# Supplementary material : results

**Transfer tasks: training effect and retention**

Simon task

*Incompatible RT*: there were a main effect of Group ($F_{2,49}$ = 3.38; p = .042; $\eta_p^2$ = .12), a main effect of Time ($F_{2,98}$ = 31.7; p = .000; $\eta_p^2$ = .39) and a significant Group x Time interaction ($F_{4,98}$ = 322; p = .015; $\eta_p^2$ = .11). The post hoc tests revealed that the RTs in POST and RET decreased as compared to PRE in the Complex and the Simple groups (all p < .003). In the passive Control group, there was no effect of Time.

*Compatible RT*: there was no main effect of Group ($F_{2,49}$ = 2.53; p = .089; $\eta_p^2$ = .09). There was a main effect of Time ($F_{2,98}$ = 24.7; p < .001; $\eta_p^2$ = .33). The Bonferroni post-hoc showed that RTs decreased at POST (350 ± 41 ms) and RET (354 ± 40 ms) as compared to PRE (386 ± 52 ms) (all p < .001) but not between POST and RET. There was no Group x Time interaction.

*Compatible errors*: non-parametric tests did not reveal any significant effect of Group at POST (H(2) = 5.21; p = .074; $\eta^2$ = .06). However, there was a main effect of Time in the Complex group ($\chi^2$(N=18, df=2) = 7.62; p = .022; Kendalls' W = 0.21).

*Incompatible errors:* non-parametric tests revealed a significant effect of Group for the percentage of error at POST (H(2) = 5.84; p = .05; $\eta^2$ = .08). There was an effect of Time in the Complex group ($\chi^2$(N=18, df=2) = 9.77; p = .007; Kendalls' W = 0.27) and in the Simple group ($\chi^2$(N=17, df=2)=14.16; p < .001; Kendalls' W = 0.42).

Eriksen flanker task

*Congruent RT*: there was no main effect of Group for the RT ($F_{2,49}$ = 1.87; p = .16). There was a main effect of Time ($F_{2,98}$ = 36.8; p < .0001; $\eta_p^2$ = .43), driven by a decrease of RT in POST and RET as compared to PRE (all p < .0001). There was a Group x Time interaction ($F_{4,98}$ = 3.58; p = .0090; $\eta_p^2$ = .13), showing a decrease of RT after training (POST and RET; all p < .0001) in the Complex and the Simple groups but not in the Control group. There was no difference in RTs between POST and RET.

*Congruent errors:* whatever the time point, there was no effect of Group in the percentage of error (all p > .05). There was a significant effect of Time ($\chi^2$(N = 17, df = 2) = 9.54; p = .008; Kendalls' W = 0.28) in the Simple group. The percentage of error increased from 0.6% (PRE) to 3.4% (POST) and decreased to 1.0% (RET).

*Incongruent RT*: there was no main effect of Group ($F_{2,49}$ = 1.99; p = .15). There was a main effect of Time ($F_{2,98}$ = 38.10; p < .001; $\eta_p^2$ = .44), driven by a decrease of RTs in POST and RET as compared to PRE (all p < .001). There was no difference between POST and RET. There was no Group x Time interaction ($F_{4,98}$ = 2.27; p = .066; $\eta_p^2$ = .084).

*Incongruent errors*: there was a significant effect of Group at POST (H(2) = 16.71; p < .001; $\eta^2$ = 0.30) and RET (H(2) = 6.09; p = .047; $\eta^2$ = 0.08). After the training phase, the percentage of error was higher in the

Complex (23.3%) and the Simple (22.5%) groups as compared to the Control (10.4%) group (all $p < .003$). After the retention period, the percentage of error remained higher in the Complex group (20.0%) as compared to the Control group (11.9%) ($p < .047$) only. There was a main effect of Time for the Complex group ($\chi^2$(N=18, df=2) = 14.18; $p = .0008$; Kendalls' W = 0.39). The percentage of error increased from 12.4% (PRE) to 23.3% (POST) and slightly decreased to 20.0% (RET). There was a significant effect of Time in the Simple group ($\chi^2$(N=17, df=2)=12.59; $p = .002$; Kendalls' W = 0.37). The percentage of error increased from 10.1% (PRE) to 22.5% (POST) and decreased to 14.9% (RET).

*Neutral RT:* there was no main effect of Group ($F_{2,49} = 1.60$; $p = .21$). There was a main effect of Time ($F_{2,98} = 38.8$; $p < .001$; $\eta_p^2 = .44$), driven by a decrease of RTs in POST and RET as compared to PRE (all $p < .001$). There was no Group x Time interaction ($F_{4,98} = 2.18$; $p = .076$; $\eta_p^2 = .081$).

*Neutral errors:* there was a significant effect of Group at POST (H(2) = 10.06; $p = .006$; $\eta^2 = 0.16$), with a difference between the Complex (6.8%) and the Control groups (2.1%) ($p = .01$). There was a main effect of Time for the Complex group ($\chi^2$(N=18, df=2) = 15.13; $p < .001$; Kendalls' W = 0.42). The percentage of error increased from 2.1% (PRE) to 6.8% (POST) and decreased to 3.3% (RET).