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Editorial

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This volume of *BLC* presents two thematic sets of studies, the first one consisting of short concise reviews of studies on neuroimaging of the bilingual brain, and the second one a Special Issue edited by Margaret Deuchar that focuses on code switching, priming, and other cross-language effects in bilingual production and comprehension, presenting novel findings from different language combinations and a range of experimental and naturalistic methods; Deuchar (2016) provides an overview of this set of studies.

As regards the first set of studies, "neuroimaging of bilingualism" refers to the employment of functional and structural neuroimaging techniques to investigate the cerebral organization of two (or more) languages. The most widely employed technique is MR (Magnetic Resonance) scanning which is widely recognized as a non-invasive technique (i.e., a technique not based on radiations to illustrate brain activity). Earlier studies employed the PET technique (Positron Emission Tomography) but because of its invasiveness it has become by now almost obsolete for studying cognitive functions in healthy subjects. MR scanning, in turn, may be divided into two big categories: functional imaging and structural imaging. The former makes use of fMRI (functional magnetic resonance imaging), a neuroimaging technique that creates activation 'maps' of the brain in order to depict which areas or regions of the brain are involved in a particular cerebral process (such as speaking an L2 rather than an L1). On the other hand, structural neuroimaging measures the density of brain tissue such as grey matter or white matter. This type of structural information may be very useful to investigate the long-term effects of neural plasticity where it is assumed that, for instance, the continuous use of a particular cognitive function may increase the grey matter of a particular area. For instances, it has been consistently observed that bilinguals have increased grey matter density in the anterior cingulate cortex (a brain region involved in MONITORING of different processes) as opposed to monolinguals (Abutalebi & Green, 2016).

In the last two decades, the interest in the study of the neural correlates of bilingualism, including the cognitive effects of bilingualism, has increased considerably. Against this background, the aim of the current special issue is to put together concise reviews of neuroimaging research on bilingualism written by prominent scholars in this field that should provide the *BLC* readership with a competent update on recent advances in this ever-increasing field.

In the first contribution, Li and Grant (2016) provide an overview of neuroimaging studies of successful second language learning. Their specific approach relies on the study of neural networks through functional and effective connectivity to better capture second language learning success. Roncaglia-Denissen and Kotz (2016) review the available neuroimaging evidence of the last 20 years on morphosyntactic processing and discuss the findings in the light of different theoretical models. In the third contribution, Golestani (2016) reviews neuroimaging studies on phonological processing in bilinguals with a specific focus on phonetic perception, a still under-researched topic compared to the multitude of studies available for grammatical and lexico-semantic aspects of language processing. The fourth contribution, by Cao (2016), reviews neuroimaging studies of reading. Among other points, Cao (2016) argues that orthographic transparency crucially affects brain activation in L2 reading and that learning to read an L2 also influences the neural basis of reading in the L1. The fifth contribution, Abutalebi & Green (2016), discusses recent neuroimaging studies on language control and updates the original language control model (Abutalebi & Green, 2007). The authors conclude that the bilingual brain adapts via neural plasticity to the specific control demands of language use, and that this adaptation leads to an eventual neural reserve (i.e., increased grey and/or white matter densities) in the human brain. The last study within this Special Issue, on neuroimaging of the bilingual brain, by Pliatsikas and Luk (2016), shows that brain networks supporting non-linguistic executive control significantly overlap with brain regions recruited for language control. The authors conclude that, given the dynamic nature of bilingual experience, it is essential to consider both task-related functional networks that are required for external tasks and resting-state networks, such as the default mode network that is responsible for internal control. Both types of networks are crucially involved in bilingual language control.

We hope that our readers will enjoy this journey through both neuroimaging studies of bilingualism and studies of cross-language effects in bilingual production and comprehension.

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