

LEYLA LOUED-KHENISSI

Email : lkhenissi@gmail.com Nationalities: USA, Tunisia ; Swiss Permit C
Languages (Native/Fluent): French, English, Arabic ; (B2): German



Research Interests

Neuroimaging, Cognitive Neuroscience, Consciousness, Decision-making, Uncertainty, Computational Modeling, Altered States, Greater Good, AI

Methods

MRI, fMRI, Behavioral Economics, Psychophysics, Computational Modeling

Professional Research Experience

- 2022- Post-doctoral Fellow, MIPLab, EPFL/Labnic Université de Genève. PIs: Profs. Vuilleumier and Van de Ville. Modeling fMRI responses to film and emotion
- 2019-2021 Post-doctoral Fellow, Theory of Pain Laboratory, University of Geneva. PI : Prof. Corrado-Dell'Acqua. Investigating inference on expected pain and pain uncertainty.
- 2018-2019 Post-doctoral Fellow, Laboratoire de Recherche en Neuroimagerie, CHUV : Researching the impact of economic status on neuroimaging data (qMRI) in a large cohort (CoLaus).

Education

- 2014-2018 Ecole Polytechnique Fédérale de Lausanne (EPFL)
Brain Mind Institute
Doctoral Assistant, Neuroscience (EDNE)
Thesis Title: "Belief as a Wise Wager : The Neural Representation of Uncertainty, Surprise and Confidence Across Cognitive and Perceptual Domains "
- 2007-2010 Open University, Milton Keynes, United Kingdom
M.Sc. Research Methods in Psychology

Dissertation Title: "Could Envy Lie Behind Egalitarian Motives?"

Pre-Doctoral Research Experience

- 2007 *Research Internship, Department of Neurology USZ, PI: Dr. Peter Brugger* Investigation of Dermo-optical perception, a study replication of an experiment originally conducted in 1966
- 2004-2005 *Research Associate, UCLA, Laboratory of Neuromolecular Imaging. PI: Prof. E. D. London* Neuroimaging of methamphetamine abuse, PMS and OCD using FDG. Duties included running PET scans, acquiring, preprocessing and analyzing image data, using MRlcro, SPM99, SPM2, and MedX. Studies focused on smokers, methamphetamine abusers, PMDD sufferers and OCD patients.
- 2001-2002 *Data Analyst, Functional Brain Mapping Division, New York State Psychiatric Institute. PI: Mark Laruelle.* Neuroimaging using PET and some SPECT in substance abuse, autism, schizophrenia and OCD. Duties included pre-processing and analysis of image data, using SPM and MedX. Image data acquired using C11 ligands; data analyzed included NNC, DASB, MCN and RAC scans.

Volunteer Experience

- Volunteer with the Multidisciplinary Association for Psychedelic Studies
- Relief International, Volunteer, Santa Monica, CA, December 2003-May 2004
- Volunteer, Marijuana Policy Project, Capitol Hill, Washington DC August-September 2003
- Action Contre La Faim, Freetown, Sierra Leone, April-May, 1997

Technical Tools

Operating user, 3T Siemens MRI scanner ; Matlab ; Python; LaTeX ; Eyelink Eyetracker ; BioPac Systems ; Infrared Laser (Stimul 1340, El.En.)

Talks and Presentations

- Invited Speaker, « the Neuroscience of Consciousness and Beyond », Shankra Festival, Lostallo, Switzerland, July 2022
- Invited Speaker, CIBM/BBL research day, University of Geneva, June 2022
- Invited Speaker, Bavelier Laboratory, University of Geneva, May 2022
- Invited Speaker, Societal Challenges Seminar, University of Geneva, October, 2021
- Host & Presenter, NeuroMatch Conference III, October, 2020

- Host & Presenter, NeuroMatch Conference II, May, 2020
- Invited Speaker, NeuroMatch Conference, March 31, 2020
- Invited Speaker, Alpine Brain Imaging Meeting, Champéry, Switzerland, January 8, 2018
- Invited Speaker, Nestle Research Center, Lausanne, September 18, 2017
- Invited Speaker, Apéro(Neuro)Science, BioScience Network Lausanne, Lausanne, March 14, 2017
- Invited speaker, Human Brain Project Summit, Florence, Italy 2016

Grants and Awards

- Research Grant Foundation for Scientific Research at the UZH (STWF-22-004, **Prof. Davide Scaramuzza**, University of Zurich, March 2022
- Travel Grant from the Centre Interdisciplinaire des Sciences Affectives, Université de Genève, January 2022
- Research Grant from the Centre Interdisciplinaire des Sciences Affectives, Université de Genève, November 2021
- Research Grant from the Centre Interdisciplinaire des Sciences Affectives, Université de Genève, November 2020
- First Prize Winner, Science Writing Competition, Human Brain Project Summit, Florence, Italy, 2016
- Short-list, Richard Casement Internship for Science writing, Economist, 2004

