

That project was a rollercoaster: An ERP test of deliberate metaphor theory

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Introduction: Deliberate metaphors are metaphors that are intended in their production to be explicit metaphors, and are understood and processed as such by the comprehender.

Deliberate metaphors thus serve as a distinct rhetorical device with an explicit communicative goal. Shakespeare's "Shall I compare thee to a summer's day?" is an example of a deliberate metaphor: it explicitly sets up a comparison between two concepts, the addressee and the summer day, and invites the comprehender to engage in a process of cross-domain mapping between these two concepts. Conceptual metaphor theory (CMT; Lakoff 1993) holds that metaphors are processed via these conceptual mappings between two concepts. Deliberate metaphor theory (DMT; Steen 2008) proposes that this type of cross-domain mapping is only recruited to process deliberate metaphors. Non-deliberate metaphors, like "She looked out over the blanket of snow," involve comparisons that are not explicit, and so do not invite cross-domain mappings. According to DMT, speakers use distinct pragmatic cues to signal that a metaphor is coming that will require explicitly representing and mapping the metaphor concept onto the target concept. DMT also suggests that most metaphorical uses are not deliberate; therefore, most metaphors are not processed as metaphors. We conducted an ERP study that tested whether deliberate and non-deliberate metaphors are processed differently.

Methods: 21 participants read nominal metaphors and literal sentences of a similar structure, either with or without the word "like" preceding the second noun phrase or metaphor vehicle (see Table 1 for examples), with 50 items in each of the four experimental conditions. The word "like" was chosen as the pragmatic marker because it had been shown in Gibbs 2015 to be a strong signal for the upcoming metaphor, and effectively elicited comparative mappings in participants. Sentences were presented one word at a time for 200 ms, with a variable inter-word interval of 100ms plus an additional 37ms for each character in the preceding word (for an average of 284ms between words). Comprehension questions followed 10% of trials to encourage deep comprehension. We recorded ERP responses time-locked to the noun following the verb.

The N400: Previous studies have shown that metaphors elicit a greater N400 ERP response than literal sentences (see Coulson and Van Petten, 2002). This is thought to be due to a mismatch between the metaphor vehicle and the comprehender's expectation to receive a literal sentence completion. However, according to DMT, deliberate metaphors are unique in that the comprehender is alerted to the upcoming metaphor by pragmatic cues in the sentence preceding the metaphor vehicle. This pragmatic signaling should lead to facilitation in processing the metaphor vehicle; therefore, deliberate metaphors should exhibit a reduced N400 effect. CMT, on the other hand, holds that all metaphorical language is processed by the same cross-domain mappings; in this view, there should be no difference in ERP responses to deliberate and non-deliberate metaphors.

Results: We found that amplitudes of the N400 ERP component were more negative for all metaphors than for literal sentences ($p = 0.0002$), but this difference was not modulated by the presence of a pragmatic cue word: there was no main effect of cue ($p = 0.96$) and no interaction between cue and metaphor ($p = 0.62$). The amplitude of the N400 response did not differ between deliberate and non-deliberate metaphors. The absence of a difference between cued and uncued metaphors shows a lack of support for DMT, which claims that deliberate and non-deliberate metaphors are processed differently. We found no evidence of such difference.

These data support CMT, which predicts no differences in processing between different types of metaphors.

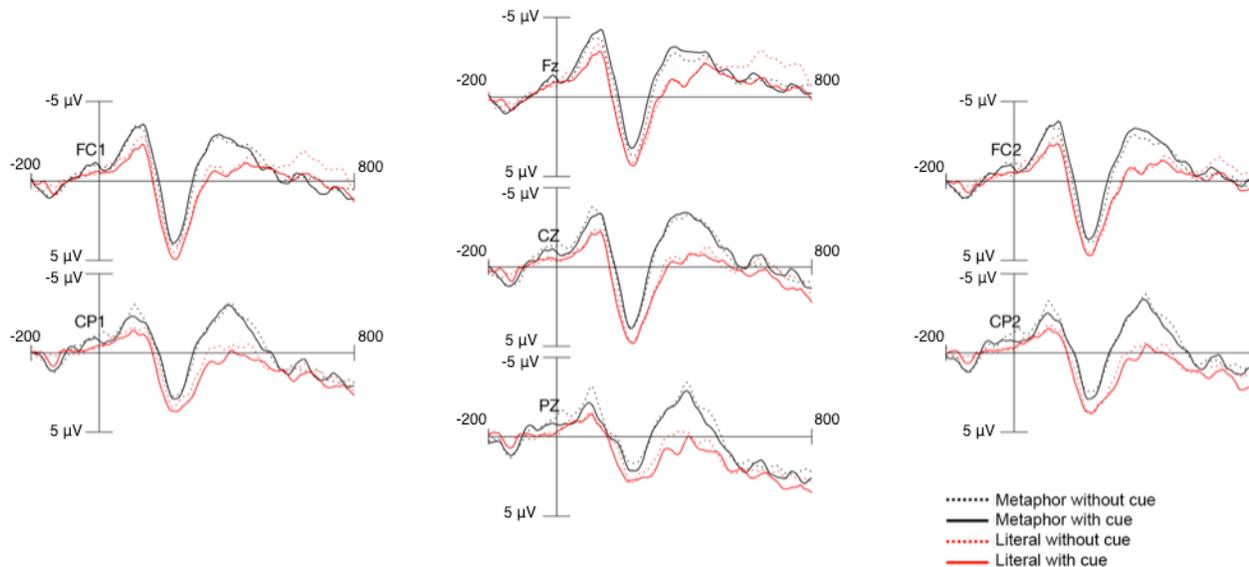


Figure 1: ERP waveforms from selected scalp sites.

	Metaphor	Literal
Without Cue	John is an <u>elephant</u> .	Boston is a <u>city</u> .
With Cue	John is like an <u>elephant</u> .	Boston is like a <u>city</u> .

Table 1: Examples of experimental stimuli sentences.

References:

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