

**Faculty of Business, Law and Social Sciences**

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| **Proposed Title:** An EEG and computational modelling investigation into cultural differences in visual perceptual learning.  **Project Reference Number 4** |
| **School:** School of Social Sciences |
| **Proposed Supervisory Team:** Professor Eirini Mavritsaki, Dr Panagiotis Rentzelas, Professor Maxine Lintern, Professor Zoe Kourtzi (University of Cambridge), Stephanie Chua |
| **Abstract:**  Visual perceptual learning (VPL) refers to the acquisition of visual skills through training which improves our ability to detect useful information in cluttered scenes (Dosher & Lu, 1998; Lu et al., 2011; Sagi, 2011). Despite considerable reports of individual differences in perceptual learning (Hansen et al., 2012; Rop & Withagen, 2014; Withagen & Caljouw, 2011), cross-cultural differences in VPL remains largely unexplored. Cultural differences in the time course of VPL have been widely debated (Gutchess et al., 2006; Kitayama & Murata, 2013; Liu, Rigoulot, & Pell, 2017), and it is imperative to investigate this. Individualism and independence in Western cultures, as well as collectivism and interdependence in Eastern cultures have been associated with differential processing and attentional styles (Han & Humphreys, 2016; Lin & Han, 2009). It is thus estimated that the group- and individual-level cultural differences differentiating Western and Eastern cultures could influence VPL processes. **To our knowledge, there is no research that investigates the underlying brain processes that support these differences and how they influence VPL.** Therefore, building on previous work (Chua et al., 2019; Mavritsaki et al., 2018;Mavritsaki, 2011) this PhD project aims to broaden our knowledge of cultural influences on VPL using electroencephalography (EEG) and computational modelling techniques. |
| **Research Environment:**  The proposed studies will be conducted mainly in Birmingham City University in collaboration with Cambridge University. Birmingham City University has invested massively in research by moving the Department of Psychology into a new building, with newly equipped laboratories for experiments.  The department is equipped with state-of-the-art eye-tracking and electroencephalogram (EEG) equipment. The PhD student on this project will benefit from close interactions and sharing of research ideas with other PhD students in the school and wider research community in BCU. The Department of Psychology also holds regular seminars and research centre meetings that the PhD student can participate and benefit from. |
| **Applicant Requirements:**   * This work requires a student with experience in computational modelling (Visual C ++) as evidenced by previous work or a masters degree. * The applicant should hold a good undergraduate honours degree (First or 2:1) in psychology or related area. * A Masters’ degree in research methods, psychology, or computational modelling is desirable. * A demonstrated understanding of research methods is essential (as evidenced by degree transcript grades for research methods and dissertation modules). * Some experience in Matlab and EEG analysis (additional training will take place). * Some experience in EEG analysis (additional training will take place). |
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