

Sandrine Basaglia-Pappas¹, Hina Solignac², Laurent Lefebvre¹, & Édith Durand³

¹University of Mons, Cognitive Psychology and Neuropsychology Department, Mons, Belgium;

²University of Montpellier, Department of Speech-Language Pathology, Montpellier, France;

³Research Chair in Sensorimotor Function and Language (Labo SNC), Université du Québec à Trois-Rivières, Trois-Rivières, Canada



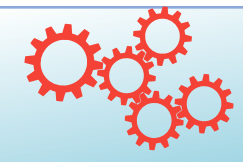
INTRODUCTION

- Verb anomia → common symptom in logopenic variant primary progressive aphasia (lvPPA)¹
- Few interventions specifically target verb anomia in lvPPA²
- POEM therapy → sensorimotor-based approach:
 - Action observation
 - Motor execution
 - Mental imagerydemonstrated efficacy in chronic post-stroke aphasia³
- Telepractice → promising outcomes in neurodegenerative disorders^{4,5}



AIM

To evaluate the effects of POEM therapy via telepractice in a person with lvPPA presenting with verb anomia



METHODS

PARTICIPANT

- 74-year-old woman, 9 years of education
- Diagnosis: lvPPA

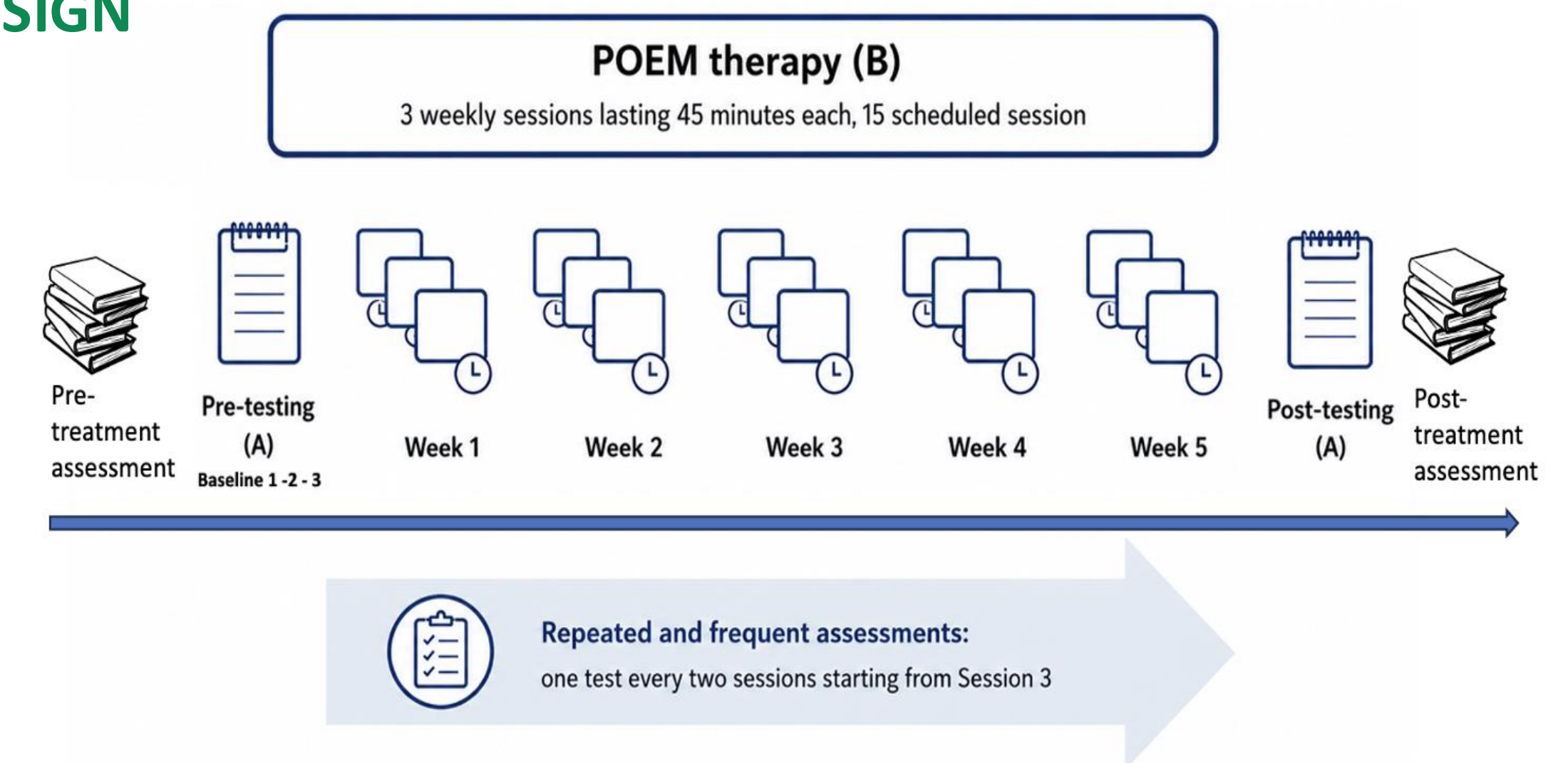
PRE- AND POST-ASSESSMENT

- Linguistic functions
- Cognitive functions
- Motor abilities
- Mood

BASELINE (phase A)

