Loïc Labache, Ph.D.

Postdoctoral Fellow in Psychiatry

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Employment

2023–Current **Postdoctoral Fellow**, *Department of Psychiatry*, Rutgers University – Piscataway, NJ, US.
PI: Dr. Avram J. Holmes

2023–Current **Research Collaborators**, *Department of Psychology*, Yale University – New Haven, CT, US. PI: Dr. Gregory McCarthy

2021–2023 **Postdoctoral Associate**, *Department of Psychology*, Yale University – New Haven, CT, US. PI: Dr. Avram J. Holmes

2020–2021 **Postdoctoral Researcher**, *Department of Epidemiology, French National Institute of Health and Medical Research (Inserm)*, Université de Bordeaux – Bordeaux, FR.
PI: Dr. Cécilia Samieri

Education

2017–2020 **Ph.D.** (Neuroimaging), *Doctoral School of Mathematics and Computer Science – Université de Bordeaux*, Bordeaux, FR
Dissertation: Elaboration of Brain Network Atlases Underpinning Lateralized Cognitive Functions
PI: Dr. Nathalie Tzourio-Mazoyer, Dr. Marc Joliot, & Pr. Jérôme Saracco

2014–2017 **M.S.** (Engineering Degree), *Institut Polytechnique de Bordeaux*, Talence, FR
Computer Science, Cognitive Neurosciences, Applied Mathematics. *Summa cum laude*

2011–2014 **B.S.**, *Université de Bordeaux*, Bordeaux, FR
Cognitive Neurosciences, Computer Science, Applied Mathematics. *Summa cum laude*

Honors & Awards

2023 **Runner-Up Trainee Prize**, *The Neuro - Irv and Helga Cooper Foundation Open Science Prizes – Montréal, CA.*

2023 **Merit Award Abstract Winner**, *Organization for Human Brain Mapping – Montréal, CA.*

2022 **Merit Award Abstract Winner**, *Organization for Human Brain Mapping – Glasgow, Scotland, GB.*

2017–2020 **CEA Graduate Research Fellowship**, *French Alternative Energies and Atomic Energy Commission – Paris, FR.*

Publications

Source codes and atlases are available on GitHub: github.com/loiclabache

Peer-reviewed

8. **Labache, L.**, Ge, T., Yeo, BT. T., & Holmes, A. J. (**2023**). Language network lateralization is reflected throughout the macroscale functional organization of cortex. **Nature Communications**, 14, 3405. DOI: 10.1038/s41467-023-39131-y [link to code repository]
7. Chopra, S., **Labache, L.**, Dhamala, E., Orchard, E. R., & Holmes, A. J. (**2023**). A Practical Guide for Generating Reproducible and Programmatic Neuroimaging Visualizations. **Aperture Neuro**. DOI: 10.52294/001c.85104 [link to the web-app] [link to code repository]
6. Forkel, S., **Labache, L.**, Parashkev, N., Thiebaut de Schotten, M., & Hesling, I. (**2022**). Stroke disconnectome decodes reading networks. **Brain structure & function**, 227(9), 2897-2908. DOI: 10.1007/s00429-022-02575-x
5. Doucet, G. E., **Labache, L.**, Thompson, P. M., Joliot, M., Frangou, S., & Alzheimer's Disease Neuroimaging Initiative. (**2021**). Atlas55+: Brain Functional Atlas of Resting-State Networks for Late Adulthood. **Cerebral cortex**, 31(3), 1719–1731. DOI: 10.1093/cercor/bhaa321
4. Tzourio-Mazoyer, N., **Labache, L.**, Zago, L., Hesling, I., & Mazoyer, B. (**2021**). Neural support of manual preference revealed by BOLD variations during right and left finger-tapping in a sample of 287 healthy adults balanced for handedness. **Laterality**, 26(4), 398-420. DOI: 10.1080/1357650X.2020.1862142 [link to atlas repository]
3. **Labache, L.**, Mazoyer, B., Joliot, M., Crivello F., Hesling, H., & Tzourio-Mazoyer, N. (**2020**). Typical and atypical language brain organization based on intrinsic connectivity and multitask functional asymmetries. **eLife**, 9, e58722. DOI: 10.7554/eLife.58722
2. Hesling, I., **Labache, L.**, Joliot, M., & Tzourio-Mazoyer, N. (**2019**). Large-Scale plurimodal networks common to listening, production and reading word-lists: an fMRI study combining tasks-induced activation and intrinsic connectivity in 144 right-handers. **Brain structure & function** 224(9), 3075-3094. DOI: 10.1007/s00429-019-01951-4 [link to atlas repository]
1. **Labache, L.**, Joliot, M., Saracco J., Jobard G., Hesling I., Zago L., Mellet E., Petit L., Crivello F., Mazoyer B., & Tzourio-Mazoyer N. (**2019**). A SENtence Supramodal Areas AtlaS (SENSAAS) based on multiple task-induced activation mapping and graph analysis of intrinsic connectivity in 144 healthy right-handers. **Brain structure & function**, 224(2), 859-882. DOI: 10.1007/s00429-018-1810-2 [link to atlas repository]

