

Morphology does not help comprehension in agrammatism

A study of German and Hebrew

Frank Burchert¹, Na'ama Friedmann², Ria De Bleser¹
 1: University of Potsdam, Germany 2: Tel Aviv University, Israel

Agrammatism in Broca's aphasia:

- acquired form of language deficit with non-fluent speech production (telegraphic style)
- sentence comprehension may be impaired as well, the underlying deficit is assumed to be syntactic in nature (Grodzinsky, 1990)

The study:

- focuses on agrammatic sentence comprehension
- Background:** overt morphology may provide cues to interpretation for example: Nominative Case → Agent of the action
- Verb agreement with the subject → Agent of the action
- both German and Hebrew have overt morphology
- Question:** Are agrammatics able to use morphological information to compensate for their comprehension difficulties?

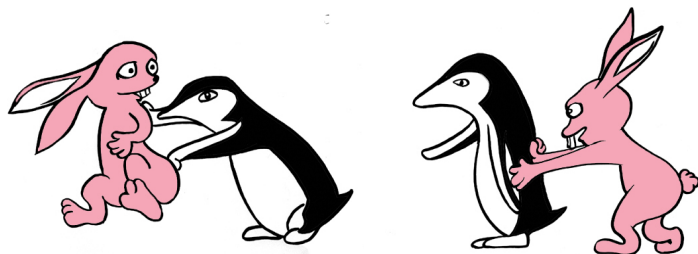
Test

Method: Sentence-Picture Matching

- auditory presentation of a sentence
- presentation of two pictures: target picture + distractor picture with reversed roles

The penguin pushes the rabbit

Which of the two pictures matches the sentence?
 target picture distractor picture



Material:

German:

- case-ambiguous sentences ($n=44$)
- case-marked sentences ($n=88$): Subject first (SVO); Object first (OVS); Subject relative (S-Rel); Object relative (O-Rel). Case can be interpreted as a cue for agent identification.

Hebrew:

5 sentence structures, within each type we compared sentences with and without gender cue. In the sentences with gender cue the subject and object differed in gender, and verb agreement with the subject could be used as a cue for the agent. The sentence types were: Simple SVO, focalization OSV and OVS, Subject relatives and Object relatives. $n=200$ sentences per participant (total of 1760 sentences)

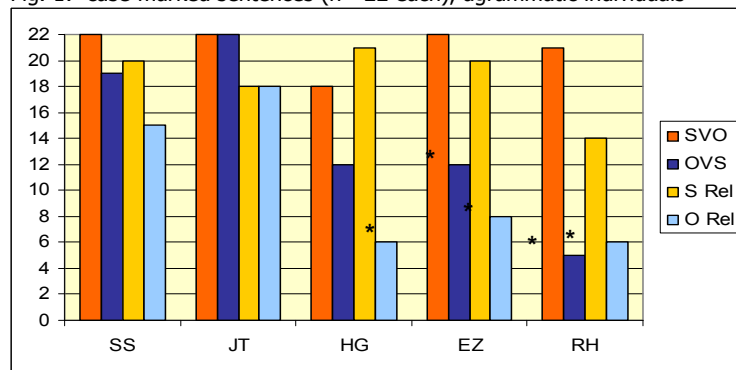
Subjects:

- German:** 5 agrammatic Broca's aphasics, 5 normal controls
- Hebrew:** 8 agrammatic Broca's aphasics, 8 normal controls

Results

German:

Fig. 1: case-marked sentences ($n=22$ each), agrammatic individuals



chance range: 4-18 (Fisher's exact, two-tailed)

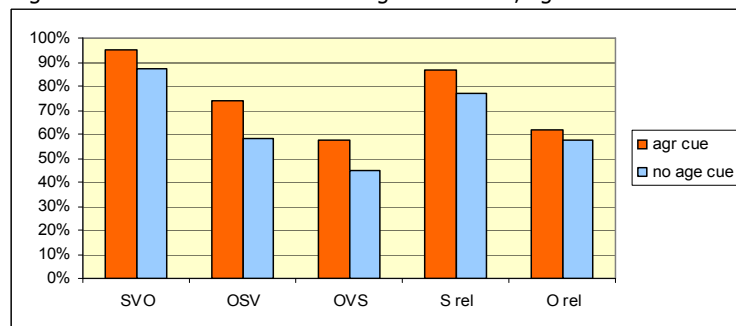
Table 1: Group results

| | SVO | t-test | OVS | t-test | S-Rel | t-test | O-Rel | t-test |
|------|-----|--------|-----|--------|-------------|--------|-------------|--------|
| mean | 21 | > | 14 | = | 18,6 | > | 10,6 | = |

> above chance, = chance, significant differences are bold

Hebrew:

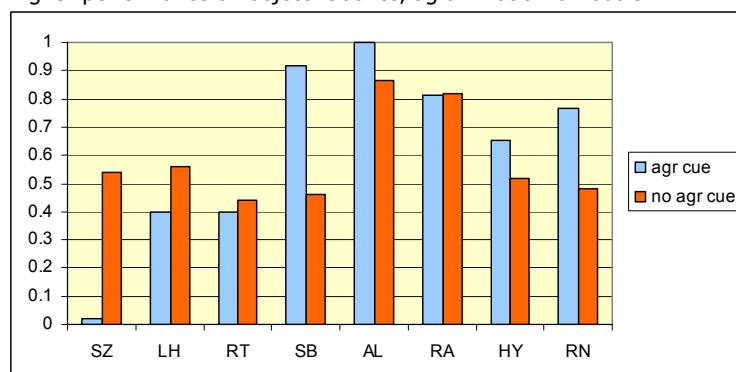
Fig. 2: sentences with and without agreement cue, agrammatic individuals



The comparison of sentences with and without morphological cues yielded no significant difference in any structure (except for the simple SVO which was unimpaired):

| SVO * | OSV | OVS | S rel | Orel |
|--------------------|--------------------|--------------------|--------------------|--------------------|
| $t(7)=2.57, p=.04$ | $t(7)=2.42, p=.06$ | $t(5)=1.26, p=.26$ | $t(7)=0.79, p=.45$ | $t(7)=0.32, p=.76$ |

Fig. 3: performance on object relatives, agrammatic individuals



7/8 individuals showed no significant improvement with agreement cues on object relatives (using Fisher's exact test).

Summary:

The results from both German and Hebrew indicate that agrammatic aphasics are unable to use morphological cues for the interpretation of the semantic roles in sentences that include syntactic movement