Leadership Skills

- Life Sciences Faculty Council, SV, EPFL September 2016-December 2017

Reviewing

European Journal of Neuroscience ; Biological Psychiatry ; Frontiers in Behavioral Neuroscience ; Cortex ; Peer J ; Royal Society Open Science ; NeuroImage ; Neuroscience Letters ; Psychology Research & Behavior Management ; PCI Registered Reports; National Science Center (Poland); Cognitive Neurodynamics; Communications Biology; Proceedings of the Royal Society Biological Sciences

Teaching

- CISA, Université de Genève Graduate Seminar on Affective Science, November, 2022
- « Press Release » of scientific paper, New York University, May 4, 2020
- fMRI course, Lemanic Neuroscience, Fall, 2018
- Neuroscience III (Prof. Carmen Sandi)
- Algèbre Linéaire (Prof. Kathryn Hess-Bellwald)
 - _Guest Lecture : Application de l'algèbre linéaire en IRMf

Mentoring

- Undergraduate : Anaïs Chloé G., 2016, SV, EPFL
- Masters : Luis Joachim S., 2020-2021, Psychology, Université de Genève
- Masters : Giorgia Antonia B., 2021, Neurosciences, Université de Genève
- Neuromatch Computational Neuroscience Summer School mentor, July 2022

Conference Proceedings

The Curious Brain: After reward and surprise, information gain. L.Loued-Khenissi, ICLR, Brain 2AI workshop, May 7, 2021

Courses

- Neuromatch Academy Deep Learning Course, Summer, 2021
- Computational Psychiatry Course 2021, the Translational Neuromodeling Unit, University of Zurich & ETH Zurich.

Publications

Loued-Khenissi, L. (2022) Allow error into your life and experience the joy of surprise. *Psyche Magazine*. United Kingdom, 2022.

Loued-Khenissi, L., Martin-Brevet, S., Schumacher, L. J., & Corradi-Dell'Acqua, C. (2022). The Effect of Uncertainty on Pain Decisions for Self and Others.

Loued-Khenissi, L., Trofimova, O., Vollenweider, P., Marques-Vidal, P., Preisig, M., Lutti, A., ... & Draganski, B. (2022). Signatures of life course socioeconomic conditions in brain anatomy. *Human Brain Mapping*.

Trofimova, O., **Loued-Khenissi, L.**, DiDomenicantonio, G., Lutti, A., Kliegel, M., Stringhini, S., ... & Draganski, B. (2021). Brain tissue properties link cardio-vascular risk factors, mood and cognitive performance in the CoLaus PsyCoLaus epidemiological cohort. *Neurobiology of Aging*.

Loued-Khenissi, L., & Corradi-Dell'Acqua, C. Assessing Self-Other Distinctions Through Decision-making Under Risk in The Era of Covid-19.

Loued-Khenissi, L., & Preuschoff, K. (2020). A Bird's eye view from below: Activity in the temporo-parietal junction predicts from-above Necker Cube percepts. *Neuropsychologia*, 149, 107654.

Loued-Khenissi, L., Trofimova, O., Vollenweider, P., Marques-Vidal, P., Preisig, M., Lutti, A., ... & Draganski, B. (2020). The Inequality of Neural Destiny: Signatures of Lifecourse Socioeconomic Conditions in Markers of Brain Tissue Myelination and Volume. *medRxiv*.

Loued-Khenissi, L., Pfeuffer, A., Einhäuser, W., & Preuschoff, K. (2020). Anterior insula reflects surprise in value-based decision-making and perception. *NeuroImage*, 116549.

Loued-Khenissi, L., & Preuschoff, K. (2020). Information Theoretic Characterization of Uncertainty Distinguishes Surprise from Accuracy Signals in the Brain. *Frontiers in Artificial Intelligence*, 3, 5.

Fiorito, G., McCrory, C., Robinson, O., Carmeli, C., Rosales, C. O., Zhang, Y., ... **Loued-Khenissi, L...** & Jeong, A. (2019). Socioeconomic position, lifestyle habits and biomarkers of epigenetic aging: a multi-cohort analysis. *Aging (Albany NY)*, 11(7), 2045.

