

Influence of conference interpreting on executive functions

Sébastien Henrard (1) & Agnès Van Daele (1)

(1) *Université de Mons (UMONS), Mons, Belgique*

Many studies show that the use of two or more languages is a cognitive advantage (Craik, Bialystok, & Freedman, 2010; Gold, Johnson, & Powell, 2013). Some of these studies have focused on executive functions as bilingualism requires the use of language selection process involving flexibility and inhibition (Bialystok, 2008). Conference interpreting is a cognitively demanding activity that involves executive functions and bilingualism. The requirement comes from the need to keep two active languages, switch continually from one to the other, to avoid interference and all simultaneously under high time pressure. Based on these findings, several studies have examined the performance of tests assessing executive function in conference interpreters, bilingual and monolingual. The results showed that conference interpreters have better performance in test requiring manipulation of information (Signorelli *et al.*, 2012), cognitive flexibility (Yudes *et al.*, 2011), allocation of attentional resources (Lee, 2011) or in tasks assessing working memory (Signorelli *et al.*, 2012; Yudes *et al.*, 2011). So it seems that beyond the benefits of bilingualism, particularly demanding work activity of conference interpreters contributes to a better executive functioning. However, these studies are often conducted on small samples and focus on one executive function. In our research, we study several executive functions following the theoretical framework of Miyake *et al.* (2000) and, from a large number of participants.

180 subjects divided in three groups: 60 professional interpreters (23 men and 37 women), 60 translators (26 men and 34 women) and 60 monolingual (29 men and 31 women). Age, experience and socio-cultural level are controlled. Tasks: Software E-Prime 2.0. Two tasks of reaction times (Motor – Oral). Three tasks from the model of executive functions (Miyake *et al.*, 2000): Letter Memory (Updating); Plus-Minus (Flexibility); Antisaccade (Inhibition). A Computer-based Brown Peterson (Multitasking).

Results from ANOVA are significant for all tasks. Reaction time: interpreters are faster than translators ($p = .001$) and monolingual ($p = .001$). Updating: interpreters are more efficient than translators ($p = .001$) and monolingual ($p = .001$). Multitasking: interpreters are more efficient than translators ($p = .001$) and monolingual ($p = .001$). Moreover, translators are more efficient than monolinguals ($p = .03$). Flexibility: interpreters and translators have a significantly lower shift cost than monolingual ($p = .001$). Inhibition: interpreters are more efficient than translators ($p = .006$) and monolingual ($p = .01$).

These results show that except cognitive flexibility, interpreters have better performance in all tests. These results are consistent with the literature. It seems that beyond the effects of bilingualism, the work activity of conference interpreters can contribute to a better executive functioning.