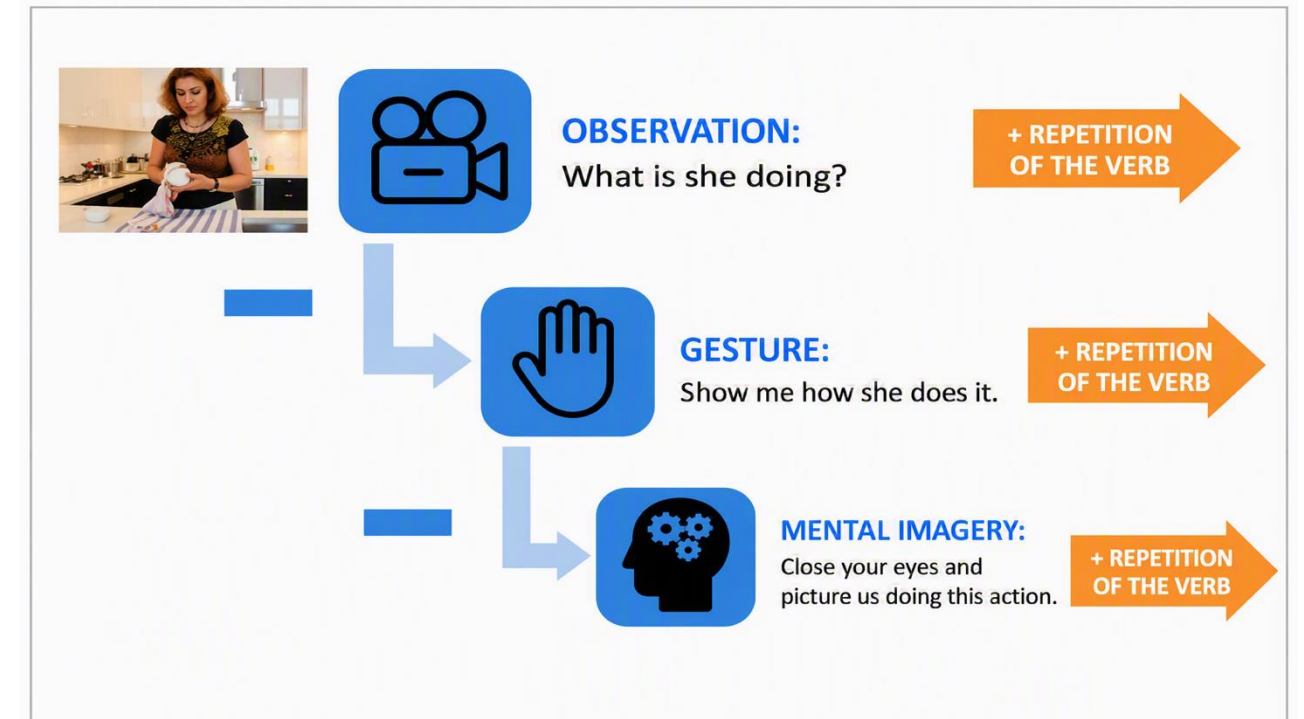
- 121 Video-Based Action Naming Task

DESIGN



INTERVENTION: POEM THERAPY via TELEPRACTICE (phase B)

- 20 trained verbs
 - 16 consistently failed items + 4 successfully produced items
- 40 untrained verbs
 - matched on frequency, number of syllables, and valence ($p > 0.05$)
 - 35 consistently failed items + 5 successfully produced items
- Repeated Measures
 - 6 verbs selected from the trained set, every 2 sessions

