

Department of Psychology
SE14 6NW

30th November 2016

To Whom it May Concern,

Please find below an application for funding for a two day EPS Research Workshop entitled 'accelerating the impact of research into sensorimotor learning'. This is a joint submission by myself (along with my lab, [Goldsmiths Action Lab](#)) and Professor Mark Mon-Williams (along with his lab, [paclab](#)) of the University of Leeds. I confirm that I am a member of EPS and that this topic has not previously received an EPS grant.

As you will see from our application, there is a growing recognition internationally that sensorimotor processes underpin cognition, lay the developmental foundations of health and education and are a major cause of disability when impaired through neurological insult. However, work in this area does not have the same prominence as its cognitive counterparts (e.g. language or memory) in research, professional practice or the understanding of the general public. Nonetheless there is a good deal of expertise and energy among researchers involved in this area and focusing on a broad range of areas of relevance within the UK. Those more senior within this field have strong international contacts as well as a passion for supporting early and mid career researchers to develop this area of research and its impact.

The workshop would be open to EPS and non EPS members alike. From the application, you will see that we have planned the workshop to fulfil a number of aims, not least to enable career development opportunities for early career researchers, and to develop the research capacity of the field through including time not only for mentoring but also for discussion of future research ideas. These connections will be nurtured beyond the workshop. The time commitment required for such a structure would not be possible within the format of regular EPS meetings. In our selection of speakers we have purposely included both those more senior and more junior within the field and with a varied range of foci to reflect the experimental, professional and translational relevances of the research area. Furthermore we are committed to ensuring diversity among the workshop attendees. This commitment is built into our costings as well as our plans around communicating the workshop and encouraging participation, should our application be successful.

We are requesting funds of £4200 to run a two day workshop hosted at the University of Leeds. These costs are estimated on the basis of a two-day conference organised by paclab at Leeds in the summer of 2016. Broadly, we request funds to cover the

expenses of the two outside speakers (estimated to total approx. £400 for travel and accommodation). We also request funds to cover catering costs (approx. £2000 for up to 100 delegates for lunch on two days plus tea/coffee on each day) and subsidisation of accommodation costs for early career researchers (delegates will be housed in high quality accommodation on the Leeds campus; subsidy approx. £1200). This will help (1) realise our goal of enabling as many early career researchers, and those without significant funding to attend, are able to contribute to, and benefit from the workshop, and (2) ensure that delegates remain at the conference during breaks and the evening of the first day for networking and mentoring a primary aim of the workshop. The hire of poster boards (approx. £300) and limited printing costs (approx. £300) are also included in the costings. The cost of room hire will be waived by the University of Leeds. Members of paclab and Goldsmiths Action Lab will organise and run the workshop as part of their commitment to this area, and to enable career development opportunities.

We hope that the panel will find that this workshop proposal meets the terms of the scheme and that it will be of interest to the panel.

If you have further questions, please let me know.

Yours sincerely,

A handwritten signature in black ink that reads "Elisabeth Hill". The signature is written in a cursive, flowing style.

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EPS Research Workshop Application: Accelerating the impact of research into sensorimotor learning

Applicants: Professor Elisabeth Hill (Goldsmiths, University of London) and Professor Mark Mon-Williams (University of Leeds)

Overview: There is a growing recognition that sensorimotor processes underpin cognition, lay the developmental foundations of health and education and are a major cause of disability when impaired through neurological insult (especially in older age). Nevertheless, sensorimotor systems have been the ‘Cinderella’ of experimental psychology, with higher order cognitive processes obtaining the lion’s share of investigation and little recognition historically given to the symbiotic relationship that exists between sensorimotor control and ‘cognition’.

In the UK, there is a thriving but disconnected community of experimental psychologists exploring sensorimotor learning using a wide range of approaches (e.g., eye-tracking, robotics, virtual reality) in a diverse range of areas (e.g., genetic abnormalities, developmental disorders, surgical training, stroke rehabilitation). This work is at the cutting-edge of science but also has immense potential for societal and economic impact.

This two-day workshop aims to bring together early career researchers and established leaders in the field together with experts from germane disciplines (genetics, epidemiology, psychiatry etc) to: (i) share approaches to the study of sensorimotor learning, (ii) communicate the power of experimental psychology techniques to stakeholders, (iii) accelerate the societal and economic impact of sensorimotor research and (iv) develop an network of UK researchers with the collaborative infrastructure necessary to have international impact within this area. We estimate 80-100 delegates on the basis of preliminary enquiries.

