# Dominique Makowski

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Born: October 19, 1991 – Clamart, France (25 years old)

Nationality: French (FRA)



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# **Current position**

PhD Student

Memory & Cognition Lab', Institute of Psychology, University of Sorbonne Paris Cité, Paris, France Center for Psychiatry & Neuroscience, INSERM U894, Sainte-Anne Hospital, Paris, France

### Education

2014-17 DOCTOR OF PHILOSOPHY (PHD)

Neuropsychology, University of Sorbonne Paris Cité, Paris, France

*Thesis.* Beyond Reality: Neuropsychology of the Sense of Reality and its Relationship with Emotion Regulation, Memory and Consciousness.

Supervisor. Pr. Serge Nicolas

2014-17 CERTIFIED PSYCHOTHERAPIST

**Cognitive-Behavioural Therapy (CBT)**, French Association for Cognitive-Behavioural Therapy (AFTCC), Paris, France

*Thesis.* Cognitive and Behavioural Therapy of two Patients: One suffering from Motivation Disorder associated with Dysthymia and the other from Social Anxiety.

Supervisor. Sophie Kindynis

2012-14 MASTER OF SCIENCE (MSc) - LICENCED PSYCHOLOGIST

Neuropsychology and Cognitive Psychology, University of Sorbonne Paris Cité, Paris, France

Second year Thesis. How the Study of Emotions in Schizophrenia enlight the Paradox of Fiction

Supervisor. Pr. Pascale Piolino

*First year Thesis.* The Cognitive Development of the Aesthetic Judgement in Children and Adults (see talk).

Supervisor. Pr. Sandrine Rossi

BACHELOR OF SCIENCE (BSc)

Psychology, University of Sorbonne Paris Cité, Paris, France

# **Research Topic and Scientific Interests**

In 1896, the Lumière brothers presented a 50-seconds long movie of a train's arrival at a station. Intense fear and awe rose up among the audience, as if they could not believe that it was not a real train. Several decades later, the edges of our reality still continue to fade. Through virtual reality, augmented reality and new forms of fictions, simulations of all kind populate our everyday experience and challenge our intuitive *feeling* and *belief* concerning its reality. Understanding the neurocognitive processes underlying this sense of reality is what drives my research. This topic is heavily connected with others levels and states of the Self such as minimal consciousness, mindfulness, attentional absorption, presence or dreams and has an obvious echo in several neuropsychiatric diseases such as schizophrenia, PTSD or depersonalisation-derealization disorder. As it also shares a strong relationship with emotional processing, modifications of the sense of reality might be at stake in some forms of voluntary or involuntary emotion regulation mechanisms (such as distancing, decoupling, defusion, decentering or fictional reappraisal).

More generally, my scientific interests also include the following topics:

- *Emotion Regulation.* The unicity and diversity of emotion regulation strategies, its structure and alteration in neuropsychiatric diseases.
- Consciousness. The different levels and states of consciousness and their neural correlates.
- *Neuropsychological Practice*. Developing tools that will improve the efficiency and accuracy of neuropsychological examination and diagnostic.
- Neuroaesthetics. The cognitive processes involved in the aesthetic experience and judgement.
- Statistics, Programing and Methodology. The application of cutting-edge statistical procedures (artificial intelligence) on neuropsychological data. Also interested in scientific good practises and reportability (with a special focus on open-access and reproducibility).
- *History of Psychiatry/Neuroscience*. The origin of modern neuroscience and psychology, with a special focus on the romantic era and *La belle époque* (19-20<sup>th</sup> centuries).
- *Philosophy*. Phenomenology, radical determinism, transhumanism as well as the links between oriental philosophies/religions (*e.g.*, Buddhism and Hinduism) and modern knowledge.

# Experience

### Research

### 2012 INTERNSHIP

Developmental Psychology Lab' (LaPsyDé), University of Sorbonne Paris Cité, CNRS UMR 8240, Paris, France

Activity. Data collection for an experiment on emotions and mental rotation (Borst, 2016).

Supervisor. Pr. Grégoire Borst

### 2011 INTERNSHIP

Memory & Cognition Lab' (LMC), Institute of Psychology, University of Sorbonne Paris Cité, Paris, France

Activity. Experiment creation and data collection for a study on memory, salience and bizarreness effect.