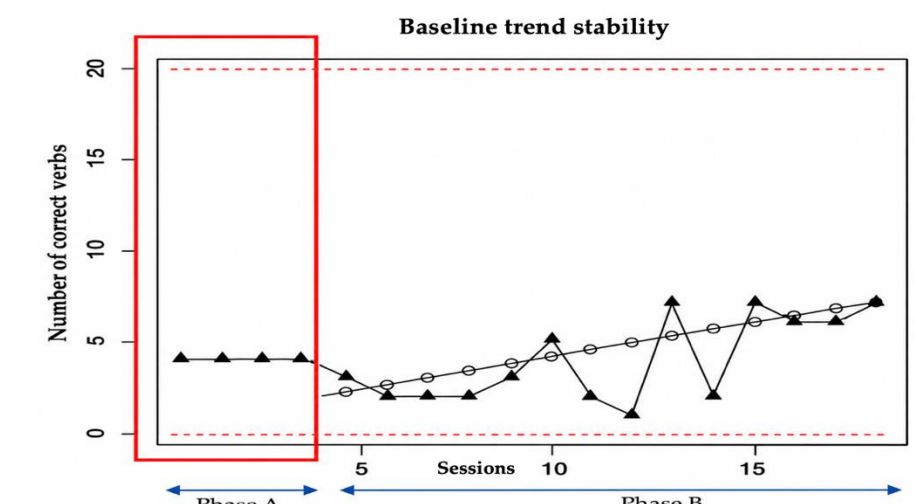


RESULTS

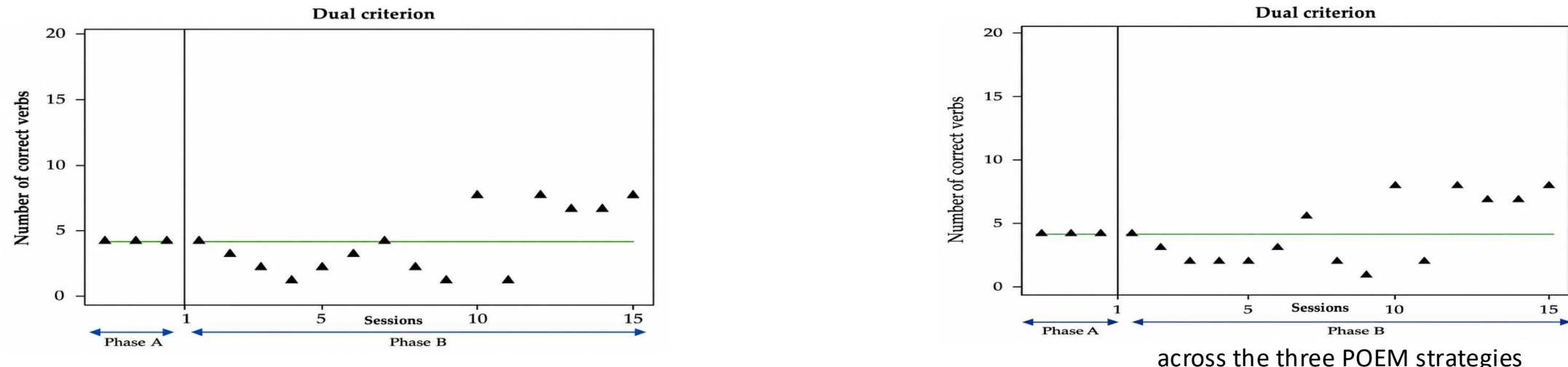
EFFECTS OF POEM ON TRAINED VERBS

VISUAL STATISTICAL ANALYSIS

