



Mouratille DAMIEN, PHD

Human Factors Researcher

 [linkedin.com/in/damien-mouratille](https://www.linkedin.com/in/damien-mouratille)  Toulouse (France)  damien.mouratille@outlook.com  +33 7 61 51 66 88

RESEARCH EXPERIENCE

Today
August 2024

Assistant professor in Human Factors, ENAC, Toulouse

Teaching, Selection and Research

Activity 1: Selection of Pilot students. Development of tests assessing cognitive abilities and social competencies. Psychometrics and predictive validity studies of these tests. Assessment center for ENAC and airlines (Air France, HOP, etc.).

Activity 2: Cognitive fitness of "Old" Air Traffic Controllers (ATCO). Swiss regulation on the increase of retirement age. Study on the impact of aging on cognitive abilities in response of this new regulation. Implementation of recommendations: cognitive fitness assessment in order to work longer, longitudinal cognitive follow-up from the academy to retirement, etc. Activity with the board company (Skyguide), social partners (HelvetiCA), company doctors, ATCO, etc.

Activity 3: Research in Human Factors (cognitive abilities, aging, startle effect, cognitive assistant, physiological measures, Competency-Based Training and Assessment).

Activity 4: Teaching of Human factors courses to ATCO, pilots and engineers.

Activity 5: Member of the scientific board of the European Association for Aviation Psychology (EAAP) and ENAC representative on the French Aviation Safety Network and Eurocontrol ATCO Training Team.

Activity 6: Supervision of students and interns.

Selection Research Teaching Statistics Current

July 2024
June 2022

Post-doc, ENAC, Toulouse

Supervision: Dr. Nadine Matton and Dr. Jean-Paul Imbert

Project 1: Selection of ATCO based on psychotechnical and physiological measures

Project 2: Competency-Based Training and Assessment of ATCO and Pilots

Project 3: Aging and cognitive abilities of Swiss ATCO

Project 4: Selection of pilots based on psychotechnical measures

Project 5: Development of an eye-tracking library (ArGaze)

Selection Research Teaching Statistics Finished

June 2022
June 2019

PhD thesis, ENAC, Toulouse

Supervision: Dr. Nadine Matton and Pr. Franck Amadiou

Research Topic: Individual differences in competencies: psychotechnical and physiological assessments applied to the selection of ATCO students

Confidential Finished

September 2018
July 2018

Engineer, CNRS, Toulouse

Supervision: Dr. Pierre-Vincent Paubel and Dr. Bastien Tremoliere

Research Topic: Mortality salience and physiological validation

Mortality salience Eye-Tracker ECG EDA Finished

June 2018
October 2017

Master thesis, CLLE, Toulouse

Supervision: Pr. Andre Tricot and Dr. Radouane El Yagoubi

Research Topic: Road safety and cognitive load - TBRS model and physiological measures

Working memory Cognitive workload EEG fNIRS EDA ECG Car simulator Finished

September 2017
May 2017

Research assistant, Co-DOT AND THALES CANADA, Quebec City (Canada)

Supervision: Dr. Cindy Chamberland & Pr. Sebastien Tremblay

Research Topic: Cognitive countermeasures as an intelligent solution to surveillance work

Attentional tunneling Eye-Tracker ECG EDA CCTV simulator Finished

April 2017
January 2017

Research assistant, ISAE-SUPAERO, Toulouse

Supervision: Pr. Mickael Causse

Research Topic: Decision making, Deafness and neurocognitive processes

Deafness High-density EEG ERP LORETA Finished

May 2017 | **Master thesis, ENAC, Toulouse**
 September 2016 | *Supervision: Dr. Radouane El-Yagoubi, Dr. Nadine Matton and Pr. Mickael Causse*
 Research Topic: Relationships between emotion and cognitive workload on flight simulator
 Cognitive workload | Emotion | EEG | fNIRS | EDA | ECG | Flight simulator | **Finished**

INDUSTRIAL EXPERIENCE

Today | **Freelancer, (NEURO & DATA)-SCIENTIST, Toulouse (France)**
 February 2020 | Methodological aspects of research from A to Z
Current

May 2023 | **Executive Assistant, FONDATION JONAS & CHALET JONAS, Casablanca (Maroc)**
 May 2022 | Health center for patients with neurodevelopmental disorders: psychologist, psychiatrist, speech therapist
 Volunteering | Management | Scientific advisor | Congress organizer | **Finished**

May 2019 | **(Neuro/Data)Scientist, HUMAN DESIGN GROUP, Toulouse (France)**
 October 2018 | Industrial Topic: Human Factors in SPO and Multimodal sensors fusion for pilot monitoring at EYDN – AIR-BUS Operation S.A.S.
 Sensors | Benchmarking | Python | **Finished**