Supervisor. Pr. Serge Nicolas

# **Teaching**

#### Additional training

ACADEMIC TEACHING CERTIFICATE
University of Sorbonne Paris Cité, Paris, France
Five-days long training in pedagogy and innovative teaching.

#### ACADEMIC

#### 2017-18 LECTURER

University of Sorbonne Paris Cité, Paris, France

Subject. Clinical Neuropsychology (for bachelor and master degrees).

Supervisor. Pr. Isabelle Jambaqué

Topics. Neurology and psychiatry (main neurodegenerative, neurological and psychiatric disorders), assessment (examination, diagnostic, psychometry), clinical practice (cognitive rehabilitation, practice supervision), general neuroscience and psychology (neuroanatomy, emotion regulation, mindfulness, psychological trauma and handicap, ...).

Activity. 192 hours, performed all regular duties of a teaching assistant including lectures, office hours and marking, plus course creation and organisation.

### 2015-17 TEACHING ASSISTANT

University of Sorbonne Paris Cité, Paris, France

Subject. Differential cognitive psychology for first year students.

Supervisor. Dr. Christophe Mouchiroud

*Topics.* **Experimental methodology (assessment** and related problems, scientific reasoning, **psychometric properties** of tests and questionnaires, **statistics**...) and introduction to concepts such as **intelligence**, **personality** and **creativity**.

Activity. 144 hours, performed all regular duties of a T.A. for classes size of 40 including lectures, office hours and marking.

#### 2014-16 TUTOR

University of Sorbonne Paris Cité, Paris, France

*Activity.* Helping bachelor students on their mentoring programme (mainly **cognitive psychology**, **psychopathology** and **neuroscience**). Approximately 1h per week.

### 2014-16 TEACHING ASSISTANT

University of Sorbonne Paris Cité, Paris, France

Subject. Cognitive psychology for third year students.

Supervisor. Pr. Todd Lubart

Topics. Models of working memory, mental imagery and categorisation.

*Activity.* 48 hours, performed all regular duties of a T.A. for for classes size of 40 including lectures, office hours and marking.

### 2013 TEACHING ASSISTANT

University of Sorbonne Paris Cité, Paris, France

Subject. Introduction to the use of Internet and on-line university services for first year students.

Supervisor. Dr. Christian Fondrat

Topics. Internet security, anonymity, legal rights, course organisation.

Activity. 16 hours.

#### SCIENTIFIC

#### 2015-17 Instructor

Introduction and Basic Statistics using R

What. Short within-lab' trainings (2h) for master and PhD's students on basic statistics using

Where. Memory & Cognition Lab'.

### 2015-16 Instructor

EDA, ECG, Facial EMG: Theory and Practical Signal Acquiring

*What.* Short within-lab' trainings (2h) for master and PhD's students on how to acquire electrophysiological (EDA, ECG, EMG) signal using Biopac©and the AcqKnowledge software.

Where. Memory & Cognition Lab'.

### 2015-16 Instructor

The Anamnesis in Clinical and Experimental Psychology

*What.* Short within-lab' trainings (2h) for master students on how to ask and handle sensitive personal information about patients or participants.

Where. Memory & Cognition Lab'.

#### Supervision

I have supervised nine third-year psychology students during their lab internship and ten master students (studying neuropsychology and cognitive psychology) for their master thesis.

# **Clinical Activity**

### ADDITIONAL TRAINING

Master Class: Mindfulness based on Compassion and Insight (MBCI)

Institute for psychiatry, Sainte-Anne Hospital, Paris, France Two-days long training on mindulness based rehabilitation.

FIRST AID CERTIFICATE

University of Sorbonne Paris Cité, Paris, France

Two-days long training.

#### **PSYCHIATRY**

### 2013-14 INTERNSHIP

Department of adult psychiatry (Pr. Philippe Fossati)

Pitié-Salpêtrière Hospital, Paris, France

Supervisor. Dr. Séverine Hatif

*Activity.* Assessment and diagnostic of psychiatric or neurological illnesses among adults, as well as development and application of cognitive rehabilitation programs.

### 2012-13 INTERNSHIP

Department of geriatric psychiatry (Dr. Thierry Gallarda)

Sainte-Anne Hospital, Paris, France

Supervisor. Emmanuel Guiliano

*Activity.* Assessment and diagnostic of psychiatric and neurological illnesses among an elderly population.

