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The influence of sense-contingent argument structure frequencies on ambiguity resolution in aphasia

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Abstract

Verbs with multiple senses can show varying argument structure frequencies, depending on the underlying sense. When *acknowledge* is used to mean 'recognise', it takes a direct object (DO), but when it is used to mean 'admit' it prefers a sentence complement (SC). The purpose of this study was to investigate whether people with aphasia (PWA) can exploit such meaning-structure probabilities during the reading of temporarily ambiguous sentences, as demonstrated for neurologically healthy individuals (NHI) in a self-paced reading study (Hare et al., 2003). Eleven people with mild or moderate aphasia and eleven neurologically healthy control participants read sentences while their eyes were tracked. Using adapted materials from the study by Hare et al., target sentences containing an SC structure (e.g. *He acknowledged (that) his friends would probably help him a lot*) were presented following a context prime that biased either a direct object (DO-bias) or sentence complement (SC-bias) reading of the verbs. Half of the stimuli sentences did not contain *that* so made the post verbal noun phrase (*his friends*) structurally ambiguous. Both groups of participants were influenced by structural ambiguity as well as by the context bias, indicating that PWA can, like NHI, use their knowledge of a verb's sense-based argument structure frequency during online sentence reading. However, the individuals with aphasia showed delayed reading patterns and some individual differences in their sensitivity to context and ambiguity cues. These differences compared to the NHI may contribute to difficulties in sentence comprehension in aphasia.

Keywords

Aphasia; Structural Ambiguity; Garden-Path; Argument Structure Frequency; Probabilistic Cues; Verb Sense; Eye Tracking

1. Introduction

Language processing by neurologically healthy individuals (NHI) involves the integration of a variety of information sources at different levels, sometimes referred to as cues (Elman et al., 2005; MacDonald et al., 1994; MacWhinney and Bates, 1989; Spivey-Knowlton and Sedivy, 1995). These cues are integrated in an incremental manner, meaning that each word enters the processing system as soon as it is encountered, and is analysed in light of the information that is available at that point in the sentence (Marslen-Wilson, 1975). Further, it is assumed that processing is not just based on the information encountered, but that processing may additionally be based on predictions, expectations, and anticipations (Altmann and Kamide, 1999; Hare et al., 2009, 2003; Kamide, 2008; Kamide et al., 2003; Levy, 2008). Expectations can be based on probabilistic factors such as word frequency or the influence of a sentence context, which help to determine the statistical likelihood that a word or a structure occurs in a sentence. Eye tracking while reading studies demonstrated, for example, that fixation durations are

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