

Joshua O. Eayrs

Tel: (+32) 497728647 Email: Eayrs.j.o@gmail.com

Web: www.josheayrs.com

Professional history

2020-present: Postdoctoral researcher (Ghent University)

Multi-lab collaborative research project investigating cognitive effort using fMRI, EEG, pupillometry and behavioural techniques

Principal investigator: Professor C. Nico Boehler

2017-2020: Postdoctoral researcher (University College London)

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

Principal investigator: Professor Nilli Lavie

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

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 honours; 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., Kukkonen, N., Prutean, N., Steendam, S. T., Boehler, C. N., Wiersema, J. R., Krebs, R. M., & Notebaert, W. (under review; *Journal of Experimental Psychology: Human Perception and Performance*). Attentional set and explicit expectations of perceptual load determine flanker interference

Kukkonen, N., Braem, S., Allaert, J., Eayrs, J., Prutean, N., Steendam, S. T., ... & Krebs, R. (under review; *Journal of Cognition*). The cost of regulating effort: Reward and difficulty cues with longer prediction horizons have a stronger impact on performance.

Harris, A. M., Eayrs, J. O., & Lavie, N. (2023). Establishing gaze markers of perceptual load during multi-target visual search. *Cognitive Research: Principles and Implications*, 8(1), 1-16.

Eayrs, J. O., & Lavie, N. (2021). Perceptual load and enumeration: Distractor interference depends on subitizing capacity. *Journal of experimental Psychology: Human Perception and Performance*, 47(9), 1149.

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 prep). Pupil dilation reflects the distinction between parallel subitizing and serial counting processes.

Eayrs, J. O., Tobing, H. S. & Boehler, C. N. (in prep). Expectations of reward and efficacy are reflected in preparatory pupil dilation.

Patents

Named inventor on two patents:

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 (first-author contributions only)

Eayrs, J. O., Tobing, H. S., & Boehler, C. N. (2024; January). *Pupillometric indices of proactive allocation of cognitive control*. Poster accepted for presentation at the January 2024 meeting of the Experimental Psychology Society, London, UK.

Eayrs, J. O., & Boehler, C. N. (2023; November). *Investigating the effects of reward motivation on the allocation of feature-based attention*. Poster accepted for presentation at the November 2024 meeting of the Society for Neuroscience, Washington, DC, USA.

Eayrs, J. O., Boehler, C. N., & Notebaert, W. (2023; November). *Attentional set and explicit expectations of perceptual load determine flanker interference*. Poster accepted for presentation at the November 2023 meeting of the Psychonomic Society, San Francisco, CA, USA.

Eayrs, J. O., Prutean, N., Kukkonen, N., Steendam, S. T., Wiersema, J. R., Notebaert, W., Krebs, R. M., & Boehler, N. (2021, December). *Dissociating neural indices of effort evaluation and allocation*. Poster presented at the winter meeting of the Dutch Society for Brain and Cognition (NVP), Egmond aan zee, NL.

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, FL, USA.

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, FL, USA.

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, FL, USA.

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.

Other conference contributions

Co-organizer of Ghent University's "Cutting Gardens" Hub: Played a pivotal role in organizing Ghent University's "Cutting Gardens" hub as part of a multi-site conference on EEG methods.

Responsibilities encompassed speaker selection and invitation, advertisement, coordination with other hubs, and overseeing logistical aspects.

Co-organizer and Symposium Chair: Coordinated and chaired the symposium titled "Recent Advances in Understanding the Evaluation and the Allocation of Cognitive Effort" at the 2022 European Conference on Cognitive Psychology (ESCoP). This symposium featured speakers from the USA, Canada, Germany, and the Netherlands, contributing to the dissemination of cutting-edge research in the field.

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 course development, lecturing, practical tutorial and analysis sessions, exam design and assessment).

"Attention" (UCL, 2019) - Developed and delivered "Attention" component of the compulsory undergraduate "Cognitive Psychology" module.

"Statistics and research methods" (Birkbeck University, 2016-2019). Taught to a mixed BSc and MSc class on statistics and research methods, including practical class instruction, report grading and project supervision.

Supervised several masters and undergraduate students' final year dissertation research projects

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, Matlab, R, LISREL, STISIM (driving simulation)

Languages: English and Welsh (native), Dutch/ Flemish (intermediate - approx. level B1)

References

Available upon request