#### NEUROLOGY

2012-13 INTERNSHIP

Department of gerontology La Porte Verte Hospital, Versailles, France

Supervisor. Sophie Fleury

Activity. Observation of assessment and diagnostic of memory related deficits such as neurodegenerative diseases, somatic ageing-related illnesses or depression.

# **Communications**

### Journal articles (peer reviewed)

Sperduti, M., Armougum, A., **Makowski, D.** & Piolino, P. (2017). Interaction between attentional systems and episodic memory encoding: the impact of conflict on binding of information. *Experimental Brain Research*, 1-8.

**Makowski, D.\***, Sperduti, M.\*, Nicolas, S. & Piolino, P. (2017). "Being there" and remembering it: Presence improves Memory Encoding. Consciousness & Cognition, 53, 194–202.

Nicolas, S. & Makowski, D. (2017). Centenaire Ribot (I). La réception de l'oeuvre de Théodule Ribot chez l'éditeur Ladrange (1870-1873). Bulletin de Psychologie, 70 (3), 163-178.

Sperduti, M., **Makowski**, **D.**, Blondé, P. & Piolino, P. (2017). Méditer pour bien vieillir? Les possibles bienfaits des pratiques méditatives sur le déclin cognitif lié à l'âge | Meditation and successful aging: can meditative practices counteract age-related cognitive decline?, *Gériatrie et Psychologie Neuropsychiatrie du Vieillissement*, 15 (2), 205-13.

Sperduti, M.\*, **Makowski, D.**\*, Arcangeli, M., Wantzen, P., Zalla, T., Lemaire, S., Dokic, J., Pelletier, J. & Piolino, P. (2017). The Distinctive Role of Executive Functions in Implicit Emotion Regulation. *Acta Psychologica*, 173, 13-20.

Nicolas, S. & Makowski, D. (2016). Can mental fatigue be measured by Weber's compass? Alfred Binet's answer on the value of aesthesiometry (tactile sensitivity) as an objective measure of mental fatigue. European Yearbook of the History of Psychology, vol. 2, 11-46.

Sperduti, M., **Makowski**, **D.**, & Piolino, P. (2016). The protective role of long-term meditation on the decline of the executive component of attention in aging: a preliminary cross-sectional study. *Aging, Neuropsychology, and Cognition*, 23(6), 691-702.

Sperduti, M.\*, Arcangeli, M.\*, **Makowski, D.**, Wantzen, P., Zalla, T., Lemaire, S., Dokic, J., Pelletier, J. & Piolino, P. (2016). The paradox of fiction: Emotional response toward fiction and the modulatory role of self-relevance. *Acta psychologica*, 165, 53-59.

Makowski, D., Sperduti, M., Blanchet, S., Nicolas, S. & Piolino, P. (2015). Emotion regulation and the cognitive decline in aging: beyond the paradox. Gériatrie et Psychologie Neuropsychiatrie du Vieillissement, 13 (3), 301-8.

### Technical Publications (peer reviewed)

**Makowski**, **D.** (2017). Efficient and Publishing-Oriented Workflow for Psychological Science with the R Package 'psycho'. *The Comprehensive R Archive Network (CRAN)*.

**Makowski, D.** & Dutriaux, L. (2017). Neuropsydia.py: A Python Module for Creating Experiments, Tasks and Questionnaires. *Journal of Open Source Software*, 2(19), 259.

**Makowski, D.** (2016). R Package neuropsychology: A Toolbox for Psychologists, Neuropsychologists and Neuroscientists. *The Comprehensive R Archive Network (CRAN)*.

### **Talks**

Sperduti, M., **Makowski, D.** & Piolino, P. & Piolino, P. (2017). The Role of Self-Relevance and Interindividual Variability in Executive Functions in Implicit Emotion Regulation, 24-28 July, Warsaw, Poland.

Tuena, C., Serino, S., Gaston-Bellegarde, A., Orriols, E., **Makowski, D.**, Riva, G. & Piolino, P. (2017). How Virtual Embodiment Affects Episodic Memory Functioning: a Proof-of-Concept Study, 27 June, Milano, Italy.