Under Review

5. **Labache, L.**, Petit, L., Joliot, M., & Zago, L. (**2024**). Atlas for the lateralized visuospatial attention networks (ALANs): insights from fMRI and network analyses. DOI: 10.1101/2024.02.13.580164 (*preprint*) [link to atlas repository]
4. **Labache, L.***, Roger, E.*, Hamlin, N., Kruse, J., Baciu, M., & Doucet, G. E. (**2023**). When age tips the balance: a dual mechanism affecting hemispheric specialization for language. DOI: 10.1101/2023.12.04.569978 (*preprint*) [link to code repository] **authors contributed equally to this work*
3. Ricard, J.A., **Labache, L.**, Segal, A., Dhamala, E., Cocuzza, C. v., Jones, G., Yip, S., Chopra, S., & Holmes, A. J. (**2023**). A shared spatial topography links the functional connectome correlates of cocaine use disorder and dopamine D2/3 receptor densities. DOI: 10.1101/2023.11.17.567591 (*preprint*)

2. Dong, HM., Zhang, XH., **Labache, L.**, Zhang, S., Ooi, L. Q. R., Yeo, BT. T., Holmes, A. J., & Zuo, XN. (**2023**). Ventral attention network connectivity is reliably linked to the accelerated maturation of adult-like cortical organization and cognitive functioning in childhood. DOI: 10.1101/2022.04.12.488101 (*preprint*)
1. **Labache, L.**, Joliot, M., Doucet, G. E., & Saracco, J. (**2022**). Study of inter-individual variability of three-dimensional data table: detection of unstable variables and sample. DOI: 10.48550/arXiv.2004.05033 (*preprint*)

Thesis

Labache, L. (**2020**). Elaboration Of Brain Network Atlases Underpinning Lateralized Cognitive Functions, Application To The Study Of Inter-individual Variability Of Language. *PhD thesis*, French Alternative Energies and Atomic Energy Commission, **Université deBordeaux**. NNT: 2020BORD0155 (*in french*).

Open-source Code

4. **Labache, L.** (**2024**). loiclabache/ALANs_brainAtlas: Atlas for the Lateralized Visuospatial Attention Networks (ALANs) (Labache_2024_ALANs_240214.) **Zenodo**. DOI: 10.5281/zenodo.10658842
3. **Labache, L.**, Roger, E., Hamlin, N., Kruse, J., Baciu, M., & Doucet, G. E. (**2023**). When age tips the balance: a dual mechanisms affecting hemispheric specialization for language. **Zenodo**. DOI: 10.5281/zenodo.10253278
2. Chopra, S., **Labache, L.**, Dhamala, E., Orchard, E. R., & Holmes, A. J. (**2023**). A Practical Guide for Generating Reproducible and Programmatic Neuroimaging Visualizations. **Figshare**. DOI: *Table selector*; 10.6084/m9.figshare.23537316.v1, *R version*; 10.6084/m9.figshare.23537313.v1, *Python version*; 10.6084/m9.figshare.23537319.v1
1. **Labache, L.**, Ge, T., Yeo, BT. T., & Holmes, A. J. (**2023**). Language network lateralization is reflected throughout the macroscale functional organization of cortex. **Zenodo**. DOI: 10.5281/zenodo.7869039

