Verbs with alternating transitivity in Parkinson’s disease: Evidence from production and comprehension tasks

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Introduction

Parkinson’s disease (PD) is characterized by several cognitive deficits (Dubois & Pillon, 1997) but it is not clear whether specific language disturbances form part of the PD cognitive profile. Studies on PD present contradictory results, showing deficits in grammatical rules (Ullman et al., 1997) and studies showing no grammatical deficits (Caplan & Waters, 1999). Two different hypotheses on the grammatical abilities of PD patients have been developed. Hypothesis one claims that grammatical abilities are predicted to be impaired due to the general impairment of the procedural memory system in PD (Ullman et al., 1997). Hypothesis two claims that grammatical abilities are not predicted to be impaired (Caplan & Waters, 1999), as the general impairment of the procedural memory system in PD is assumed not to affect grammatical abilities.

The present study aims to investigate the grammatical abilities of Greek speaking patients with PD by studying their performance on the production and comprehension of unaccusative verbs entering transitivity alternations. In Greek, such verbs show evidence for A-move- ment. However, they do not all show the same morphology. There are unaccusatives with active morphology; unaccusatives with passive morphology and finally verbs both active and passive morphology. It has been argued that the structure of unaccusatives with passive morphology is more complex than the structure of unaccusatives with active morphology (Alexiadou & Anagnostopoulou, in press).

In this paper we explore whether (i) patients with Parkinson’s disease show difficulty in A-Chain formation in Greek unaccusatives and (ii) their performance is in any way influenced by structural complexity.

Method

Subjects

Twenty five non-demented patients with idiopathic PD were enrolled in the study. There were 16 men and 9 women, aged 43–72 yrs.

The cardinal symptoms of the disease and the total motor disability were assessed by means of the Unified Parkinson’s Disease Rating Scale (UPDRS). The Dementia Rating Scale (DRS), (Mattis, 1973) was employed for the evaluation of their mental status. PD patients’ mean DRS score was 134.6 ± 4.8 (range: 143–126, cut-off: score 125). A control group of 13 normal subjects matched to the PD patients on chronological age and educational background participated in the study.

Materials and procedure

We examined transitive and unaccusative verb production and comprehension using a task testing the production of 15 transitive and 15 unaccusative verbs and a picture pointing task testing the comprehension of the same 15 transitive and 15 unaccusative verbs; all three classes of unaccusative verbs were tested. In the first experiment, the methodology used by Bastiaanse and van Zonneveld (2002) was followed. A picture was shown and the verb was orally presented in the first person, as there are no infinitival forms in Greek. The subject was asked to tell in one sentence what was happening in the picture using the verb. The response was scored as correct when a sentence with the verb in the appropriate transitive or intransitive form was produced. In the second experiment the subject was visually presented three pictures; two of them corresponded to the transitive/intransitive form of the verb while the remaining one depicted a semantic distracter. The subject was orally presented the transitive or intransitive sentence and should show the correct picture.

Results and discussion

The results of both experiments are presented in Table 1. The first experiment indicated that the PD patients performed lower than normal controls on the production of unaccusative verbs; however this difference was not significant t(36) = −1.683, p = .101. The correlation between DRS scores and correct performance on the production of unaccusative verbs failed to reach significance (Spearman rank correlation, r = .380, p = .061). The performance of
the PD patients on transitive verbs is significantly better than on unaccusative verbs \( t(24) = -4.150, p < .001 \); such significance was not found with the normal controls \( t(12) = -2.008, p = .068 \). No effect of structural complexity was found on the performance of PD patients and normal controls, as no significant difference was found between the PD patients’ performance on the production of unaccusative verbs with passive and active morphology (Wilcoxon test, \( p > .05 \)). The second experiment indicated that both groups performed at ceiling.

Based on the above results we argue that the syntactic operation of A-movement is well preserved in the PD grammar as indicated by the same level of performance between PD patients and normal controls on the unaccusative verb production and absence of significant correlation between DRS and PD correct performance on unaccusative verb production. This is not in conflict with the significantly lower performance of PD patients on the production of unaccusatives in comparison to the production of transitive verbs. This indicates a failure to retrieve unaccusatives—presumably correlated with the computational demands of unaccusative sentence formation—rather than systematic problems with the A-chain formation. Thus our results support hypothesis two.

### References


