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## TRAINING PROGRAMS AND RESEARCH LABORATORIES

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# MSc in Music, Mind and Brain at Goldsmiths, University of London

LAUREN STEWART & DANIEL MÜLLENSIEFEN

### AIMS OF THE PROGRAMME

Research in music cognition and the cognitive neuroscience of music is undertaken in a number of laboratories worldwide, providing opportunities for graduates to specialize in an area that is increasingly becoming a mainstream topic in cognitive (neuro)science. Coverage of this area at undergraduate level, however, is rather sparse, and depends upon the level of expertise available. Nevertheless, many undergraduates develop an interest in the field through wider reading but may find it daunting to commit to a specific doctoral project without having a broader perspective.

The MSc in Music, Mind and Brain (<http://www.goldsmiths.ac.uk/pg/msc-music-mind-brain.php>) aims to address the discrepancy between the growing number of research labs worldwide and the relative lack of coverage of the topic at the undergraduate level.

The course is a one year full time or two year part time taught postgraduate degree that aims to equip students with a thorough understanding of the cognitive and neural underpinnings of musical behaviour and to provide them with the research skills necessary to conduct a high-quality piece of independent research during their Masters degree and beyond. The coverage of both psychological and neuroscientific perspectives on music makes this course particularly unique.

### PARENT INSTITUTION & EXTERNAL LINKS

As London's 'creative' university, Goldsmiths provides a fitting base for the MSc in Music, Mind and

Brain. The course is strongly interdisciplinary and much of the teaching happens within the college's Centre for Cognition, Computation and Culture. The course benefits from good links with institutions such as the Institute of Education, the Royal College of Music, and the National Hospital for Neurology and Neurosurgery, from which we draw guest lecturers, from fields ranging from music education to music therapy and clinical neurology.

### TEACHING FACULTY

The course is co-directed by Lauren Stewart and Daniel Müllensiefen, who bring complementary skill sets (cognitive neuroscience and experimental psychology; musicology and computational approaches) to the course. All teaching faculty have international profiles within the field: Pamela Heaton (development disorders and music); Joydeep Bhattacharya (electrophysiological studies of music), John Gruzelier (effects of neurofeedback on high level musical performance), and Geraint Wiggins (computational models of music perception and cognition). We are also fortunate to count Aaron Williamon (Royal College of Music), Jason Warren (National Hospital for Neurology and Neurosurgery), Wendy Magee (Putney Hospital for Neurodisability), Marcus Pearce (University College London), Graham Welch (Institute of Education)

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and Adam Ockelford (Roehampton University) among our external faculty.

#### **COURSE CONTENT & TEACHING METHODS**

The programme includes modules in Music Perception and the Cognitive Neuroscience of Music, along with Foundations of Neuroscience, Statistics and Experimental Design and Research Skills. As part of our Eminent Speaker series, we have been privileged to host such luminaries as Ian Cross, Andrea Halpern, David Huron, Stefan Koelsch, Steven Mithen, and John Sloboda. The research project component is a significant part of the degree, comprising a substantive piece of work conducted under close supervision over an extended period of time, with the potential to lead to publication in a peer-reviewed journal. Recent topics have included an empirical study of absolute pitch in congenitally blind children; EEG-based projects on melodic expectancy; and the role of the human body in rhythm perception.

Teaching style incorporates a range of approaches: from traditional teacher-led lectures, to hands-on methods sessions, student-led discussions and debates, and journal clubs. Where possible, we try to dovetail academic aspects of the degree with the excellent cultural opportunities that are afforded by living in London. A lecture on exceptional early musical development by Adam Ockelford was accompanied by a concert at London's South Bank, given by Derek Paravicini, a high profile individual with musical savant skills with whom Adam has worked over several decades. Similarly, a lecture on focal dystonia in musicians was followed by a concert given by the renowned pianist, Leon Fleischer, following his rehabilitation from the condition.

#### **FACILITIES**

Students in the MSc Programme in Music, Mind and Brain are based within the department of Psychology, split across the Whitehead and Ben Pimlott Buildings. Both offer excellent facilities for teaching, research and laboratory-based work,

including electrophysiology laboratories (EEG, psychophysiological recording), an eye tracking facility, and a sound-attenuated booth for auditory psychophysics. Students have access to networked PCs and electronic journals, and the department is well stocked with audiovisual equipment and neuropsychological tests. The department has five full-time technical staff, skilled in supporting these facilities for both teaching and research.

#### **STUDENT BODY**

Our students are diverse in terms of background, nationality, age range, and their motivations for taking the course. Many have come from undergraduate programmes in psychology or neuroscience or are music graduates with an awareness of the scientific approach. Many wish to pursue postgraduate research in this field, while some hope to gain insight into issues relating to performance and pedagogy, and others are interested in the biological bases of music therapeutic approaches. Class size is kept deliberately small (10 – 15 per year) to encourage discussion and interaction.

#### **CAREER PATHS**

The research projects of several of our students are in preparation for publication and conference presentation, and the majority of graduates from the first year of the MSc in Music, Mind and Brain have already taken up, or are pursuing, PhD positions or research assistantships within the field, either within Goldsmiths or further afield.

#### **FUTURE PLANS**

The success of the first year of the MSc has allowed us to further enhance the course, with the addition of more practical elements, such as methods sessions and student contributions to lectures. We continue to further strengthen our ties with the Intelligent Sound and Music Group from the Department of Computing, offering a number of projects from a

computational perspective. In addition, we are organizing a public engagement event, 'Striking your Own Chord' at the Science Museums' Dana Centre which will include contributions from psychologists

neuroscientists and songwriters, as well as 'Creative Karaoke': a workshop designed to test the audience's musical creativity, involving current and past MMB students in the hands-on aspects of this event.



Fig. 1. MSc Graduation Day—Music, Mind, and Brain at Goldsmiths

**SELECTED RECENT PUBLICATIONS FROM  
TEACHING FACULTY**

- Heaton, P. (2009). Assessing musical skills in autistic children who are not savants. *Philosophical Transactions of the Royal Society B*, 364, 1443-1447.
- Heaton, P., & Allen, R. (2009). 'With concord of sweet sounds..': new perspectives on the diversity of musical experience in autism and other neurodevelopmental conditions. The Neurosciences of music III: Disorders and plasticity. *Annals of the New York Academy of Sciences*, 1169, 318-325
- Herrojo Ruiz, M., Koelsch, S., & Bhattacharya, J. (2009). Early right alpha band phase desynchronization and late gamma band oscillations in processing musical syntax. *Human Brain Mapping*, 30, 1207-1225.
- Logeswaran, L., & Bhattacharya, J. (2009) Crossmodal transfer of emotion by music. *Neuroscience Letters*, 455, 129-133.
- Müllensiefen, D., Pfliederer, M., & Frieler, K. (2009). The perception of accents in pop music melodies. *Journal of New Music Research*, 38 (1), 19-44.
- Müllensiefen, D., & Pendsch, M. (2009). Court decisions on music plagiarism and the predictive value of similarity algorithms. *Musicae Scientiae, Discussion Forum 4B*, 257-295.
- Stewart, L. (2008). Fractionating the Musical Mind: Insights from Congenital Amusia. *Current Opinion in Neurobiology*, 18, 127-130.
- Stewart, L. (2010). Lost in music. *The Psychologist*, 22, 1030-1033.
- Stewart, L., Von Kriegstein, K., & Warren, J.D., & Griffiths, T. (2006). Disorders of Musical Listening *Brain*, 129, 2533-2553



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