



# Hugo Botha

ASSISTANT PROFESSOR

Department of Neurology, Mayo Clinic

✉ botha.hugo@mayo.edu | 🏠 www.github.io/HugoBothaMD | 🐦 HugoBothaMD

## Research Interests

Neurodegenerative disease, Neuroimaging, Machine learning, Bayesian statistics

## Education

### Mayo Clinic

CLINICIAN INVESTIGATOR PROGRAM, DEPARTMENT OF RADIOLOGY

Rochester, MN, USA

07/2017-06/2019

### Mayo Clinic

BEHAVIORAL NEUROLOGY FELLOWSHIP, DEPARTMENT OF NEUROLOGY

Rochester, MN, USA

07/2016-06/2017

### Mayo Clinic

NEUROLOGY RESIDENCY, DEPARTMENT OF NEUROLOGY

Rochester, MN, USA

07/2012-06/2016

### University of Stellenbosch

BACHELOR OF MEDICINE BACHELOR OF SURGERY, (MBChB)

Cape Town, WC, SA

01/2006-12/2011

## Awards

### Mayo Brother's Fellowship Award

MAYO CLINIC

2016

## Research funding

## Publications

### PUBLISHED

1. **Botha** H, Carr J. Attention and visual dysfunction in Parkinson's disease. *Parkinsonism & Related Disorders*. 2012;18(6):742–7.
2. Schalkwyk G van, **Botha** H, Seedat S. Comparison of 2 dementia screeners, the test your memory test and the mini-mental state examination, in a primary care setting. *Journal of geriatric psychiatry and neurology*. 2012;25(2):85–8.
3. **Botha** H, Ackerman C, Candy S, Carr JA, Griffith-Richards S, Bateman KJ. Reliability and diagnostic performance of ct imaging criteria in the diagnosis of tuberculous meningitis. *PloS one*. 2012;7(6):e38982.
4. **Botha** H, Schalkwyk GI van, Bezuidenhout J, Van Schalkwyk SC. Discourse of final-year medical students during clinical case presentations. *African Journal of Health Professions Education*. 2011;3(1):3–6.
5. **Botha** H, Whitwell JL, Madhavan A, Senjem ML, Lowe V, Josephs KA. The pimple sign of progressive supranuclear palsy syndrome. *Parkinsonism & related disorders*. 2014;20(2):180–5.
6. Zalewski N, **Botha** H, Whitwell JL, Lowe V, Dickson DW, Josephs KA. FDG-pet in pathologically confirmed spontaneous 4R-tauopathy variants. *Journal of neurology*. 2014;261(4):710–6.
7. **Botha** H, Duffy JR, Strand EA, Machulda MM, Whitwell JL, Josephs KA. Nonverbal oral apraxia in primary progressive aphasia and apraxia of speech. *Neurology*. 2014;82(19):1729–35.
8. Martinez-Thompson JM, **Botha** H, Katz BS. Clinical reasoning: A woman with subacute progressive confusion and gait instability. *Neurology*. 2014;83(5):e62–7.
9. **Botha** H, Moore SA, Rabinstein AA. Teaching neuroimages: Massive cerebral edema after ct myelography an optical illusion. *Neurology*. 2014;83(18):e170–0.
10. **Botha** H, Duffy JR, Whitwell JL, Strand EA, Machulda MM, Schwarz CG, et al. Classification and clinicoradiologic features of primary progressive aphasia (ppa) and apraxia of speech. *Cortex*. 2015;69:220–36.

