

## **Agrammatic comprehension of OVS and OSV structures in Hebrew**

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### **Abstract**

This commentary brings further support for the trace deletion hypothesis from a new study of OVS and OSV sentences in Hebrew, which are active constructions that involve object movement but no change in morphology. The results show that the comprehension of these constructions in Broca's aphasia is impaired, and the performance is at chance level, as predicted by the TDH.

One of the impressive aspects of the Trace Deletion Hypothesis (TDH) is that it correctly predicts performance on a wide range of syntactic structures in a variety of languages. These structures were carefully selected to enable an empirical testing of contradicting predictions that different theories of agrammatic comprehension make. Thus, they enable a comparison between competing accounts, and provide insight into the nature of the comprehension deficit in Broca's agrammatic aphasia.

In what follows I will suggest a critical case from Hebrew that allows an examination of the TDH and its comparison to other accounts. Two structures that are created by left dislocation, the active OVS and OSV, suggest such a critical test case, as they distinguish syntactic movement from thematic-role ordering and morphological complexity.

The basic word-order in Hebrew, like in English, is SVO. The orders OVS and OSV are also possible, but are secondary, and are the result of focalization (Shlonsky 1997). They are created by left dislocation, namely, by moving the object (together with its accusative marker) to the beginning of the sentence (in OVS the verb also moves after the object) (see examples 1 and 2).

#### 1)OVS

et ha-rofe ha-ze mecayer ha-xayal.  
ACC the-doctor this paints the-soldier.

#### 2)OSV

et ha-rofe ha-ze ha-xayal mecayer.  
ACC the-doctor this the-soldier draws.

These structures form a minimal pair with simple active sentences: they are active just like their SVO counterpart, and contain exactly the same elements without morphological change. However, unlike the simple active, their derivation requires a movement of the object, and the thematic role order is reversed. These properties make OVS and OSV a good test case for the TDH by enabling a critical comparison between its predictions and the predictions of other theories for agrammatic comprehension.

Three possible theories make three different predictions regarding this construction: A theory that claims that the canonicity of thematic roles order is what determines agrammatic comprehension, and that agrammatics assign thematic-roles by their linear position (Caplan 1983), predicts below-chance performance on OVS and OSV structures, because the order of the arguments is reversed, and therefore the object is bound to receive an agent role, and the subject – a theme role (But see Piñango, 1999, for a different type of canonicity approach that predicts chance performance in these sentences).

A theory that blames the additional morphology (in passive and maybe also in relative clauses) for the deficit in comprehension, would predict an above-chance performance on the OVS/OSV sentences that are not morphologically different from the simple active. And finally, the TDH predicts that since the object moves and cannot receive its thematic-role through a chain, it receives an agent role by the strategy, and the subject retains its Agent role. An agrammatic patient who is left with two agents, and is forced to guess who the real agent is, would perform at chance Level.

A study I am currently conducting examines the comprehension of this construction in Hebrew-speaking agrammatic patients. The results that will be presented below are preliminary, taken from the one subject that has already completed the 220 test sentences. This subject suffered a massive left frontal hemorrhage five years prior to testing, and was diagnosed as a Broca's aphasic according to the Hebrew version of the WAB, and had characteristic non-fluent agrammatic speech, with short, simple and ungrammatical utterances, and tense inflection errors. He (and the other participating patients) were selected by clinical evaluation using the WAB, by imaging information, and their speech output; no preliminary selection according to comprehension pattern was made.

Comprehension was assessed using a picture-selection task. The patient heard a (semantically reversible) sentence, and was asked to select the picture that correctly described the sentence, from two pictures presented. The foil was a picture in which the roles were reversed. The experiment included OVS and OSV sentences, as well as active SVO, object relatives and subject relatives, randomly ordered. A healthy control subject matched to the patient in age, gender, and education, scored 100% correct on all five conditions.

The results presented in Table 1 show that although OVS and OSV are active sentences, the performance on both of them was not significantly different from chance (using the binomial test,  $p > 0.05$ ). The active SVO, on the other hand, was significantly above chance ( $p < 0.001$ ). On subject and object relatives, the patient performed like other reported patients: subject relatives were significantly above chance ( $P < 0.001$ ), and object relatives were at chance ( $p > 0.05$ ).

Table 1 Agrammatic comprehension in different constructions

Structure	%Correct (correct/total)
Active - OSV	46% (23/50)
Active - OVS	52% (26/50)
Active - SVO	90% (45/50)
Object relative	42% (21/50)
Subject relative	86% (43/50)

Thus, the prediction of the TDH is corroborated by the findings: the performance on these two types of active sentences was at chance. This result cannot be accounted for by a theory that assumes thematic-role assignment by linear order, nor can it be explained by morphological complexity. The performance distinction between SVO and OSV actives in Hebrew is similar to the findings of Hagiwara and Caplan (1990) for Japanese, which is an SOV language, thus providing additional support for their case from an SVO language.

Another intriguing result of this study is that verb movement did not interact with the comprehension deficit: although OVS and OSV differ in verb movement, the performance on them was the same (no significant difference using  $\chi^2$ ,  $p > 0.05$ ). This further supports Grodzinsky's claim that agrammatics are able to represent traces of verb movement.

Finally, the chance performance in this type of sentences raises an interesting question regarding the integration of trace deletion in recent syntactic theories. As Grodzinsky notes, within the framework of the VP-internal subject hypothesis, together with later suggestions about NP-movement (Pollock 1989; Chomsky 1995), the subject moves out of the VP

(where it receives its theta-role) in many cases. In the case of actives and subject relatives, although the subject moves, it receives the appropriate theta-role from the strategy.

However, in OVS structures a problem arises: How does the subject that moved out of the VP receive its Agent role, given that its trace has been deleted too? Without Agent role assigned to the subject, and given the R-strategy that assigns roles by linear position in the absence of a thematic-role, a below-chance rather than chance performance is expected.

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