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## Online Sentence Processing in Aphasia: Verb Inflection Overrides Subject-first Assumptions, Reanalysis Suffers

Hanne S.<sup>\*</sup>, Burchert F.<sup>a</sup>, Vasisht S.<sup>a</sup>*Linguistics Department, Centre of Excellence for Cognitive Sciences, University of Potsdam*

### Background

Auditory comprehension of non-canonical syntactic structures can pose severe problems for individuals with aphasia. It is still unclear to which extent different morphological cues (e.g. case marking or verb inflection) may influence patients' performance or even help to override syntactic processing deficits (Burchert et al., 2003). Moreover, many studies have used offline methods to draw inferences about syntactic impairments and, so far, only a few studies have looked at online sentence processing in aphasia (e.g., Dickey et al., 2007; Meyer et al., 2011).

### Goal

The objective is to investigate online sentence processing in German individuals with aphasia and to determine whether and how patients make use of inflectional morphology as a cue to sentence interpretation.

### Procedures

We conducted a visual-world study using German reversible SVO and OVS sentences. The first NP was case-ambiguous between nominative and accusative allowing both an SVO or OVS reading. At the verb, number inflection disambiguated either towards an SVO or an OVS structure. Participants performed an auditory sentence-picture matching task during which eye-movements as well as reaction times and accuracy were measured. We collected data from 24 control subjects and, so far, 3 patients with aphasia (2 male, 1 female; 2 Broca's, 1 amnesic, age range: 39-59 years; 8-18 years post-onset) have been investigated. The experiments are still ongoing.

### Results and Conclusions

Controls showed higher error rates and response latencies in the OVS condition compared to SVO sentences. Patients' accuracy was at chance on OVS and above chance on SVO sentences. They showed higher response times compared to controls in both conditions.

For SVO sentences, controls' eye-movement patterns showed a preference for the correct picture already at NP1, indicating their expectation of a canonical sentence structure. This kind of subject-first assumption was also reflected in their high proportion of looks to the incorrect picture at the ambiguous NP1 region in OVS sentences. However, after hearing the inflectional cue at the verb, their looks switched to the correct picture indicating successful cue processing and rapid revision of the syntactic structure towards an OVS interpretation.

The preliminary eye-movement data from patients revealed a similar preference to interpret the ambiguous NP1 as the subject. This effect, however, showed up slightly later, indicating a delay in syntactic parsing in patients. In addition, just as controls, patients showed online processing of the morphological cue at the verb. However, the integration of the inflectional cue was not as instantaneous as in controls. Moreover, the data indicate that, in contrast to controls, patients show instances of unsuccessful attempts to revise an initial subject-first assumption. This intermittent deficiency in reanalysis mechanisms could be the source of their chance performance with OVS sentences.

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\* Corresponding author.

E-mail address: [hanne@uni-potsdam.de](mailto:hanne@uni-potsdam.de).

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