## Dr Charles Ludowici

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Research Interests: Vision, psychophysics, eye movements, attention, crowding, behaviour, mathematical modelling

Research Tools: Eyelink, R, Python, MATLAB, Reinforcement Learning

## Education

2016 - 2020: **PhD (Science, Psychology), The University of Sydney**

*Temporal Selection in Dynamic Displays: Sensory Information Persists Despite Masking*

Supervision: Prof. Alex O. Holcombe

2011 — 2015: **Bachelor of Arts (Psychology Honours, First Class), The University of Sydney**

*Scaffolding Individual Differences in Category Learning*

Supervision: Dr Micah Goldwater

## Research Experience

Feb 2020 - Ongoing **Postdoctoral Scholar, The School of Optometry, The University of California, Berkeley**

Psychophysical research into visual function (peripheral vision, hyperacuity, crowding, macular degeneration) and fixational eye movements using traditional psychophysical methods, machine learning, reinforcement learning and tracking scanning laser ophthalmoscopy. http://selab.berkeley.edu/

Tools: Matlab, Python, Eyelink, TSLO, Retinal Video

Feb 2019 - June 2019 **Visiting PhD student, The Visual Attention Lab, Harvard University**

Eyetracking analysis and experimental design for research related to medical image perception.

Tools: Matlab, R, Eyelink

2016 - 2017 **Research Assistant, Prof. Alex Holcombe, The University of Sydney**

Experimental design and statistical analysis of experiments investigating the temporal properties of vision and the visual system's ability to process multiple stimuli simultaneously.

Tools: R, Python, Matlab, Eyelink

2014 - 2016 **Research Assistant, Dr Micah Goldwater, The University of Sydney**

Experimental design and statistical analysis of research investigating higher-order cognitive functioning and psychological development.

Tools: R, Qualtrics

## Teaching

2016 - 2018 **Tutor, The School of Psychology, The University of Sydney**

Statistics and Research Methods for Psych (PSYC2012), Cognitive and Social Psychology (PSYC2013) and Analytical Thinking (ATHK1001).

2016 - 2016 **Tutor and Lecturer, School of Health Sciences, The University of Sydney**

Quantitative Research Methods in Health (HSBH3018)

## Scholarships and Funding

2017 - 2019: Commonwealth Research Training Program

2017: Attention Allocation and Binding Supplementary Scholarship

2017: Postgraduate Research Support Scheme

## Publications

Ludowici, C,. Holcombe, A. O., (2020) The Dynamics of Buffered and Triggered Selection from RSVP Streams. *Journal of Experimental Psychology: Human Perception and Performance* Preprint

Goldwater, M. B., Gershman, S. J., Moul, C., Ludowici, C., Burton, A., Killer, B., Kuhnert, R.-L., & Ridgway, K. (2020). Children's understanding of habitual behaviour. *Developmental Science,* 23(5), e12951. https://doi.org/10.1111/desc.12951

**Under review**

Coates, D., Ludowici, C., Chung, S. T. L (Under review) *The generality of the critical spacing for crowded optotypes: From Bouma to the 21st century*

## Conference Presentations

Ludowici, C., Chung, S. T. L. (2021) *Development of preferred retinal loci for fixation in response to binocular asymmetric simulated central scotomas.* Poster presented at the Annual Meeting of The Association for Research in Vision and Ophthalmology, Online.

Ludowici, C., Holcombe, A. (2019) *Selection from concurrent RSVP streams: attention shift or buffer read-out?* Poster presented at the Annual Meeting of the Vision Sciences Society, St. Pete Beach

Holcombe, A., Ludowici, C., Haroz, S. (2019) *Is there a reproducibility crisis around here? Maybe not, but we still need to change.* Poster presented at the Annual Meeting of the Vision Sciences Society, St. Pete Beach

Ludowici, C., Holcombe, A. (2017) *Was That a Shift of Attention or Binding in a Buffer?* Talk presented at the 58th Annual Meeting of the Psychonomic Society, Vancouver

Ludowici, C., Holcombe, A. (2017) *System Factorial Technology's Power is Greater for Capacity Than Architecture When Recovering the Processing Qualities of Models That Simulate Lexical Processing Data.* Poster presented at the 58th Annual Meeting of the Psychonomic Society, Vancouver

Ludowici, C., Holcombe, A. (2017) *Not a shift of attention: Buffering and binding of visual stimuli.* Poster presented at the 40th European Conference on Visual Perception, Berlin

Holcombe, A., Ludowici, C. (2017) *When do cues work by summoning attention to a target and when do they work by binding to it?* Talk presented at the 44th Experimental Psychology Conference, Shoal Bay

Ludowici, C., Holcombe, A. , Donkin, C. (2017) *Can SFT identify a model's processing characteristics when faced with reaction time variability?* Talk presented at the 44th Experimental Psychology Conference, Shoal Bay

Goldwater, M., Kurtz, K., Loewenstein, J., Ludowici, C., (2014) *Abstracting a Schema From Comparing and Retrieving a Series of Cases.* Poster presented at the 55th Annual Meeting of the Psychonomic Society, Long Beach, California

## Invited Talks

*Reproducible Manuscripts with R and R Markdown*, Workshop, Macquarie University, Sydney

## References

Available upon request

## Work Authorisation

As an Australian, I am eligible for the E-3 visa - an inexpensive US visa for which processing can be expedited.