11. **Botha** H, Boeve BF, Jones LK, Parisi JE, Klaas JP. A young man with progressive language difficulty and early-onset dementia. *JAMA neurology*. 2016;73(5):595–9.
12. Cohen A, Kenney-Jung D, **Botha** H, Tillema J-M. NeuroDebian virtual machine deployment facilitates trainee-driven bedside neuroimaging research. *Journal of Child Neurology*. 2017;32(1):29–34.
13. Yost MD, Chou CZ, **Botha** H, Block MS, Liewluck T. Facial diplegia after pembrolizumab treatment. *Muscle & nerve*. 2017;56(3):E20–1.
14. Jones DT, Graff-Radford J, Lowe VJ, Wiste HJ, Gunter JL, Senjem ML, et al. Tau, amyloid, and cascading network failure across the alzheimer's disease spectrum. *Cortex*. 2017;97:143–59.
15. **Botha** H, Finch NA, Gavrilova RH, Machulda MM, Fields JA, Lowe VJ, et al. Novel grn mutation presenting as an aphasic dementia and evolving into corticobasal syndrome. *Neurology Genetics*. 2017;3(6):e201.
16. **Botha** H, Mantyh WG, Graff-Radford J, Machulda MM, Przybelski SA, Wiste HJ, et al. Tau-negative amnesic dementia masquerading as alzheimer disease dementia. *Neurology*. 2018;90(11):e940–6.
17. Josephs KA, Martin PR, **Botha** H, Schwarz CG, Duffy JR, Clark HM, et al. [18F] av-1451 tau-pet and primary progressive aphasia. *Annals of neurology*. 2018;83(3):599–611.
18. Townley RA, **Botha** H, Graff-Radford J, Boeve BF, Petersen RC, Senjem ML, et al. 18F-fdg pet-ct pattern in idiopathic normal pressure hydrocephalus. *NeuroImage: Clinical*. 2018;18:897–902.
19. **Botha** H, Utianski RL, Whitwell JL, Duffy JR, Clark HM, Strand EA, et al. Disrupted functional connectivity in primary progressive apraxia of speech. *NeuroImage: Clinical*. 2018;18:617–29.
20. **Botha** H, Mantyh WG, Murray ME, Knopman DS, Przybelski SA, Wiste HJ, et al. FDG-pet in tau-negative amnesic dementia resembles that of autopsy-proven hippocampal sclerosis. *Brain*. 2018;141(4):1201–17.
21. **Botha** H, Duffy JR, Whitwell JL, Strand EA, Machulda MM, Spsychalla AJ, et al. Non-right handed primary progressive apraxia of speech. *Journal of the neurological sciences*. 2018;390:246–54.
22. Tetzloff KA, Duffy JR, Strand EA, Machulda MM, Boland SM, Utianski RL, et al. Clinical and imaging progression over 10 years in a patient with primary progressive apraxia of speech and autopsy-confirmed corticobasal degeneration. *Neurocase*. 2018;24(2):111–20.
23. **Botha** H, Jones DT. Functional connectivity in dementia. In: *The neuroimaging of brain diseases*. Springer; 2018. pp. 245–66.
24. Utianski RL, Whitwell JL, Schwarz CG, Duffy JR, **Botha** H, Clark HM, et al. Tau uptake in agrammatic primary progressive aphasia with and without apraxia of speech. *European journal of neurology*. 2018;25(11):1352–7.
25. Utianski RL, Duffy JR, Clark HM, Strand EA, **Botha** H, Schwarz CG, et al. Prosodic and phonetic subtypes of primary progressive apraxia of speech. *Brain and Language*. 2018;184:54–65.
26. Whitwell JL, Tosakulwong N, Schwarz CG, **Botha** H, Senjem ML, Spsychalla AJ, et al. MRI outperforms [18F] av-1451 pet as a longitudinal biomarker in progressive supranuclear palsy. *Movement Disorders*. 2019;34(1):105–13.
27. Jones DT, Townley RA, Graff-Radford J, **Botha** H, Knopman DS, Petersen RC, et al. Amyloid-and tau-pet imaging in a familial prion kindred. *Neurology Genetics*. 2018;4(6):e290.
28. Utianski RL, **Botha** H, Duffy JR, Clark HM, Martin PR, Butts AM, et al. Rapid rate on quasi-speech tasks in the semantic variant of primary progressive aphasia: A non-motor phenomenon? *The Journal of the Acoustical Society of America*. 2018;144(6):3364–70.
29. Graff-Radford J, **Botha** H, Rabinstein AA, Gunter JL, Przybelski SA, Lesnick T, et al. Cerebral microbleeds: Prevalence and relationship to amyloid burden. *Neurology*. 2019;92(3):e253–62.
30. Whitwell JL, Martin PR, Duffy JR, Clark HM, Machulda MM, Schwarz CG, et al. The influence of  $\beta$ -amyloid on [18F] av-1451 in semantic variant of primary progressive aphasia. *Neurology*. 2019;92(7):e710–22.
31. **Botha** H, Josephs KA. Primary progressive aphasias and apraxia of speech. *CONTINUUM: Lifelong Learning in Neurology*. 2019;25(1):101–27.
32. Ali F, Martin PR, **Botha** H, Ahlskog JE, Bower JH, Masumoto JY, et al. Sensitivity and specificity of diagnostic criteria for progressive supranuclear palsy. *Movement Disorders*. 2019;
33. Whitwell JL, Stevens CA, Duffy JR, Clark HM, Machulda MM, Strand EA, et al. An evaluation of the progressive supranuclear palsy speech/language variant. *Movement Disorders Clinical Practice*.
34. Tetzloff KA, Duffy JR, Clark HM, Utianski RL, Strand EA, Machulda MM, et al. Progressive agrammatic aphasia without apraxia of speech as a distinct syndrome. *Brain*. 2019;
35. Ali F, **Botha** H, Whitwell JL, Josephs KA. Utility of the movement disorders society criteria for progressive supranuclear palsy in clinical practice. *Movement Disorders Clinical Practice*.
36. Townley RA, Syrjanen JA, **Botha** H, Kremers WK, Aakre JA, Fields JA, et al. Comparison of the short test of mental status and the montreal cognitive assessment across the cognitive spectrum. In: *Mayo clinic proceedings*. Elsevier; 2019.
37. Sintini I, Schwarz CG, Senjem ML, Reid RI, **Botha** H, Ali F, et al. Multimodal neuroimaging relationships in progressive supranuclear palsy. *Parkinsonism & Related Disorders*.

