

Guillaume P. Pech

PhD Student, Université libre de Bruxelles (ULB)

CO3 lab (Université libre de Bruxelles) supervised by prof. Axel Cleeremans

BI lab (Chapman University) co-supervised by prof. Uri Maoz

M&SB lab (Ghent University) collaborating with prof. Emilie Caspar

PERSONAL INFORMATION

Last Name, First Name: Pech, Guillaume P.

Gender: Male

Date and Place of Birth: 28/11/1994, Dieppe (France)

Address: Brussels, Belgium

Language: French (mother tongue), English (B2+)

Github : <https://github.com/GuillaumePech>

I graduated from the master in cognitive sciences at the University of Lyon Lumière 2 (France) in 2021. Then, I had the opportunity to work as a research assistant during 8 months at the Université Libre de Bruxelles with Prof. Emilie CASPAR (M&SB lab). We conducted projects investigating several processes related to decision-making, such as the sense of agency, empathy for pain and cognitive conflict using EEG. We approached rare populations such as inmates, military, and former perpetrators and survivors of the genocide in Rwanda. In 2022, I had the honor to receive a 6-month predoctoral fellowship offered by the Neurophilosophy of Free Will for the project 'Does the Readiness Potential reflect action initiation or uncertainty?'.

I am now a PhD student under the supervision of Pr. Axel CLEEREMANS (CO3) and Pr. Uri MAOZ (Brain Institute). My research focuses on the neural markers of volition, with a specific interest in the Readiness Potential. In a broader sense, my topic of interest is to investigate how to model decision-making and how these findings can feed the debate on free-will. I also collaborate with the M&SB lab for projects involving social and moral decision-making.

MAJOR RESEARCH INTERESTS

Intentions, free will, Voluntary actions, Sense of agency, Empathy, Meta-Science, Inferences.

PhD title

What are the characteristics of volition and how does our measurement relate to them? an investigation of self-report, implicit markers (i.e., temporal binding) and neural activity (i.e., Readiness potential).

ACADEMIC DEGREES

2019-2021 **MA** – Cognitive Science – Université Lumière Lyon 2 & ENS Lyon

2016-2019 **BA** – Cognitive Science – Université Lumière Lyon 2

WORKSHOPS - SUMMER SCHOOL

- **Cognestic 2022** – Cognitive Neuroimaging Skills Training In Cambridge, 5 days.
- **Cutting Garden EEG 2023-2024** – cutting-edge methods for M/EEG data analysis, 4 days.
- **Neuromatch 2024** - Neuromatch computational neuroscience – 3 weeks.
- **Model Based Neuroscience 2024** – Cognitive modeling using evidence-accumulation models and cognitive neuroscience methods – 5 days.

GRANTS AND AWARDS

- **Award (14,000\$)** - 2022 Worldwide Competition in the Neurophilosophy of Free Will – Project "Does the Readiness Potential reflect action initiation or uncertainty?"
- **Funding (four-years PhD Scholarship, full-time salary)** – National Fund for Scientific Research (aspirant FRS-F.N.R.S.). Project "Can we predict an intention to act? An investigation of the Readiness Potential as a neural markers of voluntary actions"
- **Award (5,000 yens ~ 30\$)** – Open Science Award at the Society for Social Neuroscience conference in 2024 – Poster "A novel electroencephalography-based paradigm to measure intergroup prosociality: An intergenerational study in the aftermath of the genocide against Tutsis in Rwanda."
- **Funding (1750€)** – Mobility and Congress funding (FNRS) in 2024.
- **Funding (600€)** – Mobility and Congress funding (FNRS) in 2025.

