Error patterns of Greek aphasic speakers in sentence completion and grammaticality judgment

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1. Objective

Varlokosta, Valeonti, Kakavoulia, Lazaridou, Economou & Protopapas (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.

A recent replication with balanced materials suggests that deficits are evenly distributed across functional categories and not selective. Here we extend the analysis of the study with balanced materials, examining distinct categories of errors.

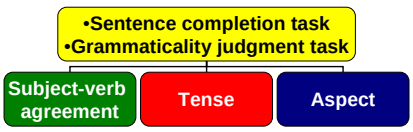
2. Method

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**.

Procedure

2 tasks * 3 conditions addressing the participants' performance in the three functional categories:



Materials

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:

	Length		Distance
	Char.	Words	
M	48	8,6	4,9
SD	6,3	1,1	0,6

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Sentence Completion Task:

Examples:

agr condition

Cue Sentence: símera óli méra **o mános** γráfi γráma sti θía.
Today all day Manos write-3rd sg. letter to aunt.
"Manos is writing (the) letter to (his) aunt all day today."

Target Sentence: símera óli méra **eγó** _____. (γráfo γráma sti θía)
Today all day I _____. (write-1st 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 jaʎá tis.
This year aunt Helen is constantly loosing her glasses.
"This year aunt Helen keeps losing her glasses."

TS: **périsi** i θía eléni ólo_____. (éxane ta jaʎá tis)
Last year aunt Helen____. (was constantly loosing her glasses)
"Last year aunt Helen kept loosing her glasses."

asp condition

CS: apó ávrio o θános **sinéçia** θa 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** _____. (θa ði ton patéra tu)
Tomorrow Thanos suddenly will see-perf his father.
"Tomorrow Thanos will encounter his father."

Grammaticality Judgment Task:

Examples:

agr condition

káθe xróno tis jortes **eγó stélno** ðémata sta peðja.
Every year during the holidays I send parcels to the children.
"Every year during the holidays I send parcels to the children."

*metá to faí páda **esí pléno** ta pçáta.
After eating always you-sg wash-1st up the dishes.
"You always wash up the dishes after eating."

t condition

ávrio i θía sinéçia **θa stélni** prosklísis.
Tomorrow the aunt constantly will send invitations.
Tomorrow the aunt will often send invitations.

***x0es** to mesiméri i pópi **vlépi** tileórasi.
Yesterday at noon popi watches TV.
"Yesterday at noon Popi watches TV."

asp condition

*ávrio i aɟelici **sinéçia** θa **pléksi** éna kaskól.
Tomorrow angeliki will constantly knit-perf a scarf.
"Tomorrow Angeliki will constantly finished knitting a scarf."

paliótera o stelios **sinéçia élege** anoisíes.
In the past Stelios constantly was telling nonsense.
"In the past Stelios was always talking nonsense."

3. Results

Table 1
Performance comprarisons (by Wilcoxon signed ranks test, 2-tailed) among the conditions, for each group

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

* $p < .05$, ** $p < .01$

Sentence completion responses were classified as **form** or **lexical** errors, i.e., incorrect inflectional morpheme or incorrect lexeme, respectively.
Grammaticality judgment errors were classified as **acceptances** of incorrect sentences versus **rejections** of correct sentences.

Table 2.
Proportion of errors as a percentage of the total number of sentences per condition, for each group.

	Sentence completion								
	Agreement			Tense			Aspect		
	Total	Lexical	Form	Total	Lexical	Form	Total	Lexical	Form
Aphasics									
M	30.0	14.3	20.3	35.0	15.0	24.0	36.0	12.3	27.5
SD	19.9	19.2	13.7	24.5	16.2	23.8	9.5	10.0	11.7
Controls									
M	2.0	1.8	0.8	8.5	0.3	8.3	7.0	0.3	6.8
SD	2.3	2.3	1.2	16.1	0.8	16.2	5.9	0.8	6.0
	Grammaticality judgment								
	Agreement			Tense			Aspect		
	Total	Accept	Reject	Total	Accept	Reject	Total	Accept	Reject
Aphasics									
M	19.0	22.0	16.0	42.0	66.3	17.8	39.3	57.5	21.0
SD	17.4	24.4	12.0	10.1	18.2	17.5	12.0	23.9	18.4
Controls									
M	2.0	2.8	1.3	8.1	11.8	4.5	9.8	18.8	0.8
SD	2.4	3.0	3.2	6.3	11.1	4.0	7.1	14.6	1.2

Note: For sentence completion, totals may be less than the sum of lexical and form errors because both types of errors may appear on the same item (mixed errors), counting as one in the total.

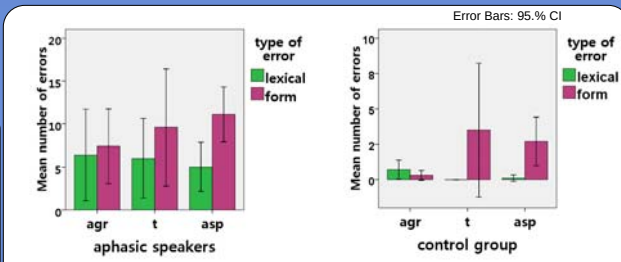

Figure 1 & 2. Comparisons of types of errors for the two groups in **sentence completion**

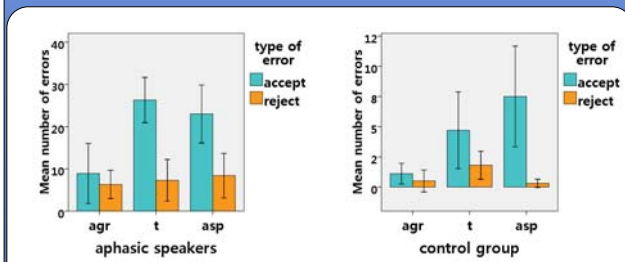

Figure 3 & 4. Comparisons of types of errors for the two groups in **grammaticality judgment**

4. Discussion

•Our findings show similar patterns of error distributions for aphasic speakers and control participants, taking into account the large and expected overall differences between the two groups.
•The data show no evidence for a selective deficit ➔ the results are not compatible with structural approaches to agrammatism.
•Our findings appear compatible with processing accounts.

References

Varlokosta, S., Valeonti, N., Kakavoulia, M., Lazaridou, M., Economou, A., & Protopapas, A. (2006). The breakdown of functional categories in Greek aphasia: Evidence from agreement, tense, and aspect. *Aphasiology, 20* (8), 723–743 .