

Unaccusative Verb Production Revisited: Evidence for Dual Deficit

Srdan Popov^{1,2,3}, Mile Vuković⁴, Roelien Bastiaanse³

¹ *International Doctorate in Experimental Approaches to Language And the Brain (IDEALAB)*, ² *Center for Mind/Brain Sciences (CIMeC) and Center for Neurocognitive Rehabilitation (CeRIN), University of Trento, Rovereto, Italy*, ³ *Center for Language and Cognition Groningen (CLCG), University of Groningen, Groningen, The Netherlands*, ⁴ *University of Belgrade - Faculty of Special Education and Rehabilitation, Belgrade, Serbia*

Introduction

Previous studies have identified a number of factors that influence verb production in aphasia. According to the Argument Structure Complexity Hypothesis (ASCH; Thompson 2003), an increase in syntactic complexity adds to the processing load, which in turns impedes verb production. The number of arguments is recognized as the major component of syntactic complexity, predicting that verbs with more arguments are more difficult to produce. Regarding the locus of the deficit in the speech production model (Levelt 1989), the ASCH predicts that the lemma access level is impaired in verb production. Since lemmas contain the information on the number of arguments, the more arguments there are, the more syntactically complex the lemma becomes.

A study by Bastiaanse and Van Zonneveld (2005) found that the number of arguments may not be the most important grammatical factor in verb production. When comparing the production of verbs with alternating transitivity, Bastiaanse and Van Zonneveld demonstrated that the intransitive realization of the verb (1) was more difficult than the transitive one (2).

(1) John broke the vase.

(2) The vase broke.

The intransitive realization in (1) is unaccusative, meaning that the only argument is the Theme that has moved to the subject position. Based on the movement property of unaccusative verbs, Bastiaanse and Van Zonneveld concluded that the source of difficulty was in violating the basic word order, and not the number of arguments. Their assumption is that every language has a canonical underlying word order (e.g., V-S for sentences with unaccusative verbs in Dutch), and that any changes in that word order will affect production in aphasia, thus the Derived Order Problem Hypothesis (DOP-H). Unlike the ASCH, the DOP-H places the deficit in the grammatical encoding phase.

The current study looks deeper into the issue of unaccusative production and deficit localization. The previous studies have not taken into account the difference between non-derived unaccusative verbs (e.g., fall, arrive), and unaccusative verbs derived from transitive verbs (henceforth anticausatives). Theoretically, the two unaccusative classes differ at the presyntactic (lemma) level. Reinhart (2000) in her Theta System theory suggests that verbs with alternating transitivity represent one concept, and are therefore a single lexicon entry. Just before the derivation (grammatical encoding), the transitive lemma of a verb with alternating transitivity is rendered intransitive unaccusative through the lexical operation Expletivization. After that, at the grammatical encoding level, unaccusative and

anticausative verbs cannot be differentiated any more, as they both comprise a Theme movement to the subject position. This study hypothesizes that Expletivization is a factor adding to syntactic complexity of the anticausative verb. If the production of anticausative verbs is more impaired, the deficit distinguishing the two unaccusative classes should be at the lemma level, which is where the anticausative derivation takes place. Such an assumption is in line with the ASCH and syntactic complexity. If there is no discrepancy in the production between the two unaccusative classes, the DOP-H is correct in predicting that the only relevant deficit is at the grammatical encoding level.

Methods

The aphasic group consisted of four people with Broca’s aphasia, diagnosed with the Serbian adaptation of the Boston Diagnostic Aphasia Examination (Goodglass and Caplan 1972). The control group consisted of eight participants, matched for age and education level with the experimental group. All participants were monolingual speakers of Serbian.

The participants performed a sentence production task. For this purpose, 50 verbs were chosen. In order to elicit the sentences, 50 black-and-white drawings were used. Each drawing depicted one event. In addition to the visual presentation of an event, the infinitive form of the verb was given above the drawing to avoid interference with word-finding difficulties. The test consisted of 50 test items, with 10 items in the unaccusative group, 10 items in the anticausative group, and 30 items divided between one intransitive and two transitive groups that served as control conditions.

Results

The control group performed at ceiling, and was significantly better than the experimental group in all the conditions (chi-squared test: $\chi^2 = 79.6$, $df = 4$, $p = 0.000$). The question in this study was if the production of unaccusative verbs differed significantly from the production of anticausative verbs. The data obtained from the four people with aphasia point in this direction; anticausative verbs were significantly more impaired than unaccusative verbs ($\chi^2 = 5.409$, $df = 1$, $p = 0.02$). The other pairwise comparisons between the conditions are given in Table 1.

Table 1: P-values (chi-square test) for the pairwise comparisons between the conditions in the experimental group

Comparison	Results (p)
Intransitive - Unaccusative	0.018*
Intransitive - Anticausative	0.000*
Unaccusative – Anticausative	0.02*
Unaccusative – Transitive 1	0.22
Unaccusative – Transitive 2	1
Anticausative – Transitive 1	0.000*
Anticausative – Transitive 2	0.01*
Transitive 1 – Transitive 2	0.35

Discussion

The results clearly show that the production of anticausative verbs is more impaired than the production of unaccusative verbs. The results are in line with the ASCH (Thompson 2003) and show that syntactic complexity is a factor in verb production. The additional lexical operation applied at the lemma level of anticausative verbs adds to their syntactic complexity, and makes them more difficult than unaccusative verbs. The deficit, in this case, has to be at the lemma level.

Still, the results do not necessarily contradict the DOP-H (Bastiaanse and Van Zonneveld 2005). The movement, and consequently the variation in the basic word order, clearly play a role in aphasic verb production. Our data show that unaccusative verbs are more difficult than unergative verbs. Since they have an equal number of arguments, the only difference is at the grammatical encoding level where the movement operation takes place. Therefore, unaccusatives, as well as anticausatives, indicate a deficit at the grammatical encoding level. The difference between the two unaccusative classes is that anticausative verbs have an additional deficit at the lemma level, which makes them even more difficult. The difference at the lemma level can only be captured by the ASCH and syntactic complexity since the DOP-H does not have predictions about the lemma level.

References

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