

Toby Wise, BSc. MSc. PhD.

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EDUCATION

- 2013-2017** **PhD Neuroimaging** *Institute of Psychiatry, Psychology & Neuroscience, King's College London*
Thesis Title: Structural and Neurochemical Alterations in Unipolar and Bipolar Major Depression
Supervisors: Prof Anthony Cleare & Dr Danilo Arnone
- 2012-2013** **MSc Cognitive Neuroscience (Distinction)** *University of Sussex*
Dissertation title: The role of embodied simulation in context-based facial emotion recognition: a transcranial magnetic stimulation study
Dissertation supervisor: Prof Jamie Ward
- 2009-2012** **BSc Psychology (First Class Honours)** *University of Sussex*
Dissertation title: The Effect of Facial Emotion on Time Perception in Schizotypy; A Comparison of Two Temporal Tasks
Dissertation supervisor: Dr Sam Hutton

EMPLOYMENT

- 2019-present** **Visiting postdoctoral fellow** *California Institute of Technology*
- 2017-present** **Sir Henry Wellcome Postdoctoral Fellow** *Max Planck UCL Centre for Computational Psychiatry and Ageing Research, University College London / Division of Humanities and Social Sciences, Caltech*
- 2016** **Course contributor and teacher (Introduction to the Python programming language)** *Goldsmiths College*
- 2015-2017** **Graduate Teaching Assistant** *Institute of Psychiatry, Psychology & Neuroscience, King's College London*

RESEARCH INTERESTS

My research focuses on the neurocomputational mechanisms underlying aversive learning and avoidance behaviour. I use neuroimaging and computational modelling of behaviour to understand how humans learn about punishment and make decisions that allow danger to be avoided. I also apply these methods to understand how alterations in aversive learning relate to psychopathology.

PUBLICATIONS

Peer-reviewed publications

- Wise T.** & Dolan R.J. Associations between aversive learning processes and transdiagnostic psychiatric symptoms in a general population sample. (2020). *Nature Communications*. In press.
- Wise T.** & Patrick, F., Meyer M., Mazibuko, M., Oates A.E., van der Bijl, A.H.M, Danjou, P., O'Connor S.M., Doolin E., Wooldridge C., Rathjan, D., Macare, M., Williams, S.C.R., Perkins,

- A.M. & Young, A.H. (2020). Cholinergic Modulation of Disorder-Relevant Neural Circuits in Generalised Anxiety Disorder. *Biological Psychiatry*.
3. Herane-Vives, A., Arnone, D., de Angel, V., Papadopoulos, A., **Wise, T.**, Alameda, L., Chua, K.-C., Young, A.H., Cleare, A.J., (2020). Cortisol levels in unmedicated patients with unipolar and bipolar major depression using hair and saliva specimens. *International Journal of Bipolar Disorders* 8, 15.
 4. Herane-Vives, A., Young, A.H., Wise, T., Aguirre, J., de Angel, V., Arnone, D., Papadopoulos, A., Cleare, A.J., (2020). Comparison of short-term (saliva) and long-term (hair) cortisol levels in out-patients with melancholic and non-melancholic major depression. *BJPsych Open* 6, e41
 5. **Wise, T.**, Michely, J., Dayan, P., Dolan, R.J. (2019). A computational account of threat-related attentional bias. *PLOS Computational Biology*, 15(10), e1007341
 6. Marwood, L., **Wise, T.**, Perkins, A. M., & Cleare, A. J. (2018). Meta-analyses of the neural mechanisms and predictors of response to psychotherapy in depression and anxiety. *Neuroscience & Biobehavioral Reviews*.
 7. **Wise, T.**, Marwood, L., Perkins, A. M., Herane-Vives, A., Williams, S. C. R., Young, A. H., ... & Arnone, D. (2018). A morphometric signature of depressive symptoms in unmedicated patients with mood disorders. *Acta Psychiatrica Scandinavica*, 138(1), 73-82.
 8. **Wise, T.**, Taylor, M. J., Herane-Vives, A., Gammazza, A. M., Cappello, F., Lythgoe, D. J., ... & Arnone, D. (2018). Glutamatergic hypofunction in medication-free major depression: Secondary effects of affective diagnosis and relationship to peripheral glutaminase. *Journal of affective disorders*, 234, 214-219.
 9. Arnone, D. & **Wise, T.**, Walker, C., Cowen, P. J., Howes, O., & Selvaraj, S. (2018). The effects of serotonin modulation on medial prefrontal connectivity strength and stability: A pharmacological fMRI study with citalopram. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 84, 152-159.
 10. Herane-Vives, A., de Angel, V., Papadopoulos, A., **Wise, T.**, Chua, K. C., Strawbridge, R., ... & Cleare, A. J. (2018). Short-term and long-term measures of cortisol in saliva and hair in atypical and non-atypical depression. *Acta Psychiatrica Scandinavica*, 137(3), 216-230.
 11. Herane-Vives, A., Fischer, S., de Angel, V., **Wise, T.**, Cheung, E., Chua, K. C., ... & Cleare, A. J. (2018). Elevated fingernail cortisol levels in major depressive episodes. *Psychoneuroendocrinology*, 88, 17-23.
 12. **Wise, T.** & Marwood, L, Perkins, AM, Herane, A, Joules, R, Lythgoe, D, Luh, W, Williams, SCR, Young, AH, Cleare, AJ, Arnone, D. (2017) Instability of Default Mode Dynamic Functional Connectivity in Major Depression: A Two-Sample Confirmation Study. *Translational Psychiatry*. 7(4), e1105
 13. **Wise, T.**, Radua, J., Via, E., Cardoner, N., Abe, O., Adams, T. M., ... & Dickstein, D. P. (2017). Common and distinct patterns of grey-matter volume alteration in major depression and bipolar disorder: evidence from voxel-based meta-analysis. *Molecular psychiatry*, 22(10), 1455.
 14. **Wise, T.**, Arnone, D, Marwood, L, Zahn, R, Lythe, KE, Young, AH (2016). Recruiting for research studies using online public advertisements: examples from research in affective disorders. *Neuropsychiatric disease and treatment*. 12, 279-285.
 15. **Wise, T.**, Radua, J, Nortje, G, Cleare, A J, Young, A H, & Arnone, D (2016) Voxel-Based Meta-Analytical Evidence of Structural Disconnectivity in Major Depression and Bipolar Disorder. *Biological psychiatry*. 79, 293-302. (featured on the cover of the February 2016 issue)
 16. Herane-Vives, AH, De Angel, V, Papadopoulos, A, Strawbridge, R, **Wise, T.**, Young, AH, Arnone, D and Cleare, AJ (2015). The relationship between cortisol, stress and psychiatric illness: New insights using hair analysis. *Journal of psychiatric research*. 70, 38-49.

