

Wassenaar, M., & Hagoort, P. (2007). Thematic role assignment in patients with Broca's aphasia: Sentence-picture matching electrified. *Neuropsychologia*, 45(4), 716-740. doi:10.1016/j.neuropsychologia.2006.08.016.

An event-related brain potential experiment was carried out to investigate on-line thematic role assignment during sentence–picture matching in patients with Broca's aphasia. Subjects were presented with a picture that was followed by an auditory sentence. The sentence either matched the picture or mismatched the visual information depicted. Sentences differed in complexity, and ranged from simple active semantically irreversible sentences to passive semantically reversible sentences. ERPs were recorded while subjects were engaged in sentence–picture matching. In addition, reaction time and accuracy were measured. Three groups of subjects were tested: Broca patients (N = 10), non-aphasic patients with a right hemisphere (RH) lesion (N = 8), and healthy aged-matched controls (N = 15). The results of this study showed that, in neurologically unimpaired individuals, thematic role assignment in the context of visual information was an immediate process. This in contrast to patients with Broca's aphasia who demonstrated no signs of on-line sensitivity to the picture–sentence mismatches. The syntactic contribution to the thematic role assignment process seemed to be diminished given the reduction and even absence of P600 effects. Nevertheless, Broca patients showed some off-line behavioral sensitivity to the sentence–picture mismatches. The long response latencies of Broca's aphasics make it likely that off-line response strategies were used.

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