**Makowski, D.**, Sperduti, M. & Piolino, P. (2017). *The Distinctive Effect of Emotion Regulation and Mindfulness on Attentional Capture.* 1ère Journée Scientifique des Jeunes Chercheurs du Centre de Recherches sur la Cognition et l'Apprentissage, 8 June, Poitiers, France.

**Makowski, D.**, Sperduti, M. & Piolino, P. (2016). "Being there" and Remembering it: Presence enhances Encoding in Memory. International Congress On Memory (ICOM), 17-22 July, Budapest, Hungary.

**Makowski, D.**, Sperduti, M. & Piolino, P. (2016). The Sense of Reality as a feature of proto-Consciousness, its Alteration and Generation induced by Fictional Worlds. Literary States of Consciousness, 2 June, Paris, France.

**Makowski, D.**, Sperduti, M. & Piolino, P. (2016). *Does Mindfulness ability differently affect Implicit and Explicit Emotion Regulation?* 2nd International Conference on Mindfulness (ICM), 11-15 May, Roma, Italy.

Sperduti, M., **Makowski, D.** & Piolino, P. (2016). Does mindfulness enhances interoception? Dissociation between different interoceptive abilities. 2nd International Conference on Mindfulness, 11-15 May, Roma, Italy.

**Makowski, D.**, Sperduti, M. & Piolino, P. (2015). Bon et Mauvais Régulateurs Emotionnels: Un Rôle Spécifique de l'Inhibition ? 56è Congrès National de la Société Française de Psychologie (SFP), 2-4 September, Strasbourg, France.

**Makowski, D.**, Sperduti, M., Pelletier, J. & Piolino, P. (2015). *Régulation émotionnelle et Self Control: De la recherche Fondamentale à l'Application Clinique*. 1er Congrès Francophone de TCC, 27-29 May, Lyon, France.

**Makowski, D.**, Sperduti, M., Arcangeli, M., Pelletier, J. & Piolino, P. (2014). From Philosophy to the Rehabilitation of Psychiatric Patients: Fiction/Reality, Emotion et Cognitive Control. Journée d'hiver de l'IUPDP, 19 December, Boulogne-Billancourt, France.

**Makowski, D.**, Sperduti, M. & Piolino, P. (2014). L'émotion face à la fiction : l'étude de patients schizophrènes éclaire le paradoxe de la fiction. 27 June, Fête de la Recherche, Boulogne-Billancourt, France.

**Makowski, D.**, & Rossi, S. (2013). *Le jugement esthétique chez l'enfant*. Journées Neurosciences, Esthétique, et Complexité, 28 September, Paris, France.

### **Posters**

**Makowski, D.**, Sperduti, M. & Piolino, P. (2016). Régulation Emotionnelle, pleine-conscience et bien-être: Interactions et implication dans les troubles de l'humeur. Journée d'hivers de la Société de Neuropsychologie de Langue Française, 5 December, Paris, France.

Blondé, P., Sperduti, M., **Makowski, D.** & Piolino, P. (2016). Le rôle des réseaux attentionnels sur l'encodage en mémoire épisodique dans le cadre du vieillissement et de sa variabilité interindividuelle liée aux traits de pleine conscience. Journée d'hivers de la Société de Neuropsychologie de Langue Française, 5 December, Paris, France.

**Makowski, D.**, Sperduti, M. & Piolino, P. (2016). *I know it's not real...what does it change?* nCPN day, 16 September, Paris, France.

**Makowski, D.**, Sperduti, M. & Piolino, P. (2015). "J'avais l'impression d'y être": Sentiment de présence et encodage en mémoire autobiographique. Journée d'hiver de la Société de Neuropsychologie de Langue Française, 5 December, Paris, France.

Sperduti, M., **Makowski, D.** & Piolino, P. (2015). *Interaction entre systèmes attentionnels et encodage en mémoire épisodique*. Journée d'hivers de la Société de Neuropsychologie de Langue Française, 5 December, Paris, France.

**Makowski, D.**, Sperduti, M., Arcangeli, M., Pelletier, J. & Piolino, P. (2015). *I know it's not real...what does it change?* 12e colloque de la Société des Neurosciences, 19-22 May, Montpellier, France.