EDUCATION

June 2022 | **PhD in Cognitive Psychology, FRENCH CIVIL AVIATION UNIVERSITY (ENAC), Toulouse**
 June 2019 | *Supervision: Pr. Franck Amadiou and Dr. Nadine Matton*

June 2018 | **Neuropsychology and Cognitive Master's Degree, WITH HONORS, University of Toulouse**
 September 2016 | *Supervision: Pr. Andre Tricot and Dr. Radouane El Yagoubi*

TEACHING EXPERIENCE

- › Everything you need for a successful defense (*Air Traffic Controller students, Aviation Technician students, African Aviation Technician students, Engineering students, ENAC, France*): 230h
- › Introduction to psychophysiology (*Psychology students, CHI students, Engineering students, UT2J and ENAC, France*): 54h
- › Human Factors (*Air Traffic controller students, ATSEP students, ENAC, France*): 50h
- › Cognitive Psychology (*Psychology students, UT2J, France*): 48h
- › Statistics (*STAPS students, UT3, France*): 24h
- › EEGLAB: Introduction & Hands-on (*Master and PhD students, Researchers, University of Mons, Belgium*): 4h

SKILLS

Programming Python, Matlab, R, PHP, JS, React-Native, Arduino, ESP32

Hardware Bitalino, Brain products, Biosemi, Biopac, Enobio, NirX, EyeLink, **Pupil Labs**, SmartEye, **Tobii**

EEG Assessment of brain rhythms (**spectral analysis**), extraction of neuronal activation induced by stimulus (**ERP**), resolve of inverse problem (LORETA)

ECG Heart rate and heart rate variability (**temporal analysis**), assessment of sympathetic and parasympathetic activity (**spectral analysis**)

fNIRS Assessment of hemodynamic activity (**temporal analysis**)

Eye-Tracker Scan path, **pupillometry**

EDA Assessment of tonic and phasic components (temporal analysis), assessment of sympathetic activity (spectral analysis)

Statistics Descriptive and inferential statistics, basic machine learning (SVM, LDA, LSTM, LLM), meta-analysis

Machine learning LLM, RAG

Others LabStreamingLayer, LaTeX, Eprime, Qualtrics, Microsoft Office

Scientific journal:

- ▶ **Mouratille, D.**, Amadiou, F., & Matton, N. (Manuscript submitted for publication). Cognitive Abilities for Air Traffic Controllers Selection: A Valid Predictor for Scientific Proficient Applicants?.
- ▶ de la Hogue, T., **Mouratille, D.**, Causse, M., & Imbert, J.-P. (Manuscript submitted for publication). ArGaze: An Open and FLexible Software Library for Gaze Analysis and Interaction.
- ▶ Causse, M., **Mouratille, D.**, Baumgartner, M., & Imbert, J.-P. (2025). The Impact of Age on Cognitive Performance at Work: A Focus on Pilots and Air Traffic Controllers. In Handbook of Aviation Neuropsychology; A Practical Guide for the Clinician. Hogrefe.
- ▶ Fabre, E. F., **Mouratille, D.**, Bonnemain, V., Palmiotti, G. P., & Causse, M. (2024). Making Moral Decisions With Artificial Agents As Advisors. An fNIRS Study. Computers in Human Behavior: Artificial Humans, 2, 100096
- ▶ Causse, M., **Mouratille, D.**, Rouillard, Y., El Yagoubi, R., Matton, N., & Hidalgo-Muñoz, A. (2024). How a pilot's brain copes with stress and mental load? Insights from the executive control network. Behavioural Brain Research, 456, 114698.
- ▶ **Mouratille, D.**, Amadiou, F. & Matton, N. (2022). A Meta-Analysis on Air Traffic Controllers Selection: Cognitive and Non-Cognitive Predictors. Journal of Vocational Behavior, 138.
- ▶ Causse, M., Parmentier, F., **Mouratille, D.**, Thibaut, D., Kisselenko, M., & Fabre, E. (2022). Busy and confused? High risk of missed alerts in the cockpit: an electrophysiological study. Brain Research, 1793.
- ▶ Hidalgo-Muñoz, A. R., **Mouratille, D.**, El-Yagoubi, R., Causse, M., Rouillard, Y., & Matton, N. (2021). Conscientiousness in Pilots Correlates with Electrodermal Stability: Study on Simulated Flights under Social Stress. Safety 2021, 7, 49.
- ▶ Djeriouat, H., Matton, N., & **Mouratille, D.** (2021). Does hostile intent cause physiological changes? An airport security check simulation experiment. International Journal of Psychophysiology, 165, 29-35.
- ▶ Hidalgo-Muñoz, A. R., **Mouratille, D.**, Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2018). Cardiovascular Correlates of Emotional State, Cognitive Workload and Personality Style during a Realistic Flight Simulation. International Journal of Psychophysiology, 128, 62-69.

