Language and memory features in autobiographical narratives of svPPA patients

B Seixas Lima[1,2], B Levine[3,4], NL Graham[1,2], C Leonard, [1,5] D Tang-Wai[6], S Black[1,7,8], E Rochon[1,2]

1-Rehabilitation Sciences Institute, Department of Speech-Language Pathology - University of Toronto; 2- Toronto Rehabilitation Institute – University Health Network; 3- Department of Psychology – University of Toronto; 4- Rotman Research Institute – Baycrest; 5- Audiology and Speech-Language Pathology Program – University of Ottawa; 6- Department of Medicine, Division of Neurology – University Health Network 7- Institute of Medical Science – University of Toronto; 8- L.C. Campbell Cognitive Neurology Research Unit – Sunnybrook Health Sciences Centre.

Introduction

Autobiographical memory recall is known to rely on:
- semantic memory (general knowledge)
- episodic memory (memory of specific events) (1)

Semantic variant primary progressive aphasia (svPPA) is a disorder which affects the semantic memory system and whose most prominent symptom is aphasia (2). Previous studies from our lab (3) found that this group of patients showed reduced episodic memory recall but equivalent semantic memory recall when compared to controls. However, patients with svPPA showed deficits in macro-linguistic structures – specifically coherence of discourse – when producing semantic but not episodic information about past events. One possibility is that these deficits could have been caused by micro-linguistic deficits –especially deficits in lexical recall and impoverished sentence production (i.e. grammatically less complex sentences).

Objectives and Hypothesis:
- To investigate the production of episodic and semantic memory details and the linguistic production of patients with svPPA during autobiographical narratives
- Previously observed deficits in coherence of semantic information produced during autobiographical narratives could arise from micro-linguistic impairments.

Methods

Participants
- 18 svPPA patients and 18 matched controls

Autobiographical Interview (1)
- Participants reported an autobiographical narrative
- Responses were recorded, transcribed and segmented into utterances or "details"
- Details were coded as episodic (specific events), semantic (general knowledge) or supplementary details (rhetorical questions, metacognitive statements, fillers)

Quantitative Production Analysis – QPA (5)
Based on previous literature we investigated participants' production of:
- Well-formed sentences
- Sentence elaboration index (Calculation of mean length of subject noun-phrase + verb phrase)
- Mean utterance length
- Words
- Open class words
- Nouns
- Pronouns
- Verbs

References
1- Levine et al., 2002. *Psych and aging,* 17(4), 677-689.
2- Gorno-Tempini et al., 2011. *Neurology,* 76 (11), 1006-1014.
3- Seixas Lima et al., (under review)
5- Rochon et al, 2000. *Brain and Language, 72(3), 193-218*.

Number of well-formed sentences

Sentence elaboration index

Mean utterance length

Number of words

Number of open-class words

Number of nouns
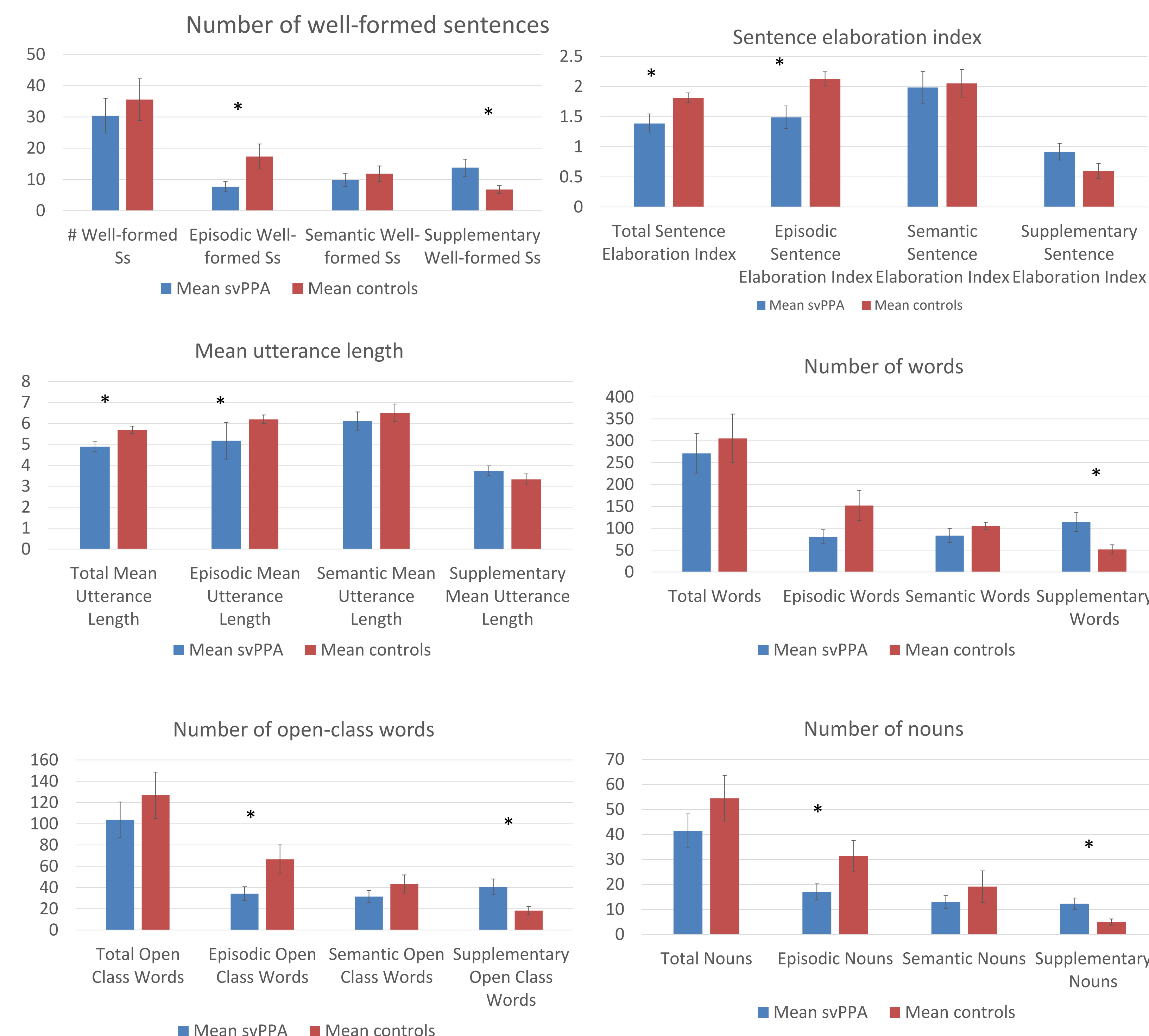
svPPA patients also produced greater quantity of pronouns and verbs in supplementary details (not illustrated)

Results
- svPPA patients demonstrated impairments on micro-linguistic measures of episodic but not semantic details.

Discussion
- Our previous study found impaired production of macro-linguistic structures of semantic information, while the current study found impaired production of micro-linguistic elements in episodic recall.
- The difficulty recalling episodic information and lexical items could be causing patients to rely on semantic information.
- svPPA patients appear to have distinctive linguistic deficits in semantic versus episodic memory recall
- Further research should examine these deficits and their relationships.