

## Supplemental data

### Behavioral data

#### Interaction item x context for reaction time

The interaction effect [ $F(4,168) = 7.32$  ;  $p < .001$ ;  $\eta_p^2 = .15$ ] was firstly characterized by larger interference effects (comparison of incongruent and neutral items) in the MN context by comparison to MI [ $F(1,42) = 8.51$  ;  $p < .01$ ] and MC [ $F(1,42) = 13.87$  ;  $p = .001$ ] contexts. Second, the comparison of incongruent and congruent items was characterized by significantly larger differences in MN than MI context [ $F(1,42) = 18.63$  ;  $p < .0001$ ] and in MC than in MN context [ $F(1,42) = 6.28$  ;  $p = .02$ ]. Finally, the same pattern of results was observed for the comparison of congruent and neutral items [(MI-MN :  $F(1,42) = 6.73$  ;  $p < .05$ ) ; (MC-MN :  $F(1,42) = 5.37$  ;  $p < .05$ )].

#### Main effects and interaction context x item for item accuracy

We observed a significant effect of item [ $F(2,84) = 69.09$  ;  $p < .0001$ ;  $\eta_p^2 = .62$ ] and context [ $F(2,84) = 7.45$  ;  $p < .005$ ;  $\eta_p^2 = .15$ ]. Planned comparisons showed that the item effect was characterized by less accurate responses for incongruent than for congruent [ $F(1,42) = 65.80$  ;  $p < .0001$ ] or neutral [ $F(1,42) = 98.29$  ;  $p < .0001$ ] items. The context effect was characterized by a better accuracy in MI context by comparison to MC [ $F(1,42) = 8.46$  ;  $p < .01$ ] and MN [ $F(1,42) = 24.07$  ;  $p < .0001$ ] contexts, but also by a better accuracy in MC than MN context [ $F(1,42) = 6.21$  ;  $p < .05$ ]. An interaction effect between context and item has been also observed [ $F(4,168) = 3.18$  ;  $p = .02$ ;  $\eta_p^2 = .07$ ]. This interaction was firstly characterized by a larger difference between congruent and neutral items in MC context than in MI [ $F(1,42) = 17.37$  ;  $p < .001$ ] or MN [ $F(1,42) = 6.26$  ;  $p = .02$ ] contexts. A larger difference was also observed between incongruent and congruent items in MN by comparison to MI context [ $F(1,42) = 4.26$  ;  $p = .046$ ].

**Table S1: General interference effect in the whole sample of participants.** Local maxima of brain area showing more activity in the incongruent than neutral items in the MI, MC and MN contexts.

Hemisphere	Anatomical region	MNI coordinates			Cluster size	Z score	P value
		x	y	z			
R	Anterior Cingulate	8	20	36	1311	5.70	< .001
R	Medial frontal	2	12	50	1311	6.28	< .001
	Superior frontal	18	4	64	1311	5.24	< .001
L and R	Middle frontal	-44	24	24	4751	6.42	< .001
		-44	6	28	4751	Inf	< .001
		40	36	26	76	4.80	< .01
R	Insula	32	22	6	938	6.73	< .001
L and R	Inferiorparietal (BA 40)	-44	-42	46	5404	7.46	< .001
		-38	-46	50	5404	7.10	< .001
		64	-40	24	16	4.72	< .05
L	Precuneus (BA 31)	-24	-72	30	5404	6.94	< .001
R	Cuneus	10	-70	-30	1215	7.11	< .001
L	Inferior occipital	-38	-82	-6	1718	6.66	< .001
		46	10	12	938	6.00	< .005
		48	-42	16	21	4.67	< .05
L and R	Thalamus	-14	-24	10	298	5.59	< .001
		12	-6	4	341	4.63	< .05
		20	-26	10	341	5.55	< .001
		6	-30	-4	18	4.55	< .05
L and R	Lentiform nucleus	-18	-2	12	22	4.69	< .05
		20	4	12	341	4.96	< .005
		-40	-56	-24	1718	6.25	< .001
		-38	-60	-14	1718	6.20	< .001
		30	-60	-30	1215	7.14	< .001
L	Cerebellum (claustrum)	-32	20	4	4751	Inf	< .001

L/R = left or right; x, y, z: coordinates (mm) in the stereotactic space defined by the Montreal Neurological Institute (MNI). The analysis was conducted with a  $p$  value < .05 FWE corrected.

**Table S2: Interference effect in proactive and reactive control conditions in the whole sample of participants. (1)** Local maxima of brain regions showing more transient brain activity for the interference effect (interferent vs. neutral items) during MI blocks and MC blocks in the whole sample at a p value < .05 FWE corrected. **(2)** Local maxima of brain regions showing more activation for interferent, facilitator and neutral items in the mostly incongruent condition than in the mostly congruent condition at a voxel p value < .001 uncorrected.

Hemisphere	Anatomical region	MNI coordinates			Cluster size	Z score	P value
		x	y	z			
<b>(1) Transient activity</b>							
MI (proactive control)							
R	Cerebellum (declive)	10	-70	-30	23	4.85	.007
MC(reactive control)							
L	Middle frontal	-32	-2	56	17	4.56	.024
L	Inferior frontal	-52	10	32	37	4.61	.020
L	Precentral gyrus	-54	10	4	13	4.52	.029
L	Inferior parietal	-48	-38	48	317	5.29	<.001
L and R	Insula	-34	18	4	450	5.57	<.001
		42	20	2	61	4.47	.035
		36	22	8	61	4.67	.015
		-36	-46	52	317	4.85	<.001
R	Cerebellum (declive)	30	-60	-28	27	4.89	.005
R	Cerebellum (claustrum)	26	22	6	61	4.49	.032
<b>(2) Sustained activity</b>							
MI (proactive control)							
NOTHING							

L/R = left or right; x, y, z: coordinates (mm) in the stereotactic space defined by the Montreal Neurological Institute (MNI).