Others:

- ▶ **Mouratille, D.**, Amadiou, F. & Matton, N. (September 2024). Cognitive Abilities and Gender during Air Traffic Controllers Selection and Training. 35th Conference of European Association for Aviation Psychology (EAAP). Athens (Greece).
- ▶ Marois, A., **Mouratille, D.**, Pratviel, Y., Chamberland, C., & Tremblay, S. (July 2024). Using Cardiac and Electrodermal Activity as Cognitive Markers for Interruptions and Distraction in a Surveillance Simulation. AHFE 2024. Nice (France).
- ▶ Baumgartner, M., Cabon, P., Drogoul, F., Causse, M., Imbert, J.-P., & **Mouratille, D.** (July 2024). Scientific Evaluation of the Impact of an Increase in the Retirement Age on the Cognitive Functions and Well-Being of Air Traffic Controllers (ATCOs). AHFE 2024. Nice (France).
- ▶ **Mouratille, D.**, Cabon, P., Drogoul, F., Imbert, J.-P., Baumgartner, M., & Causse, M. (July 2024). Évaluation Scientifique de l'Augmentation de l'Age de Départ à la Retraite sur les Fonctions Cognitives et le Bien-être des Contrôleurs Aériens. XXVes Journées Internationales de Psychologie Différentielle. Rennes (France).
- ▶ **Mouratille, D.**, Amadiou, F. & Matton, N. (July 2024). Habiletés cognitives pendant la formation de contrôleur aérien: stabilité ou évolution ? XXVes Journées Internationales de Psychologie Différentielle. Rennes (France).
- ▶ **Mouratille, D.**, Amadiou, F. & Matton, N. (May 2024). A Preliminary Study on the Predictive Validity of Neural Efficiency for the Air Traffic Controllers Selection. 2024 International Conference on Cognitive Aircraft Systems (ICCAS). Toulouse (France).
- ▶ **Mouratille, D.**, Cabon, P., Drogoul, F., Imbert, J.-P., Baumgartner, M., & Causse, M. (May 2024). A Physiological Study on the Impact of Aging on Cognitive Performance of Air Traffic Controllers. 2024 International Conference on Cognitive Aircraft Systems (ICCAS). Toulouse (France).
- ▶ **Mouratille, D.**, Cabon, P., Drogoul, F., Causse, M., Imbert, J.-P., & Baumgartner, M. (May 2024). The Retirement Age of ATCOs: A Case Study on the Application of Science to Address a Societal Issue in Switzerland. 2024 Annual Meeting of the Aerospace Medical Association. Chicago (USA).
- ▶ Causse, M., **Mouratille, D.**, & Imbert J.-P. (2023). Cognitive performance and ageing in air traffic controllers: when to retire? 2023 Padova MAIA Project. Padova (Italia).
- ▶ **Mouratille, D.**, Matton, N. & Amadiou, F. (2021). A Preliminary Study on the Usefulness of Physiological Assessment for the ATCO Selection. 2021 International Symposium on Aviation Psychology (ISAP). Oregon State University (USA).
- ▶ Hidalgo-Muñoz, A. R., **Mouratille, D.**, Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2020). Influence of Anxiety and Mental Workload on Flight performance in a Flight Simulator. In proceedings of 1st International Conference On Cognitive Aircraft Systems (ICCAS). Toulouse (France).
- ▶ **Mouratille, D.**, Hidalgo-Muñoz, A. R., Matton, N., Rouillard, Y., El-Yagoubi, R. & Causse, M. (2020). Flight simulator and fNIRS: study of relation between acute stress and cognitive workload. In proceedings of 1st International Conference On Cognitive Aircraft Systems (ICCAS). Toulouse (France).
- ▶ Hidalgo-Muñoz, A. R., **Mouratille, D.**, Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2018). Cognitive workload and personality styles in pilots: a heart rate study. Driver Distraction and Inattention (DDI). Gothenburg (Sweden)

- **Mouratille, D.**, Hidalgo-Muñoz, A. R., Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2017). Emotional state and cognitive workload during a flight simulation: heart rate study. In proceedings of 19th International Conference on Applications of Neuropsychology, Cognition, Emotion, and Motivation (ICANCEM). Venice (Italy).
- Hidalgo-Muñoz, A. R., **Mouratille, D.**, Matton, N., Causse, M., Rouillard, Y., & El-Yagoubi, R. (2017). Cardiovascular Activity linked to the Emotional State and Cognitive Workload during a Flight Simulation. In proceedings of 4th International Conference on Physiological Computing Systems (ICPCS). Madrid (Spain).

OTHERS

- Supervisor of Master students: 1 Aeronautical Engineer, 4 Air Traffic Controllers
- Member of an association of science popularization: Incognu (Toulouse) since September 2019
- Doctoral student representative at ENAC Research Council (Toulouse): 2021-2022
- Co-organizer of 2017 Brain Week (Toulouse)