

SAMUEL GUAY

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Education

PhD(c) in Cognitive Neuroscience 2019 - present
Université de Montréal, Montreal, QC.
Supervisor: Louis De Beaumont

PhD in Clinical Neuropsychology 2017 - 2019
Université de Montréal, Montreal, QC.
*Reoriented in a research-only program in 2019

BA in Psychology 2014 - 2017
Université du Québec à Trois-Rivières, Trois-Rivières, QC.

Research Experience

Data Steward 2022 - Present
CIUSSS NÎM Research Centre, Montreal, QC.

- Develop workflows and software to standardize big, longitudinal and sensitive data from the acquisition to storage in hospital settings.
- Convert brain, physiological, and phenotypical data into the Brain Imaging Data Structure (BIDS) organizational standard and FAIR data sets.

PhD Student 2019 - present
Sports & Trauma Applied Research Lab, CIUSSS NÎM Research Centre, Université de Montréal, Montreal, QC.

- Acquire multimodal neuroimaging data in active and retired athletes with a history of repetitive head impacts.
- Analyze multimodal neuroimaging data (sMRI, dMRI, QSM, MRS, and PET).

Research Assistant 2017 - 2019
Sports & Trauma Applied Research Lab, CIUSSS NÎM Research Centre, Université de Montréal, Montreal, QC.

- Drafted Institutional Review Board (IRB) submissions for new studies
- Helped optimized analysis pipelines for animal and clinical projects led by other students in the lab
- Performed quantitative statistical analyses, wrote, and revised manuscripts.

Research Chair on the Neurobiology of Mild Traumatic Brain Injury, Université du Québec à Trois-Rivières, Trois-Rivières, QC. 2015 - 2017

- Principal investigator: Louis De Beaumont
- Recruited participants and ran behavioral tasks
- Acquired and analyzed electroencephalography (EEG) and transcranial magnetic stimulation (TMS) data in patients and controls.

Service de soutien et d'entraide en méthodologie (SESAME), Université du Québec à Trois-Rivières, Trois-Rivières, QC. 2015 - 2016

- Principal investigator: Michael Cantinotti
- Project: *Learning by doing: experience of students involved in the creation of tutorials in quantitative methods in psychology*
- Wrote, created, and taught interactive and didactic contents on statistics.

Languages

French
English

Skills

Data Analysis & Analytics

R - Bash - Python

Programming & Systems

Linux environment - HPC

Containerization - Docker - Singularity

Version control systems - Git

Static site generators

CI/CD

Interests

#Data organization

#Open science

#Outreach

#Open source

#Reproducibility

Community Involvement

Open Science UMontreal, Co-Founder

Brainhack & Brainhack Global, Participant & Organizer

Framework for Open & Reproducible Research Training (FORRT), Maintainer

Teaching and Mentoring Experience

Lecturer

Initiation à la programmation en sciences sociales (FAS1002), *Université de Montréal, Montreal, QC.* Fall 2021

- *Introduction to Programming for Social Sciences* was a new course for the new *Microprogram in Big Data Analysis in the Humanities and Social Sciences* offered by the Faculty of Arts and Sciences.
- 3-credit course built and taught by me in hybrid mode (in-person and virtually at the same time).
- Tools taught: R, Karel (Python), Git, GitHub | Final project: https://github.com/FAS1002/FAS1002_projet-final

Section Leader

Code In Place, *Online / Stanford Engineering, Department of Computer Science, CA.* May 2021

- Led weekly discussion section of students in the 5-week introductory online Python course: Code In Place, a free, human-centric, intro-to-coding course in the time of COVID-19.

Teaching Assistant

Méthodes en neurosciences cognitives 2 (PSY3018), *Université de Montréal* Fall 2018 - 2019 - 2020

- Introduction to main methods to explore the human and animal nervous system including Magnetic Resonance Imaging (sMRI, dMRI, fMRI), Positron Emission Tomography (PET), and Optical Imaging.
- Prof: by Pierre Bellec | Educational material at <https://psy3018.github.io>

Instructor

Certified Carpentries Instructor 2022 - present

- Completed the two-day Instructor training course workshop and checkout process offered by The Carpentries in February 2022.

Partager ses analyses sur le Web, *La PAUSE Méthode, Online @ Université du Québec à Trois-Rivières.* 2021

- 60-min workshop on how to make statistical analyses available online with Git & GitHub.

Brainhack School, *Montreal, QC & Online* 2019 & 2020

- Main organizer of a 4-week long, project-based, transdisciplinary “summer” school in Neuroscience, Statistical Modeling and Computer Science.

