Dr. Yali Pan

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Education

2013 – 2018 **PhD in Cognitive Neuroscience**, Institute of Psychology, Chinese Academy of Sciences, China
2009 – 2013 **B.Ed in Applied Psychology,** China Women's University, China

Professional Experience

2024.12 – present | **Visiting Scholar** | Department of Psychiatry, **University of Oxford**
- Co-supervise two postdoctoral researchers with PI
- Collaborate with three research teams at Oxford (Ole Jense, Kate Nation, & Laurence Hunt) to integrate my newly developed research methods (RIFT) into their projects
- Leverage the large language models (LLMs) to understand human language processing, decoding (MEG) brain signal during speech listening and sentence reading.

2024.05 – present | **Leverhulme Early Career Fellow** | Centre for Human Brain Health, **University of Birmingham**
- Lead research on children's reading development using advanced neuroimage techniques, including optically pumped magnetoencephalography (OPM) and magnetoencephalography (MEG).
- Contribute to the setup and optimization of the OPM lab for cognitive neuroscience experiments.
- Deliver lectures for MSc students and conduct lab demonstrations for MSc & undergraduate students.
- Served as key researcher in high-profile projects funded by the Wellcome Trust (£2.6 million, PI: Ole Jensen) and the European Research Council (€1.5 million, PI: Joshua Snell).
- Expand research networks and foster collaborations across UK, USA, China, Netherlands, and Norway.

2025.06 – 07 | **AI Resident** | **The Machine Learning Institute,** London
- Six-week hands-on experience with projects employing deep learning techniques, ranging from Word2Vec to fine-tuning large language models.

2018.08 – 2024.04 | **Postdoc Researcher** | Centre for Human Brain Health**, University of Birmingham**
- Investigated attention mechanisms in adult reading, pioneering novel research methodologies that opens new research directions in the field (has been adopted by 6 international research teams).
- Supervised research projects for 3 PhD students, 3 MSc students, and 5 undergraduates, providing mentorship and guidance on experimental design, data analysis, and scientific writing.

2013.09 – 2018.07 | **Doctoral Researcher** | Institute of Psychology, **Chinese Academy of Sciences**
- Explored the role of neuronal oscillations in working memory, honing robust skills in programming, data analysis, and scientific communication in both verbal and written formats.
- Collaborated with hospitals to collect intracranial EEG (iEEG) data from epilepsy patients.
- Managed lab operations and coordinated research projects within and between institutions as lab manager (2013.05 – 2018.01).

Grants & Awards

Total: > £263,400

2025 Data Science upskilling award, University of Birmingham, UK (£1,000)
2024 Leverhulme Trust Early Career Fellowship, UK (PI: £248,000)
2024 Royal Society International Exchanges Cost Share Programme (NSFC), UK (PI: £12,000)
2022 Winner of the Pump Prime funds at the University of Birmingham, UK (£500)

2021 Best Postdoc Paper at Centre of Human Brain Health, University of Birmingham, UK (£100)
2017 Mingde scholarship, Chinese Academy of Sciences, China (≈ £300)
2013 – 2017 Scholarship for graduates, Chinese Academy of Sciences, China (≈ £300 per year)

Publications

for a full list see google scholar

Major papers in the past five years **corresponding/senior author(*)**

[1] Wang, L., Frisson, S., **Pan, Y. (*),** & Jensen, O. (accepted). Fast hierarchical processing of orthographic and semantic parafoveal information during natural reading. ***Nature Communications*.**
- I'm the corresponding author. Co-supervised the first project of a PhD **student** with the PI, applying Representational Similarity Analysis (RSA) to co-registered MEG and eye-tracking data to decode word representations during reading.

[2] **Pan, Y. (*),** Frisson, S., Federmeier, D. K., Jensen, O. (2024). Early parafoveal semantic integration in natural reading. ***eLife***, 12, RP91327.
- Found that semantic violations occur before direct word fixation using the Rapid Invisible Frequency Tagging (RIFT) method, challenging classic N400 time window for semantic processing.

[3] **Pan, Y. (*),** Popov, T., Frisson, S., & Jensen, O. (2023). Saccades are locked to the phase of alpha oscillations during natural reading. ***PLoS Biology****, 21*(1), e3001968.
- Showed that oculomotor activity in reading is not noise but plays a critical role in word processing by phase-locking to endogenous alpha oscillations. This opens new avenues to understand the functional roles of neuronal oscillations in naturalistic scenarios involving eye movements.

