

Assessment tools accuracy for classification and diagnosis of Primary Progressive Aphasia: A systematic review and meta-analysis protocol

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- Brief language assessments can accurately differentiate primary progressive aphasia variants.
- Semantic, repetition, and speech-motor measures are the strongest discriminators for svPPA, lvPPA, and nfvPPA, respectively.
- Selecting tests according to the suspected phenotype improve diagnostic precision while reducing assessment time and clinical burden.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Accurate diagnosis and classification of primary progressive aphasia (PPA) variants are essential for prognosis, clinical management, and research. Despite the availability of brief language assessment tools, their relative diagnostic accuracy for distinguishing PPA from healthy controls and between PPA variants remains unclear.	We conducted a systematic review and meta-analysis of diagnostic accuracy studies evaluating brief language and cognitive assessment tools for PPA and its variants. MEDLINE, EMBASE, and Web of Science were searched from 2011 onward following PRISMA guidelines. Studies reporting sensitivity, specificity, or area under the curve (AUC) were included. Diagnostic performance was synthesized using summary receiver operating characteristic (SROC) analyses with bivariate random-effects models.	The pooled sample comprised 1,469 individuals with PPA, including semantic (svPPA), logopenic (lvPPA), and non-fluent/agrammatic PPA (nfvPPA). Semantic and naming measures best discriminated svPPA: the Semantic Association and Naming Domains (SAND) battery showed excellent discrimination between PPA and healthy controls (AUC = 0.98; sensitivity ≈93%; specificity ≈95%), and object semantics tasks achieved very high specificities (96–100%). lvPPA was best identified using sentence repetition, with AUC values up to 0.93 versus nfvPPA. Although nfvPPA showed greater overlap, speech rate and articulation rate provided strong discrimination, reaching AUC values up to 0.96 for nfvPPA versus svPPA. For PPA versus healthy controls, pooled SROC analysis across 7 studies showed high accuracy (AUC = 0.876), with the ACE-III PPA Diagnostic Calculator achieving near-perfect sensitivity and specificity (≈1.00). Object naming (Boston Naming Test) demonstrated prognostic value in initially unclassifiable PPA (AUC ≥0.75).	Brief, domain-targeted language assessments allow accurate differentiation of PPA variants. Semantic and naming measures are most informative for svPPA, repetition-based tasks for lvPPA, and speech timing measures for nfvPPA. Multidimensional, rule-based approaches outperform single tests, supporting a clinically feasible diagnostic strategy.	Epelbaum, S., Saade, Y. M., Flamand-Roze, C., et al. (2021). A reliable and rapid language tool for the diagnosis, classification, and follow-up of primary progressive aphasia variants. <i>Frontiers in Neurology</i>, 11, 571657. https://doi.org/10.3389/fneur.2020.571657 Foxe, D., Hu, A., Cheung, S. C., et al. (2022). Utility of the Addenbrooke's Cognitive Examination III online calculator to differentiate the primary progressive aphasia variants. <i>Brain Communications</i>, 4(4), fcac161. https://doi.org/10.1093/braincomms/fcac161 Gorno-Tempini, M. L., Hillis, A. E., Weintraub, S., et al. (2011). Classification of primary progressive aphasia and its variants. <i>Neurology</i>, 76(11), 1006–1014. https://doi.org/10.1212/WNL.0b013e31821103e6 Page, M. J., McKenzie, J. E., Bossuyt, P. M., et al. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. <i>BMJ</i>, 372, n71. https://doi.org/10.1136/bmj.n71 Whiting, P. F., Rutjes, A. W. S., Westwood, M. E., et al. (2011). QUADAS-2: A revised tool for the quality assessment of diagnostic accuracy studies. <i>Annals of Internal Medicine</i>, 155(8), 529–536. https://doi.org/10.7326/0003-4819-155-8-201110180-00009
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