

Processing literary metaphor with and without original context: ERP evidence

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ERP studies on metaphor have mainly focused on everyday expressions, either familiar (“Those fighters are lions”) or unfamiliar (“Those apprentices are lions”), showing an N400 modulation driven by context expectations [1]. Almost no interest has been devoted to more creative metaphors as those found in literary works (“All the world’s a stage”). The specificity of literary metaphor is still unexplored in its neuroscientific aspects. Interesting hints come from pragmatic approaches to metaphor. The distinctive feature of literary metaphor might lay in the condensation of multiple meanings in a few words and in the vast range of non-manifest implications (“weak implicatures”). The cognitive effects achieved by such implications could be identified as “poetic effects” [2]. This study aims at (i) exploring possible distinctive ERP signatures for literary metaphor, and (ii) understanding to what extent context can affect the process. Based on previous evidence on figurative language [3;4;5], we hypothesized a biphasic pattern in response to literary metaphor, i.e., a lexical-semantic stage followed by pragmatic enrichment. The specificity of literary metaphor is expected to influence pragmatic stages of processing, rather than lexical-semantic access. Context is expected to facilitate lexical-semantic integration [1;6] but not pragmatic enrichment [3;4].

In Experiment 1, participants read a corpus of Italian literary metaphors (1a), literal phrases (1b) and anomalies (1c) presented out-of-context. In Experiment 2, another group of participants read the same set of literary metaphors (2a) and literal phrases (2b) embedded in their original context - prose and poetry - which had the same length in number of words. In both experiments, behavioral pre-tests (e.g., cloze probability) were carried out. Participants were unaware of the study goal and were asked to perform a word matching-task at the end of each trial.

In the out-of-context presentation (Exp1), literary metaphors were more costly than their literal counterparts in both early and late time-windows (P200 and LPC). The effort in lexical/semantic access required by literary metaphors was visible in the P200 modulation [7]. LPC presumably reflects pragmatic elaboration that might be related to the activation of poetic effects, as hypothesized in the theoretical literature. Surprisingly, no N400 effect was observed: literary metaphors did not elicit more enhanced amplitudes than the literal condition (while, as expected, anomalies did). In the in context presentation (Exp2), compared to controls, literary metaphors elicited an early and sustained negative effect. This is likely to index a highly demanding process of pragmatic enrichment triggered by context and is consistent with results reported for coherence construction [8] and recomputation of the discourse models [9].

Collectively, our results suggest that the specificity of literary metaphor emerges in relation to the pragmatic aspects of the comprehension process and that, crucially, context does not facilitate but rather enhances the comprehension process. This increased cognitive effort is likely to result in greater aesthetic benefits, as presumably happens in the ecological fruition of literary texts. In conclusion, this study can pave the way to a fruitful combination of literary studies and (neuro)pragmatics.

Example stimuli [Original Italian, English translation in brackets]:

Exp 1 (out-of-context): 1a) Literary metaphor: *prato di velluto* [grass of velvet] – 1b) Literal: *trono di velluto* [throne of velvet] – 1c) Anomalous: *marmo di velluto* [marble of velvet]

Exp 2 (in context): 2a) Literary Metaphor: *Non so se veramente fu vissuto / quel giorno della prima primavera. / Ricordo o sogno? Un prato di velluto, / Ricordo o sogno? Un cielo che s’annerà (Gozzano). [I don’t know if really was lived / that day of the early spring. / Do I remember or dream? A grass of velvet, / Do I remember or dream? A sky that grows dark]. - 2b) Literal: *Venti minuti appena la sua ospitata: seduta su un trono di velluto rosso e dorato, ha sorseggiato una coppa di spumante. [Her visit lasted only twenty minutes: sat on a throne of (red and golden) velvet, she sipped a bowl of sparkling wine].**

[1] Pynte et al. (1996), *Brain Lang*, 55: 293-316. [2] Sperber & Wilson (2008), in Gibbs (ed.), CUP: 171-203. [3] Bambini (2010), *Italian J of Linguistics*, 22: 1-20. [4] Schumacher (2011) in Meibauer & Steinbach (eds.), Benjamins: 199-219. [5] Regel et al. (2011), *J Cognitive Neurosci*, 23: 277-293. [6] Lai et al. (2009), *Brain Res*, 1284: 145-155. [7] Penolazzi et al. (2007), *Biol Psychol*, 74: 374-88. [8] Coulson & Kutas (2001), *Neurosci Lett*, 316: 71-4. [9] Baggio et al. (2008), *J Mem Lang*, 59: 36-53.