Open Data

2. Mazoyer, B., Tzourio-Mazoyer, N., **Labache, L.**, Zago, L., Hesling I. (**2021**). BIL&GIN FTT fMRI and handedness. **Dryad**, Dataset. DOI: 10.5061/dryad.cz8w9gj1z
1. Mazoyer, B., Tzourio-Mazoyer, N., **Labache, L.**, Joliot, M., Crivello F. (**2020**). BIL & GIN sentence and rest asymmetries. **Dryad**, Dataset. DOI: 10.5061/dryad.ht76hdrcf

Presentations

Posters

15. **Labache, L.**, Ge, T., Yeo, BT. T., & Holmes, A. J. (**2023**) *Language network lateralization is reflected throughout the macroscale functional organization of cortex*. **Society for the Neurobiology of Language**, Palais du Pharo - Marseille, FR.
14. **Labache, L.***, Roger, E.*, Baciu, M., & Doucet, G. E. (**2023**) *When Age Tips The Balance: a Dual Mechanism Affecting Hemispheric Specialization for Language*. **Society for the Neurobiology of Language**, Palais du Pharo - Marseille, FR. **authors contributed equally to this work*
13. **Labache, L.***, Roger, E.*, Baciu, M., & Doucet, G. E. (**2023**) *When Age Tips The Balance: a Dual Mechanism Affecting Hemispheric Specialization for Language*. **Organization for Human Brain Mapping**, Palais des congrès de Montréal - Montréal, CA. DOI: 10.13140/RG.2.2.32508.72324 **authors contributed equally to this work*

12. Chopra, S., **Labache, L.**, Dhamala, E., Orchard, E., & Holmes, A. J. (**2023**) *Brain-code: A web-app to generate brain visualisation code templates for R and Python*. **Organization for Human Brain Mapping**, Palais des congrès de Montréal - Montréal, CA.
11. **Labache, L.**, Petit, L., Joliot, M., & Zago, L. (**2023**) *Visuospatial Attention Networks Evidenced in a Population with Typical Language Brain Organization*. **Organization for Human Brain Mapping**, Palais des congrès de Montréal - Montréal, CA. DOI: 10.13140/RG.2.2.12271.20641
10. **Labache, L.**, Ge, T., Yeo, BT. T., & Holmes, A. J. (**2023**) *Language network lateralization is reflected throughout the macroscale functional organization of cortex*. **Society of Biological Psychiatry**, Hilton Bayfront San Diego - San Diego, California, US. DOI: 10.1016/j.biopsych.2023.02.544
9. Ricard, J.A., **Labache, L.**, Chopra, S., Dhamala, E., Jones, G., Harnett, N., Yip, S., & Holmes, A. J. (**2023**) *The Neural Underpinnings of Cocaine Use Disorder*. **Society of Biological Psychiatry**, Hilton Bayfront San Diego - San Diego, California, US. DOI: 10.1016/j.biopsych.2023.02.639
8. Ricard, J.A., **Labache, L.**, Chopra, S., Dhamala, E., Harnett, N., Jones, G., Yip, S., & Holmes, A. J. (**2022**) *The network-level correlates of cocaine use disorder*. **Society for Neuroscience**, San Diego, CA, US.
7. Thomas, A., **Labache, L.**, Tsuchida, A., Arsandaux, J., Zago, L., Tzourio, C., Crivello, F., & Samieri, C. (**2022**) *Dietary pattern and brain structure among young adults*. **Alzheimer's Association International Conference**, San Diego, CA, US. DOI: 10.1002/alz.064049
6. **Labache, L.**, Ge, T., Yeo, BT. T., & Holmes, A. J. (**2022**) *Topological Perspective of atypical brain organization*. **Organization for Human Brain Mapping**, Scottish Event Campus - Glasgow, Scotland, GB.
5. **Labache, L.**, Ge, T., Yeo, BT. T., & Holmes, A. J. (**2022**) *Atypical language network organization is reflected in the macroscale organization of the cortical sheet*. **Neurobiology of Language: Key Issues and Ways Forward II**, Max Planck Institute for Psycholinguistics – Nijmegen, NL.
4. **Labache, L.**, Joliot, M., Saracco, J., Mazoyer, B., Tzourio-Mazoyer, N. (**2018**). *"FALCON: a functional atlas of language comprehension networks based on multiple task-induced activation mapping and graph analysis of intrinsic connectivity in 137 healthy right-handers"*. **2nd Doctoral Day of the Frédéric Joliot Institute**, Neursopin, CEA – Paris, FR.
3. Tzourio-Mazoyer, N., Joliot, M., **Labache, L.**, Crivello, F., Zago, L., Hesling, I., Mazoyer, B. (**2018**). *"Brain language dominance and hand lateralization relationships: insights from the Brain Imaging Lateralization database (BIL&GIN)."* **North Sea Laterality International Meeting** – Dundee, GB.
2. Hesling, I., **Labache, L.**, Jobard, G., Leroux, G., Tzourio-Mazoyer, N. (**2018**). *"Heteromodal brain areas commonly activated and asymmetrical in production, listening and reading tasks at the word level: an fMRI study of 144 right-handers from the BIL&GIN."* **North Sea Laterality International Meeting** – Dundee, GB.
1. **Labache, L.**, Tzourio-Mazoyer, N., Jobard, G., Crivello, F., Mazoyer, B., Joliot, M. (**2017**). *"Tentative atlas of core language areas from fMRI mapping of 6 language tasks in 144 healthy right-handers"*. **Organization for Human Brain Mapping** – Vancouvert, CA