17. **Wise, T.**, Cleare, AJ, Herane, A, Young, AH, & Arnone, D (2014). Diagnostic and therapeutic utility of neuroimaging in depression: an overview. *Neuropsychiatric disease and treatment*. 10, 1509-1522.

Under review & preprints

1. **Wise, T.**, Zbozinek, T., Michelini, G., Hagan, C.C., Mobbs, D. Changes in risk perception and protective behavior during the first week of the COVID-19 pandemic in the United States. *PsyArXiv (resubmitted to Royal Society Open Science)*
2. Zbozinek, T. D., **Wise, T.**, Qi, S., Perez, O., Fanselow, M., & Mobbs, D. Occasion Setting, Anxiety, and their Computation in Human Fear Conditioning. *PsyArXiv (under review at Journal of Experimental Psychology: General)*
3. Qi, S., Cross, L., **Wise, T.**, Sui, X., O'Doherty, J., & Mobbs, D. The Role of the Medial Prefrontal Cortex in Spatial Margin of Safety Calculations. *bioRxiv (under review at Neuron)*
4. **Wise, T.**, Michelini, G., Zbozinek, T., Hagan, C. C., & Mobbs, D. Development and validation of the Avoidance of Respiratory Viral Infection Scale (ARVIS). *PsyArXiv (under review at Assessment)*
5. Valton, V., **Wise, T.**, Robinson. O.J. The Importance of Group Specification in Computational Modelling of Behaviour. *PsyArXiv*
6. Perkins, A.M., Patrick, F., **Wise, T.**, Meyer, N., Mazibuko N., Oates, A.E., van der Bijl, A.H.M., Danjou, P., O'Connor, S.M., Doolin, E., Wooldridge, C., Rathjen, D., Macare, C., Williams, S.C.R., Young, A.H. Cholinergic Modulation of Disorder-Relevant Human Defensive Behaviour in Generalised Anxiety Disorder (*resubmitted to Translational Psychiatry*)

AWARDS AND FUNDING

2020	Merkin Institute Grant to study the psychological impact of the COVID-19 pandemic (co-investigator, \$35,000)
2020	Institute of Advanced Studies at Toulouse multidisciplinary award to study the evolution of social inference (co-investigator, €1500)
2017	Trainee Professional Development Award from the Society for Neuroscience to attend the 2017 SfN annual meeting (\$2500)
2017-2021	Wellcome Trust Sir Henry Wellcome Postdoctoral Fellowship (£250,000)
2016	Award from the Guarantors of Brain to attend the 2016 Society for Neuroscience annual meeting (£800)
2016	Prize for best research proposal at the Max Planck-UCL Center for Computational Psychiatry Symposium and Advanced Course 2016
2016	British Association for Psychopharmacology training member bursary to attend the 2016 summer meeting (£200)
2016	Prize for best graduate teaching assistant on the KCL BSc Psychology degree
2015	Award from the Guarantors of Brain to attend the 2015 Society for Neuroscience annual meeting (£800)
2014	British Association for Psychopharmacology training member bursary to attend the 2014 summer meeting (£200)
2013-2017	National Institute for Health Research Biomedical Research Centre PhD Studentship (£96,000)
2013	Prize for Best Performance on the Cognitive Neuroscience MSc at the University of Sussex

