

Lateralisation of cognitive functions in the brain: Typical vs. atypical patterns

ABSTRACT:

Variable environmental demands guide our behaviour. Under such circumstances, cognitive control processes enable us to maintain current goals, or, to change to alternative ones. Here, we examine both functions in left- and right-handers using variants of experimental paradigms that contrast the processing requirements of cognitive stability (distractor inhibition) vs. cognitive flexibility (task switching), and investigate the participants' behavioural metrics. The data revealed that individuals differ in their cognitive control functions of stability and flexibility. In particular, we observed that handedness biases the cognitive system. That is, left- and right-handers showed opposite trends with respect to the stability-flexibility balance, with left-handers demonstrating increased flexibility as opposed to stability. This indicates that both groups vary in their information processing, and suggests that handedness guides intra-hemispheric as well as inter-hemispheric resources for achieving behaviour. Together, the findings highlight that cognitive control functions depend on individual parameters that are driven by handedness, and that accordingly regulate the implementation of our goals. These results extend knowledge into individual differences of cognition and the underlying brain mechanisms.

Keywords

Handedness, Cognitive stability, Cognitive flexibility, Inhibition, Switching

Published Work:

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O'Regan, L., Spapé, M., & Serrien, D. (2017). Motor timing and covariation with time perception: Investigating the role of handedness. *Frontiers in Behavioral Neuroscience*, *11*: 147. doi: 10.3389/fnbeh.2017.00147

Researcher's Contacts:

Deborah Serrien
School of Psychology
University of Nottingham
University Park
Nottingham NG7 2RD
United Kingdom

Phone: +44 115 951 5285

Email: deborah.serrien@nottingham.ac.uk