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## Symposium

### THE IMPACT OF LEARNING TO READ ON VISUAL PROCESSING

Saturday, 14 March 2015, 11:00 - 12:20  
Volmer Room 3-NH Grand Krasnapolsky Hotel

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**Subject Areas:** Cognitive Psychology, Neuroscience

Chair: **José Morais**  
*Université Libre de Bruxelles, Belgium*

An emergent bulk of research indicates that, independently of maturation, learning to read strongly impacts on visual processing, including for non-linguistic materials. Panelists in this symposium will present their latest findings on the neural and cognitive processes modulated by literacy, from low-level visual processes to mirror-image discrimination and letter processing.

#### ***The visual cortex is not exclusively visual, and plays a critical role in tactile Braille reading. fMRI, resting-state fMRI and TMS evidence from sighted Braille readers.***

**Marcin Szwed**  
*Jagiellonian University, Poland*

Co-Author: **Lukasz Bola**, Department of Psychology, Jagiellonian University, Krakow, Poland

Co-Author: **Katarzyna Siuda**, Department of Psychology, Jagiellonian University, Krakow, Poland

Co-Author: **Magdalena Sliwinska**, Department of Psychology, UCL, London, UK

#### ***How literacy breaks the mirror invariance of the visual system***

**Felipe Pegado**  
*Katholieke Universiteit Leuven, Belgium*

Literacy acquisition changes the mirror invariance property of the visual system. I will highlight the putative brain mechanisms underpinning mirror discrimination learning (e.g., 'b' versus 'd'): essentially via top-down inputs from phonological, handwriting and articulatory representations, namely through a multisystem learning process, with information from other systems influencing visual processing.

Co-Author: **Kimihiko Nakamura Dr**, Human Brain Research Center, Kyoto University Graduate School of Medicine, Japan

Co-Author: **Thomas Hannagan Dr**, Laboratoire de Psychologie Cognitive UMR 7920, Fédération de Recherche 3C, Aix-Marseille Université and CNRS, Marseille, France

#### ***When does literacy start to impact on visual processing? Evidence from preschool children and illiterate adults.***

**Tânia Fernandes**  
*Universidade de Lisboa, Portugal*

Co-Author: **Isabel Leite Dr**, Universidade de Evora, Portugal

Co-Author: **Régine Kolinsky Dr**, Fonds de la Recherche Scientifique (FNRS) & Université Libre de Bruxelles, Belgium

#### ***Looking beyond letters: The impact of literacy on visual discrimination***

**Jon Andoni Duñabeitia**  
*Basque Center on Cognition, Brain and Language, Spain*

We investigated how literacy modifies two mechanisms essential for efficient reading: flexible letter-position coding and accurate letter-identity assignment. In both studies on (il) literate adults and longitudinal studies with developing readers, only non-readers were almost blind to within-string position and identity alterations. Thus, visual sequence recognition is highly modulated by reading.

Co-Author: **Manuel Carreiras Dr**, Basque Center on Cognition, Brain and Language (BCBL), Donostia, Spain

**Régine Kolinsky (Discussant)**  
*Fonds de la Recherche Scientifique, Belgium and Université Libre de Bruxelles, Belgium*

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