INVITED TALKS

- February 2020** Uncertainty, threat, and psychopathology. *Goldsmiths, University of London.*
- April 2019** The neurobiology of mood and anxiety disorders: A computational perspective. *Stony Brook university*
- February 2019** Learning and planning in aversive environments. *Phelps Lab, New York University*
- November 2018** A computational account of threat-related attentional bias. *Symposium, Society for Neuroscience Annual Meeting*
- October 2018** The computational underpinnings of anxiety. *Gershman Lab, Harvard University*
- July 2018** Computations underlying attentional bias towards threat. *Symposium, British Association for Psychopharmacology Conference*
- May 2018** The search for a mechanistic understanding of anxiety disorders. *Departmental seminar, University of Zurich*
- May 2018** The computational basis of threat-related attentional bias. *Bach Lab, University of Zurich*
- July 2017** Neural systems underlying active avoidance behaviour in major depression. *Symposium, British Association for Psychopharmacology Conference*
- May 2016** Understanding affective disorders: Insights from novel neuroimaging methods. *Computational psychiatry seminar, UCL*

SELECTED CONFERENCE PRESENTATIONS

Wise, T., Michely, J., Dayan, P., Dolan, R.J. The computational basis of threat-related attentional bias. *Poster presentation given at the Society of Biological Psychiatry 2018 annual meeting.*

Wise, T, Marwood L, Williams, SCR, Young, AH, Cleare, AJ, Perkins, AM. Neural Systems Underlying Active Avoidance Behaviour in Major Depression. *Poster presented at the Society for Neuroscience 2017 annual meeting.*

Wise, T, Marwood L, Perkins AM, Herane, A, Williams, SCR, Young, AH, Cleare, AJ, Arnone, D. Morphometric Correlates of Depressive and Hypomanic Symptoms in Major Depression. *Poster presented at the Society of Biological Psychiatry 2017 annual meeting.*

Wise, T & Marwood L, Perkins AM, Herane, A, Joles, R, Lythgoe, D, Luh, W, Williams, SCR, Young, AH, Cleare, AJ, Arnone, D. Major Depression is Associated with Unstable Functional Connectivity in the Default Mode Network. *Poster presented at the Society for Neuroscience 2016 annual meeting.*

Wise, T, Radua, J, Via, E, Cardoner, N, Cleare, AJ, Adams, T, Cole, JH, Pezzoli, S, Kempton, MJ, Fu, CH, Young, AH, Arnone, D. Grey Matter Changes in Major Depression and Bipolar Disorder: Evidence from Voxel-Based Meta-Analysis. *Poster presented at the Society for Neuroscience 2015 annual meeting.*

Wise, T, Radua, J, Via, E, Cardoner, N, Cleare, AJ, Adams, T, Cole, JH, Pezzoli, S, Kempton, MJ, Fu, CH, Young, AH, Arnone, D. Major Depression and Bipolar Disorder show Common and Distinct Patterns of Grey Matter Volume Reduction. *Poster presented at the British Association for Psychopharmacology 2015 annual meeting.*

Wise, T, Radua, J, Herane, A, Young, AH, Cleare, AJ, Arnone, D. Voxel-Based Meta-Analytical Comparison of White Matter Alterations in Major Depression and Bipolar Disorder. *Poster presented at the British Association for Psychopharmacology 2014 annual meeting.*

TEACHING

2015 Session leader on Introduction to Python course at Goldsmith's College
2015-2017 King's College London Psychology BSc graduate teaching assistant
Modules: Psychology and the brain; Research methods; Decision making
2014 Small group tutorial leader, statistics module for MSc programmes across the Institute of Psychiatry, Psychology & Neuroscience

SUPERVISION

2018-2019 *Rose Clarke*, UCL Neuroscience iBSc (awarded 1st Class)
2018-2019 *Fatima Chowdhury*, UCL Brain Sciences MRes (awarded Distinction)
2017-2018 *Helen Schmidt*, UCL Clinical Neuroscience MSc (awarded Merit)

MEDIA COVERAGE

"Cougar or not?", *National Geographic*:
<https://www.nationalgeographic.com/animals/2019/11/cougar-or-not-twitter-big-cats-united-states/>

Featuring my work on attentional bias towards threat

PEER REVIEW

Reviewing for *Molecular Psychiatry*, *Biological Psychiatry*, *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, *Bipolar Disorders*, *Journal of Psychiatry and Neuroscience*, *Translational Psychiatry*, and others.