

Different processing dynamics for metaphor and metonymy

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Figurative language is a wide label comprising different types of meanings departing from what is literally said, among which are metaphor and metonymy. For a long time grouped together indiscriminately, different types of figurative language are now undergoing a more fine-grained inspection. While metaphor has been extensively described in pragmatic terms as a case of broadening and narrowing of the lexical concept, metonymy seems rather to require a conceptual shift [1]. There are also hints in the direction of additional grammatical processes in the resolution of metonymic expressions, especially for what concerns anaphoric reference and semantic type shifting [2;3]. When it comes to processing, psycholinguistic evidence suggests that metaphor is more costly than non-figurative language, but doesn't elicit differential processing speed [4;5]. Evidence on metonymy is sparse [6] but other types of semantic shift (such as event-type shift, i.e., logical metonymy) are known to produce differences in processing speed with respect to control expressions, as a consequence of semantic composition [7].

In this experiment we aimed at describing the processing dynamics of metaphor and metonymy by employing Multiresponse Speed-Accuracy Trade-Off (MR-SAT). If metaphor can be described by conceptual broadening and narrowing while metonymy can be described as conceptual shift and/or grammatical processes, then we would expect the time-course of the two phenomena to vary. Participants performed a sensibility judgment task on utterances including figurative, literal and anomalous expressions. Figurative expressions included both nominal metaphors, where a noun is the vehicle for the metaphorical meaning (1a), and referential metonymies, where proper names of people are used to refer to objects (2a). Both types of figurative expressions were rated as equally meaningful in a previous norming study. Each type of figurative expression had its own set of literal and anomalous counterparts (metaphor set in 1; metonymy set in 2).

Fits of the time-course functions showed that both metaphorical and metonymical meanings resulted in lesser availability (lower asymptotic accuracies) than their literal counterparts. Metonymy also exhibited slower processing speed (later intercept), but metaphor did not. These results replicate previous findings for metaphor [5] and support the idea that metaphorical comprehension results from conceptual elaboration that lowers the likelihood that an appropriate interpretation is found, but is not associated with variation in the time-course profile. With respect to metonymy, we also found differences in asymptotic accuracy. More interestingly, the time-course profile obtained is similar to what was found for syntactic reanalysis, specifically case reanalysis [8]. A possible explanation for our findings is the animacy violation produced by metonymic referents with respect to the argument structure of the verbs, which might force the processor to revise its expectations in order to reach an appropriate interpretation.

Collectively, this study suggests that metaphor is based on conceptual elaboration, while metonymy entails a combination of conceptual processing and grammatical reanalysis. The results also add to our understanding of metonymy, up to now mostly confined to logical metonymy, and offers new insights for a taxonomy of figurative language based on the combination of linguistic-pragmatic distinctions and experimental evidence.

(1) Example of a triple used in the metaphor set (Original Italian; English translation in brackets)

a. Metaphor: *Quelle ballerine sono farfalle* (Those dancers are butterflies) / b. Literal: *Quegli insetti sono farfalle* (Those insects are butterflies) / c. Anomalous: *Quelle bottiglie sono farfalle* (Those bottles are butterflies)

(2) Example of a triple used in the metonymy set (Original Italian; English translation in brackets)

a. Metonymy: *Quello studente legge Camilleri* (That student reads Camilleri) / b. Literal: *Quel giornalista intervista Camilleri* (That reporter interviews Camilleri) / c. Anomalous: *Quel cuoco cucina Camilleri* (That chef cooks Camilleri)

[1] Wilson & Carston 2007. In Burton-Roberts (ed.), *Pragmatics*. Palgrave: 230-259. [2] Panther & Thornburg 2003. In Geeraerts & Cuyckens (eds.), *Handbook of Cognitive Linguistics*, OUP. [3] Pustejovsky 1995. MIT Press. [4] Glucksberg 2003. *Trends Cogn Sci*, 7:92-96. [5] McElree & Nordlie 1999. *Psychon B Rev*, 6:486-494. [6] Frisson & Pickering 1999. *J Exp Psych:LMC*, 24:1366-1383. [7] McElree, Pykkänen, Pickering & Traxler 2006. *Psychon B Rev*, 13:53-59. [8] Bornkessel, McElree, Schlesewsky & Friederici 2004. *J Mem Lang*, 51:495-522.