Introduction à la science des données sociales avec R, *Massive Open Online Course (MOOC) by EDUlib.* 2020

- Created ~3 hours of video content and exercises for the chapter I led on Open Science.
- Course led by Pr. Eric Lacourse.

Open Science principles and practices, *opensciencemooc.eu* 2018

- Co-created and revised the first course on *Open Principles* of the Open Science MOOC.

En finir avec l'impuissance statistique, *38e annual conference of the Société Québécoise pour la Recherche en Psychologie, Trois-Rivières, QC.* 2016

- 75-min pre-conference workshop on statistical power.

Mentor

100 Days of Data.Trek, *Online by IVADO* 2022

- Mentored four wonderful trainees for their 100-day training course on data manipulation, computational analysis and machine learning.

Open Life Science, *Online* 2020

- Mentored two amazing humans working on the project *Embedding Accessibility in The Turing Way Open Source Community Guidance* during the second cohort of the international mentoring & training program for Open Science ambassadors.

Mentoring of students with disabilities, *Université du Québec à Trois-Rivière, Trois-Rivières, QC.* 2016-2017

- Hired by my University to mentor and tutor students with ADHD, anxiety issues, and learning difficulties through their study journey.

Science Communication & Volunteer Work

Expo-Sciences - QC	2016 - present
Annually judge this science and technology competition open to all young people aged 6 to 20 in Quebec.	
ComSciConQC - Online, QC	2020
Co-organized the first ComSciCon annual meeting in Quebec, a 2-day series of science communication workshops.	
BrainReach - Montreal, QC	2016 - 2020
Provided neuroscience classes to highschool students and for the Correctional Service of Canada.	

Secured Funding

CGS - Michael Smith Foreign Study Supplement	6 000\$	2022
Canadian Institutes of Health Research (CIHR)		
Vanier Canada Graduate Scholarship Doctoral Award	150 000\$	2019-2022
Canadian Institutes of Health Research (CIHR)		
Canada Graduate Scholarships Doctoral Award (<i>declined</i>)	105 000\$	2019-2022
Canadian Institutes of Health Research (CIHR)		
Doctoral Training Award (<i>declined for the first 3 years</i>)	84 000\$	2019-2023
Fonds de recherche du Québec - Santé (FRQS)		
Masters Training Award (<i>first year declined</i>)	35 000\$	2017-2019
Fonds de recherche du Québec - Santé (FRQS)		
Canada Graduate Scholarship Masters Award (CGS-M)	17 500\$	2017-2018
Canadian Institutes of Health Research (CIHR)		
Bourse d'accès direct au doctorat depuis le baccalauréat	30 000\$	2017-2020
Faculté des études supérieures et postdoctorales (FESP) de l'Université de Montréal		
Undergraduate Student Research Award	10 500\$	2016
Natural Sciences and Engineering Research Council of Canada (NSERC)		

Distinction

Anne Martin-Matthews Doctoral Prize of Excellence in Research on Aging	2019
Canadian Institutes of Health Research (CIHR) Institute of Aging	
Dynamism in Research Award	2016
Received at the annual scientific day of the CogNAC research group from UQTR, Trois-Rivières, QC.	

Excellence Awards & Merit Scholarships

Highest average GPA in Psychology	300\$	2016 & 2017
Psychology Student Association Annual Gala, Université du Québec à Trois-Rivières		
Bourse d'excellence – premier cycle	1 000\$	2017
Fondation de l'Université du Québec à Trois-Rivières		
Bourse d'excellence François Armand Mathieu	2 500\$	2016
Fondation de l'Université du Québec		
Bourse d'excellence – Implication Scolaire	2 000\$	2016
Ma bourse D Programme Excellence jeunesse Desjardins Mauricie		
Scholarship - Undergraduate studies (Other disciplines)	1 500\$	2016
Fondation Desjardins		
Bourse d'excellence de l'association des retraités de l'UQTR	1 000\$	2016
Fondation de l'Université du Québec à Trois-Rivières		

Oral Presentations

Invited Talks

- Guay, S., & Proulx, A. (2021). **First steps into Open Science**. *Unifying Neuroscience and Artificial Intelligence in Quebec (UNIQUE) - Student Symposium*, Online.
- Guay, S., & Proulx, A. (2020). **Parlons science ouverte**. *Symposium annuel sur la recherche étudiante en sciences infirmières (SARÉSI)*, Online.
- Guay, S. (2019). **La science ouverte: un monde de possibilités | Open science: A World of Possibilities**. *Global Health Axis and Quebec Population Health Research Network Research days*, Montreal, QC.
- Guay, S., & Roskams-Edris, D. (2020). **Supporting Science in the Open**. *The (virtual) NeuroSymposium 2020*, Online.
- Guay, S. (2017). **Importance des projets de recherche sur les effets à long terme des commotions cérébrales**. *6e congrès annuel du Conseil chiropratique des sciences du sport*, Trois-Rivières, QC.