[4] **Pan, Y. (*)**, Frisson, S., & Jensen, O. (2021). Neural evidence for lexical parafoveal processing. ***Nature Communications***, *12*(1), 1-9.
- We propose a new technique, Rapid Invisible Frequency Tagging (RIFT), to measure attention during reading, establishing a novel paradigm for studying attention in active vision.

[5] Jensen, O., **Pan, Y.,** Frisson, S., & Wang, L. (2021). An oscillatory pipelining mechanism supporting previewing during visual exploration and reading. ***Trends in cognitive sciences***, *25*(12), 1033-1044.

[6] Liu, J., Yu, T., Wu, J., **Pan, Y.,** Tan, Z., Liu, R., ... & Wang, L. (2021). Anterior thalamic stimulation improves working memory precision judgments. ***Brain stimulation***, 14(5), 1073-1080.

Pre-prints / under review

[7] **Pan, Y. (*),** Frisson, S., Snell, J., Federmeier, K. D., & Jensen, O. (2025). Parallel and dynamic attention allocation during natural reading. *bioRxiv*. (Under review at ***Nature Communications***):

[8] Naveed, T., Evans, A., Ferrante, O., & **Pan, Y. (*)** (2024). Emotional Content Interacts with Word Frequency During Parafoveal Reading. *psyRxiv,* 2024-10.
- (Under review at ***Cognition***): Supervised two undergraduate **students** on an eye-tracking study. Both students went directly to a Master program at University of Birmingham.

[9] Prigorkina, V., & **Pan, Y. (*).** (2024). How Does Rapid Invisible Frequency Tagging Method Affect Word Processing During Reading. *OSF,* 2024-05.
- (Pre-registered on Open Science Framework (OSF)): Supervised a master's **student** applying distributional analysis to eye movement data. This student got accepted to a fully funded PhD program at Vrije Universiteit Amsterdam.

In preparation

[10] **Pan, Y. (*),** Federmeier D. K., & Jensen, O. Addressing the Serial versus Parallel Reading Debate using Rapid Invisible Frequency Tagging

[11] **Pan, Y. (*)** & Jensen, O. Measuring attention in active vision: the theory and implementation of Rapid Invisible Frequency Tagging (RIFT)

[12] **Pan, Y. (*),** Frisson, S., Federmeier D. K., & Jensen, O. Prediction facilitate parafoveal processing in natural reading

Invited Talks

**Chair symposium, **Public engagement*

2025.09 International Conference of Cognitive Neuroscience (ICON), Porto, Portugal
2025.01 *Organizing the Royal Society sponsored Workshop: Attention in Reading, Birmingham, UK
2024.11 Annual meeting of the Psychonomic Society, New York, US
2024.10 *MEG UKI conference, Birmingham, UK
2024.08 International Conference on Biomagnetism (BIOMAG), Sydney, Australia
2024.08 Talk Series, Tianjin Normal University, Tianjin, China
2023.10 MEG UKI conference, Dublin, Ireland
2023.09 Annual Meeting of the Society for Psychophysiological Research (SPR), New Orleans, US
2023.09 Annual Meeting of European Society for Cognitive Psychology (ESCoP), Porto, Portugal
2023.06 Talk Series, Institute of Psychology, Chinese Academy of Sciences, Beijing, China
2023.05 **Brain Awareness Week 2023, Explaining the brain to the public, Birmingham, UK
2022.11 Talk Series, China Women's University (online)
2022.10 Talk Series, University of Toronto (online)
2022.07 Talk Series, School of Psychological and Cognitive Sciences, Peking University (online)
2022.06 Talk series, University of Oxford (online)
2022.05 *International Conference of Cognitive Neuroscience (ICON), Helsinki, Finland
2022.05 Leading Edge Workshop on Co-registration of eye tracking and EEG, Tampa, US
2022.04 *Annual Meeting of the Cognitive Neuroscience Society (CNS), San Francisco, US
2022.04 Talk series, Beijing Language and Culture University (online)
2021.03 Annual Meeting of the Association for Reading and Writing in Asia (ARWA), Taipei (online)

