

Eleni Peristeri<sup>1</sup>, Michaela Nerantzini<sup>2,3</sup>, Katerina Drakoulaki<sup>3</sup>, Antonia Mpozou<sup>3</sup>, & Spyridoula Varlokosta<sup>3</sup>

<sup>1</sup> School of English, Aristotle University of Thessaloniki, Greece

<sup>2</sup> Department of Speech and Language Therapy, University of Patras, Greece

<sup>3</sup> Department of Linguistics, School of Philology, National and Kapodistrian University of Athens, Greece

## INTRODUCTION

- Production of narrative discourse in aphasia has been mainly studied in English (e.g., Mack et al., 2021; Cummings, 2019; Fraser et al., 2014).
- In post-stroke aphasia, oral narratives have been found to be less pragmatically coherent in terms of propositional meanings and cohesive ties than the oral narratives of healthy controls (Behrns et al., 2009).
- Narrative production in post-stroke aphasia has been reported to be affected by executive functions (EFs), specifically working memory (WM) (Cahana-Amitay & Jenkins, 2018).
- There is limited evidence on the relation between oral narrative production and EFs in post-stroke Broca's aphasia.

## OBJECTIVES

- ✓ To investigate the microstructure (lexical diversity, subordination) and macrostructure (pronoun ambiguity, emotion words, story organization) of the oral narratives of individuals with Broca's aphasia
- ✓ To investigate the relation between microstructural and macrostructural variables and EFs in the same individuals

## ACKNOWLEDGEMENTS

We are grateful to our participants for their unrelenting commitment to our study.

This research work was funded by the Hellenic Foundation for Research and Innovation (H.F.R.I.) under the "1st Call for H.F.R.I. Research Projects to support Faculty Members & Researchers and the Procurement of High-and the procurement of high-cost research equipment grant" (Project Number 2992) (PI: S. Varlokosta).

## MATERIALS AND METHODS

### Participants

- 12 Greek-speaking patients with Broca's aphasia  
-time of onset: 1-4 years  
-mean age: 67;4 yrs. ( $SD=4.7$ ) (range:62-75 yrs.)  
-mean years of education: 14;6 yrs. ( $SD=2.3$ )
- 12 age- and education-matched healthy controls

### Experimental tasks

#### Narrative production

- Cinderella storybook (Grimes, 2005)  
Oral narration was analyzed in terms of:  
-lexical diversity → type/token ratio  
-syntactic complexity → no subordinate clauses divided by total no of clauses  
-referential ambiguity → no of ambiguous pronouns divided by total no of pronouns  
-emotion words → no of affective terms divided by total no of clauses  
-story organization → no of goal-attempt-outcome components across episodes

#### EF tasks

- One Touch of Stockings (OTS), the computerized analogue of the Tower of Hanoi (WM). Measures:  
**OTSPSFC** → correct answers on first attempt  
**OTSMCC** → mean frequency of box selections before choosing correct box
- Intra-extra Dimensional Set Shift (IED), the computerized analogue of Wisconsin Card Sorting (Cognitive flexibility)  
**IEDYSTCO** → number of trials undertaken on all successfully completed stages

## RESULTS

### Narrative production

Group	Lexical Diversity %	Syntactic Complexity %	Pronoun Ambiguity %	Emotion Words %	Story Organization (max. 23)
Broca	60.3 (11.1)	22.8 (3.2)	42.8 (11.7)	10.8 (2.2)	11.3 (3.8)
Control	67.1 (7.3)	44.1 (5.2)	13.9 (1.9)	31.1 (6.4)	19.8 (4.6)

- Broca < Controls in all measures ( $p < .001$ ) except for lexical diversity ( $p = .458$ )

### EF tasks

Group	OTSPSFC	OTSMCC	IEDYSTCO
Broca	7.4 (3.2)	2.9 (1.1)	24.4 (7.1)
Controls	7.1 (2.8)	2.3 (1.2)	8.9 (3.9)

- Broca < Controls in IEDYSTCO ( $p < .001$ )
- Broca ≈ Controls in OTSPSFC ( $p = .903$ ) and OTSMCC ( $p = .100$ )

### Relations btw. EFs and narrative measures

- OTSMCC sign. predicted syntactic complexity for both Broca ( $p=.02$ ,  $R^2 = 33.8$ ) and healthy controls ( $p=.04$ ,  $R^2 = 29.2$ )
- IEDYSTCO sign. predicted referential ambiguity ( $p<.001$ ,  $R^2 = 44.3$ ) and story organization ( $p<.001$ ,  $R^2 = 55.6$ ) in individuals with Broca's aphasia

## CONCLUSIONS

- There were links between EFs and narrative production mainly for the individuals with Broca's aphasia.
- WM was mostly related to the patients' frequency of use of subordinate clauses in oral story generation. Cognitive flexibility was mostly related to the patients' use of referentially ambiguous pronouns and episodic complexity; macrostructure was probably more demanding in processing resources than narrative microstructure.
- The study identifies profiles of language and EF strengths and weaknesses that may improve diagnostic and therapeutic outcomes in Broca's aphasia.

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