Sanjay Manohar MB BChir MA PhD MRCP MBPsS DipLCM

PERSONAL DETAILS

Name:	Sanjay George MANOHAR	Nationality:	British
Address:	Nuffield Dept of Clinical Neurosciences, OX3 9DU	GMC:	6065120
		Telephone:	07788 138892

QUALIFICATIONS

2015	PhD (Cognitive Neurology)	UCL
2006	MRCP (UK)	Royal College of Physicians
2004	Master of Arts	Gonville & Caius College Cambridge University (***Academic Scholarship***)
2003	Medicine (MB, BChir)	
2000	BA Hons. **Psychology & Physiology**	

EMPLOYMENT

Current Positions

Sep 2017 –	Associate Professor	University of Oxford
Aug 2014 –	Honorary Consultant Neurologist (8h/week clinical work)	John Radcliffe Hospital
Aug 2020 –	AI Consultancy (4h/week)	Solvemed.ai
Jan 2025 –	Divisional Medical Informatics Lead	John Radcliffe Hospital

Previous Employment

Sep 2022 – 2025	Stipendiary Lecturer	New College, Oxford
Apr 2017 –2023	Honorary Senior Research Associate	UCL
Feb 17 – Feb 22	MRC Clinician Scientist Fellowship (intermediate)	Nuffield Department of Clinical Neurosciences, Oxford
Sep 15 – Sep 18	Junior Research Fellow	Lady Margaret Hall, Oxford
May 14 – Feb 16	Clinical Research Fellow	Department of Experimental Psychology, University of Oxford
Aug 07 – May 14	Specialist Registrar in Neurology	Imperial College NHS Trust
May 10 – Aug 13	Wellcome Trust Clinical Research Training Fellowship	Institute of Cognitive Neuroscience, Queen Square, UCL
Feb 07 – May 10	Academic Clinical Fellowship	Cognitive Neurology, Imperial College, London
Feb 03 – Dec 06	Senior House Officer & Pre-registration House Officer	Hammersmith Hospital, Addenbrooke's Hospital, Kings College Hospital

AWARDS AND GRANTS

2026-2029	**MRC research grant** UKRI2552 (PI, **£1,148,663**)
2025-2026	John Fell Fund (Co-applicant, £40,455)
2025-2028	Australian Research Council (co-PI, AU$1,107,087)
2024-2025	Wellcome Centre for Integrative Neuroimaging Seed fund (PI, £15,000)
2025-2028	BBSRC Prosperity Partnership Grant (Industry science lead, **£1,208,691**)
2023-2026	MRC research grant MR/X022080 (co-investigator, £1,119,310)
2022-2025	Host PI for ERC Marie Curie Postdoctoral Fellow (**£198,825**)
2021-2023	**MRC Transition Support Fellowship** (**£288,494**)
2020	Thomas Willis Intermediate Career Research Prize (University of Oxford)
2019-2020	Nuffield Oxford Hospitals Fund (co-applicant, **£9,187**)
2019-2020	Oxford-Berlin seed grant (co-applicant, **£30,000**)
2019-2022	Oxford University Hospitals Local Clinical Excellence Award
2019-2021	Leverhulme Trust Research Grant, (PI, **£102,941**)
2017-2021	**MRC Clinician Scientist Fellowship** MR/P00878/X (**£1,291,319**)
2015	Fellowship of the Software Sustainability Institute (PI, **£3000**)
2015-2018	Junior Research Fellowship at Lady Margaret Hall, Oxford (3 years, **£15,000**)
2015-2016	University Staff Innovation Seed Fund award (**£18,769**)
2013	UCL Queen Square Symposium Prize
2013	Oxford Learning Institute Teaching Award
2013	Oxford University OxTALENT Prize for innovation (2 prizes)
2012	Guarantors of Brain Travel Grant (£1000)
2010	**Wellcome Trust Clinical Training Fellowship** (awarded **£231,790**)
2007	**NIHR Academic Clinical Fellowship** (3 years, value **£30,750**)
1998–1999	Academic Scholarship at Gonville and Caius College (×2)
1997–2000	Choral Scholarship at Gonville & Caius College
2000	Sir Rudolph Peters Prize

RESEARCH

Summary

I am a computational neuroscientist specialising in motivation. I lead a multidisciplinary group of cognitive psychologists, engineers, computer scientists and clinicians. My group aims to understand how the human brain gives us motivation, by modelling cognitive, behavioural and neural data in health, disease and artificial neural networks. I examine similarities between quantities that are encoded in neural networks and corresponding variables coded in the human brain. In the NHS I am an active clinician, as well as medical informatics lead for technology in four hospitals, and as such I am a qualified clinical Safety Officer and familiar with safety policy implementation, risk register and hazard management, and AI software procurement. I also have >5 years' experience consulting in the AI industry.

Books

1. **Manohar SG**, "Adventures of the Brain" (2024) ISBN 1526323338 – Comic book for children aged 8+ introducing cognitive functions of the brain.
2. **Manohar SG**, "Good Coding Practices for Scientists"– **OUP as part of the Oxford Biological Primers series** (*in production*) – What makes good quality code? This book is for data scientists and researchers who learned to code on the job. It aims to promote reproducible, open and modular data analysis in the scientific community.

Peer reviewed publications summary
H-index 45, citations 6814 (Google scholar). Total publications = 139.

86 peer-reviewed publications since 2021, of which 28 were senior author, 5 first author, 7 were in *Brain*, 5 in *Nature Human Behaviour*, 2 in *Current Biology*, 4 in *eLife*, 5 in *Cortex*, 2 in *PNAS*, and others in *Lancet Psychiatry* and *JAMA Neurology*.

