

**On-line Table 1: Hierarchic regression models for healthy controls, predicting performance in the cognitive composite score (NP<sub>total</sub>) by demographic variables (block 1), volumes (block 2), and QSM (block 3)**

DGM Region	Block	Predictor	Final $\beta$	$\beta$ P Value	VIF	R <sup>2</sup>	$\Delta$ R <sup>2</sup>	Model F	Model P Value	F Change	
Caudate	1 <sup>a</sup>	Age	-0.326	.057	1.009	0.423 <sup>a</sup>	0.423 <sup>a</sup>	5.622 <sup>a</sup>	.005 <sup>a</sup>	5.622 <sup>a</sup>	
		Sex <sup>a</sup>	0.498 <sup>a</sup>	.006 <sup>a</sup>	1.009 <sup>a</sup>						
		Education	0.121	.509	1.238						
Putamen	2	Volume	-0.185	.297	1.150	0.450	0.027	4.500	.008	1.077	
		3	QSM	-0.069	.690	1.108	0.454	0.004	3.496	.019	0.164
			1	Age	-0.325	.054	1.009	0.423 <sup>a</sup>	0.423 <sup>a</sup>	5.622 <sup>a</sup>	.005 <sup>a</sup>
GP	1 <sup>a</sup>	Sex <sup>a</sup>	0.499 <sup>a</sup>	.005 <sup>a</sup>	1.009 <sup>a</sup>						
		Education	0.158	.357	1.113						
		Volume	-0.218	.195	1.054	0.466	0.043	4.795	.006	1.756	
	3	QSM	-0.056	.743	1.123	0.469	0.003	3.703	.015	0.110	
		1 <sup>a</sup>	Age	-0.325	.061	1.009	0.423 <sup>a</sup>	0.423 <sup>a</sup>	5.622 <sup>a</sup>	.005 <sup>a</sup>	5.622 <sup>a</sup>
	Thalamus	1 <sup>a</sup>	Sex <sup>a</sup>	0.499 <sup>a</sup>	.006 <sup>a</sup>	1.009					
Education			0.192	.269	1.071						
Volume			-0.115	.504	1.072	0.432	0.009	4.191		0.364	
3		QSM	-0.077	.663	1.134	0.438	0.005	3.269		0.195	
		1 <sup>a</sup>	Age	-0.326	.056	1.009	0.423 <sup>a</sup>	0.423 <sup>a</sup>	5.622 <sup>a</sup>	.005 <sup>a</sup>	5.622 <sup>a</sup>
2		Sex <sup>a</sup>	0.498 <sup>a</sup>	.006 <sup>a</sup>	1.009 <sup>a</sup>						
	Education	0.138	.438	1.177							
	Volume	-0.198	.258	1.121	0.458	0.035	4.652	.007	1.427		
3	QSM	0.009	.955	1.054	0.458	<0.001	3.554	.017	0.003		

**Note:**—R<sup>2</sup> indicates variance in the NP<sub>total</sub> explained by each block of predictors;  $\Delta$ R<sup>2</sup>, change in explained variance by each block of predictors compared with the previous block; VIF, variance inflation factor.

<sup>a</sup> Significant changes in F by including a block of predictors and predictors within significant blocks.

**On-line Table 2: Hierarchic regression models for patients with MS, predicting performance in the cognitive composite score (NP<sub>total</sub>) by demographic variables (block 1), volumes (block 2), and QSM (block 3)**

DGM Region	Block	Predictor	Final $\beta$	$\beta$ P Value	VIF	R <sup>2</sup>	$\Delta$ R <sup>2</sup>	Model F	Model P Value	F Change	
Caudate	1	Age	-0.136	.399	1.072	0.149	0.149	2.099	.118	2.099	
		Sex	0.255	.106	1.000						
		Education	-0.261	.118	1.123						
Putamen	2	Volume	-0.006	.971	1.039	0.151	0.002	1.559	.207	0.096	
		3	QSM	-0.225	.170	1.089	0.198	0.046	1.674	.168	1.963
			1	Age	-0.140	.354	1.069	0.149	0.149	2.099	.118
GP	2 <sup>a</sup>	Sex	0.256	.084	1.000						
		Education	-0.249	.104	1.080						
		Volume <sup>a</sup>	0.313 <sup>a</sup>	.037 <sup>a</sup>	1.003	0.248 <sup>a</sup>	0.099 <sup>a</sup>	2.890 <sup>a</sup>	.036 <sup>a</sup>	4.628 <sup>a</sup>	
	3	QSM	-0.224	.129	1.008	0.298	0.050	2.889	.028	2.420	
		1	Age	-0.150	.324	1.068	0.149	0.149	2.099	.118	2.099
	Thalamus	2	Sex	0.256	.086	1.000					
Education			-0.207	.175	1.069						
Volume			0.162	.273	1.009	0.186	0.037	1.993	.117	1.577	
3 <sup>a</sup>		QSM <sup>a</sup>	-0.323 <sup>a</sup>	.033 <sup>a</sup>	1.009	0.289 <sup>a</sup>	0.103 <sup>a</sup>	2.763 <sup>a</sup>	.034 <sup>a</sup>	4.944 <sup>a</sup>	
		1	Age	-0.161	.253	1.069	0.149	0.149	2.099	.118	2.099
2 <sup>a</sup>		Sex	0.257	.064	1.000						
	Education	-0.160	.259	1.086							
	Volume <sup>a</sup>	0.488 <sup>a</sup>	.001 <sup>a</sup>	1.015	0.386 <sup>a</sup>	0.237 <sup>a</sup>	5.503 <sup>a</sup>	.002 <sup>a</sup>	13.526 <sup>a</sup>		
3	QSM	-0.038	.781	1.008	0.388	0.079	4.302	.004	0.079		

<sup>a</sup> Significant changes in F by including a block of predictors and predictors within significant blocks.