

Emma Elizabeth Biggs

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Nationality: Dutch & American

Current Researcher January 2018 – Present

Employment KU Leuven: Center for the Psychology of Learning and Experimental Psychopathology

- PI: Tom Beckers [ERC project: [WipeOutFear](#)]
- Behavioral and neuroimaging studies to investigate the mechanisms underlying the attenuation of emotional memories. Specifically focusing on identifying a physiological index of prediction error to predict future changes in conditioned responding using classical conditioning procedures. In a large MRI study we are also investigating changes in effective connectivity as a result of fear extinction, and how this can predict return-of-fear.

Previous FWO Aspirant **Doctoral Fellowship** October 2013 – January 2018

Research KU Leuven: Research Group for Health Psychology

Experience & Maastricht University: Department of Cognitive Neuroscience

- (Co-)Promotors: Prof. dr. Johan Vlaeyen, Prof. dr. Rainer Goebel, Dr. Ann Meulders, Dr. Amanda Kaas
- “Towards a neuro-cognitive model of pain-related fear”
- A mixture of behavioral and neuroimaging studies using fear conditioning procedures to study the development, spread, and reduction of pain-related fear.

MSc Cognitive Neuroscience, *cum laude* September 2011 – August 2012

Maastricht University, The Netherlands

- Master's thesis under supervision of Dr. Amanda Kaas and Dr. Alard Roebroek “Functional and Anatomical Connectivity in Complex Regional Pain Syndrome: A Multi-Modal Magnetic Resonance Imaging Study”. A comparison of methods to combine resting-state fMRI and diffusion-weighted MRI data from CRPS patients to predict treatment responses.

BSc Psychology, *1st Class with Honours* September 2008 – August 2011

University of Exeter, United Kingdom

Publications

Biggs, E. E., Timmers, I., Meulders, A., Vlaeyen, J. W., Goebel, R., & Kaas, A. L. (2020). The neural correlates of pain-related fear: a meta-analysis comparing fear conditioning studies using painful and non-painful stimuli. *Neuroscience and biobehavioral reviews*.

Biggs, E. E., Meulders, A., Kaas, A. L., Goebel, R., & Vlaeyen, J. W. (2020). The acquisition and generalization of fear of touch. *Scandinavian Journal of Pain*.

Timmers, I., Kaas, A. L., Quaedflieg C. W. E. M., Biggs, E. E., Smeets, T. & de Jong, J. R. (2018) Fear of pain and cortisol reactivity predict the strength of stress-induced hypoaesthesia. *The Journal of Pain*. [doi:10.1002/ejp.1217](https://doi.org/10.1002/ejp.1217)

Biggs, E. E., Meulders, A., Kaas, A. L., Goebel, R., & Vlaeyen, J. W. (2017). The acquisition and extinction of fear of painful touch: a novel tactile fear conditioning paradigm. *The Journal of Pain*. [doi: 10.1016/j.jpain.2017.08.002](https://doi.org/10.1016/j.jpain.2017.08.002)

Biggs, E. E., Meulders, A. & Vlaeyen, J. W. S. (2016) The Neuroscience of Fear and Pain. In M. A. Flaten & M. al'Absi (eds.) *The Neuroscience of Fear, Stress, and Emotion*. Elsevier. ISBN: [9780128005385](https://doi.org/9780128005385).

Biggs, E. E. (2013). Functional and anatomical connectivity in Complex Regional Pain Syndrome: A Multi-modal magnetic resonance imaging study. *The Maastricht Student Journal of Psychology and Neuroscience*, 2, 98-115.

Conference Contributions

Biggs, E. E., Vervliet, B., Van Oudenhove, L., & Beckers, T. (June 2019) The third interval response as a physiological index of prediction error. **Oral presentation** at the Expert Meeting on the Attenuation of Emotional Memories.

Biggs, E. E., Vervliet, B., Van Oudenhove, L., & Beckers, T. (May 2019) The third interval response as a physiological index of prediction error. **Poster** at the 11th European Meeting on Human Fear Conditioning.

Biggs, E. E., Meulders, A., Vlaeyen, J. W. S., Timmers, I., Eck, J., Goebel, R., & Kaas, A. L. (September 2017) *The reduction of pain-related fear through extinction and exposure*. Oral presentation part of a **Workshop** at the 10th Congress of the European Pain Federation (EFIC). [Speakers: Timmers, I., Biggs, E. E., Simons, L., Davis, K. Many paths to treating pain: clinical and experimental neuroimaging studies targeting pain-related fear and cognitions].