2026

1. Hirschbichler ST, Lagrata S, Shedd N, Akram H, Schwingenschuh P, Waiss C, Oberndorfer S, Matharu MS, **Manohar SG**, "Stimulation of the human ventral tegmental area increases strategic betting", *Brain* (2026)
   ▶ **The first in-human study to directly stimulate dopaminergic nuclei in a behavioural task.** We showed differences in a reinforcement learning task after causally manipulating the VTA.
2. Al-Diwani A, Theorell J, Zghoul T, Voruganti A, Townsend L, De Giorgi R, Griffin B, Bajorek T, Okai D, Lennox B, Leite MI, Kim C, Coughlin A, Martin K, Glassberg B, Lachner C, Westerbeek N, Bergink V, Thakur K, Yeshokumar AK, Pruss H, Gay G, Finke C, Handel A, **Manohar SG**, Joyce DW, Irani SR, "The distinctive psychopathology of NMDAR-antibody encephalitis compared with primary psychoses: an international multi-centre retrospective phenotypic analysis", *Lancet Psychiatry* (2026)
   ▶ **I led the computational phenotyping strand** that found dynamic evolution between different psychiatric syndromes during the course of this autoimmune neurological disease
3. Tai XY, Zhao S, Liem B, Galovic M, Husain M, Sen A, **Manohar SG**, "The relationship between sleep, cognition and dementia risk in people with focal epilepsy", *Neurology* (2026)
4. Mazor M, Seghezzi S, **Manohar SG**, "Remembering what you did: episodic memory for self-actions", *Neurosci. Biobeh. Rev.* (2026)
5. Zhao S, Ye R, Sen A, Scholl J, Lockwood P, Li M, Karatas KF, Ang YS, Little S, Harmer CJ, He K, Li Q, Wang K, Apps M, **Manohar SG**, Husain M, "On the relationships between apathy, depression and anhedonia", *J. Neurol. Neurosurg. Psychi.* (2026)
6. Tabi Y, Husain M, **Manohar SG**, "Not all misbinding is swapping: Evidence from whole full report in visual short-term memory", *Scientific Reports* (2026)
7. Maramotti R, Parr T, Ballotta D, **Manohar SG**, Zamboni G, Pagnoni G, "Understanding mechanisms of voluntary engagement of mental effort using active inference", *Cog. Aff. Beg. Neurosci.* (2026)
   ▶ **We applied active inference to model motivational control** in the Stroop task. We found that motivation increased the value of correct actions, but did not increase the inhibition of incorrect actions.
8. Zhao S, Parr T, Udale R, Klar V, Jones G, Scholz A, Toniolo S, **Manohar SG**, Husain M, "Transsaccadic working memory in healthy ageing and neurodegenerative disease", *eLife* (2026)
9. Zhao S, Ye R, Tang QY, Attaallah B, Toniolo S, Saleh Y, Rouse MA, Garrard P, Broulidakis MJ, Thompson S, **Manohar SG**, Irani S ,Ang YS, Lockwood P, Apps M, Hu P, Wang K, Rowe JB, Le Heron C, Husain M, "The social dimension of apathy: evidence for a distinct domain from 11,243 individuals across health and neurocognitive disorders", *Transl. psychiatry* (2026)
10. Morris LA, Horne KL, Paermentier L, Buchanan C, Myall D, **Manohar SG**, Apps M, Roxburgh R, Anderson T, Husain M, Le Heron C, "Decision context and neurobehavioural disturbance in Huntington's disease", *Cog. Aff. Beh. Neurosci.* (2026)
11. Klein A, Hong S, Kim A, Chib V, **Manohar SG**, Husain M, Gold HM, Culbreth AJ, "Examining effects of effort and reward magnitude on effort-cost decision-making in people with major depressive disorder", *Cog. Aff. Beh. Neurosci.* 2026

12. Zhao S, Toniolo S, Tang QY, Scholcz A, Ganse-Dumrath A, Gendarini C, Broulidakis MJ, Thompson S, **Manohar SG**, Husain M, "Remote digital cognitive assessment for aging and dementia using the Oxford cognitive testing portal OCTAL", *npj Digital Medicine* (2026)

2025

13. Holton E, van Opheusden B, Grohn J, Ward H, Grogan J, Lockwood P, Ma I, Ma WJ, **Manohar SG**, "Disentangling the component processes in complex planning impairments following ventromedial prefrontal lesions", *J Neurosci* (2025)
▶ **How do frontal lesions disrupt planning?** In a task where people had to plan ahead to place counters in a board game, we fitted a Monte Carlo tree search model of planning to patients with medial prefrontal cortex lesions. We found that they used good planning rules, but did not plan as far ahead.

14. Le Heron C, Morris LA, **Manohar SG**, "Understanding disrupted motivation in Parkinson's disease through a value-based decision-making lens", *Trends in Neurosciences* (2025)
▶ **Opinion and new framework for dimensions of apathy.** I proposed that many dimensions of motivation Parkinson's disease, from arousal through to energization, can be linked in a quantitative computatiojnal framework.

15. Hu M, Coma AQ, Rowe JB, Zerenner T, Church A, Fumi R, Constantini A, Jabbari E, Jensen MT, Gerhard A, Pavese N, Kobylecki C, Leigh PN, Koychev I, Morris H, **Manohar SG.** "Cognitive and neuropsychiatric profiles distinguish atypical parkinsonian syndromes", *Brain* (2025)
▶ **Combining two large cohorts, we found distinct neuropsychological patterns in four "Parkinson's plus" syndromes that are difficult to distinguish in clinic**. Paper has reached news outlets and features an online clinical tool to help classify patients.

16. Shibata K, Chen C, Tai XY, **Manohar SG**, Husain M, "Impact of APOE, Klotho and sex on cognitive decline with ageing", *PNAS* (2025)

17. Gueguen M, Cutler J, Drew D, Apps MAJ, Jeyaretna DS, Husain M, **Manohar SG**, Lockwood PL, "Ventromedial prefrontal cortex lesions disrupt learning to reward others," *Brain* (2025)

18. Parr T, Oswal A, **Manohar SG**, "Inferring when to move", *Neurosci. Biobeh. Rev* (2025)
▶ **How can a neural network determine the right time to act?** We develop a general method that uses clock-like dynamics at inference time to generate flexibly-timed actions.

19. Sadnicka A, Strudwick AM, Grogan JP, **Manohar SG**, Nielsen G, "Going 'meta': a systemic review of metacognition and functional neurological disorder", *Brain Communications* (2025)

20. Toniolo S, Attaallah B, Maio MR, Tabi YA, Slavkova E, Klar V, Saleh Y, Idris M, Turner V, Preul C, Srowig A, Butler C, Thompson S, **Manohar SG**, Finke K, Husain M, "Performance and validation of a digital memory test across the Alzheimer's disease continuum", *Brain Communications* (2025)

21. Su Z, Garvert M, Zhang L, Vogel TA, Cutler J, Husain M, **Manohar SG**, Lockwood PL, "Dorsomedial and ventromedial prefrontal cortex lesions differentially impact social influence and temporal discounting", *PLoS Biology* (2025)

22. Parr T, **Manohar SG**, "Constrained confabulation: Comment on 'The paradox of the self-studying brain'", *Physics of Life Rev* (2025)

23. Harmson O, Grennan I, Perry B, Toth R, McNamara CG, Denison T, Cagnan H, **Manohar SG**, Walton ME, Sharott A. "Multi-level encoding of reward, effort and choice across the frontal cortex and basal ganglia during cost-benefit decision-making", *Cell Reports* (2025)

24. Morris LA, **Manohar SG**, Horne KL, Paermentier L, Buchanan CM, MacAskill MJ, Myall DJ, Husain M, Roxurgh R, Anderson TJ, Le Heron CJ, "Goal-directedness deficit in Huntington's disease", *Cog. & Aff. Beh. Neurocsi.* (2025)

