipment requested by the doctor was not... (Inanimate, Ambiguous)
 (3d) As usual, the equipment that was requested by the doctor was not... (Inanimate, Unambiguous)

■ Unambiguous ■ Ambiguous



A. Mean gaze duration on subject NP (*the hospital* vs. *the equipment*); B. mean regression-path duration on subject NP; C. mean regression-path duration on two-word spillover region (*did not*); D. mean second-pass time on by-phrase (*by the doctor*). Error bars represent 95% confidence intervals.

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