**Makowski, D.**, Sperduti, M., Arcangeli, M., Pelletier, J. & Piolino, P. (2014) *Emotion Regulation by fiction is related to cognitive inhibition.* Journée d'hiver de la Société de Neuropsychologie de Langue Française, 5 December, Paris, France.

Sperduti, M., **Makowski, D.**, Vialatte, F. & Piolino, P. (2014). The decline of Autobiographical Memory in aging, inhibition and the cingulate cortex: an activation and resting state fMRI study. Journées d'Etudes du Vieillissement, 15-16 September, Caen, France.

Sperduti, M., **Makowski**, **D.** & Piolino, P. (2014). The protective role of meditation on the cognitive decline in aging: a cross-sectional study. Journées d'Etudes du Vieillissement, 15-16 Setpember,

Caen, France.

**Makowski, D.**, Sperduti, M., Arcangeli, M., Pelletier, J. & Piolino, P. (2013). *QUID du paradoxe de l'émotion face à la fiction? Nouvelles données physiologiques comparant la réponse émotionnelle à des scènes réelles ou fictionnelles.* Journées de l'IUPDP, 19 December, Boulogne-Billancourt, France.

# **Public popularization**

**Public Debate**, Art  $\mathring{\sigma}$  science discussion on sensory illusions. 24 November 2017, Bordeaux, France.

Magazine, Neuroanatomie de la réalité : quand le réel n'est plus, 2016, Les yeux brouillés, 1, 48-55.

**National TV**, *The effect of violent images on the brain and body*, 2015, Testé sous contrôle médical, France 4

Online journal, "Avengers, l'ère d'Ultron" en 3D: aussitôt vu, aussitôt oublié?, 2015, francetvinfos.fr

# **Skills**

# Language

**French**: Native proficiency **Polish**: Native proficiency

English: Fluent

**German**: Limited working proficiency **Italian**: Limited working proficiency

# **Neuroimaging**

My main interest is currently dedicated to electrophysiological data, including **EEG**, **biosignals** and their integration, as I believe that cutting-edge statistical techniques, associated with this high-complexity data, can open new horizons for discoveries.

Biosignals (Biopac®, AcqKnowledge®)

- Electrodermal Activity (EDA): Full proficiency
- Electrocardiaogram (ECG): Full proficiency
- Facial Electromyography (fEMG): Full proficiency
- Eye tracking: Theoretical knowledge

EEG (MNE, BrainVision®, Geodesic®, Fieldtrip)

- Event-Related Potentials (ERPs): Full proficiency
- Time-frequency: Intermediate proficiency
- Micro-states: *Intermediate proficiency*

• Source localization: Beginner

### MRI (SPM, FSL)

• Functional (fMRI): Theoretical knowledge

• Connectivity: Theoretical knowledge

#### **CREATIONS AND CONTRIBUTIONS**

• **NeuroKit** (*main author*): Open-source python module for statistics and neurophysiological signal processing (EEG, EDA, ECG, EMG...).

#### ADDITIONAL TRAINING

Multiscale Neurodynamics of Emotions and their Pathologies: from Oscillations to Complex Networks

University of Lille, Lille, France

one-day long (8h) training on innovative EEG analysis methods in emotion research

2016 Introduction to Eye Tracking

Memory and Cognition Lab', University of Sorbonne Paris Cité, Paris, France

Multiscale Neurodynamics of Emotions and their Pathologies: from Oscillations to Complex Networks one-day long (5h) training on signal acquisition and processing with the SMI system

2016 How to get great EDA (electrodermal activity) data

Biopac webinar

one-day long (4h) training on acquiring and processing of EDA

2015 FMRI AND CONNECTIVITY

National Institute of Nuclear Sciences & Techniques (INSTN), Marseille, France

Four-days long (32h) training with Dr. Jorge L. Armony on fMRI and connectivity

2014-15 FMRI : Preprocessing and Analysis

Sainte-Anne Hospital, Paris, France

Four-days long (32h) training with Dr. Sylvain Charron on fMRI data analysis

2014 SIGNAL PROCESSING THEORY AND APPLICATION FOR EEG

Ecole Supérieure de Physique et de Chimie Industrielle (ESPCI), Paris, France

Three-days long (24h) training with Dr. Francois Vialatte on signal theory and its application for EEG

### Statistics / Data Science

I use **R** and **Python** for data analysis. My knowledge is oriented toward the fields of *structural modelling* (Bayesian and frequentist mixed-effects models and structural equations), *predictive modelling* (artificial intelligence, machine learning) and *multivariate statistics* (network analysis, data mining). I'm more generally interested in good practices in statistics (reporting, reproducibility, open-source solutions) and their use in psychology and neuroscience.