25. Dawidziuk A, Butters E, Lindegger DJ, Foubister C, Chrost H, Wlodarski M, Grogan J, Rowicka PA, Bremner F, **Manohar SG**, "Can the pupillary light reflex and pupillary unrest be used as biomarkers of Parkinson's disease? A systematic review and meta-analysis", *Diagnostics* (2025)
26. Toniolo S, Udale R, Klar VS, Maio MR, Attaallah B, Tofaris GK, Hu MT, **Manohar SG**, Husain M, "Working memory filtering at encoding and maintenance in healthy ageing, Alzheimer's and Parkinson's disease", *Scientific Reports* (2025)
27. Tai XY, Toniolo S, Llewellyn DJ, Van Duijn CM, Husain M, **Manohar SG**, "Detection of cognitive deficits years prior to clinical diagnosis across neurological conditions", *Brain Communications* (2025)
28. Al Diwani A, Theorell J, Zghoul T, Voruganti A, Townsend L, De Giorgi R, Griffin B, Bajorek T, Okai D, Lennox B, Leite MI, Kim C, Coughlin A, Martin K, … Finke C, Handel A, **Manohar SG**, Joyce D, Irani SR. "The distinctive psychopathology of NMDAR-antibody encephalitis compared with primary psychoses: an international multicentre retrospective phenotypic analysis", *Lancet Psychiatry* (2026)
29. Valton V, Mkrtchian A, Moses Payne M, Gray A, Kieslich K, Van Urk S, Samborska V, Halhakoon D, **Manohar SG**, Dayan P, Husain M, Roiser JP, "A computational approach to understanding effort-based decision-making in depression", *Psychological Medicine* (2025)
30. Zhao S, Scholcz A, Rouse MA, Klar VS, Ganse-Dumrash A, Toniolo S, Broulidakis MJ, Lambon Ralph MA, Rowe JB, Garrard P, Thompson S, Irani SR, **Manohar SG**, Husain M, "Self-versus caregiver-reported apathy across neurological disorders", *Brain Comms.* (2025)

2024

31. Morris LA, Horne KL, **Manohar SG**, Parmentier L, Buchanan C, MacAskill M, Myall D, Roxburgh R, Anderson T, Le Heron, C, "Disrupted time perception underlies motivational disturbances in Huntungton's disease", *Timing & Time Perception* (2024)
32. Grogan JP, Raemaekers M, van Swieten M, Green A, Gillies MJ, **Manohar SG**, "Muscarinic receptors mediate motivation via preparatory neural activity in humans", *eLife* (2024)
    ▶ **First-in-human demonstration that muscarinic drugs can alter motivation.**
33. Dor A, Harrison C, Irani S, Al Diwani A, Grogan J, **Manohar SG**, "N-methyl-D-aspartate receptor-antibody encephalitis impairs maintenance of attention to items in working memory"", *J. Neurosci.* (2023)
    ▶ **We studied a rare encephalitis with antibodies against NMDA receptors**, and demonstrate specific deficits in binding and selection of items in working memory, in line with a recent computational model of memory**.**
34. Wang Y, Lak A, **Manohar SG**, Bogacz R, "Dopamine encoding of novelty facilitates efficient uncertainty-driven exploration", *Plos Comp Biol*, 20:4 e1011516 (2024)
35. Lockwood PL, Cutler J, Drew D, Abdurahman A, Jeyaretna DS, Apps MAJ, Husain M, **Manohar SG**, "Human ventromedial prefrontal cortex is necessary for prosocial motivation", *Nature Human Behaviour* (2024)
36. Au-Yeung SK, Halahakoon DC, Kaltenbock A, Cowen P, Browning M*, **Manohar SG***, "The effects of pramipexole on motivational vigour during a saccade task", *Psychopharmacology* (2024)
37. Bogucki A, John I, Zinkiewicz L, Jachura M, Jaworski D, Suwala K, Chrost H, Wlodarski M, Kaluzny J, Campbell D, Bakken P, Pandya S, Chrapkiewicz R, **Manohar SG**, "Machine learning approach for ambient-light-corrected parameters and the Pupil Reactivity score in smartphone-based pupillometry", *Frontiers in Neurology* (2024)
    ▶ **I led the development of an AI pupillometer running on iPhone**, commercially deployed in intensive care units in the USA.

38. Toniolo S, Zhao S, Scholcz A, Manei B, Ganse-Dumrath A, Heslegrave AJ, Thompson S, **Manohar SG**, Zetterberg H, Husain M, "Relationship of plasma biomarkers to digital cognitive tests in Alzheimer's disease", *Alzheimers & Dementia* (2024)

39. Attallah B, Petitet P, Zambellas R, Toniolo S, Maio MR, Ganse-Dumrath A, Irani S, **Manohar SG**, Husain M, "The role of the human hippocampus in decision-making under uncertainty" *Nature Hum. Beh.* (2024)

40. Holton E, Grohn J, WardH, **Manohar SG***, O'Reilly JX*, Kolling N*, "Goal commitment is supported by vmPFC through selective attention", *Nature Hum. Beh.* (2024)
▶ I led the patient component (joint senior author) in this multimodal lesion and fMRI study to demonstrate brain areas that causally contribute to goal commitment

41. Shibata K, Klar V, Fallon SJ, **Manohar SG**, "Working memory as a representational template for reinforcement learning" *Sci Rep.* (2024)

42. Balaet M, Alhajraf F, Zerenner T, Wlech J, Razzaque J, Lo C, Giunchiglia V, Trender W, Lerede A, Hellyer P, **Manohar SG**, Malhotra P, Hu M, Hampshire A, "Online cognitive monitoring technology for people with Parkinson's disease and REM sleep behavioural disorder", *npj Digital Medicine* (2024)

43. **Manohar SG**, "Motivation in Parkinson's disease: apathetic before you know it", *Brain* (2024)

44. Binks SNM, Al-Diwani A, Handel AE, Bajorek T, **Manohar SG**, Husain M, Irani S, Koychev I, "LGI1-antibody encephalitis: how to approach this highly treatable dementia mimic in memory and mental health services", *Brit J. Psychiatry* (2024)

45. Culbreth AJ, Chib V, Riaz SS, **Manohar SG**, Husain M, Waltz JA, Gold JM, "Increased sensitivity to effort and perception of effort in people with schizophrenia", *Schizophrenia Bull.* (2024)

46. Su Z, Garvert M, Zhang L, **Manohar SG**, Vogel TA, Thomas L, Balsters J, Husain M, Apps M, Lockwood P, "Older adults are relatively more susceptible to impulsive social influence than younger adults" *Communications Psychology* (2024)

47. Morris L, Horne K, **Manohar SG**, Paermentier L, Buchanan C, MacAskill M, Myall D, Apps M, Roxburgh R, Anderson T, Husain M, Le Heron C, "Decision cost hypersensitivity underlies Huntington's disease apathy", *Brain* (2024)

48. Sen A, Toniolo S, Tai XY, Akinola M, Symmonds M, Mura S, Galloway J, Hallam A, Chan J, Koychev I, Butler C, Geddes J, Jones G, Tabi Y, Maio R, Frangou E, Love S, Thompson S, Putt R, **Manohar SG**, McShane R, Husain M, "Safety, tolerability and efficacy outcomes of the investigation of levetiracetam in Alzheimer's disease study", *Epilepsia Open* (2024)