First Author Oral Conference Presentations

- Guay, S., et al. (2019). **A White Matter Investigation of the Effects of Subconcussive, Repetitive Head Impacts in Women Athletes**. *7th Annual Concussion Research Symposium*, Canadian Concussion Center, Toronto, ON.
- Guay, S., et al. (2018). **Full-Brain Connectivity Analysis in Healthy Aging Concussed Athletes**. *6th Annual Concussion Research Symposium*, Canadian Concussion Center, Toronto, ON.
- Guay, S., et al. (2018). **Analyse de la connectivité structurelle chez les athlètes commotionnés à la retraite**. *40th annual conference of the Société Québécoise pour la Recherche en Psychologie*, Quebec, QC.
- Guay, S., et al. (2018). **Investigation du connectome structurel d'athlètes commotionnés**. *Annual Hôpital du Sacré-Coeur Scientific Day*, Montreal, QC.
- Guay, S., et al. (2016). **Effet de la stimulation transcrânienne par courant alternatif (tACS) sur l'activité cérébrale d'athlètes commotionnés**. *Annual CogNAC Research Group Scientific Day*, Trois-Rivières, QC.

Publications

- Parsons, S., Azevedo, F., Elsherif, M., **Guay, S.**, [...], & Azcel, B. (2022). **A Community-Sourced Glossary of Open Scholarship Terms**. *Nature Human Behaviour*. 10.1038/s41562-021-01269-4
- Poulin, P., Theaud, G., Rheault, F., St-Onge, E., Bore, A., Renauld, E., De Beaumont, L., **Guay, S.**, Jodoin, P., & Descoteaux, M. (2021). **TractoInferno: A large-scale, open-source, multi-site database for machine learning dMRI tractography**. *bioRxiv*. 10.1101/2021.11.29.470422
- Levitis, E., [...], **Guay, S.**, [...], & Maumet, C. (2021). **Centering inclusivity in the design of online conferences—An OHBM–Open Science perspective**. *GigaScience*, (8). 10.1093/gigascience/giab051
- Corbin-Berrigan, L., Wagnac, É., Vinet, S., Charlebois-Plante, C., **Guay, S.**, & De Beaumont, L. (2021). **Head impacts in canadian varsity football: An exploratory study**. *Concussion*, pp.CNC93. 10.2217/cnc-2020-0024
- De Koninck, B., **Guay, S.**, Blais, H., & De Beaumont, L. (2021). **Parametric study of transcranial alternating current stimulation for brain alpha power modulation**. *Brain Communications*, (2). 10.1093/braincomms/fcab010
- Gau, R., [...], **Guay, S.**, [...], & Zuo, X. (2021). **Brainhack: Developing a culture of open, inclusive, community-driven neuroscience**. *Neuron*. 10.1016/j.neuron.2021.04.001
- Lefebvre, G., **Guay, S.**, Chamard, E., Theaud, G., de Guise, E., Bacon, B., Descoteaux, M., De Beaumont, L., & Théoret, H. (2020). **Diffusion tensor imaging in contact and non-contact university-level sport athletes**. *Journal of Neurotrauma*. 10.1089/neu.2020.7170
- Corbin-Berrigan, L., Teel, E., Vinet, S., De Koninck, B., **Guay, S.**, Beaulieu, C., & De Beaumont, L. (2020). **The use of electroencephalography as an informative tool in assisting early clinical management after sport-related concussion: A systematic review**. *Neuropsychology Review*. 10.1007/s11065-020-09442-8
- Woodley, L., [...], **Guay, S.**, [...], & Vasko, S. (2020). **A guide to using virtual events to facilitate community building: Curated resources**. *Zenodo*. 10.5281/ZENODO.4270106
- Massé, I., Moquin, L., Provost, C., **Guay, S.**, Gratton, A., & De Beaumont, L. (2019). **A novel and translational rat model of concussion combining force and rotation with in vivo cerebral microdialysis**. *Journal of Visualized Experiments*. 10.3791/59585

