Joshua O. Eayrs

Tel: (+44) 07757015737 **Email:** Eayrs.j.o@gmail.com

Web: josheayrs.com

Professional history

2021-present: Postdoctoral research (Ghent University)

Part of a large mulit-lab, multi-method research project investigating cognitive effort using behavioural, pupilometry, EEG, fMRI and TMS.

Supervisor: Professor C. Nico Boehler

Collaboration with: Professor Wim Notebeart, Professor Roeljan Wiersema and Professor Ruth Krebs

Funding: GOA

2017-2021: Postdoctoral researcher (University College London)

Researching neural and physiological markers of attention and individual differences with behavioural paradigms, EEG, eye-tracking and pupilometry.

Supervisor: Professor Nilli Lavie

Funding: Toyota Motor Europe (TME)

Education

2013 – 2017: PhD Cognitive Neuroscience (University College London)

Thesis: Establishing individual differences in visual perception capacity and related brain morphology

Supervisor: Professor Nilli Lavie

Funding: Ministry of Defence, Defence Science and Technology Laboratory (DSTL)

2012 – 2013: MSc Neuroimaging (Bangor University)

Dissertation: Using structural and functional connectivity to understand cerebellar contributions to cognition

Supervisor: Dr Martyn Bracewell

2009 – 2012: BSc Psychology (1st class hons; Bangor University)

Dissertation: A modulation of the N400 response by individual differences in creativity but not IQ

Supervisor: Professor Guillaume Thierry

Extracurricular courses

July 2018, ERP bootcamp delivered by Professor Steve Luck and Dr Emily Kappenman (hosted by Birmingham University)

June 2015, Public engagement training delivered by the London Science Museum (in advance of a 3-month 'live science' residency)

September 2012, brain anatomy course delivered by Dr Paul Johns (Organised by Neurocourses UK, hosted by UCL)

Awards

Cecily de Monchaux Research Prize: Awarded for the best poster presentation at the UCL Graduate students conference. *Cumberland Lodge, April 2017.*

Bangor University Merit Scholarship: A scholarship awarded as an undergraduate student on the basis of two written essays.

Publications

Peer-reviewed articles

Eayrs, J. O., & Lavie, N. (2019). Individual differences in parietal and frontal cortex structure predict dissociable capacities for perception and cognitive control. *NeuroImage*, *202*, 116148.

Eayrs, J., & Lavie, N. (2018). Establishing individual differences in perceptual capacity. *Journal of Experimental Psychology: Human Perception and Performance*, *44*(8), 1240.

Eayrs, J. O. & Lavie, N. (in press). Subitizing, perceptual capacity and distractibility. *Journal of Experimental Psychology: Human Perception and Performance.*

Eayrs, J. O., Harris, A. M., Takitani, K. & Lavie, N. (in prep). Perceptual load impairs cross modal detection in multi-target visual search

Eayrs, J. O. & Lavie, N. (in prep). Perceptual capacity and pupil dilation patterns predict threat detection in X-ray luggage scans

Harris, A. M., Eayrs, J. O., & Lavie, N. (in prep). Effects of perceptual load on eye tracking pattern during a multi-target visual search with free eye movements.

Ajala, J., Eayrs, J. O., Pearson, D. & Lavie, N. (in prep). Tracking the effects of perceptual load in real time via distractor SSVEP.

Patents

Named inventor on two patent applications:

- PCT/EP 2019/055908 "Electronic device, system and method for determining the perceptual capacity of an individual human" Inventors: Jonas Ambeck-Madsen, Nilli Lavie, Joshua Eayrs (filed March 2019).

- Jaguar Land Rover GB/2019 “Vehicle control system” inventors: Rebecca Matthias, Lee Skrypchuk, Nilli Lavie, Anthony Harris, Joshua Eayrs (filed March 2019).

Conference papers

Eayrs, J. O., & Lavie, N. (2019, May). *Pupil dilation as a predictor of perceptual capacity in subitizing.* Poster presented to Vision Sciences Society (VSS), St. Pete Beach, Florida.

Harris, A. J., Eayrs, J. O., & Lavie, N. (2019, May). *The effect of perceptual load on gaze and EEG signals in multi-target search with free eye-movements.* Poster presented to Vision Sciences Society (VSS), St. Pete Beach, Florida.

Eayrs, J. O., & Lavie, N. (2018, May). *Distinct correlates of perceptual capacity and working memory capacity in brain structure and behaviour.* Poster presented to Vision Sciences Society (VSS), St. Pete Beach, Florida.

Eayrs, J. O., & Lavie, N. (2017, August). *Perceptual load and enumeration: Distractor interference depends on subitizing capacity.* Poster presented to European Conference on Visual Perception (ECVP), Berlin, Germany.

Eayrs, J. O., & Lavie, N. (2017, April). *Distractor interference in visual enumeration.* Poster presented to the UCL Cumberland Lodge Conference, Windsor, UK.

Eayrs, J. O., & Lavie, N. (2016, May). *Individual differences in subitizing capacity predict visual detection ability.* Poster presented to Vision Sciences Society (VSS), St. Pete Beach, Florida.

Other invited talks

Eayrs (2018). *Individual differences in perceptual capacity and related brain morphology.* Technology development and exploration – academia, May 2018, Oxford (organised by DSTL).

Eayrs (2016). *Individual differences in perceptual capacity as a predictor of visual detection ability.* Understanding and enhancing cognition and performance, October 2016, DSTL Porton Down.

Professional memberships

Vision Science Society (VSS)

British Psychological Society (BPS)

Teaching and supervision

Teaching:

Research Project Neuroscience (Gent University, 2020-present) - Co-lecturer on a MSc course designed to provide students with a theoretical and hands on experience of EEG research (including lecturing, practical tutorial and analysis sessions as well as exam design and assessment).

Attention lectures (UCL, 2019) - Delivered lectures on attention as part of undergraduate 'cognitive psychology' module.

Statistics (Birkbeck University, 2017-2018; 2018-2019). Taught to a mixed BSc and MSc class on statistics and research methods, including practical class instruction and report grading

Supervision:

Assisted in supervision of masters and undergraduate students' final year dissertation research projects

Supervised MSc students (Birkbeck University) in research mini-projects as part of their research methods module

Public engagement

I conducted a 3-month residency at the London Science Museum, managing a small team of student volunteers to involve members of the public in research (as participants). I received public engagement training and the placement gave me a great deal of practical experience.

Research skills

Software: Python (MNE, Psychopy, numpy, pandas, matplotlib etc.), Matlab (Cogent, Psychtoolbox, SPM, SnPM, EEGLAB etc.), R (ggplot2, lmer, tidyverse etc.), LISREL, STISIM (driving simulation)

Languages: English and Welsh (native), Japanese and Spanish (Learner)

References

Available upon request