

# Verb Morphology in Aphasic Speech: Evidence from Greek

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## 1. Objective

Previous studies (Friedmann & Grodzinsky, 1997; Wenzlaff & Clahsen, 2004; Burchert, Swoboda-Moll & de Bleser, 2005; Varlokosta et al. 2006; Nanousi et al. 2006) have suggested that deficits in grammatical morphemes appear to be selective in aphasia, evidenced by poor performance in certain functional categories while other categories appear relatively spared.

Varlokosta et al. (2006) found selective deficits in verb inflection by Greek aphasic speakers. However, materials in their study were not balanced across conditions, confounding functional category with putative processing load.

The present study was conducted as a follow-up of Varlokosta et al. 2006. We aim to confirm the functional category differences having ruled out the possibility of length effects by specifically equating testing materials.

## 2. Method

### Participants

10 aphasic speakers (1 woman) all right-handed; all with left CVA at least four months prior to testing (mean time post-onset: 21.2 months, SD = 15.6); mean age: 61.8, SD = 9.8; mean years of education: 12.2, SD = 2.4. 10 age-, sex-, and education-matched control participants.

### Materials & Procedure

A Sentence Completion and a Grammaticality Judgment task were administered, each including three conditions:

### Subject-Verb Agreement (agr), Tense (t), and Aspect (asp).

10 verbs were used, the same in each condition, controlled for phonological properties, regularity, and frequency. The sentences were balanced across conditions for length of phrase (number of characters, M=48, SD=6.3, and number of words, M=8.6, SD=1.1) and number of words preceding the verb (M=4.9, SD=0.6).

### Sentence Completion Task:

80 items in each condition: 40 cue-sentences (CS) and 40 target-sentences (TS) differing from the corresponding CS only in one "dimension". Each participant was presented with the CS and then asked to complete the TS.

Examples:

#### agr condition

CS: simera oli mera **o manós** grafí yráma sti θía.

Today all day Manos write-3<sup>rd</sup>sg. letter to aunt.  
"Manos is writing (the) letter to (his) aunt all day today"

TS: simera oli mera **eyó** \_\_\_\_\_. (yrafó yráma sti θía)

Today all day I \_\_\_\_\_. (write-1<sup>st</sup>sg. letter to aunt.)  
"I am writing (the) letter to (my) aunt all day today"

#### t condition

CS: fétos i θía eléni ólo xáni ta jaLá tis.

This year aunt Helen is constantly losing her glasses.  
"This year aunt Helen keeps losing her glasses"

TS: **périsi** i θía eléni ólo \_\_\_\_\_. (éxane ta jaLá tis)

Last year aunt Helen \_\_\_\_\_. (was constantly losing her glasses.)  
"Last year aunt Helen kept losing her glasses."

#### asp condition

CS: apó ávrio o θános **sinéchia** tha vlépi ton patéra tu.

From tomorrow onwards Thanos will constantly see-imp. his father  
From tomorrow onwards Thanos will always see his father.

TS: apó ávrio o θános **ksafniká** \_\_\_\_\_. (tha ði ton patéra tu)

Tomorrow Thanos suddenly will see-perf his father.  
"Tomorrow Thanos will encounter his father."

### Grammaticality Judgment Task:

80 items in each condition: 40 grammatical and 40 ungrammatical.

Each participant was asked to judge the grammaticality of each sentence presented.

Examples:

#### agr condition

káthe xróno tis jorjes **eyó stélnó** ómata sta pejía. ✓  
Every year during the holidays I send parcels to the children.

"Every year during the holidays I send parcels to the children."

\***metá** ta faí páda **esi pléno** ta pçata. ✗

After eating always you-sg wash-1<sup>st</sup> up the dishes.  
"You always wash up the dishes after eating."

#### t condition

**ávrio** i θía **sinéchia** **tha stélni** prosklisis. ✓

Tomorrow the aunt constantly will send invitations.  
Tomorrow the aunt will often send invitations.

\***xóes** te mesiméri i pópi **vlépi** tileórasí. ✗

Yesterday at noon popi watches TV.  
"Yesterday at noon Popi watches TV."

#### asp condition

\***ávrio** i ajelici **sinéchia** **tha pléksi** éna kaskól. ✗

Tomorrow angeliki will constantly knit-perf a scarf.  
"Tomorrow Angeliki will often finished knitting a scarf."

paliótera o stelios **sinéchia élege** anoisíes. ✓

In the past Stelios constantly was telling nonsense.  
"In the past Stelios was always talking nonsense."

## 3. Results

Table 1  
Proportion of errors (as a percentage of the total number of sentences per condition, for each group)

Groups	Sentence completion			Grammaticality judgment		
	agr	t	asp	agr	t	asp
<b>Aphasics</b>						
M	32.3	40.3	40.6	19.4	42.5	40.0
SD	20.7	26.1	10.8	17.0	9.8	12.0
<b>Controls</b>						
M	2.0	8.8	7.0	2.0	8.1	9.8
SD	2.2	15.7	5.6	2.3	6.0	6.7

Table 2  
Performance comparisons (by Wilcoxon signed ranks test, 2-tailed) among the conditions, for each group

Groups	Sentence completion			Grammaticality judgment		
	agr - t	t - asp	asp - agr	agr - t	t - asp	asp - agr
<b>Aphasics</b>						
z	-1.072	-.308	-1.485	-2.395*	-.561	-2.497*
<b>Controls</b>						
z	-.512	-.141	-2.200*	-2.524*	-.615	-2.668**

\* p < .05, \*\* p < .01

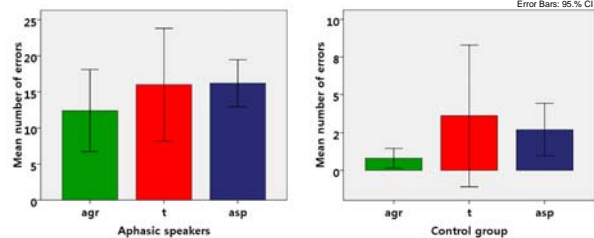


Figure 1 & 2. Performance of the two groups in sentence completion

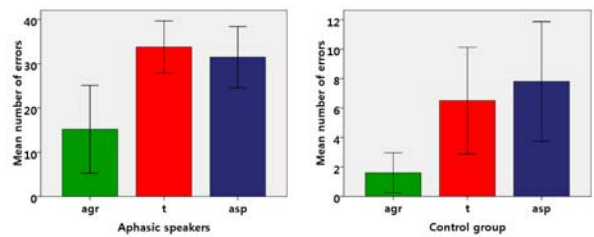


Figure 3 & 4. Performance of the two groups in grammaticality judgment

## 4. Discussion

- Our findings are **not compatible with structural approaches** of agrammatism, as they all predict a selective deficit.
- In the sentence completion task the deficit observed in the aphasic speakers' group appears not to be selective.
- The fact that same patterns of performance are observed in the grammaticality judgment between the two groups suggests that performance on the categories of tense and aspect is normally lower than on agreement → agrammatism accentuates an already existing difference between these categories and therefore the deficit cannot be characterized as selective on the basis of agrammatism.
- If the deficit found was due to a structural-representational account, it should be expected to appear not only in the grammaticality judgment task, but also in the sentence completion task for the same categories (Dickey, Milman & Thompson, 2008).
- Compared with the previous study (Varlokosta et al. 2006), our results suggest that as the sentences were balanced in terms of length, they were balanced in terms of processing load and thus the deficit was balanced across the categories.
- Our findings are **compatible with a processing account** of agrammatism.

## References

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