38. Utianski RL, **Botha** H, Martin PR, Schwarz CG, Duffy JR, Clark HM, et al. Clinical and neuroimaging characteristics of clinically unclassifiable primary progressive aphasia. *Brain and language*. 2019;197:104676.
39. Jack CR, Wiste HJ, **Botha** H, Weigand SD, Therneau TM, Knopman DS, et al. The bivariate distribution of amyloid- $\beta$  and tau: Relationship with established neurocognitive clinical syndromes. *Brain*. 2019;
40. Bejanin A, Murray ME, Martin P, **Botha** H, Tosakulwong N, Schwarz CG, et al. Antemortem volume loss mirrors tdp-43 staging in older adults with non-frontotemporal lobar degeneration. *Brain*. 2019;
41. Clark HM, Stierwalt JA, Tosakulwong N, **Botha** H, Ali F, Whitwell JL, et al. Dysphagia in progressive supranuclear palsy. *Dysphagia*. 2019;1–10.
42. Clark HM, Utianski RL, Duffy JR, Strand EA, **Botha** H, Josephs KA, et al. Western aphasia battery–revised profiles in primary progressive aphasia and primary progressive apraxia of speech. *American journal of speech-language pathology*. 2019;1–13.
43. Utianski RL, Martin PR, **Botha** H, Schwarz CG, Duffy JR, Petersen RC, et al. Longitudinal flortaucipir ([18F] av-1451) pet imaging in primary progressive apraxia of speech. *Cortex*. 2019;
44. Whitwell JL, Tosakulwong N, **Botha** H, Ali F, Clark HM, Duffy JR, et al. Brain volume and flortaucipir analysis of progressive supranuclear palsy clinical variants. *NeuroImage: Clinical*. 2019;102152.
45. Whitwell JL, Tosakulwong N, Weigand SD, Graff-Radford J, Duffy JR, Clark HM, et al. Longitudinal amyloid- $\beta$  pet in atypical alzheimer's disease and frontotemporal lobar degeneration. *Journal of Alzheimer's Disease*. 2020;(Preprint):1–13.
46. Townley RA, Graff-Radford J, Mantyh WG, **Botha** H, Polsinelli AJ, Przybelski SA, et al. Progressive dysexecutive syndrome due to alzheimer's disease: A description of 55 cases and comparison to other phenotypes. *Brain Communications*. 2020;
47. Buciuc M, **Botha** H, Murray ME, Schwarz CG, Senjem ML, Jones DT, et al. Utility of fdg-pet in diagnosis of alzheimer-related tdp-43 proteinopathy. *Neurology*. 2020;
48. Utianski RL, **Botha** H, Whitwell JL, Martin PR, Schwarz CG, Duffy JR, et al. Longitudinal flortaucipir ([18F] av-1451) pet uptake in semantic dementia. *Neurobiology of Aging*. 2020;
49. Boes S, **Botha** H, Machulda M, Lowe V, Graff-Radford J, Whitwell JL, et al. Dementia with lewy bodies presenting as logopenic variant primary progressive aphasia. *Neurocase*. 2020;1–5.
50. Utianski RL, Clark HM, Duffy JR, **Botha** H, Whitwell JL, Josephs KA. Communication limitations in patients with progressive apraxia of speech and aphasia. *American Journal of Speech-Language Pathology*. 2020;1–11.
51. Whitwell JL, Martin P, Duffy JR, Clark HM, Utianski RL, **Botha** H, et al. Survival analysis in primary progressive apraxia of speech and agrammatic aphasia. *Neurology: Clinical Practice*. 2020;