PUBLICATIONS

1. **Pech, P.G.** & Caspar A.E. (2022). Can a video game with a fictional minority group decrease intergroup biases towards non-fictional minorities? A social neuroscience study. *International Journal of Human-Computer Interaction*
2. **Pech, P.G.** & Caspar A.E. (2023). Does the cowl make the monk? The effect of military and Red Cross uniforms on empathy for pain, sense of agency and moral behaviors. *Frontiers in psychology*
3. Caspar A.E., **Pech, P.G.**, Gishoma D., C. Kanazayire (2023). On the impact of the genocide on the intergroup empathy bias between former perpetrators, survivors, and their children in Rwanda. *American Psychologist*.
4. **Pech, P.G.**, Gishoma D., Caspar A.E. (2024). A novel electroencephalography-based paradigm to measure intergroup prosociality: An intergenerational study in the aftermath of the genocide against Tutsis in Rwanda. *Journal of Experimental Psychology: General*
5. Caspar A.E. & **Pech, P.G.** (2024). Obedience to authority reduces cognitive conflict before an action. *Social neuroscience*
6. Caspar A.E., Nicolay E., Banderembaho F., **Pech, P.G.** (2024). Volition as a modulator of the intergroup empathy bias. *Social neuroscience*.
7. Caspar, E. A., **Pech, G. P.**, & Ros, P. (2025). Long-term affective and non-affective brain alterations across three generations following the genocide in Cambodia. *Biological Psychology*.
8. **Pech, G. P.**, & Caspar, E. A. (2025). A cross-cultural EEG study of how obedience and conformity influence reconciliation intentions. *Social Cognitive and Affective Neuroscience*.
9. **Pech, P.G.**, Caspar A.E., Pacherie E., Cleeremans A., Maoz U. (2025). A multi-measurement study of the relation between deliberation and volition. *Neuroscience of Consciousness*.

PRESENTATIONS

- **Symposium** – presentation A novel EEG-based paradigm to measure intergroup prosociality ICPS 2023
- **Teaching** – Research seminar 2022-2023-2024. Ma1-Ma2 - Neuropsychology and cognitive development ULB ~150hours
- **Lecture** – Introduction to the neuroscience of Free-Will – Ba1 - Law student 2hours – 2023 - 2024
- **Invited talks** – presentation of "A multi-measurement study of the relation between deliberation and volition" at the Neurophilosophy of free-will meeting 2023 ~ 30min
- **Teaching** – Consultant for the restructuration of the course "Outils et Méthode en Neuropsychology" following a Fond d'Encouragement à l'Enseignement funding received by Prof. Adélaïde De Heering – 2023-2024
- **Teaching** – Introduction to Bayesian modeling for members of the CRCN department (based on the Chapter 1 to 9 of the Statistical Rethinking written by Richard McElreath). 5 x 2 hours.
- **Teaching** – Introduction to EEG pre-processing and extraction of ERPs in the time and time-frequency domain with the MNE library on python. For members of the CRCN department 2 x 2 hours.

- **Symposium** – presentation of “A cross-cultural EEG study of how obedience and conformity influence reconciliation intentions” - ESCAN 2024
- **Lecture** – Linear Mixed models - Ma1 - Neuropsychology and cognitive development ULB 2 x 2hours 2024
- **Lecture** – Introduction to Evidence Accumulation Models – Ma1 - Neuropsychology and cognitive development ULB 2hours 2025. <https://colab.research.google.com/drive/1BGMNS-1piSNQyAPyNgwEvq09w8nbQpOQ?usp=sharing>
- **Lecture** – Introduction to (Deep) Neural Networks - Ma1 - Neuropsychology and cognitive development ULB 2hours 2025. <https://colab.research.google.com/drive/1JA15btj7kulCfZeBgauZFNoXVDX5IRTP?usp=sharing>
- **Symposium** – presentation of “A cross-cultural EEG study of how obedience and conformity influence reconciliation intentions” - BAPS 2025
- **Oral presentation** – presentation of “A simulated comparison of three univariate outlier detection methods—Standard Deviation (SD), Median Absolute Deviation (MAD), and Interquartile Range (IQR)—across various distributions, data points, and outlier scenarios: introduction of a new method, the MAD, IQR, and SD Simultaneously (MISS method)”. BAPS 2025.
- **Oral presentation** – presentation of “The role of endogenous inputs for self-generated action. A multi-measurement study comparing markers of volition.” ASSC 2025
- **Invited talk** – title “What makes an action both self-generated and deliberated” at the workshop “Uncertainty of Mind in the Context of Addressing Questions of Accountability and Prevention in Criminal Law” hosted by the Research group on Crime, Responsibility and Security, Faculty of Law at the University in Bergen. ~ 45 min

