

Lexical-level predictors in a connected speech task in patients with Primary Progressive Aphasia

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Connected speech contains diagnostically relevant lexical information: a reduced corpus of words and grammatical-category profiles may provide a simpler approach for identifying language impairment in PPA.

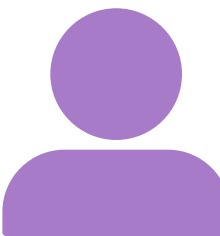
INTRODUCTION

Neuropsychological language assessment batteries commonly include **connected speech tasks**. However, transcription and quantification of speech properties are time-consuming and require specialized linguistic expertise.

Identifying clinically informative **lexical markers may enhance the diagnostic utility** of connected speech.

Our objective was to identify a reduced corpus of lexical markers and characterize group-level linguistic composition patterns that can be used for assessing and diagnosing in the picture description task of the Latin American Spanish MLSE (Vivas et al., 2023).

METHODS

 22 patients diagnosed with PPA  34 healthy participants

all native Spanish speakers from Argentina and Uruguay, completed the MLSE picture description task (Patel et al., 2022). Patients were classified into:



Responses were audio-recorded and transcribed and word frequencies were computed.

Binomial LASSO logistic regressions were conducted in pairwise group comparisons to identify words associated with group membership. Grammatical category proportions relative to total word output were compared using non-parametric tests (Kruskal–Wallis; FDR-corrected Dunn post-hoc).

RESULTS

A reduced corpus of lexical markers was identified (Table 1), providing information about the relative likelihood of belonging to the control group or to a PPA subtype. Lexical differentiation was more robust between healthy controls and PPA groups than among PPA variants.

Table 1. Results of LASSO analysis

Word	β	Comparison	Direction
arena (sand)	-2,16	Control vs PPA	control
leyendo (reading)	-1,15	Control vs PPA	control
pájaro (bird)	2,02	Control vs PPA	PPA
sol (sun)	-1,21	Control vs PPA	control
sombrilla (umbrella)	-1,67	Control vs PPA	control
arena (sand)	-3,17	Control vs lvPPA	control
leyendo (reading)	-0,64	Control vs lvPPA	control
pájaro (bird)	0,95	Control vs lvPPA	lvPPA
sol (sun)	-0,73	Control vs lvPPA	control
sombrilla (umbrella)	-3,09	Control vs lvPPA	control
arena (sand)	-7,81	Control vs nfvPPA	control
leyendo (reading)	-0,04	Control vs nfvPPA	control
pájaro (bird)	7,80	Control vs nfvPPA	nfvPPA
sol (sun)	-7,24	Control vs nfvPPA	control
sombrilla (umbrella)	-0,94	Control vs nfvPPA	control
arena (sand)	-0,34	Control vs svPPA	control
leyendo (reading)	-0,90	Control vs svPPA	control
sol (sun)	-0,49	Control vs svPPA	control
sombrilla (umbrella)	-0,69	Control vs svPPA	control

Linguistic composition analyses revealed group-level differences. Specifically, noun production was significantly reduced in svPPA ($Z=-3.56, p<.05$) and lvPPA ($Z=-3.1, p<.05$) relative to controls, while verb proportions differed across PPA subtypes, with svPPA showing a higher proportion of verbs relative to total word output compared to both lvPPA ($Z=-2.63, p<.05$) and controls ($Z=2.68, p<.05$). Additional patterns, including increased pronoun and indefinite-term use in svPPA and reduced function-word use in nfvPPA, were observed at a descriptive level (Table 2).

Table 2. Grammatical categories proportion

PPA type	% nouns	% verbs	% pronouns	% closed words	% adverbs	% adjectives	% indefinite terms
APPvi	14,2	9,8	5,0	35,7	5,1	1,4	2,2
APPvnf	13,7	33,7	0,7	24,0	2,7	2,7	0,0
APPvs	11,7	12,7	5,8	37,9	7,1	1,9	2,8
Control	20,4	10,1	3,7	39,7	3,7	2,4	0,9

CONCLUSIONS

The identification of a restricted set of lexical markers, together with quantitative analyses of grammatical categories, highlights complementary sources of diagnostically relevant information in connected speech. This approach supports the development of simplified methods for speech analysis in PPA. While the present findings provide an initial corpus of candidate markers, larger and more balanced samples are needed to improve subtype specificity.

REFERENCES

Vivas, L., Cuitiño, M. M., Manoiloff, L. M. V., Romanelli, S., & Garrard, P. (2023). Traducción y adaptación lingüística y cultural del Minilinguistic State Examination al español de Argentina. *Revista Argentina de Ciencias del Comportamiento (RACC)*, 15(3), 82-98.

Patel, N., Peterson, K. A., Ingram, R. U., Storey, I., Cappa, S. F., Catricala, E., ... & Garrard, P. (2022). A 'Mini Linguistic State Examination' to classify primary progressive aphasia. *Brain Communications*, 4(2), fcab299.

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