2023

49. van Swieten M, Bogacz R, **Manohar SG**, "Gambling on an empty stomach", *Brain and Behaviour* (2023)

50. Shibata K, Attaallah B, Tai XY, Trender W, Hellyer PJ, Hampshire A, Irani SR, **Manohar SG,** Husain M, "Remote digital cognitive assessment reveals cognitive deficits related to hippocampal atrophy in autoimmune limbic encephalitis", *eClinicalMedicine* (2023)

51. Tai XY, Torzillo E, Lyall D, Sen A, **Manohar SG**, Husain M, "Association of dementia risk with focal epilepsy and modifiable cardiovascular risk factors" *JAMA Neurology* (2023)

52. Nobis L, Maio M, Saleh M, **Manohar SG**, Kienast A, McGann E, Husain M, "Role of serotonin in modulation of decision-making in Parkinson's disease", *J. Psychopharm.* (2023)

53. Fallon SJ, van Rhee C, Kienast A, **Manohar SG**, Husain M, "Mechanisms underlying corruption of working memory in Parkinson's disease", *J. Neuropsychology* (2023)

54. Dallery R, Saleh Y, **Manohar SG**, Husain M, "Persistence of effort in apathy", *Revue Neurologique* (2023)
55. Saleh Y, Jarratt-Barnham I, Petitet P, Fernandez-Egea E, **Manohar SG**, Husain M, "Negative symptoms and cognitive impairment are associated with distinct motivational deficits in treatment resistant schizophrenia", *Molecular Psychiatry* (2023)
56. Barber TR, Muhammed K, Drew D, Bradley KM, McGowan DR, Klein JC, **Manohar SG**, Hu M, Husain M, "Reward insensitivity is associated with dopaminergic deficit in REM sleep behaviour disorder", *Brain* (2023)
57. Fallon SJ, Plant O, Tabi YA, **Manohar SG**, Husain M, "Effects of cholinesterase inhibition on attention and working memory in Lewy body dementias", *Brain Comms.* (2023)

2022

58. Grogan J, Randhawa G, Kim M, **Manohar SG**, "Motivation improves working memory by two processes" *Cognitive Psychology* (2022)
    ▶ **Does working memory capacity depend on motivation?** In a series of 5 experiments we confirm that it is not. While we can perform better when incentivised to do so, this is due to strategic slowing of item selection, rather than increased memory capacity.
59. Atilgan H, Doody M, Oliver D, McGrath TM, Shelton AM, Echeverria-Altuna I, Tracey I, Vyazovskiy VV, **Manohar SG**, Packer AM, "Human lesions and animal studies link the claustrum to perception, salience, sleep and pain." *Brain* (2022)
60. Bocincova A, Buschman T, Stokes M, **Manohar SG**, "Neural signature of flexible coding in prefrontal cortex", *PNAS* (2022)
    ▶ **We developed a new trial triplet decoding method** which demonstrated rapid changes in neural selectivity in primate prefrontal neurons. The findings are consistent with my previously published predictions for Hebbian plasticity.
61. **Manohar SG**, "Quiet trajectories as neural building blocks", *J. Cogn. Neurosci.* (2022)
    ▶ **A theoretical perspective on how to draw inferences about "activity-silent" coding**
62. Hirschbichler ST., Rothwell JC, **Manohar SG**, "Dopamine increases risky choice while D2 blockade shortens decision time", *Exp. Brain Res.* (2022)
63. Printzlau F, Myers N, **Manohar SG**, Stokes M, "Neural reinstatement tracks spread of attention between object features in working memory" *J. Cogn. Neurosci.* (2022)
64. Khalighinejad N, **Manohar SG**, Husain M, Rushworth MFS, "Complementary roles of cholinergic and serotonergic systems in decision about when to act" *Current Biology* 32:5 (2022)
65. Tai XY, Chen C, **Manohar SG**, Husain M, "Impact of sleep duration on executive function and brain structure" *Communications Biology* (2022)

    ▶ **UK Biobank study of N > 37,000 brains highlighting specific regions associated with abrnormal sleep patterns and their relation to cognitive impairment**
66. Moeller M, **Manohar SG**, Bogacz R, "Uncertainty–guided learning with scaled prediction errors in the basal ganglia" *Plos Comp Biol* (2022)
67. Grima LL, Panayi MC, Harmson O, Syed E, **Manohar SG**, Husain M, Walton ME. "Nucleus accumbens dopamine D1-receptors regulate and focus transitions to reward-seeking action", *Neuropsychopharmacology* (2022)
68. van der Plas T, Vogels T, **Manohar SG**, "Predictive learning enables neural networks to learn complex working memory tasks" *Conf. Lifelong Learning Agents* (2022)
    ▶ **RNNs can be trained to hold information over time, but at a computational cost.** When resources are constrained, training fails unless the curriculum includes a simpler future-prediction task. This prediction task "catalyses" working memory formation.

69. Petitet P, Zhao S, Drew D, **Manohar SG**, Husain M, "Dissociable behavioural signatures of co-existing impulsivity and apathy in decision-making", *Scientific Reports* (2022)

70. Thompson AG, Gray E, Verber N, Bobeva Y, Lombardi V, Shepheard S, Yildiz O, Feneberg E, Farrimond L, Dharmadasa T, Gray P, Edmond E, Scaber J, Gagliardi D, Kirby J, Jenkins T, Fratta P, McDermott C, **Manohar SG**, Talbot K, Malaspina A, Shaw P, Turner M, "Multicentre appraisal of ALS fluid biomarkers shows primacy of blood neurofilament light chain", *Brain Comms* (2022)

71. Attaallah B, Petitet P, Slavkova E, Turner V, Saleh Y, **Manohar SG**, Husain M, "Hyperreactivity to uncertainty is a key feature of subjective cognitive impairment", *eLife* (2022)

72. Zhao S, Shibata K, Hellyer P, Trender W, **Manohar SG**, Hampshire A, Husain M, "Rapid vigilance and episodic memory decrements in COVID-19 survivors", *Brain Comms* (2022)
▶ For 9 months after COVID, sustained attention drops even in people who report no cognitive symptoms or long COVID.

73. Tabi Y, Maio MR, Attallah B, Dickson S, Drew D, Idris MI, Kienast A, Klar V, Nobis L, Plant O, Saleh Y, Sandhu T, Slavkova E, Toniolo S, Zokaei N, **Manohar SG**, Husain M, "Vividness of visual imagery questionnaire scores and their relationship to visual short-term memory performance", *Cortex* (2022)

74. Udale R, Tran MT, **Manohar SG,** Husain M, "Dynamic in-flight shifts of working memory resources across saccades", *J Exp Psychol: Hum Perc. Perf* .48:1 (2022)

2021

75. Doody M, van Swieten M, **Manohar SG**, "Model-based learning retrospectively updates model-free values" *Scientific Reports* (2021)
▶ **Model-based behaviour can arise in two ways:** from planning ahead at the time we make a decision, or from retrospective 'reverse planning' at the time of reward. By harnessing subjective value ratings, we find that many people use reverse planning.

