conferenceseries.com

17ᵗʰ Global Neuroscience Conference

OCTOBER 16-17, 2017   OSAKA, JAPAN

The effect of mental countermeasures on fMRI-based concealed information tests

Chun-Wei Hsu and Giorgio Ganis
University of Plymouth, UK

Concealed Information Paradigms (CITs) have been developed to determine if an individual is familiar with a certain piece of information such as a crime-related item. The main logic of CITs is that recognition of an item of interest (probe) will generate a differential response, compared to suitable control items (irrelevant), that can be detected by monitoring behavioral, psychophysiological or neural variables. An important issue is an extent to which countermeasures used by suspects can reduce the accuracy of the CIT. Recent work has focused on neural variables measured with Functional Magnetic Resonance Imaging (fMRI) because at first sight, such variables may seem more resistant to countermeasures than more peripheral variables. Previous work has shown that hybrid physical and mental countermeasures can decrease the accuracy of fMRI-based CITs, but questions remain as to whether purely mental countermeasures can do so as well. Existing evidence shows that attentional and memory strategies can decrease the accuracy with which one can use fMRI to detect successful recognition in standard face recognition tasks. The aim of this fMRI study was to determine if such mental countermeasures are effective also with standard CITs. Participants (N=20) were tested under three conditions: no knowledge, concealed knowledge and countermeasures. Results based on regions of interest defined in previous CIT studies showed that the area under the curve (AUC) for discriminating no knowledge and concealed knowledge cases with multi-voxel pattern analyses was 0.86 without countermeasures. Critically, memory and attentional countermeasures significantly reduced the AUC to 0.74. These results indicate that purely mental countermeasures can reduce the accuracy of fMRI-based CITs, even without extensive training of participants.

Biography

Chun-Wei Hsu is currently pursuing her PhD in Psychology at University of Plymouth, UK. She has completed her undergraduate degree at National Taiwan University, Taiwan. She has completed her Master's degree in Cognitive Neuroscience and Human Neuroimaging at University of Sheffield. She is interested in how people conduct high-level cognition in complex social interaction and how people evaluate expect the pay-offs and take action during the decision-making process.

chun-wei.hsu@plymouth.ac.uk

Notes:

J Neurol Neurosci

ISSN: 2171-6625 Neuro, an open access journal

Neuroscience 2017
October 16-17, 2017

Volume 8, Issue 6

Page 20