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’ $W = .21$).

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’ $W = .27$) and in the Simple group ($\chi^2(N=17, df=2)=14.16; p < .001$; Kendalls’ $W = .42$).

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’ $W = .28$) 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 ($\chi^2(N=18, df=2) = 14.18; p = .0008; \text{Kendall's W} = 0.39$). 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 ($\chi^2(N=17, df=2)=12.59; p = .002; \text{Kendall's W} = 0.37$). 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 ($F_{2,98} = 38.8; p < .001; \eta^2_p = .44$), driven by a decrease of RTs in POST and RET as compared to PRE (all p < .001). There was no Group x Time interaction ($F_{4,98} = 2.18; p = .076; \eta^2_p = .081$).

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 ($\chi^2(N=18, df=2) = 15.13; p < .001; \text{Kendall's W} = 0.42$). The percentage of error increased from 2.1% (PRE) to 6.8% (POST) and decreased to 3.3% (RET).