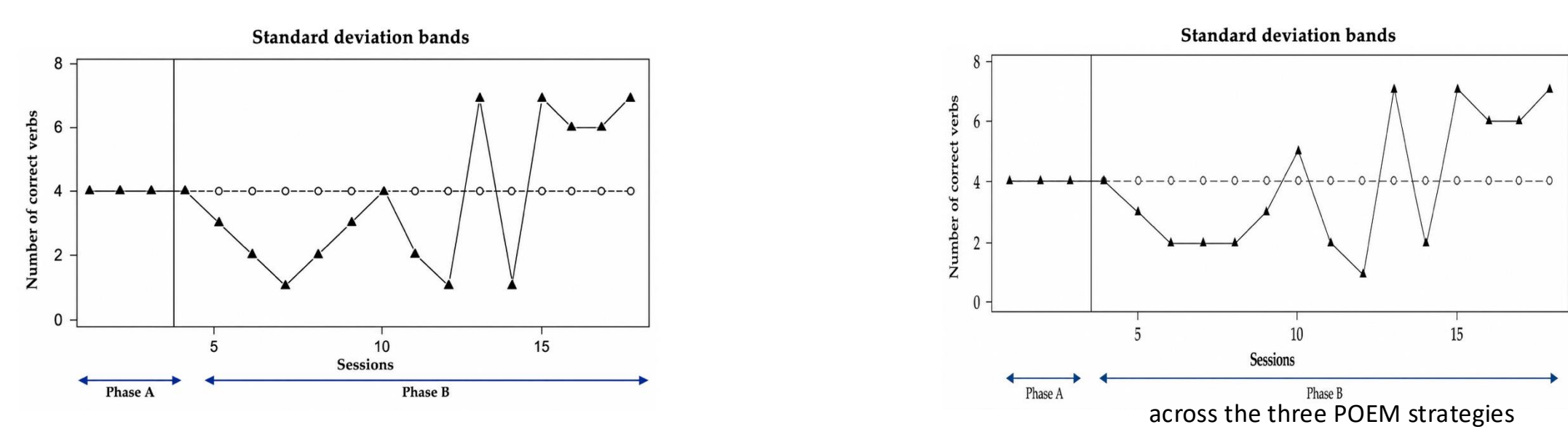
* Visual analysis of baseline trend stability



* Visual analysis of POEM treatment outcomes across the naming task, based on the Dual-Criterion Test

