Department of Psychology,
Yale University, 2 Hillouse Ave
CT 06511 New Haven, US
+1 (475) 287-6269
+33 (0)6 35 19 18 88
loic.labache@yale.edu
ORCID:
LinkedIn:

Loïc Labache, Ph.D.

Psychology Postdoctoral Associate

Research Interests

Understanding hemispheric functional segregation informs principles of brain organization and the foundations of human behavior. My research program goals leverage fundamental advances in the growing field of multimodal neuroimaging to answer questions about the most elusive mysteries of neuroscience: *how brain lateralization influences human behavior*. Through an advanced and interdisciplinary open-data approach, my aim is to resolve conflicting theories about the mechanisms of brain organization using new technologies and methods. Therefore shedding light on neuropsychiatric and neurological disorders known to alter brain laterality.

Current Position

2021–Current **Postdoctoral Associate**, *Department of Psychology*, Yale University – New Haven, CT, US
PI: Dr. Avram J. Holmes
Functional architecture of the human brain

Education

2017–2020 **Ph.D.**, *Doctoral School of Mathematics and Computer Science – Université de Bordeaux*, Bordeaux, FR

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*

Previous Positions

2020–2021 **Postdoctoral Researcher**, *French National Institute of Health and Medical Research (Inserm)*, Université de Bordeaux – Bordeaux, FR
PI: Dr. Cécilia Samieri
Dietary patterns and brain structure in young adults from the French i-Share cohort

2017–2020 **Ph.D. Student**, *French Alternative Energies and Atomic Energy Commission (CEA)*, Neurofunctional Imaging Group – UMR 5293 – Bordeaux, FR
PI: Dr. Nathalie Tzourio-Mazoyer
Elaboration of Brain Network Atlases Underpinning Lateralized Cognitive Functions

Honors & Awards

2022 **Merit Award Abstract Winner**, *Organization for Human Brain Mapping, 2022 – Glasgow,*
Awarded to the top rated abstracts – $2,000 USD (2022 Abstract Awards list)

2017–2020 **CEA Thesis Grant**
After a favorable opinion from the Selection Commission chaired by the Atomic Energy High Commissioner, awarding of a 3-year research training contract – €150,000

Publications

Peer-reviewed

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. Advance online publication. DOI: 10.1080/1357650X.2020.1862142
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
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

Manuscripts Under Review

4. **Labache, L.**, Ge, T., Yeo, BT. T., & Holmes, A. J. (**2022**). Atypical language network lateralization is reflected throughout the macroscale functional organization of cortex. **Nature Communications**. DOI: 10.1101/2022.12.14.520417 (*preprint*). [link to code repository]
3. Chopra, S., **Labache, L.**, Dhamala, E., Orchard, E. R., & Holmes, A. J. (**2022**). Reproducible and programmatic generation of neuroimaging visualizations. **Brain Communications**. Available on GitHub: Chopra et al. 2022.pdf (*preprint*)
2. **Labache, L.**, Petit, L., Joliot, & Zago, L. (**2022**). Uncovering the Brain's Visuospatial Attention Networks Using Line Bisection Task and Resting-state Connectivity in a population with typical language brain organization. **Brain structure & function**.
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. **Computational Statistics**. DOI: 10.48550/arXiv.2004.05033 (*preprint*)

Manuscripts in Preparation

2. **Labache, L.***, Roger, E.*, Baciu, M., & Doucet, G. E. (***in progress***). When age tips the balance: dual mechanisms affecting hemispheric specialization for language. **authors contributed equally to this work*
1. Thomas, A., **Labache, L.**, Tsuchida, A., Zago, L., Tzourio, C., Crivello, F., & Samieri, C. (***in progress***). Dietary pattern and brain structure among young adults.

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*).

