Common and divergent trajectories of cognitive changes and cortical thickness in non-fluent primary progressive aphasia syndromes

Ramon Landin-Romero1,2,3, Fiona Kumfor1,2,3, Austin Lee3, John R. Hodges2,5 and Olivier Piguet1,2,3

1The University of Sydney, School of Psychology, 2Brain and Mind Centre, Sydney, NSW, Australia; 3Australia Research Council Centre of Excellence in Cognition and its Disorders, Sydney, Australia; 4Department of Medicine and Therapeutics, the Chinese University of Hong Kong, Hong Kong; 5Sydney Medical School, the University of Sydney, Sydney, Australia

Background and aims
• The two non-fluent variants of primary progressive aphasia (PPA), the non-fluent variant aphasia (nfvPPA) and the logopenic variant (lvPPA), show overlapping clinical presentations, making accurate diagnosis difficult.
• The understanding of the contribution of progressive brain atrophy to the emergence of clinical symptoms in nfvPPA and lvPPA is limited.
• The aim of this study was to examine changes in cognition, emotion processing, and brain atrophy in nfvPPA and lvPPA, compared to Alzheimer’s disease (AD) over time.

Methods
• 31 PPA patients (17 nfvPPA, 14 lvPPA) matched with 15 AD and 14 healthy controls.
• All participants underwent an assessment of general cognition, emotion processing and annual MRI for 1-5 years.
• Within and between-group patterns of cortical thickness and associations with cognitive task performance were examined at baseline and over time.
• Longitudinal analyses were carried out using spatiotemporal Linear Mixed Models.

Conclusions
• Despite similar language profiles at presentation, nfvPPA and lvPPA divergent clinical and neural courses.
• Although both nfvPPA and lvPPA showed decline in cognitive ability, this was greater in lvPPA.
• Additionally, nfvPPA and lvPPA showed deficits in emotion processing compared to AD.
• These clinical changes mapped to divergent patterns of progressive atrophy.
• These contrasting clinical and neuroimaging features inform the characterisation and prognosis in of nfvPPA and lvPPA