Publications (continued)

Azevedo, F., Parsons, S., Micheli, L., Strand, J., Rinke, E., **Guay, S.**, [...], & FORRT (2019). **Introducing a Framework for Open and Reproducible Research Training (FORRT)**. *preprint*. [10.31219/osf.io/bnh7p](https://doi.org/10.31219/osf.io/bnh7p)

Tennant, J., Caron, B., Havemann, J., **Guay, S.**, Colomb, J., Lantsoght, E., Tóth-Czifra, E., Kriegel, K., Ahinon, J., & Smout, C. (2019). **OpenScienceMOOC/module-1-open-principles: Second release**. [10.5281/ZENODO.2595951](https://doi.org/10.5281/ZENODO.2595951)

Babiloni, A., **Guay, S.**, Nixdorf, D., De Beaumont, L., & Lavigne, G. (2018). **Non-invasive brain stimulation in chronic orofacial pain: A systematic review**. *Journal of Pain Research*, , pp.1445-1457. [10.2147/jpr.s168705](https://doi.org/10.2147/jpr.s168705)

Carrier-Toutant, F., **Guay, S.**, Beaulieu, C., Léveillé, É., Turcotte-Giroux, A., Papineau, S., Brisson, B., D'Hondt, F., & De Beaumont, L. (2018). **Effects of repeated concussions and sex on early processing of emotional facial expressions as revealed by electrophysiology**. *Journal of the International Neuropsychological Society*, (7), pp.673-683. [10.1017/s1355617718000231](https://doi.org/10.1017/s1355617718000231)

Guay, S., De Beaumont, L., Drisdelle, B., Lina, J., & Jolicoeur, P. (2018). **Electrophysiological impact of multiple concussions in asymptomatic athletes: A re-analysis based on alpha activity during a visual-spatial attention task**. *Neuropsychologia*, , pp.42 - 49. [10.1016/j.neuropsychologia.2017.11.022](https://doi.org/10.1016/j.neuropsychologia.2017.11.022)

Massé, I., Moquin, L., Provost, C., **Guay, S.**, Gratton, A., & De Beaumont, L. (2018). **In vivo cerebral microdialysis validation of the acute central glutamate response in a translational rat model of concussion combining force and rotation**. *bioRxiv*. [10.1101/432633](https://doi.org/10.1101/432633)

Léveillé, E., **Guay, S.**, Blais, C., Scherzer, P., & De Beaumont, L. (2017). **Sex-related differences in emotion recognition in multi-concussed athletes**. *Journal of the International Neuropsychological Society*, (1), pp.65-77. [10.1017/S1355617716001004](https://doi.org/10.1017/S1355617716001004)

Guay, S., Gagnon, J., Gélinas, S., & Cantinotti, M. (2016). **Introduction à la puissance statistique avec G*Power 3**. *Service de soutien et d'entraide en méthodologie, Trois-Rivières, QC.*

Outreach

Talks for the General Public

Guay, S. (2019). **Commotions cérébrales: Un combat multidisciplinaire | Sports-related Concussions: A multidisciplinary fight**. *Faculté des arts et sciences, Université de Montréal, Montreal, QC.*, 2019-10-24.

Guay, S. (2020). **Commotions cérébrales: Un combat multidisciplinaire | Sports-related Concussions: A multidisciplinary fight**. *Collège Stanislas, Montreal, QC.*, 2020-02-13.

Guay, S. (2020). **Commotions cérébrales: Un combat multidisciplinaire | Sports-related Concussions: A multidisciplinary fight**. *Collège Stanislas, Montreal, QC.*, 2020-01-30.

Interviews

Guay, S. (2019). **Protect ya brain**. *2019-10-01*, SBC Skateboard Magazine.

Other types of contributions

Collaborative blog posts

Steward, A., Bennett, A., Freeberg, M., Sharan, M., Doherty, M., Guay, S., & Yehudi, Y. (2020). **Key skills to know before mentoring**. *2020-10-09*, Software Sustainability Institute's Blog.

Lescak, E., Champieux, R., Doherty, M., Laderas, T., Guay, S., Robinson, E., & Bilgin, I. (2021). **Supporting Open Research Communities During COVID**. *2021-02-05*, Code for Science & Society's Blog.

Panel

Guay, S., Larivière, V., & Paquin, É. (2019). **Démystifier l'accès libre en recherche**. *2019-03-25*, Bar de sciences, Mois de la recherche de l'Université de Montréal.