Teaching and Supervision

Courses Teaching

2025.01 Application of Electrophysiological Approaches in Cognitive Neuroscience (MSc), University of Birmingham (guest lecturer)
2024.11 MEG practical in Research Skills Module (MSc), University of Birmingham (main lecturer)
2024.10 Demo for the MEG lab (MSc & undergraduate), University of Birmingham
2017.07 Workshop on intracranial EEG (iEEG) data acquisition and analysis (MSc, PhD), Institute of Psychology, Chinese Academy of Sciences

Research Supervision

- Postdoctoral researcher at University of Oxford (co-supervised with PI):
  1) 2024.02 – present Jiaqi Li
  2) 2024.12 – present Xuan Cui
- PhD students at University of Birmingham (co-supervised with PI):
  1) 2021.09 – present Lijuan Wang
  2) 2023.10 – 2024.10 Xiaohui Cui (visiting from Chinese Academy of Sciences)
  3) 2021.10 – 2022.10 Dongwei Li (visiting from Beijing Normal University)
- Master students at University of Birmingham
  1) 2023.12 – 2024.07 Veronika Prigorkina (progressed to a PhD)
  2) 2022.09 – 2023.05 Brooke Cannon, Victoria Gorneva
- Undergraduate students
  1) 2021.10 – 2023.06 Tamseel Naveed, Abbie Evans (University of Birmingham; progressed to a MSc)
  2) 2020.07 – 2020.10 Sai Sumedh (visiting from the Indian Institute of Technology)
  3) 2017.09 – 2018.07 Jiali Liu (Chinese Academy of Sciences; progressed to a PhD)

Technical Skills

- Advanced **analytical expertise** in neuroimaging data (**MEG**, EEG, and intracranial EEG)
- Strong **programming** skills (MATLAB, Python, and R)
- Expertise in designing and conducting **experiments** (eye-tracking and behavioural methods)
- Proficiency in stimulus presentation for **psychology** studies (Psychtoolbox and PsychoPy)
- In-depth knowledge of **machine learning** techniques (DNN, CNN, and NLP)
- Extensive experience with **statistical analysis** (ANOVA, parametric and non-parametric methods, linear mixed-effects modelling, and multivariate pattern analysis)

Service and Memberships

Ad hoc reviewer

eLife, Journal of Neuroscience, Cerebral Cortex, Learning and Memory, Neuroimage, PLoS ONE, European Journal of Neuroscience, Psychophysiology, Journal of Cognitive Neuroscience, PeerJ, Attention Perception & Psychophysics, Scientific Reports, Imaging neuroscience

Funding reviewer

Austrian Science Fund (FWF), Swiss National Science Foundation (SNSF)

Memberships

Cognitive Neuroscience Society, Society for Neuroscience, Society for the Neurobiology of Language, British association for cognitive neuroscience, International Conference of Cognitive Neuroscience, International Conference on Biomagnetism, European Society for Cognitive Psychology, Society for Psychophysiological Research

Departmental service

2024.10 Member of organising and scientific committees for the conference MEGUKI 2024
2024.06 Interview panel member for Postgraduate Research Scheme, University of Birmingham
2019.11 Organize neuroscience workshop between University of Birmingham & Oxford University
2015 – 2017 Translating the textbook *The Journey of Adulthood* from English to Chinese (In charge of the preface, the 2nd chapter and communication with the author, Barbara Bjorklund)
2010 – 2012 Chairperson of the Association of Psychology at China Women's University, China

References

1. Ole Jensen, ole.jensen@psych.ox.ac.uk
   Professor, Department of Experimental Psychology, Department of Psychiatry, University of Oxford
2. Kara D. Federmeier, kfederme@illinois.edu
   Professor, Department of Psychology, Departments of Linguistics and Kinesiology, Program in Neuroscience, and the Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign
3. Steven Frisson, s.frisson@bham.ac.uk
   Associate Professor, School of Psychology, University of Birmingham
4. Hyojin Park, h.park@bham.ac.uk
   Assistant Professor, School of Psychology, University of Birmingham
5. Liang Wang, lwang@psych.ac.cn
   Director, CAS Key Laboratory of Mental Health, Institute of Psychology, Chinese Academy of Sciences
   Professor, Department of Psychology, University of Chinese Academy of Sciences