76. van Swieten M, Bogacz R, **Manohar SG**, "Hunger improves reinforcement-driven but not planned action" *Cog. Aff. Behav. Neurosci.* (2021)
▶ **When people are hungry, they learn faster but do not plan more.** The Psychonomics Society also released a featured article commentary on it, "Grab a Snickers: Hunger leads to reflexive decision-making".

77. Muhammed K, Ben Yehuda M, Drew D, **Manohar SG**, Husain M, "Reward sensitivity and action in Parkinson's disease patients with and without apathy", *Brain Comms.* (2021)

78. Moeller M, Grohn J, **Manohar SG***, Bogacz R*, "A behavioral association between prediction errors and risk-seeking" [**Joint senior author**] *PLoS Comp. Biol* (2021)

79. Veldsman M, Nobis L, Almagro FA, Smith S, **Manohar SG**, Husain M, "The human hippocampus and its subfield volume across age, sex and APOE e4 status" *Brain Communications* (2021)
▶ We show that CA1 and CA4 are specifically atrophied in asymptomatic carriers of the ApoE4/E4 gene, in a Biobank sample of N>36,000 brain MRIs.

80. **Manohar SG**, Lockwood P, Drew D, Fallon SJ, Chong, TJ, Jeyaretna DS, Baker I, Husain M, "Reduced decision bias following ventromedial prefrontal cortex damage", *Cortex* (2021)
▶ **Evidence that prefrontal regions actively generate cognitive biases**

81. Saleh Y, Le Heron C, Veldsman M, Drew D, Plant O, Schulz U, Sen A, **Manohar SG**, Rothwell PM, Husain M, "Distinct white matter tract changes associated with apathy in cerebrovascular small vessel disease" *Brain* (2021)

82. Pettitet P, Scholl J, Attallah B, Drew D, **Manohar SG**, Husain M, "The relationship between apathy and impusivity in large population samples", *Scientific Reports* (2021)

83. Petitet P, Attaallah B, **Manohar SG**, Husain M, "The computational cost of active information sampling prior to decision making under uncertainty", *Nature Human Behaviour* (2021)

84. Tabi Y, Udale R, Fallon SJ, **Manohar SG,** Husain M, "Impact of processing demands at encoding, maintenance and retrieval in visual working memory", *Cognition* (2021)

85. Sen A, Akinola M, Tai XY, Symmonds M, Jones G, Mura S, Galloway J, Hallam A, Chan JY, Koychev I, Bitler C, Geddes J, Putt R, Thompson S, **Manohar SG**, Frangou E, Love S, McShane R, Husain M, "An investigation of levetiracetam in Alzheimer's disease (ILiAD) *Trials* (2021)

86. Muller T, Klein Flugge M, **Manohar SG**, Husain M, Apps MAJ, "Neural and computational mechanisms of momentary fatigue and persistence in effort-based choice", *Nature Comms.* (2021)

2020

87. Drew D, Muhammed K, Baig F, Kelly MJ, Saleh Y, Soundarajan R, Hu M, Okai D, **Manohar SG*,** Husain M*, "Dopamine and reward hypersensitivity in Parkinson's disease with impulse control disorder", *Brain* (2020)
▶ **Predicting impulse control disorders by pupillometry [Shared senior authorship].** In this clinical study, we show that pupil dilatation to reward could predict who will develop impulse-control disorders many years later.

88. Grogan J, Sandhu T, Hu M, **Manohar SG**, "Dopamine promotes instrumental motivation, but reduces reward-related vigour", *eLife* (2020)
▶ **Dopamine has opposite effects on two types of motivation in PD.** We found that medications reduce the general energization of actions by expecting reward, but accentuate selective instrumental motivation.

89. Zokaei N, Grogan JP, Fallon SJ, Slavkova E, Hadida J, **Manohar SG**, Nobre AC, Husain M, "Short-term memory advantage for brief durations in human ApoE e4 carriers", *Scientific Reports* (2020)

90. Veldsman M, Tai XY, **Manohar SG**, Husain M, "The impact of cerebrovascular risk factors on frontoparietal network integrity and executive function in healthy ageing" *Nature Communications* (2020)
▶ **A N>22,000 Biobank study of how brain networks are impacted by high blood pressure.**

91. Zokaei N, Sillence A, Kienast A, Drew D, Plant O, Slavkova E, **Manohar SG**, Husain M, "Different patterns of short-term memory deficit in Alzheimer's disease, Parkinson's disease and subjective cognitive impairment", *Cortex* (2020)
▶ **Specific cognitive patterns distinguish between neurodegenerative diseases and healthy ageing**

92. Bocincova A, Olivers CNL, Stokes MG, **Manohar SG**, "A common neural network architecture for visual search and working memory" *Visual Cognition* (2020)

93. Grogan JP, Fallon SJ, Zokaei N, Husain M, Coulthard EJ, **Manohar SG**, "A new toolbox to distinguish the sources of spatial memory error" *J Vision* (2020)

94. Codol O, Holland PJ, **Manohar SG**, Galea J, "Reward-based improvements in motor control are driven by multiple error-reducing mechanisms" *J Neurosci*. (2020)
▶ Collaboration with Birmingham to test my model of motivational costs.

95. Sadnicka A, Daum C, Meppelink A, **Manohar SG**, Edwards M, "Reduced drift rate: a biomarker of impaired information processing in functional disorders", *Brain* (2020)
▶ **Abnormal evidence accumulation in psychogenic motor disorders**. Collaboration with St George's, applying psychophysical modelling to functional neurological disorders, providing a common mechanistic marker. I was the direct supervisor.

96. Muhammed K, Dalmaijer E, **Manohar SG**, Husain M, Voluntary modulation of saccadic peak velocity associated with individual differences in motivation, *Cortex* (2020)

2019

97. Nobis L, **Manohar SG**, Smith SM, Alfaro-Almagro F, Jenkinson M, Mackay CE, Husain M, Hippocampal volume across age: Nomograms derived from over 19,700 people in UK Biobank, *Neuroimage: Clinical* (2019)
▶ **Open online tool with normalised quantiles for brain volume**

98. Al Diwani A, Handel A, Lennox B, Okai D, **Manohar SG**, Irani S, The psychopathology of NMDAR-antibody encephalitis in adults, *Lancet Psychiatry* (2019)
▶ **Computational phenotyping in neuropsychiatry.** I applied computational phenotyping for diagnosing a recently-described treatable neuro-immune disease, collaborating with psychiatry. Using a 50-dimensional clinical fingerprint, I showed that NMDAR-encephalitis manifests a unique neuropsychiatric profile compared to non-organic psychoses. It achieved impact through citations in a clinical update (Dalmau 2019), an international consensus (Pollak 2020), consensus-based practice recommendations (Zuliani 2019), and evidence-based guidelines for treatment (Barnes 2020). IF 18.3

99. **Manohar SG**, Zokaei N, Fallon SJ, Vogels T, Husain M, "Neural mechanisms of attending to items in working memory", *Neuroscience & Biobehavioral Reviews* (2019)
▶ **I devised the first neural model of how we shift our attention between items in memory.** The model unites two disparate views of short-term memory. It explains a range of puzzling fMRI, MEG and single-unit data. The surprising new principle here is that neural patterns change their meaning over seconds, calling for re-evaluation of much single-neuron data. This led to invited talks (Zurich, Brown, UCL), formed the basis for a Leverhulme grant and won the Thomas Willis Intermediate Career Research Prize (University of Oxford).