IN PRESS

PREPRINT

## Selected Presentations

---

1. **Zhang** H, Anderson NC, Miller KF. Scan-paths of mind-wandering during real-world scene perception. In 2020.
2. **Zhang** H, Qu C, Miller KF, Cortina KS. Reduced re-reading of garden-path jokes during mindless reading. In 2019.
3. **Zhang** H, Miller KF, Cortina KS, Jiang T. Mind-wandering in college classrooms: A mobile eye-tracking study. In 2019.
4. Sun X, Shah P, **Zhang** H. When do students suffer from mind wandering? The role of individual difference and learning context. In 2019.
5. **Zhang** H, Shah P. What can iPhone's screen time tell about your cognitive functioning? In 2019.
6. Fischer A, **Zhang** H. Examining the effect of word predictability during mindless reading. In 2019.
7. Hwang Y-G, **Zhang** H, Miller KF. Eye movements of mind-wandering during scene viewing: Insights from scan-paths. In 2019.
8. **Zhang** H. Mind-wandering: What can we learn from eye-movements? In 2019.
9. **Zhang** H, Miller KF, Sun X. Scan-paths of mind-wandering during video lectures. In 2019.
10. **Zhang** H, Miller KF. How irrelevant speech affects reading: The role of word predictability. In 2018.
11. **Zhang** H, Miller KF, Sun X. The wandering eyes: Mind-wandering during video lectures is associated with oculomotor behaviors. In 2018.
12. Qu C, **Zhang** H. All joking aside: Mind-wandering impairs processing of garden-path jokes. In 2018.
13. **Zhang** H, Miller KF, Cleveland R, Cortina KS. How listening to music affects reading: Evidence from eye tracking. In 2016.
14. **Zhang** H, Cleveland R. How does listening to music affect reading? An eye tracking study. In 2016.

# Teaching Experience

---

## INTERNAL LECTURES

### **EDUC 391: Educational Psychology and Human Development**

09/2017 - 12/2017

COURSE DESIGN; WEEKLY LECTURES; GRADING ASSIGNMENTS AND EXAMS; OFFICE HOURS

## LAY PUBLIC FOCUSED TALKS