Loued-Khenissi, L., Döll, O., & Preuschoff, K. (2018). An Overview of Functional Magnetic Resonance Imaging Techniques for Organizational Research. *Organizational Research Methods*, 1094428118802631.

Bendahan, S., Goette, L., Thoresen, J., **Loued-Khenissi, L.**, Hollis, F., & Sandi, C. (2017). Acute stress alters individual risk taking in a time-dependent manner and leads to anti-social risk. *European journal of neuroscience*, 45(7), 877-885.

Loued-Khenissi, L., & Preuschoff, K. (2015). Apathy and noradrenaline: silent partners to mild cognitive impairment in Parkinson's disease?. *Current opinion in neurology*, 28(4), 344-350.

Narendran R, Frankle WG, Keefe R, Gil R, Martinez D, Slifstein M, Kegeles LS, Talbot PS, Huang Y, Hwang DR, **Khenissi L**, Cooper TB, Laruelle M, Abi-Dargham A. Altered prefrontal dopaminergic function in chronic recreational ketamine users. *Am. J. Psychiatry* 2005 Dec;162(12):2352-9.

Poster Presentations

1. Imaging the Locus Coeruleus: An fMRI Sequence Comparison Study
Leyla Loued-Khenissi, Vasiliki Liakoni, Remi Castella, Antoine Lutti, Ferhat Kherif, Bogdan Draganski, Kerstin Preuschoff, Swiss Society for Neuroscience Annual Meeting, Lausanne, January, 2016

2. The Neural Correlates of Surprise, L. Loued-Khenissi, Antoine Lutti, K. Preuschoff, Alpine Brain Imaging Meeting, Champéry, January 2016

3. Imaging the Neural Correlates of Surprise, Leyla Loued-Khenissi, Vasiliki Liakoni, Antoine Lutti, Bogdan Draganski, Ferath Kherif, Kerstin Preuschoff, Organization for Human Brain Mapping (OHBM) Annual Meeting, Geneva, June 2016

4. The brain on bistable illusions, L. Loued-Khenissi, A. Pfeuffer, W. Einhauser, K. Preuschoff, Federation of European Neuroscience Societies (FENS) Forum, Copenhagen, July 2016

5. Common Neural Correlates of Uncertainty in Perceptual and Cognitive Decision-Making, Leyla Loued-Khenissi, A. Pfeuffer, W. Einhauser, Kerstin Preuschoff Society for Neuroeconomics Annual meeting, Berlin, August 2016

6. Common Neural Correlates of Uncertainty in Perceptual and Cognitive Decision-Making L. Loued-Khenissi, A. Pfeuffer, W. Einhauser, K. Preuschoff, Alpine Brain Imaging Meeting, Champéry, January 2017

7. Neural Correlates of Surprise and Entropy in a Financial Decision-Making Task L. Loued-Khenissi, K. Preuschoff, Neural Implementation of Learning Symposium, EPFL, November, 2017

8. Neural Correlates of Socio-economic Status in MRI Markers of Tissue Myelination and Grey Matter Volume. Leyla Loued-Khenissi , Olga Trofimova, Peter Vollenweider, Martin Preisig, Antoine Lutti, Ferhat Kherif, Cristian Carmeli, Dusan Petrovic, Mathias Kliegel, Silvia Stringhini, Bogdan Draganski. Organization for Human Brain Mapping Annual Meeting, Rome, June , 2019.

9. A Bird's Eye View Lying Down: The temporo-parietal junction's general role in egocentric reference frames Leyla Loued-Khenissi, A. Pfeuffer, W. Einhauser, Kerstin Preuschoff. Alpine Brain Imaging Meeting, Champéry, January 2020

10. The Effect of Uncertainty on Pain Valuation in Self and Others. Loued-Khenissi, L.; Martin, S.; Schumacher, L.; Corradi-Dell'Acqua, C. Symposium on Biology of Decision-Making, May 2021

11. The Effect of Uncertainty on Pain Valuation in Self and Others. Loued-Khenissi, L.; Martin, S.; Schumacher, L.; Corradi-Dell'Acqua, C. Cognitive and Affective Neuroscience of Pain, June 2021

12. Inferential errors downgrade the neural response and subjective assessment of pain in both self and others. Loued-Khenissi, L.; Bergmann, G.; Corradi-Dell'Acqua, C. Alpine Brain Imaging Meeting, Champéry, January 2022

13. The Gravity Prior: Perceptual Decision-making Under Uncertainty in a Space Analog Environment. Leyla Loued-Khenissi, Christian Pfeiffer, Rupal Saxena, Shivam Adarsh, Davide Scaramuzza. Alpine Brain Imaging Meeting, Champéry, January 2023