100. Ariga R, Tunnicliffe EM, **Manohar SG**, Mahmod M, Raman B, Piechnik SK, Francis JN, Robson MD, Neubauer S, Watkins H, Identification of Myocardial Disarray in Patients With Hypertrophic Cardiomyopathy and Ventricular Arrhythmias, *J Am Coll Cardiol* 73 (20), 2493-2502 (2019)
▶ **Applying brain imaging methods to cardiology.** Collaborating across departments, I transferred expertise in analysis of brain imaging to assess myocardial disarray, previously only measurable on biopsy or post-mortem. The work has won international prizes, was highlighted in the Editor-in-Chief's Top Picks (Fuster 2019) and European Heart Journal "The year in cardiology" (Pennell 2019), and was cited in a clinical update (Kolentinis et al. 2020). IF 16.8

101. Fallon SJ, Kienast A, Muhammed K, Ang Y, **Manohar SG**, Husain M, "Dopamine D2 receptor stimulation modulates the balance between ignoring and updating according to baseline working memory ability", *J. Psychopharmacol.* (2019)

102. Zokaei N, Board AG, **Manohar SG**, Nobre AC, "Adjusting the aperture of the mind's eye: modulation of the pupillary response by the content of visual working memory", *PNAS* (2019)

103. Tabi Y, Husain M, **Manohar SG**, Recall cues interfere with retrieval from visuospatial working memory, *Brit J Psychol* (2019)

2018

104. Le Heron C, Plant O, **Manohar SG**, Ang YS, Jackson M, Lennox G, Hu MT, Husain M, "Distinct effects of apathy and dopamine on effort-based decision-making in Parkinson's disease", *Brain* 141:5:1455 (2018)

105. Ang YS*, **Manohar SG***, Plant O, Kienast A, LeHeron C, Muhammed K, Husain M, "Dopamine modulates option generation for behavior", *Current Biology* (2018)
▶ **I developed precise measure of our ability to produce new ideas [Shared first authorship].** I devised a carefully controlled task that measures the speed and novelty of generating new ideas, and showed this is under dopaminergic control.

106. **Manohar SG**, Muhammed K, Fallon SJ, Husain M, "Motivation dynamically increases noise resistance by internal feedback", *Neuropsychologia* (2018)

107. Fallon SJ, Drew D, Muhammed K, **Manohar SG**, Husain M, Dopamine guides competition for cognitive control: Common effects of haloperidol on working memory and response conflict, *Cortex* (2018)

108. Fallon SJ, Mattiesing RM, Dolfen N, **Manohar S**, Husain M, "Ignoring versus updating in working memory reveal differential roles of attention and feature binding", *Cortex* (2018)

109. Moradi ZZ, **Manohar SG**, Duta M, Enock F and Humphreys GW, "In-group biases and oculomotor responses: beyond simple approach motivation", *Exp Brain Res* doi:10.1007/s00221-018-5221-7 (2018)

2017

110. **Manohar SG**, Finzi RD, Drew D, Husain M, "Distinct motivational effects of contingent and non-contingent rewards", *Psychological Science* (2017)
▶ **I uncovered a novel distinction between two kinds of motivation.** Rewards that depend on performance have distinct effects from guaranteed rewards. Cited in 3 current opinions reviews. IF 6.1

111. Fallon SJ, Mattiesing RM, Muhammed K, **Manohar S**, Husain M, "Fractionating the Neurocognitive Mechanisms Underlying Working Memory: Independent Effects of Dopamine and Parkinson's Disease", *Cerebral Cortex* 27:12 (2017)

112. Nachev P, Rose GE, Verity DH, **Manohar SG**, MacKenzie K, Adams G, Theodorou M, Pankhurst Q, Kennard C, "Magnetic oculomotor prosthetics for acquired nystagmus", *Ophthalmology* 124:10:1556 (2017)

113. **Manohar SG**, Pertzov Y, Husain M, "Short-term memory for spatial, sequential and duration information", *Curr Op Beh Neurosci* 17:20 (2017)

114. **Manohar SG**, Akam T, "Cortical areas needed for choosing actions based on desires (Commentary)", *Brain* 140:6:1539-42 (2017)

115. Sadnicka A, Daum C, Cordivari C, Bhatia KP, Rothwell JC, **Manohar SG**, Edwards MJ, "Mind the gap: temporal discrimination and dystonia" *Eur J Neurol* (2017) [Joint senior]

116. Koyluoglu OO, Pertzov Y, **Manohar S**, Husain M, Fiete I, "Fundamental bound on the persistence and capacity of short term memory as stored as graded persistent activity", *eLife* 6:e22225 (2017)

117. Pertzov Y, **Manohar SG**, Husain M, "Rapid forgetting results from competition over time between items in visual working memory", *J Exp Psychol: Learn Mem Cogn* 43:4:528 (2017)

2016

118. Muhammed K, **Manohar SG,** Yehuda MB, Chong TTJ, Tofaris G, Lennox G, Bogdanovic M, Hu M, Husain M, "Reward sensitivity deficits modulated by dopamine are associated with apathy in Parkinson's disease", *Brain* (2016)

119. **Manohar SG**, Husain M, "Lesions to human medial prefrontal cortex alter incentivisation by reward" *Cortex* 76:104 (2016)

120. Fallon SJ., Zokaei N., Norbury A., **Manohar SG**., Husain M., "Dopamine alters the fidelity of working memory representations according to attentional demands", *J Cogn Neurosci* (2016)

121. **Manohar SG**, Husain M, "Reduced pupillary reward sensitivity in Parkinson's disease" *Nature Partner Journals Parkinson's Disease* 1:15026 (2016) doi:10.1038/npjparkd.2015.26

122. **Manohar SG**., Husain M., "Working memory for sequences of temporal durations reveals a volatile single-item store", *Frontiers in Psychology* 7 (2016) doi:10.3389/fpsyg.2016.01655

2015 and earlier

123. **Manohar SG**, Chong TJ, Apps MA, Batla A, Stamelou M, Jarman P, Bhatia KP, Husain M, "Reward pays the cost of noise reduction in motor and cognitive control", *Current Biology* 25(13):1707-16 (2015)
▶ **I developed a new computational framework for understanding motivation.** This was the primary output of my PhD thesis, and united the two disparate fields of neuroeconomics and motor control theory. It allows us to predict in which situations reward can drive improved performance, across cognitive and motor tasks.