Biggs, E. E., Kaas, A. L., Meulders, A., Vlaeyen, W. S. & Goebel, R. (June 2017) *The neural correlates of the acquisition of fear of touch-related pain*. **Poster** at the Organization for Human Brain Mapping.

Eck, J., Timmers, I. Biggs, E. E., Steinbach, T., Bouwsema, H., Seelen, H., Noirhomme, Q., Schweizer, R. & Kaas, A. L. (June 2017) *Comparing somatosensory mapping designs for clinical rehabilitation assessment*. **Poster** at the Organization for Human Brain Mapping.

Biggs, E. E. (March 2017) *A neuro-cognitive perspective on pain-related fear*. **Invited oral presentation** at the group of Contextual Psychiatry, KU Leuven.

Biggs, E. E., Meulders, A., Kaas, A. L., Goebel, R. & Vlaeyen, W. S. (September 2016) *The generalization of fear of touch-related pain*. **Poster** presented at the Pain Research Meeting.

Biggs, E. E., Meulders, A., Kaas, A. L., Goebel, R. & Vlaeyen, W. S. (September 2015) *The role of predictability in the acquisition and extinction of pain-related fear: a fear-conditioning paradigm using tactile stimuli*. **Oral presentation** at the Pain Research Meeting.

Biggs, E. E., Meulders, A., Vlaeyen, J. W. S., Goebel, R. & Kaas, A. L. (June 2015) *Fear of Visual Stimuli: An ALE Meta-Analysis of fear conditioning studies*. **Poster** presented at the Organization for Human Brain Mapping.

**Awards
& Grants**

Poster prize at the 10 th European Meeting on Human Fear Conditioning	2018
Grant from Maastricht Brain Imaging Center (€7,000)	2016
Grant from Maastricht Brain Imaging Center (€4,900)	2014
FWO Aspirant & Renewal (PhD Fellowship)	2013 & 2015

**Workshops
& Further
Education**

Experimental Psychopathology (EPP) Post-graduate school	2013 - 2018
Attended workshops included: Basic Statistics, Bayesian Statistics, Network Analyses, Scientific Integrity, and Experiment Programming	
Summer School on Emotional Learning and Memory in Health and Psychopathology	2017
International summer school providing state-of-the-art lectures on the acquisition, extinction, reconsolidation, and generalization of emotional memory. In addition to clinical and practical workshops (e.g., on exposure therapy and lab techniques) and small-group discussions with experts.	
Advanced Mathematics for Signal Processing	February 2016 - March 2016
Course covering practical and theoretical mathematical concepts required for signal processing (Maastricht Brain Imaging Center, The Netherlands).	
Neurite Orientation Diffusion and Density Imaging (NODDI)	April 2014
Workshop given by Gary Zhang on using the NODDI toolbox to analyze diffusion-weighted MRI data (Maastricht Brain Imaging Center, The Netherlands).	
M-BIC 7 th fMRI Workshop	March 2012
Topics included: Multivariate pattern analysis, cortex-based alignment, granger causality modeling, and diffusion tensor imaging (Maastricht Brain Imaging Center, The Netherlands).	

Skills

Advanced programming and data processing

Advanced knowledge of Matlab and Python, intermediate knowledge of JavaScript

Advanced statistics

Primarily use of Bayesian inference for hypothesis testing applied to model selection methods, ANOVA, (generalized) linear mixed effects model, and other non-parametric approaches

Languages

English: Native speaker; Dutch: Fluent

Member of the organizational committee for the Expert Meeting on the Attenuation of Emotional Memories 2019

An international meeting funded by the ERC project WipeOutFear with the aim of discussing the state-of-the-art with prominent clinicians and basic scientists (animal and human researchers).

Member of the organizational committee for the Pain Research Meeting 2015

An annual international conference, designed to allow PhD students the opportunity to disseminate their latest results and promote collaboration within the field of experimental pain research.

Teaching experience

2013 - Present

Supervisor for bachelor and master students conducting research internships (currently 17+ students)

Teaching assistant for Lecture in Psychology Series (Online course) at KU Leuven

Lecturer & Tutor for course Pleasure & Pain (Bachelor elective) at Maastricht University