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

Atlas freely available to the community

4. Cognitive Atlas of Lateralized visuospatial Attentional Networks (2022). GitHub link: ALANs
3. HAnd MOtor Area atlas (2021). GitHub link: HAMOTA
2. Word-list Multimodal Cortical Atlas (2019). GitHub link: WMCA
1. SENtence Supramodal Areas AtlaS (2019). GitHub link: SENSAAS

Presentations

Invited Talks

3. **Labache, L.** (November 11th, **2022**). *From the elaboration of cognitive atlases to the study of hemispheric variability.*. **Psychology's Current Work Series in Neuroscience**, Department of Psychology, Yale University – New Haven, US.
2. **Labache, L.** (June 23th, **2022**). *Relationship between language lateralization and global brain architecture*. **Organization for Human Brain Mapping**, Scottish Event Campus – Glasgow, GB.
1. **Labache, L.** (February 26th, **2021**). *Typical and atypical brain organization for language*. **Oslo Virtual Laterality Colloquium**, Department of Psychology, University of Oslo – Olso, NO.

Conference Talks with Proceedings

1. **Labache, L.** (**2019**). Étude de la variabilité inter-individuelle de données de connectivité intrinsèque : détection de réseaux instables et de sous-populations dans un tableau tridimensionnel. **51ème Journées de Statistique**, Université de Lorraine - Nancy, FR. *Link to the conference proceeding (in french).*

Conference Talks

2. **Labache, L.** (**2019**). *"SENSAAS, a new atlas of language brain areas."* **10^{e} Colloque des Jeunes Chercheurs en Sciences Cognitives**, Ecole Normale Supérieure – Paris, FR.
1. **Labache, L.** (**2019**). *"Elaboration of brain atlases of functional areas."* **3rd Doctoral Day of the Frédéric Joliot Institute**, Neursopin, CEA – Paris-Saclay, FR.

Posters

12. **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. **authors contributed equally to this work*
11. 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.

10. **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.
9. 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.
8. Lawhead, C., Ricard, J.A., Chopra, S., **Labache, L.**, Chen, L., Moses, J., Blankenpaker, C., Tao, J., Fairback-Haynes, K., Kumar, P., Rubenstein, A., Harpaz-Rotem, I., Yeo, B.T.T., Baker, J.T., & Holmes, A. J. (**2022**) *Toward an understanding of the functional connectomics of affective and psychotic illness*. **Society of Biological Psychiatry**, New Orleans, LA, US.
7. Thomas, A., **Labache, L.**, Tsuchida, A., 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.
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

Teaching Experiences

2019 – 2022 **University Degree *in Neuropsychology***, *Université de Bordeaux*, Bordeaux – France, Instructor, Training in neuropsychology for physicians and psychologists
Course title: *Anatomo-functional organization of language*, 3*4h of teaching.

2018 – 2020 **Engineer Degre (M.S.)**, *Institut Polytechnique de Bordeaux*, Talence – France, Instructor
Course title: Statistical modeling and dynamical systems, 2*27h of teaching.

Ad Hoc Reviewer

Brain Structure and Function, Communications Biology, NeuroImage, Scientific Reports

Service

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

Membership

2021– **Society for Neuroscience**

2017– **Organization for Human Brain Mapping**

References

1st Referent **Monica Baciu – Professor of Cognitive Neuroscience & Neurologist**, Laboratoire de Psychologie et Neurocognition, CNRS – UMR 5105 – Université Grenoble Alpes – Grenoble, FR
e-mail: monica.baciu@univ-grenoble-alpes.fr
Telephone: +33 (0) 4 76 82 58 80

2nd Referent **Marc Joliot – Research Director in Multimodal Biomedical Imaging**, Neuro-Imaging Group (GIN), French Atomic Energy Commission (CEA) – UMR 5293 – Université de Bordeaux – Bordeaux, France
e-mail: marc.joliot@u-bordeaux.fr
Telephone: +33 (0) 5 33 51 47 19

3rd Referent **Michel Thiebaut de Schotten – Research Director in Cognitive Psychology**, Brain Connectivity and Behaviour Laboratory, Sorbonne Universities – Paris, FR
e-mail: michel.thiebaut@gmail.com

4th Referent **Avram J. Holmes – Associate Professor of Psychology**, Holmes Lab – Department of Psychology – Yale University – New Haven, CT, US
e-mail: avram.holmes@yale.edu
Telephone: +1 (203) 436-9449