### CREATIONS AND CONTRIBUTIONS

• psycho (main author): R package (see technical publications).

### ADDITIONAL TRAINING

STATISTICS AND R FOR THE LIFE SCIENCES
Harvard University, MA, USA
Online EdX course (16h).

2014 MACHINE LEARNING AND BRAIN-TO-COMPUTER INTERFACES

École Supérieure de Physique et de Chimie Industrielle (ESPCI), Paris, France

Two-days long (16h) training with Dr. Francois Vialatte on machine learning and its application for Brain-Computer Interface.

2014 Introduction to Statistics with R

Paris Sud University, Paris, France

MOOC (40h).

# **Programming**

I use **Python**™ on a daily basis and have a working knowledge of **Matlab**™. I am currently learning **Julia**™. I'm also familiar with traditional experiment creation tools such as **E-prime**©, **PsychoPy**© or **OpenSesame**©.

### **CREATIONS AND CONTRIBUTIONS**

• **Neuropsydia.py** (*main author*): Open-source python module for creating experiments, tasks and questionnaires (see technical publications).

#### ADDITIONAL TRAINING

2016 Scientific Programming with Python and Software Engineering Best Practices

Telecom ParisTech

2016

2014

Two-days (16h) long training on advanced python programing

P4N 2016: PYTHON FOR NEUROSCIENCE (AND PSYCHOLOGY)

University of Nottingham, Nottingham, UK

Three-days long (24h) training with Dr. Jon Peirce, the creator of Psychopy

# **Media Processing**

I use  $\slash\hspace{-0.6em}^{\slash\hspace{-0.6em}\text{TEX}}$  and Markdown for scientific reports. I'm also proficient with several media processing softwares such as  $\slash\hspace{-0.6em}$  Adobe  $\slash\hspace{-0.6em}$  Photoshop $^{\slash\hspace{-0.6em}\text{TM}}$ ,  $\slash\hspace{-0.6em}$  Adobe  $\slash\hspace{-0.6em}$  Illustrator $^{\slash\hspace{-0.6em}\text{TM}}$ ,  $\slash\hspace{-0.6em}$  Inkscape,  $\slash\hspace{-0.6em}$  Avidemux and the  $\slash\hspace{-0.6em}$  Microsoft $^{\circ}$ Office suite.

# Miscellaneous

### Grants, Honours and Awards

PhD ministerial scholarship (3 years - 80 000€)

### **Collaborations**

### TRANSDISCIPLINARY COLLABORATIONS

- Philosophy:
  - Fiction project: Dr. J. Pelletier (France), Dr. S. Lemaire (France), Dr. J. Dokic (France),
     Dr. M. Arcangeli (France).

### · Bioengineering:

- NeuroKit development: R. Bartels (Brazil), N. Vack (USA), C. Carreiras (Portugal).
- Statistics:
  - psycho development: Dr. V. Simko (Germany).

# Responsibilities

2016-18 Elected Representative

ED261-3CH doctoral school, University of Sorbonne Paris Cité, Paris, France

*Elected PhD students' representative at the doctoral school council.* 

2014-18 WEBMASTER

La bibliothèque du neuropsychologue

A scientific and philosophic books review blog.

2014-15 COMMUNITY MANAGER

Memory & Cognition Lab', University of Sorbonne Paris Cité, Paris, France

In charge of organising seminars, local conferences and social events.

2009-12 ACTIVE MEMBER

Student's Union, University of Sorbonne Paris Cité, Paris, France

In charge of organising social events for students.

### Other Education

2017-18 History of Arts (74h), École du Louvre, Paris.

### Other interests

**Art**: Surrealism, Hyperrealism (21<sup>st</sup> century), romanticism (18-19<sup>th</sup> century) and expressionism. **British culture during the romantic era**: literature, science, history, poetry...

Music: Piano and guitar.