Aging and sequential modulation of strategy congruency effects: An ERP study in arithmetic

Thomas Hinault*[1] and Lemaire Patrick[1]

[1]Laboratoire de psychologie cognitive (LPC) – Aix Marseille Université, CNRS : UMR7290 – Pôle 3 C, Case D 3 place Victor Hugo 13331 Marseille Cedex 3, France

Résumé

Aging is not a unitary phenomenon. A previous study (Lemaire & Hinault, 2013) demonstrated individual differences in strategy conflict adaptation effect (i.e., smaller congruency effects after incongruent items than after congruent items) within older adults. Thus, they made a distinction between so-called "low control" (i.e., with significantly impaired conflict adaptation effect compared to younger adults) and "high control" older adults (i.e., individuals with comparable conflict adaptation effect to younger adults). In this study, we matched older and younger adults based on behavioral conflict adaptation effect in order to study age-related differences in "high control" older adults with the event related potentials technique. Participants accomplished a computational estimation task (i.e., provide approximate products to two-digit multiplication problems like 38x74) and were cued which one of two rounding strategies they had to execute on each problem. Results revealed modifications of brain activity within older adults, such as higher amplitude and more anterior activation wich can be interpreted as a neuronal compensation. Our finding demonstrates the necessity of high temporal resolution technique to a better understanding of mechanisms of aging in a strategy task involving cognitive control.

*Intervenant