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## Primary and secondary lexical access in persons with aphasia: eyetracking data

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### Introduction

It is agreed, that initial lexical access to an ambiguous word is always exhaustive, i.e. all word's meanings are activated. Studies of access to ambiguous word's meanings after ambiguity resolution are contradictory: it is claimed to be both exhaustive [1], as well as context-dependent [3]. Previous research has established that initial lexical access in non-fluent aphasia is delayed in contrast to fluent [2]. However, secondary lexical access has never been studied on participants with aphasia. The present work investigates the mechanisms of primary and secondary lexical access and ambiguity resolution in aphasia.

### Method

Healthy (36) and aphasic Russian speakers (20 with fluent and 20 with non-fluent aphasia) were presented 40 trials (20 experimental items, 20 fillers) in a visual-world paradigm, each trial consisting of three spoken sentences and a visual panel. The ambiguous word was always introduced in the third sentence. All items were followed by a comprehension question, where the ambiguous word was presented again. Participants' eye movements were recorded as they viewed visual panels with four drawings representing two meanings of an ambiguous word and two distractor referents.

In each trial 5 time regions of interest were analyzed: {r1} – introduction, {r2} – ambiguous word, {r3} – disambiguation region, {r4} – 2nd presentation of ambiguous word, and {r5} – answer region.

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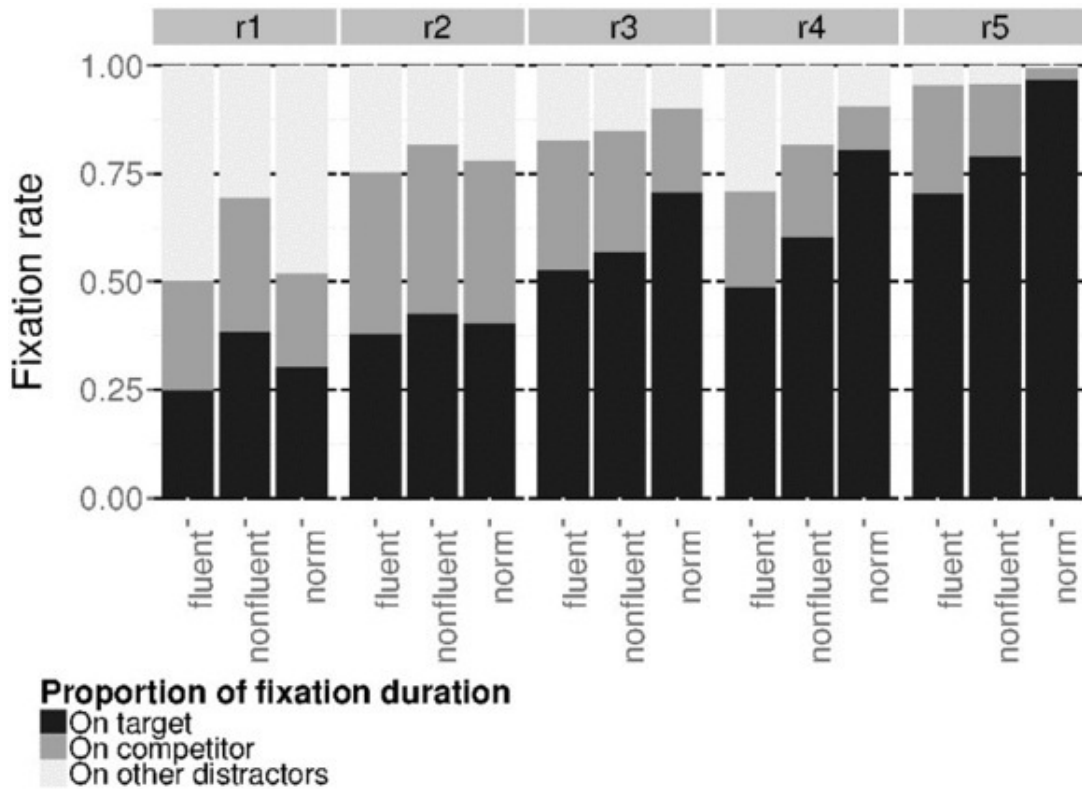


Figure 1. Proportion of fixation duration in regions of interest.

## Results and Discussion

Eye-movement data reveal (Figure 1) that when ambiguous word is first introduced, lexical access is exhaustive with no difference in proportion of fixation duration between groups of participants, thus lexical access in non-fluent patients is not delayed contrary to previous findings [2]. Consistently, all the participants resolve ambiguity successfully in the disambiguation region, healthy individuals being more efficient than persons with aphasia with no difference between the latter. As ambiguous word is reintroduced, no evidence for exhaustive activation is found, in contrast to previous research [1]. Our results, however, show a significant inhibition of competitor's activation in non-fluent patients, hence suggesting that reintroduction of ambiguous word helps them decrease the activation of the inappropriate meaning. No such facilitation is found in fluent patients' data, resulting in them being the least effective in ambiguity resolution.

## References

- Onifer, W., & Swinney, D. (1981). Accessing lexical ambiguities during sentence comprehension: Effects of frequency-of-meaning and contextual bias. *Memory and Cognition*, 9.
- Prather, P., Zurif, E. B., Love, T., & Brownell, H. (1997). Speed of lexical activation in nonfluent Broca's aphasia and fluent Wernicke's aphasia. *Brain and Language*, 59.
- Simpson, G. (1984). Lexical ambiguity and its role in models of word recognition. *Psychological Bulletin*, 96(2).

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