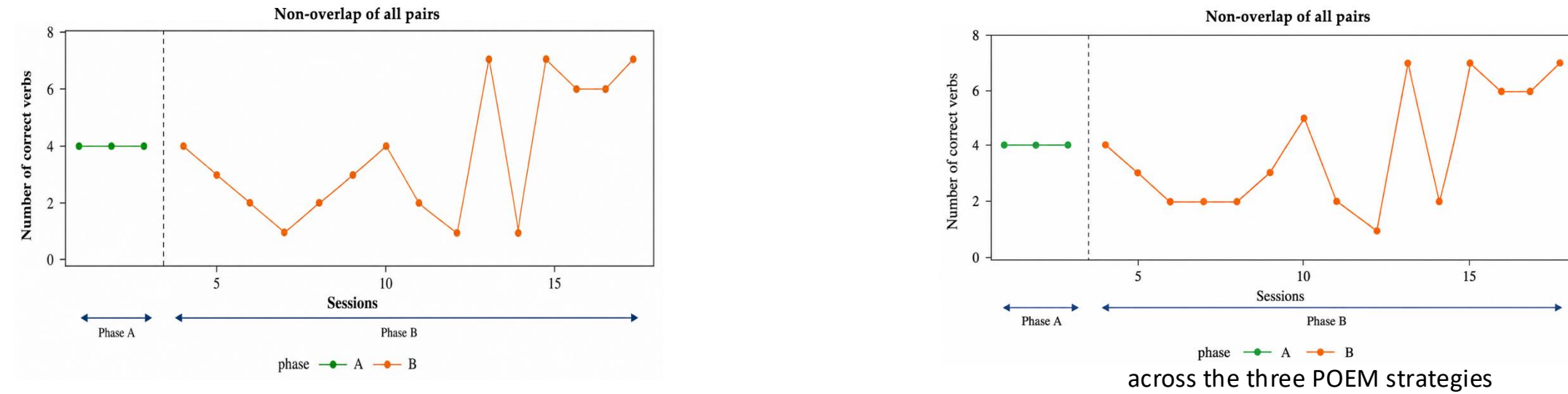


* Visual analysis of POEM treatment effects during the naming task using the 2-Standard Deviation Bands (SDB) method



STATISTICAL ANALYSIS

* Visual analysis of POEM treatment effects during the naming task using Non-overlap of All Pairs (NAP)



- No significant difference between pre- and post-therapy performance ($W = 232.0$, $p = 1.00$)

EFFECTS OF POEM ON UNTRAINED VERBS

- No significant difference between pre- and post-therapy performance ($W = 110.0$, $p = 0.506$)
- Significant increase in the use of co-verbal gestures during naming task between pre- (Baseline 1) and post-therapy assessment ($W = 109.0$, $p < 0.001$)

PRE- AND POST-ASSESSMENT RESULTS

QUANTATIVE RESULTS

Cognitive Assessment	Pre-POEM Assessment	Post-POEM Assessment	Cut-Off Score
LINGUISTIC FUNCTIONS			
Fluency—Fruits (GréMots)	2	1	18.5
Fluency—Verbs (GréMots)	0	0	17
Fluency—Letters (GréMots)	2	0	12.5
Words repetition (GréMots)	7 out of 10	8 out of 10	10 out of 10
Sentence repetition (GréMots)	13 out of 30	15 out of 30	30 out of 30
Syntactic comprehension (GréMots)	10 out of 24	9 out of 24	22 out of 24
DVAQ-30 (action video naming from Québec)	1 out of 30	2 out of 30	24 out of 30
- Number of action gestures	0	10**	
CETI (Communicative Effectiveness Index)			
Cinderella speech task	Person: 6.13	Person: 6.56	
COGNITIVE FUNCTIONS			
TMT (Trail Making Test)	SLT: 3.44	SLT: 3.38	
- Mistakes	Spouse: 4.38	Spouse: 5.50*	
- Time	See table below	See table below	
RFFT (Ruff Figural Fluency Test)			
- Part I	<3.8	<3.8	0
- Part II	<202 s	<202 s	90 s
- Part III			
CASP (Cognitive Assessment Scale for Stroke Patients)	4	6	17.3
MOTOR ABILITIES			
Mahieux Praxis	4	4	18.9
- Symbolic gestures	5	4	19.1
- Pantomimes	23 out of 36	25.5 out of 36	35 out of 36
- Imitation of meaningless gestures	13 out of 23	16 out of 23	18 out of 23
KVIQ-10 (Kinesthetic and Visual Imagery Questionnaire)	3 out of 10	3 out of 10	4 out of 5
Praxis (PARIS)	5 out of 10	8 out of 10	8 out of 10
MOOD			
GAI (Geriatric Anxiety Inventory)	5 out of 8	6 out of 8	6 out of 8
GDS (Geriatric Depression Scale)	10	27**	50–55
	4 out of 4	4 out of 4	4 out of 4
	13 out of 20	8 out of 20	≤ 8 out of 20
	Partially completed	6	5

