

# MARY ANNE MONTGOMERY

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## PROFILE

On a personal and academic level, I am highly interested in understanding human cognition. My aims are to study the relationship between decision-making, moral learning, and the underlying neural mechanisms, and to get involved with the fast moving research into understanding social interaction. My study of psychology and neuroscience, along with ethical theory in philosophy, allow me to marry my interests in altruism and in scientific questioning, and my skills in research provide a fantastic base for further exploration

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## EDUCATION

2013 – June 2016

St. Hilda's College - **University of Oxford**, United Kingdom  
B.A. (Honours) Psychology, Philosophy and Linguistics  
*Muriel Wise Research Grant recipient*  
*Chair of Experimental Psychology Joint Consultative Committee*

2011 – 2013

**Solihull School**, United Kingdom  
A-Levels: A\*A\*A in Psychology, Religious Studies and Biology  
*Scholar and prizes for Academic Excellence in Psychology and Philosophy*

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## PUBLICATIONS

**Montgomery, M.A.**, Kappes, A., & Crockett, M.J. (2017) Compassion is not always a motivated choice: a multiple decision systems perspective. *Moral Psychology: Volume 5*, MIT Press

Neise, A., **Montgomery, M.A.**, Luo, Y., & Yu, H. (under review) Distinguishing neural signatures of harm, mental state, and their integration in third-party punishment. *The Journal of Neuroscience*

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## RESEARCH POSITIONS

October 2014 – Present

Full-time Research Assistant: **Crockett Lab**, University of Oxford  
Working with Dr Molly Crockett on the neural basis of morality and economic decision-making. Independently running learning studies, as well as designing and running projects using electric shocks to evoke moral dilemmas. This includes work on Matlab, Qualtrics and SONA, the training of other lab assistants, analysing data using SPSS and Matlab, and the collaborative discussion of new research ideas. My position has been full-time as a post-graduate from 2016, and my current projects include the use of neuroimaging to detect decision-making biases in moral dilemmas using computational models with appetitive and aversive stimuli. I am also investigating the impact of agent characteristics on participants' moral judgments

June – September 2016

Visiting Research Consultant: **SNP Lab**, Harvard University  
Collaborating with Dr Joshua Buckholz to investigate differences in decision-making biases between psychopathic populations and healthy controls. This involved using model-fitting techniques in MatLab and Python. The ultimate goal of this research is to develop drift diffusion models to reveal patterns of attentional bias which differ in clinical and prison communities, with the hope of impacting systems of rehabilitation

October 2015 – June 2016	Research Assistant: <b>Gatsby Computational Neuroscience Unit</b> , UCL Completing my undergraduate thesis under the joint supervision of Dr Molly Crockett (Oxford) and Dr Mehdi Keramati (UCL). Our aim is to model decision-making using both model-based and model-free learning mechanisms in economic maze tasks with electric shocks. The future prospects of our work include using group paradigms, neural imaging and pharmacological interventions. My work at UCL involved extensive MatLab and Psychtoolbox coding and analysis, and learning modelling techniques
June – August 2015	Research Assistant: <b>Moral Cognition Lab</b> , Harvard University Working with Dr Fiery Cushman and Dr Jonathan Phillips on the neural basis of Theory of Mind using behavioural and neuroimaging techniques. This included study conception, design and implementation with adult participants using fMRI, and involved extensive use of Qualtrics and R. Other projects included exploring the effect of morality on broader causal reasoning, and an examination of the Knobe effect
July – August 2014	Research Assistant: <b>Cognitive Neurology Lab</b> , University of Oxford Working with Dr Masud Husain and Dr Sean Fallon on working memory and its relationship with Alzheimer’s and Parkinson’s Diseases in patients and healthy controls. Also working on redefining working memory using young adults. This position included responsibilities of coordinating recruitment, running MatLab, presenting findings to other academics, designing experiment protocol and processing both patients and elderly controls

## RESEARCH INTERESTS

- Computational models of decision-making processes, and the exploration of how these may differ in social/moral domains
- The role of affect in learning and decision-making; including social perception, Theory of Mind, and the application of stereotypes
- The underlying neurological processes in normal social cognition, as well as in psychopathy
- The formation and distortion of memories in moral scenarios, including the influence of inter-group conflict on cognition

## RESEARCH SKILLS

Programming	Matlab; utilising CogentToolbox and PsychToolbox, Heroku (Ruby)
Data Collection	Matlab, Qualtrics, Heroku (Ruby), Python, Presentation, mTurk
Analysis	Matlab, SPSS, experience in R
Model-fitting	Matlab, experience in Python
Research tools	fMRI, eye-tracking, electric shock stimulation, experience with EEG
Clinical exposure	Drug administration: Ritalin, Strattera, placebo
Participant populations	Teenagers, the elderly, healthy population, prison population

## REFERENCES

Professor Molly Crockett · Department of Experimental Psychology, University of Oxford  
 Dr Andreas Kappes · Department of Experimental Psychology, University of Oxford  
 Dr Stephen McHugh · Department of Experimental Psychology, University of Oxford  
 Dr Mehdi Keramati · Gatsby Computational Neuroscience Unit, University College London