

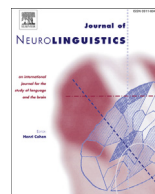


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The role of polysemy on metaphor comprehension processing: The example of Parkinson's disease



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ABSTRACT

Metaphoric language is used every day. The manner in which a metaphor is understood may depend on different factors such as polysemy (the property of a word to have multiple related meanings). Polysemy may have an impact on metaphor comprehension particularly in individuals with executive impairments such as patients with Parkinson's disease (PD). The goal of this study was to investigate the influence of polysemy on metaphor comprehension processing in PD and healthy matched controls. Twenty individuals with PD and twenty controls completed a metaphor comprehension task including metaphors build with a polysemous (MP) and non-polysemous word (MNP). Both groups made significantly more comprehension errors and took significantly longer to understand MNP than MP, suggesting that polysemy has the same effect on metaphor comprehension regardless of the group. Interestingly, a comprehension impairment was observed in the PD group for both types of metaphors, indicating that polysemy does not seem to influence the metaphor comprehension deficit in PD. Further investigations are needed to better understand this finding.

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1. Introduction

People hear and use metaphorical language every day (Smith, Pollio, & Pitts, 1981). More and more researchers claim that metaphoric language is not just a poetic way to express oneself, but is an important means of communication, which can assist in a better understanding of abstract concepts such as time and emotion (Cardillo, Watson, Schmidt, Kranjec, & Chatterjee, 2012; Kovecses, 1988; Lakoff & Johnson, 1980). Far from being a simple language ornament, metaphorical language might be useful in explaining new phenomenon and understanding complex theories (Gentner & Grudin, 1985; Roediger, 1980). In a metaphor, the intended meaning does not coincide with the literal meaning of the words used. Utterances such as “*that baby is a doll*” are not meant to be taken literally but require the listener to think beyond the literal meaning in order to understand the meaning of the utterance (Grice, 1975). According to the contemporary theory of metaphor (Lakoff, 1993) and to the career of metaphor hypothesis (Bowdle & Gentner, 2005), a metaphor is constituted by a mapping across conceptual domains. Each mapping is a fixed set of correspondences between the characteristics of a target (e.g., baby) and base (e.g., doll) domains. Metaphors establish correspondences between concepts from different domains of knowledge contrary to literal statement in which the target and base generally belong to the same semantic domain.

Many models have been proposed regarding the processes that contribute to metaphor comprehension. Among them, two models are particularly well-known: the standard pragmatic model (Grice, 1989) and the direct access model (Gibbs, 1984). The standard pragmatic model proposes that people must first analyze the complete literal meaning of a metaphor (e.g., *that lawyer is a shark*) and recognize that the literal meaning (i.e. that lawyer is a fish with gills and fins) is inappropriate before attempting to infer a figurative meaning consistent with the context (i.e. that lawyer is aggressive and tenacious like a shark) (Grice, 1989; Searle, 1979). In contrast, the direct access model claims that metaphor comprehension does not require the initial processing of the literal meaning, as proposed in the standard pragmatic model. Instead, the direct access model stipulates that literal and metaphoric meanings can be processed in parallel, at the same time, and involve the same mechanisms (Gibbs, 1984). Even if these two linguistic models seem to support opposite ideas, new hypotheses such as the Graded Salience Hypothesis (GSH) (Giora, 1997) and the Career of Metaphor Hypothesis (CMH) (Bowdle & Gentner, 2005) have been able to reconcile them by suggesting that particular psycholinguistic factors such as the degree of conventionality (Blank, 1988; Thibodeau & Durgin, 2011) or salience (determined by the conventionality, frequency, familiarity and prototypically of the metaphor (Giora, 1997, 2002)) might influence the processes involved in metaphor comprehension.

According to the GSH (Giora, 1997), familiar or conventional figurative meanings are considered salient and can be retrieved directly from the mental lexicon without the aid of the context, while non-salient meanings cannot. Thus, in a familiar or conventional metaphor (e.g., *these spies are foxes*), as the figurative and literal meanings (someone clever and fur bearing animal) are equally salient, both meanings are processed directly and in parallel. As in the direct access model (Gibbs, 1984), the GSH suggests that similar cognitive processes are involved in the comprehension of literal sentences and familiar metaphors. In contrast, non-salient figurative meanings must be derived from literal meanings with the aid of the context. To understand an unfamiliar or a novel metaphor (e.g., *these dancers are penguins*), people must first process the more salient meaning (i.e., the literal meaning: *flightless bird*) before deriving the figurative meaning (*someone clumsy*), which is less salient. Supporting the GSH, different studies showed that novel metaphors are more difficult and thus take longer to understand when compared to literal sentences (Giora & Fein, 1999; Onishi & Murphy, 1993) or conventional metaphors (Gentner & Wolff, 1997; Giora & Fein, 1999; Pexman, Ferretti, & Katz, 2000).

The career of metaphor hypothesis proposed by Bowdle and Gentner (2005) also reconciles the standard pragmatic and direct access models. According to this view, to understand a novel metaphor (e.g., *these dancers are swans*) people must activate in parallel the target (the first term, or topic, that we try to understand (e.g., dancers)), and the base (the second term, or vehicle, from which we draw metaphorical meanings (e.g., swans)) from the concepts of the sentence (Kovecses, 2002). Then, they must compare the common attributes of the base and target (e.g., both dancers and swans can be graceful) to align the two concepts. The alignment process operates to create the most optimal match between identical predicates in the target and base representations (Bowdle & Gentner, 1999). Each

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