

Accepted Manuscript

Title: How Motor, Cognitive and Musical Expertise Shapes the Brain: Focus on the fMRI and EEG Resting-State Functional Connectivity

Authors: Pauline Cantou, Hervé Platel, Béatrice Desgranges, Mathilde Groussard



PII: S0891-0618(16)30251-4
DOI: <http://dx.doi.org/10.1016/j.jchemneu.2017.08.003>
Reference: CHENEU 1513

To appear in:

Received date: 18-11-2016
Revised date: 13-8-2017
Accepted date: 16-8-2017

Please cite this article as: Cantou, Pauline, Platel, Hervé, Desgranges, Béatrice, Groussard, Mathilde, How Motor, Cognitive and Musical Expertise Shapes the Brain: Focus on the fMRI and EEG Resting-State Functional Connectivity. Journal of Chemical Neuroanatomy <http://dx.doi.org/10.1016/j.jchemneu.2017.08.003>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

How Motor, Cognitive and Musical Expertise Shapes the Brain: Focus on the fMRI and EEG Resting-State Functional Connectivity

Pauline Cantou¹, Hervé Platel¹, Béatrice Desgranges¹, Mathilde Groussard^{*1}

¹ Normandie Univ, UNICAEN, EPHE, INSERM, U1077, CHU de Caen, Neuropsychologie et Imagerie de la Mémoire Humaine, 14000 Caen, France

***Correspondence and reprint requests:**

Mathilde Groussard, Inserm-EPHE-Unicaen U1077, Centre Cyceron, Campus Jules Horowitz, Boulevard Henri Becquerel, BP 5229F-14074 Caen Cedex 5

Phone: +33 (0)2 31 47 01 77; Fax: +33 (0)2 31 47 01 06, e-mail: mathilde.groussard@unicaen.fr

Highlights

- Motor, cognitive and musical expertise is associated with resting-state functional changes within various brain networks
- There is currently no clear pattern of results that would single out a specific neural signature of general expertise at rest
- The variability of findings might be explained by different settings of resting-state and various methods used to analyze the data.

ABSTRACT

Brain activity and structure are shaped by life experiences. This plasticity has often been demonstrated with different types of expertise by using functional magnetic resonance imaging (fMRI) and electroencephalography (EEG). Experts showed domain-specific functional neural changes during completion of a task when compared to non-experts. However, all of these results are task-dependent and even though they have proven useful for understanding neural interactions and their direct relation to individual skill, studying brain plasticity without any task might provide complementary information about functional cerebral reorganization due to expertise at the whole-brain level and might facilitate comparison across studies. Resting-state functional MRI and EEG makes it possible to explore the functional traces of expertise in the brain by measuring temporal correlations of blood oxygen level-dependent (BOLD) and spontaneous neural activity fluctuations at rest. Since these correlations are thought to reflect a prior history co-activation of brain regions, we propose reviewing studies that focused on the effects of expertise in the motor, cognitive and musical domains on brain plasticity at rest, to determine whether there is a domain-specific neural signature of expertise. After highlighting

Download English Version:

<https://daneshyari.com/en/article/8336147>

Download Persian Version:

<https://daneshyari.com/article/8336147>

[Daneshyari.com](https://daneshyari.com)