Supplement: Global brain activations

In the individual fMRI analyses of global brain activations, left global LI was found in 25 children (83.3 %), bilateral global LI in one participant (3.3 %), and right global LI in four participants (13.3 %). Individual global LIs ranged from -.85 to +.87.

In fMRI group analysis, second level one sample t-test revealed activations of classical language areas bilaterally with a left-sided dominance and with a group weighted mean global laterality index of +.74 (Table Supplement, Figure A Supplement).

Table Supplement. Group activations in the global brain

	Cluster size	Z	Mean coordinate		
			X	Y	z
Left hemisphere					
Middle and inferior frontal gyrus, Pars triangularis	3753	7.84	-48	28	16
Superior frontal gyrus	1728	6.73	-6	40	46
Middle temporal gyrus, hippocampus	2694	6.33	-56	-38	-4
Thalamus, Caudate nucleus	661	5.84	-4	-14	8
Right hemisphere					
Inferior frontal gyrus, temporal pole	640	6.29	32	30	-4
Caudata nucleus	98	6.08	36	-32	-4
Hippocampus	87	5.18	42	-18	-20

Second level one sample t-test (FWE-corrected, $p < .04$, $k > 40$).

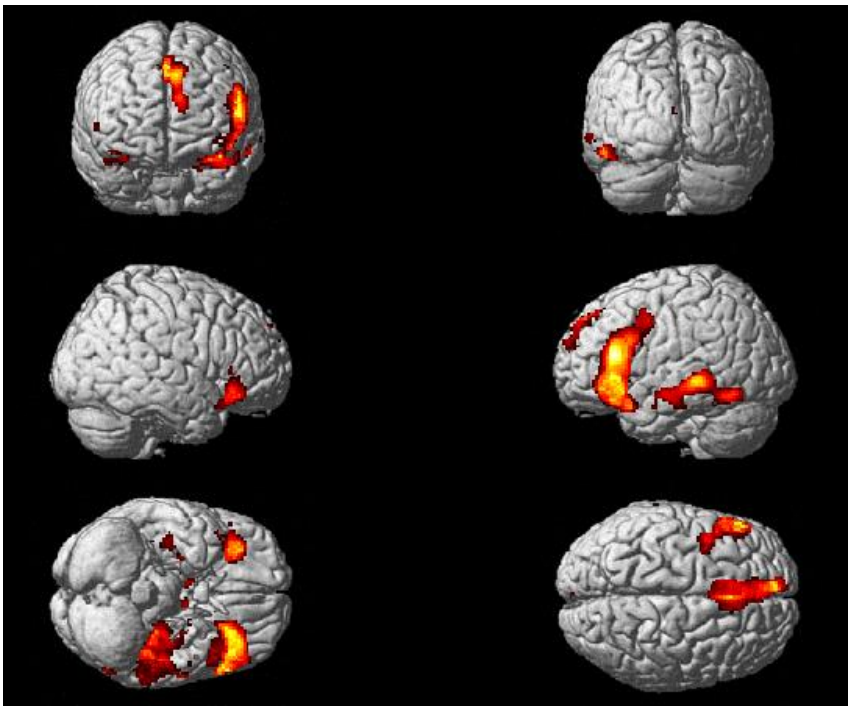

Figure A Supplement. Group activations (one sample t-test, FWE-corrected, $p < .05$).

The global LI and the MTL LI were significantly correlated ($r = .63$, $p = .000$; note: the global ROI encompasses MTL regions and is therefore not independent). LIs were not only computed for the global brain, but also for frontal and parietal regions of interest (ROI) separately using the LI-toolbox masks (Tzourio-Mazoyer et al., 2002; Wilke & Lidzba, 2007). We found a significant correlation of MTL LI with the frontal LI ($r = .44$, $p = .014$), but not with the parietal LI ($r = .28$, $p = .129$).

In sum, our right-handed study participants revealed a typical global lateralization pattern during the auditory description definition task. Furthermore, the distribution of global language laterality in our study sample is comparable to the findings of larger studies on language lateralization in children and adolescents (Holland et al., 2001; Holland et al., 2007; Szaflarski, Holland, Schmithorst, & Byars, 2006). MTL language lateralization correlated significantly with the frontal LI and the global LI.

Supplement references

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