POSTERS

- Baps conference 2022 – Does the cowl make the monk?
- Neurizons conference 2022 – Does the cowl make the monk?
- ICPS conference 2023 – A novel EEG-based paradigm to measure intergroup prosociality
- ASSC conference 2023 – A multi-measurement study of the relation between deliberation and volition
- UNI conference 2023 – A multi-measurement study of the relation between deliberation and volition
- SBDM conference 2023 – A multi-measurement study of the relation between deliberation and volition
- Neurophil meeting conference 2023 – A novel EEG-based paradigm to measure intergroup prosociality
- UNI conference 2023 – A multi-measurement study of the relation between deliberation and volition
- ESCAN conference 2023 – A novel EEG-based paradigm to measure intergroup prosociality
- S4SN conference 2024 – A novel EEG-based paradigm to measure intergroup prosociality
- UNI conference 2025 – The role of endogenous inputs for self-generated action. A multi-measurement study comparing markers of volition.
- SBDM conference 2025 – The role of endogenous inputs for self-generated action. A multi-measurement study comparing markers of volition.

SUPERVISION

- **7 Master thesis supervised** (Adrien Grondin 2024 – Eva Nicolay 2024 – Ines Saadi 2024 – Sofia Berry 2024 – Pierre Vroye 2025 – Angelo Stelino 2025 – Romain Zlatanovic 2025)
- **3 Master thesis co-supervised** (Joanna Bannach 2023 – Stephan Stoica2023 – Elie Castagnos 2023)
- **10 Research internships supervised** (Amine Bennis 2023 – Irina Negru 2023 – Nathan Vaccaro 2023 – Pierre Vroye 2024 – Deniz Barut Muazzez 2024 – Romain Zlatanovic 2024 – Myriam Merzouki 2025 – Ibtissam Yaakoub 2025 – Roseline Kayenbergh 2025 – Zakharia Van Dorpe 2025)
- **10 Research internships co-supervised** (Arnaud Tiberghien 2022 – Vincent Capello & Theo Ramade 2023 – Mouna Begdouri Harfouch 2022 – Heriberto Antonio Matos Rosal & Lois Martin 2022 - Eva Nicolay 2023 – Mattis Ieness 2024 – Rita Lima 2024 – Fanny Pasquier 2024)
- **1 Research assistant supervised** (Chouaa Chaimae 2024)

REVIEW

- 1 co-Review for PNAS 2024
- 1 co-Review for Psychological Bulletin 2024

- 1 co-Review for Neuroimage 2024
- 1 review for CABN 2025
- 1 review for Scientific Reports 2025
- 2 review for Consciousness and Cognition 2025
- 1 review for SYNT 2025

MEDIA engagement, VULGARISATION

- Audio vulgarization ICPS 2023 - <https://www.psychologicalscience.org/observer/genetics-talks>
- Master and Doctoral meeting organized by the BEPsyEL – ULB 2023
- Podcast on free will - Milgram de Savoir 2024 <https://milgram.ulb.be/100g/episodes-100g/libre-arbitre/>
- Podcast on ethics in science – Milgram de Savoir 2025 <https://milgram.ulb.be/100g/episodes-100g/pratiques-ethiques/>
- My thesis in 180 secs (MT180) 2025 at the ULB.

ADMINISTRATIVE ACTIVITIES

- Member of the ethic board 2024-2025 - department of Psychological Sciences, Education and Logopedia of ULB
- Member of the Organisation Committee of the Belgium Association of Psychological Science conference (BAPS) – 2024-2025