SLT = speech and language therapist; * = $p < 0.05$; ** = $p < 0.001$

QUALITATIVE RESULTS ON CONNECTED SPEECH

CLAN EVAL results for narrative discourse	Pre-Therapy	Post-Therapy
Duration of linguistic content (s)	76	253
Total utterances	15	29
Mean length of utterances (words)	15	28
Mean length of utterances (morphemes)	4.867	9.071
Total number of different words	5.8	10.107
Total number of words produced	41	94
Mean words per minute	108.158	111.462
Verbs per utterance	0.8	0.655
Nouns in the corpus (%)	16.092	19.259
Correct plurals in the corpus (%)	28.571	32.692
Verbs in the corpus (%)	13.793	7.037
Prepositions in the corpus (%)	4.598	8.519
Adjectives in the corpus (%)	1.149	2.963
Adverbs in the corpus (%)	14.943	15.185
Conjunctions in the corpus (%)	8.046	11.481
Determiners in the corpus (%)	4.598	9.63
Pronouns in the corpus (%)	36.782	40.37

CLAN FREQ analysis	Pre-Therapy	Post-Therapy
Total number of verbs produced	12	35
Total number of repeated verbs	7	21
Total narrative verbs	3	11



DISCUSSION

- Stable verb naming with increased frequency and quality of co-verbal gestures, particularly for untrained verbs, suggesting generalization of the gesture execution strategy
- Improved narrative discourse and functional communication, despite stable verb naming, supporting a possible prophylactic effect
- By encouraging semantically congruent gestures, POEM therapy may promote compensatory sensorimotor pathways supporting lexical access in lvPPA
- Longer intervention periods and larger controlled studies are needed to determine the robustness and generalizability of POEM effects, and to compare telepractice with in-person delivery

References

- Gorno-Tempini, M. L., Hillis, A. E., Weintraub, S., Kertesz, A., Mendez, M., Cappa, S. F., ... & Grossman, M. (2011). Classification of primary progressive aphasia and its variants. *Neurology*, 76(11), 1006-1014. <https://doi.org/10.1212/WNL.0b013e3182110366>
- Lukic, S., Licata, A. E., Weis, E., Bogley, R., Ratnasiri, B., Welch, A. E., ... & Borghesani, V. (2022). Auditory verb generation performance patterns dissociate variants of primary progressive aphasia. *Frontiers in psychology*, 13, 887591. <https://doi.org/10.3389/fpsyg.2022.887591>
- Durand, É., Masson-Trottier, M., Sontheimer, A., & Ansaldo, A. I. (2021). Increased links between language and motor areas: A proof-of-concept study on resting-state functional connectivity following Personalized Observation, Execution and Mental Imagery therapy in chronic aphasia. *Brain and Cognition*, 148, 105659. <https://doi.org/10.1016/j.bandc.2020.105659>
- Dial, H. R., Hinshelwood, H. A., Grasso, S. M., Hubbard, H. I., Gorno-Tempini, M. L., & Henry, M. L. (2019). Investigating the utility of teletherapy in individuals with primary progressive aphasia. *Clinical interventions in aging*, 453-471. <https://doi.org/10.2147/CIA.S178878>
- Duboisindien, G., Lavoie, M., Laforce, R., & Macoir, J. (2025). Effectiveness of a teletherapy-based phonological short-term memory training in reducing phonological impairments in the logopenic variant of primary progressive aphasia: a multiple case study. *Frontiers in human neuroscience*, 19, 1724345. <https://doi.org/10.3389/fnhum.2025.1724345>

