

Supplementary data

Supplementary Table 1. Changes on brain oscillations during the time load dual back (TLDB) task on delta, beta, and gamma power for all regions of interest.

| Time-on-task effect on brain oscillations during the TLDB task $p(\eta_p^2)$ | | | | | | | | |
|--|----------------|----------------|------------------|----------------|----------------|----------------|------------------|-----------------|
| Delta | | | | | | | | |
| Frontal Left | Frontal Median | Frontal Right | Central Left | Central Median | Central Right | Posterior Left | Posterior Median | Posterior Right |
| .288 (.084) | .235 (.095) | .229 (.097) | .147 (.129) | .259 (.092) | .319 (.079) | .494 (.048) | .254 (.093) | .178 (.118) |
| Interpretation: no significant time effect on delta power. | | | | | | | | |
| Beta | | | | | | | | |
| Frontal Left | Frontal Median | Frontal Right | Central Left | Central Median | Central Right | Posterior Left | Posterior Median | Posterior Right |
| .002 (.287) | .053 (.190) | .011 (.231) | < .001 (.459) | .025 (.226) | .007 (.244) | .074 (.165) | .114 (.143) | .041 (.202) |
| Interpretation: Decrease in beta power at the beginning of the TLDB task followed by an increase in beta power evidenced by a quadratic trend (all $ps < .030$; all $\eta_p^2 > .30$). | | | | | | | | |
| Gamma | | | | | | | | |
| Frontal Left | Frontal Median | Frontal Right | Central Left | Central Median | Central Right | Posterior Left | Posterior Median | Posterior Right |
| .007 (.244) | .058 (.183) | .013 (.224) | < .001 (.413) | .016 (.245) | .005 (.263) | .022 (.203) | .132 (.133) | .036 (.207) |
| Interpretation: Decrease in gamma power at the beginning of the TLDB task followed by an increase in gamma power evidenced by a quadratic trend (all $ps < .045$; all $\eta_p^2 > .25$). | | | | | | | | |

Supplementary Table 2. Changes on brain oscillations at rest on delta, beta, and gamma power for all regions of interest.

| Time effect on brain oscillations at rest $p(\eta_p^2)$ | | | | | | | | |
|--|----------------|----------------|------------------|----------------|------------------|------------------|------------------|-----------------|
| Delta | | | | | | | | |
| Frontal Left | Frontal Median | Frontal Right | Central Left | Central Median | Central Right | Posterior Left | Posterior Median | Posterior Right |
| .209 (.101) | .090 (.141) | .186 (.107) | .679 (.035) | .200 (.104) | .253 (.091) | .235 (.095) | .401 (.067) | .874 (.016) |
| Interpretation: no significant time effect on delta power. | | | | | | | | |
| Beta | | | | | | | | |
| Frontal Left | Frontal Median | Frontal Right | Central Left | Central Median | Central Right | Posterior Left | Posterior Median | Posterior Right |
| .004 (.335) | .006 (.312) | .002 (.298) | .004 (.337) | .029 (.237) | .001 (.321) | .001 (.319) | .034 (.224) | .009 (.238) |
| Interpretation: significant linear increase in beta power over time (all $ps < .033$; all $\eta_p^2 > .286$). | | | | | | | | |
| Gamma | | | | | | | | |
| Frontal Left | Frontal Median | Frontal Right | Central Left | Central Median | Central Right | Posterior Left | Posterior Median | Posterior Right |
| < .001 (.355) | .001 (.322) | .001 (.318) | < .001 (.355) | .002 (.303) | < .001 (.382) | < .001 (.381) | .001 (.304) | .001 (.252) |
| Interpretation: significant linear increase in gamma power over time (all $ps < .015$; all $\eta_p^2 > .356$). | | | | | | | | |