124. Chong T, Bonnelle V, **Manohar S**, Veromann K, Muhammed K, Tofaris G, Hu M, Husain M, "Dopamine enhances willingness to exert effort for reward in Parkinson's disease", *Cortex* 69:40 (2015)
▶ **A quantitative way to distinguish between effort sensitivity and reward sensitivity.** My quantitative task is now being employed by many groups internationally in psychiatric disease (Jim Gold, Maryland; Paul Krack, Switzerland; Patrick Bach, Mannheim).

125. Bonnelle V, **Manohar S**, Behrens T, Husain M, "Individual differences in premotor brain systems underlie behavioral apathy", *Cerebral Cortex* (2015) doi:10.1093/cercor/bhv247

126. Apps MA, Grima LL, **Manohar S**, Husain M, "The role of cognitive effort in subjective reward devaluation and risky decision-making", *Scientific Reports* 5:16550 (2015)

127. Joseph S, Iverson P, **Manohar S**, Fox Z, Scott SK, Husain M, "Precision of working memory for speech sounds", *Quart. J. Exp. Psychol.* 68:10 (2015)

128. Hayward C, Patel HC, **Manohar SG**, Lyon AR, "Gene therapy for GM1 gangiosidosis: challenges of translational medicine", *Annals of translational medicine* 3:S1 (2015)

129. Zokaei N, Ning S, **Manohar S**, Feredoes E, Husain M, Flexibility of representational states in working memory, *Frontiers in Human Neuroscience* 8 (2014) 10.3389/fnhum.2014.00853

130. Bonnelle V, Veromann K, Burnett S, Lo Sterzo E, **Manohar S**, Husain M, "Characterisation of reward and effort mechanisms of apathy", *J Physiol. Paris* (2014) doi:10.1016/j.jphysparis.2014.04.002

131. **Manohar S**, Husain M, "Attention as foraging for information and reward" *Frontiers in Human Neuroscience* 7:711 (2013)

132. Zokaei N, **Manohar S**, Husain M, Feredoes E, "Causal evidence for a privileged working memory state in early visual cortex" *J Neurosci* 34(1):158-162 (2013)

133. Norbury A, **Manohar S**, Rogers RD, Husain M, "Dopamine modulates risk-taking as a function of baseline sensation-seeking trait" *J Neurosci* 33(32):12982-12986 (2013)

134. Camara E, **Manohar S**, Husain M, "Past rewards capture spatial attention and action choices" *Experimental Brain Research* 230(3):291-300, (2013), doi:10.1007/s00221-013-3654-6

135. **Manohar S**, Bonnelle V, Husain M, "Neurological disorders of attention" in *The Oxford Handbook of Attention*, 1028-1061, Eds. Nobre & Kastner, OUP (2013)

136. Sinha N, **Manohar S**, Husain M, "Impulsivity and apathy in Parkinson's disease" *Journal of Neuropsychology* 7(2):255-283 (2013), doi:10.1111/jnp.12013

137. Adam R, **Manohar S**, "Does reward modulate actions or bias attention?" *J Neurosci* 27(41):10919-10921 (2007), doi:10.1523/jneurosci.2957-07.2007

138. Hubbard EM, **Manohar SG**, & Ramachandran VS, "Contrast affects the strength of synesthetic colors" *Cortex* 42(2):184-94 (2006), doi:10.1016/S0010-9452(08)70343-5

139. Walsh SR, Thomas C, **Manohar S**, Coveney EC, "Early management of atrial fibrillation in general surgical in-patients" *Int J Surg*. 4:115-117 (2006).

Preprints & submitted manuscripts

1. Lin S, **Manohar SG**, "Syntax through rapid synaptic changes", *bioRxiv* (2023)
2. Tai XY, Sen A, Husain M, **Manohar SG**, "Differential effects of aging and epilepsy in discriminating and reactivating memories", *bioRxiv* (2024)
3. Printzlau F, Myers N, Muhle-Karbe P, **Manohar SG**, Stokes MG, "Prospective task knowledge improves working memory-guided behavior", *PsyArXiv* doi:10.31234/osf.io/qhku6 (2019)
4. Udale R, Husain M, **Manohar SG**, "How does working memory store more information at larger set sizes? A composite code model" *PsyArxiv* (2021)
5. Tabi Y, Bocincova A, Husain M, **Manohar SG**, "Recency but not retro-cued shifts of attention protects working memory from interference", (*under review*)
6. Toniolo S, Attaallah B, Broulidakis J, Maio MR, Slavkova E, Dickson S, Plant O, Idris IM, Tabi YA, Butler C, Thompson S, **Manohar SG**, Husain M, Performance at digital testing in Alzheimer's disease is predicted by selective disruption of microstructural integrity, medRxiv (2026)

Technical Skills

Empirical: My group's empirical work spans eye tracking, drug studies, human lesion studies, EEG, MRI, big data including Biobank, and analysis of neural population recordings.

Methods: Statistics (mixed models, MLE, MCMC, Bayesian model selection), Neural networks (rate models, bump attractors, RNN / BPTT, deep convolutional NN, VAE), Dimensionality reduction (PCA, CCA, LASSO, mRMR, MDS, UMAP), classifiers (kernel methods, XGB).

Languages: C, C++, Java, Javascript, Forth, Python, MATLAB, Pascal, 80x86 / 6502 assembler

TEACHING AND LEARNING INNOVATION

2017	**Developed new lecture course** in cognitive neurology, Dept of Psychology, University of Oxford (8 lectures, 6 tutorials, 2 exam papers)
2017	**Developing Learning and Teaching** portfolio of teaching work leading to HEA-approved qualification & AFHEA.
2013 –	**Good Coding Practice for Scientists:** I developed a new course at UCL & Oxford for scientists who write computer code, introducing professional programming concepts and techniques to researchers. I have also given two national seminars.
2012	***Neuroslice***: I wrote an award-winning phone app for **teaching neuroanatomy** through histological slices and MRI scans, with > 40,000 downloads (paid commission from Taylor and Francis publishers)
2002 – 2018	***Human Physiology* Teaching simulator:** for Cambridge University undergraduate Physiology and Medicine curriculum for over 16 years. www.homphysiology.org
Summer 2000	***NeuroLab*** software is sold with the undergraduate textbook: Carpenter, RHS, *Neurophysiology,* Hodder Arnold 2012, ISBN 1444135171 A set of 30 interactive models demonstrating principles of neurophysiology.
2017 – 2020	***NeuroSim***: neurology simulator for teaching functional neuroanatomy, integrated into the Clinical Medicine course at University of Oxford.
2020 – present	***PsychSim:*** I was awarded £9,000 to develop a psychiatry simulator, used for teaching clinical medicine students.