Scientific Objectives: The purpose of this workshop is to share the latest and most innovative research techniques and findings regarding sensorimotor learning in the UK and consider this research from the perspective of societal impact. The workshop will comprise four sessions (two sessions per day):

- The first session will define ‘sensorimotor learning’ and will feature a diverse range of research that has applied different methodologies and techniques from experimental psychology to assess sensorimotor learning.
- The second session will be led by clinicians and roboticists and will focus on critical issues and questions relating to sensorimotor control within rehabilitation and robotics (and the use of robots for rehabilitation).
- The third session will focus on impairments in sensorimotor learning in children (e.g. cerebral palsy), DCD and adults (e.g. stroke) and consider sensorimotor learning from a developmental perspective.

- The fourth session will specifically focus on current efforts to measure sensorimotor processes within the ‘Born in Bradford’ (BiB) longitudinal birth cohort (involving 13,500 children). This study provides a microcosm of the issues covered within the first three sessions and will be an opportunity for experimental psychologists and practitioners to discuss how sensorimotor measures from the BiB study can shed light on cognitive development, identify children who need additional support within the classroom and provide valuable metrics for ‘big data’ analyses of the social determinants of health and educational outcomes.

The first session will be started with a keynote talk by Professor James Tresilian (Professor at Warwick University and author of ‘Sensorimotor Control and Learning’), who will provide an overview of research on neuroscience, learning and experimental psychology within the field of sensorimotor learning.

The second session will be started with a keynote talk by Professors Rory O’Connor and Martin Levesley (Consultant and Professor of Rehabilitation Medicine and Professor of Robotic Engineering at Leeds respectively), who will provide an overview of research on disability caused by sensorimotor impairment, the development of control schemes for robotic devices and the use of robotic systems in rehabilitation.

The third session will be started with a keynote talk by Dr Nicholas Holmes (Assistant Professor at the University of Nottingham) who will provide an overview of research on somatosensory perception in adults and children with and without movement disorders. He will provide an overview of brain stimulation techniques, brain imaging methods, and the use of motion tracking and electrophysiological methods with children.

The fourth session will be started with a keynote talk by Professor John Wright (Head of the Bradford Institute of Health Research), who will provide an overview of the Born in Bradford project and describe how it is a “medical detective story”- trying to piece together the clues in people's lifestyles, their environments and their genetic make-up, to determine why some children remain healthy and have good educational outcomes whilst other children show poor educational attainment and have elevated risk of physical and mental health problems. Professor Wright will focus particularly on the way that sensorimotor measures have shed light on structural determinants of health inequalities and have provided useful indicators of children at risk of poor social and emotional wellbeing and lower educational attainment.

Training environment: A central goal will be to support postgraduate and early career researchers, by providing opportunities for research presentations (five minutes, three slides, and subsequent detailed advice) and by scheduling ample time for discussions, technical demonstrations and networking (formally organised so that the community can work together more effectively). Specific sessions will be help on experimental techniques, data and software sharing, open access and study pre-registration. We will also hold sessions on maximising societal impact in order for

attendees (at all career stages) to consider how to add value to their research and generate impact outside of academia. We will ensure that early career researchers will learn from these sessions, with more established experimental psychologists sharing advice and good practice. There will also be time set aside for informal mentoring and advice on career development and we will pair early-career and established researchers for mentoring beyond the Workshop.

Workshop location and information: The workshop will take place at the University of Leeds in the summer of 2017. We have chosen Leeds as the venue because of its central location, enabling a reasonable journey for all researchers from throughout the UK. Moreover, Leeds hosts the National Robotic Centre and the MRC/ESRC Institute for Data Analytics. There will be tours and the opportunity to meet the leaders of these facilities for the delegates which will add value to the Workshop (which features research involving both of these facilities).

The University of Leeds is easily accessible from Leeds city station by walking, public transport or taxi. Leeds train station connects with all major UK cities and has a fast and efficient Scottish and London service. This makes Leeds University an ideal venue for the workshop and will ensure we attract a wide range of EPS members and postgraduate students from across the UK.

All talks will be video-recorded and made freely available online after the event.

Organisers: The event will be co-organised and co-hosted by Goldsmiths Action Lab's Professor Elisabeth Hill (www.goldactionlab.co.uk) and Leeds Perception-Action-Cognition Lab's Professor Mark Mon-Williams (www.leeds.ac.uk/paclab), offering complementary expertise that spans the scope of the workshop.

Budget: The cost of room hire etc will be waived by the University of Leeds. We request funds to cover the expenses of the two outside speakers. We also request funds to cover catering costs and subsidisation of accommodation costs for early career researchers (delegates will be housed in high quality accommodation on Leeds campus). We have estimated the costs as **£4,200** on the basis of a two-day conference organised by paclab at Leeds in the summer of 2016 (<http://www.leeds.ac.uk/paclab/dcd/>). We request the funds to be released in advance of the meeting so accommodation etc can be booked.