Invited Talks

2023 **IamBrain**, UCL Institute of Education - London, UK. (April 19th). *When Age Tips The Balance: a Dual Mechanism Affecting Hemispheric Specialization for Language*.

2022 **Psychology's Current Work Series in Neuroscience**, Department of Psychology, Yale University – New Haven, CT, US. (November 11th). *From the Elaboration of Cognitive Atlases to the Study of Hemispheric Variability.*.

2022 **Organization for Human Brain Mapping**, Scottish Event Campus – Glasgow, GB. (June 23th). *Relationship between Language Lateralization and Global Brain Architecture*.

2021 **Cognitive Neuroscience Meetings**, Department of Psychology, Yale University – New Haven, CT, US. (May 21st). *From the Identification of Language Network to Typical and Atypical Brain Organization*.

2021 **Oslo Virtual Laterality Colloquium**, Department of Psychology, University of Oslo – Olso, NO. (February 26th). *Typical and Atypical Brain Organization for Language*.

2019 **3rd Doctoral Day of the Frédéric Joliot Institute**, Neursopin, CEA – Paris-Saclay, FR. (June 14th). *"Elaboration of Brain Atlases of Functional Areas."*

2019 **51ème Journées de Statistique**, Université de Lorraine - Nancy, FR. (June 3rd). *Study of Inter-Individual Variability of Three-Dimensional Data Table: Detection of Unstable Variables and Samples*.

2019 **10e Colloque des Jeunes Chercheurs en Sciences Cognitives**, Ecole Normale Supérieure – Paris, FR. (March 29th). *SENSAAS, a New Atlas of Language Brain Areas.*

Teaching

2019 – 2023 Instructor – **University Degree *in Neuropsychology***, *Université de Bordeaux*, Bordeaux – FR, Course title: *Anatomo-functional organization of language*.

2018 – 2020 Co-Instructor – **Engineer Degre (M.S.)**, *Institut Polytechnique de Bordeaux*, Talence – FR, Course title: Statistical modeling and dynamical systems.

Mentoring and Advising

2023 – Current Supervision and mentoring of a full-time Research Assistants, Kaley Joss

2021 – 2023 Supervision and mentoring of two full-time Research Assistants, Jocelyn Ricard and Connor Lawhead

2018 – 2020 Supervision of a Master-level student: Martin Constant (co-supervisor)

Services

Ad Hoc Reviewer: Brain Structure and Function, Communications Biology, Human Brain Mapping, Imaging Neuroscience, Journal of Neurophysiology, NeuroImage, Scientific Reports

2022 **Abstract Reviewer**, *Organization for Human Brain Mapping*

2019–2021 **Elected member of the Laboratory Council**, *Institut de Mathématiques de Bordeaux*

Membership

2023–Current **Society for the Neurobiology of Language**

2021–Current **Society for Neuroscience**

2021–Current **Society of Biological Psychiatry**

2017–Current **Organization for Human Brain Mapping**