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Time Course of Processing of Grammatical Agreement Information in Russian Agrammatism

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Introduction

Although offline studies show that inflection marking for grammatical gender and number is usually spared in comprehension in aphasia, online gender comprehension can be qualitatively different from the performance of the normal participants, as Bates et al. (2000) found for Italian and Akhutina et al. (2001) for Russian. In the study described below we investigated the moment-by-moment time course of how Russian individuals with agrammatic aphasia comprehend grammatical agreement in gender and number. We tested the Slowed Processing account (Haarmann & Kolk, 1991) that assumes a causal relationship between limitations in patients' processing capacities and sentence comprehension deficits and hinges on deficient temporal characteristics of language processing in aphasia. We hypothesized that slowed processing in aphasia could be found not only in lexical retrieval and complex syntax but also in grammatical gender and number agreement even in simple and unambiguous sentences.

Methods

The participants were six individuals with agrammatic aphasia (5 men, age range 25-69, mean post-onset 4.3 years). Their eye movements were recorded as they viewed visual displays containing four animated pictures. Each picture depicted the same event (e.g., flying) using different agents (Fig. 1):

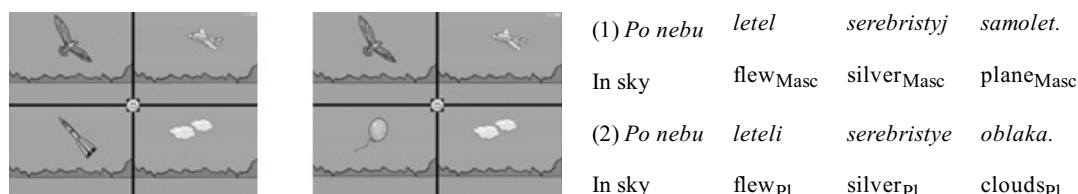


Fig. 1A. Unambiguous

Fig. 1B. Ambiguous

The Target 'plane' contrasted in gender with two pictures (a bird and a rocket, both feminine) and the third picture in plural in the Unambiguous condition (Fig. 1A), but had a Competitor of the same gender (a balloon) in the Ambiguous conditions (Fig. 1B). The gender of the Target was either masculine or feminine resulting in 2

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(gender of the Target: Masc vs. Fem) x 2 (temporary ambiguity: Unambiguous vs. Ambiguous) design. The 5th condition used the plural picture but no gender because there are no gender differences in plural in Russian. The participants listened to a sentence in (1) or (2) or in plural while looking at the four pictures and clicked on the correct picture.

Results & Conclusion

The patients' accuracy was at ceiling (97.7%). Their eye movement patterns revealed that the gender agreement information on the verb alone (*letela* vs. *letel* - flew_{Fem} vs. Masc) was not enough to allow the patients to identify the Target even in the Unambiguous conditions. Only after the gender marking on the Adjective was heard, the participants were able to do so. The looks started to diverge during the Noun in the Unambiguous and Masc-Ambiguous but only later in the Fem-Ambiguous conditions. This pattern of eye movements is predicted to be different (slowed) from the one in the controls participants whose data are being analyzed.

References

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