STUDENTS AND THEIR SUCCESS

My passion for teaching and mentoring is driven by seeing my students succeed. Many of my team have gone on to achieve excellence and attain **national and international prizes**:

Eda Mizrak	Postdoc 2022-2026	**2023 APS Rising Star award** 2026 independent MRC project grant
Youssuf Saleh	DPhil 2018-22	**2021 Academic Clinical Fellowhsip** **2020 European Academy of Neurology Trainee Prize** **2020 Royal Society of Medicine Gordon Holmes Prize**
Stephanie Hirschbichler	DPhil 2017-2021	**2022 Wissenschaftspreis, Austrian Parkinson's Society** 2021 Wissenschaftspreis, Austrian Parkinson's Society
Xin You Tai	DPhil 2019-23	2018 Academic Clinical Fellowship 2021 Trinity College Graduate Scholarship **2019-2022 Wellcome Trust Research Training Fellowship**
Kinan Muhammed	DPhil 2016 & Clinical Lecturer 2019	**2019 4-year NIHR-funded Clinical Lecturership** **2018 Mansell Prize in Neurosciences** **2016 Association of British Neurologists Symonds Prize** **2016 European Academy of Neurology First Prize**
Rebecca Dawn Finzi	MSc 2016	Departmental thesis prize and poster prize. 2020 PhD at Stanford
Sofie Procter	BSc 2023	**2024 British Neuropsychological Society Undergraduate Prize**
Younes Tabi	DPhil 2018-2022	Co-supervisor / Masud Husain **Clinician Scientist Award** (Kiel, 2023)
Bahaa Atallah	DPhil 2019-2022	Co-supervisor / Masud Husain **Academic Clinical Fellowship** (Imperial, 2025)
Frida Printzlau	DPhil 2017-2021	Postdoc at University of Toronto
Moritz Moeller	DPhil 2018-2021	Co-supervisor / Rafal Bogacz
Maaike Swieten	DPhil 2017-2021	Co-supervisor / Rafal Bogacz
Tim Sandhu	RA 2019	Funded PhD studentship at Cambridge

RECENT INVITED TALKS

2026	Invited speaker	Donders Centre for Cognitive Neuroimaging, Nijmegen
2026	Invited speaker	British Association of Psychopharmacology summer meeting
2026	Invited speaker	Paris Brain Institute (ICM) International DBS Conference
2026	Keynote speaker	Meeting of the Minds, Imperial College Neuroscience Society
2026	Invited speaker	Department of Psychology, University of Birmingham
2026	Invited speaker	UCL Max Planck Centre
2025	Invited speaker	Brain Conference, London
2025	Keynote speaker	Neuroscience and Neurosurgery Special Interest Group, UK
2025	Keynote speaker	Mind-Machine Symbiosis meeting, University of Essex
2024	Guest speaker	University of Bristol Dept. of Psychological Sciences

2023	Guest speaker	University of Cambridge MRC Cognition and Brain Unit
2023	Guest speaker	Harvard Centre for Brain Sciences Seminars
2022	Invited speaker	Dutch Psychonomic Society (NVP) meeting
2022	Invited plenary	European Workshop on Cognitive Neuropsychology (Italy)
2022	Radio 4 panellist	Documentary on dopamine and anticipation
2021	Invited speaker	Winter Conference on Brain and Cognition (Netherlands)
2021	Guest speaker	Max Planck UCL Centre
2020	Guest speaker	Department of Psychology, University of Leuven
2020	Guest speaker	Department of Psychology, University of Zurich
2019	Invited speaker	Centre for Interdisciplinary Research (Bielefeld, Germany)
2019	Invited speaker	British Psychological Society national meeting
2019	Invited panellist	Control Processes international meeting (Brown, USA)
2019	Invited speaker	Mathematical Neuroethology of Optimal Control meeting (Banff)
2019	Guest speaker	Kolloquium des Allgemeine Psychologie, Giessen (Germany)
2018	Guest speaker	Department of Psychology, University of Bielefeld (Germany)
2018	Guest speaker	British Neuroscience Association Neuroinformatics group
2018	Guest speaker	Imperial College Neurology Grand Round

CERTIFICATIONS AND PROFESSIONAL MEMBERSHIP

2025	Clinical Safety Practitioner certification
2018–	Member of the Academy of Medical Educators **(MAcadMEd)**
2017–	Fellow of the Software Sustainability Institute
2017–	Associate Fellow of the Higher Education Academy (**AFHEA**)
2016	**USMLE** Medical licensing exams for USA.
2016	British Psychological Society accreditation (**MBPsS**)
2013–	Member of the Society for Neuroscience
2014	Certificate of Completion of Specialist Training in Neurology
2012–	Member of the Association of British Neurologists
2006–	Royal College of Physicians **(MRCP)**
2005	Sun Certified Java Programmer

COMMITTEES AND ADVISORY POSITIONS

2025-	Oxford AI Oath panel (https://open-letter-tool.pages.dev/)
2026-	Dementia Theme Lead, Oxford Health Biomedical Research Centre (OHBRC)
2025-	Oxford Centre for Integrative Neuroimaging Translational Advisory Group
2025-	Oxford University Hospitals Digital Clinical Advisory Group
2025-2026	BMJ Neurology Topic editor
2024-	External advisor, Sheffield postgraduate neuroscience programmes
2023-	Oxford Brain Bank review committee
2023-2024	Topic Editor: AI and Telemedicine (Frontiers in Neurology)
2020-2021	Wellcome Trust Neuroscience & Mental Health board
2021-	Consultant for Solvemed (medical tech startup)
2016–2019	Zurich-McGill Grants Review Panel
2017–2021	University IT Innovation Grants Review Panel
2018–	Medical Sciences Interdivisional Research Ethics Committee member
2018–2024	Neurology & Dementia Academic Clinical Fellows recruitment panels
2017–	Deputy Training Programme Director for SHOs in Neurology
2016, 2019	Trust Peer Reviewer (local care quality assurance)

2016–2018 CQC Specialist Advisor (national panel)

LEADERSHIP TRAINING

2024-2025 Inclusive Leadership Programme
2019 Academy of Medical Sciences Mentoring training programme
2014 Imperial College Leadership and Management Course for Clinicians
2013 Leadership & Management: Preparing a Business Case (RSM mini-MBA)
2012 Managing Team and Self (UCL Training for Researchers programme)

EXTRA-CURRICULAR

2024 DipLCM (Diploma of the London College of Music) in Jazz Piano performance
2009–2015 Chantage London Chamber Choir – countertenor and assistant conductor
2010–2012 Conductor of the Queen Square Choir
2015 Arrangement recorded on CD, and another played on Classic FM
2008– Member of the Aristotelian Society
2006 The Holst Singers (London Chamber Choir)
2001 Intermediate Certificate in German
2000 Conductor of Caius College Orchestra
2000 Two compositions performed on Radio 3
1997–2000 Choral scholar of Caius College