Supporting Information

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SI Text

We conducted a whole-brain analysis to see activation across the whole brain by using a liberal uncorrected threshold to maximize sensitivity in this exploratory analysis. To control for activity associated with general aspects of naming in blocked contexts (e.g., processes incurred by repeatedly naming potentially salient blocked picture sets) we directly compared activity associated with the semantic blocking effect with activity associated with the phonological (blocking) facilitation effect. This direct comparison [semblocked − semmixed − (phonblocked − phonmixed)] reveals those areas that are significantly more involved in the semantic blocking effect, independent of any general processes that occur when naming pictures in this type of paradigm.

To facilitate collection of overt responses, we restricted the data acquisition period to 1 s (allowing a 1.5-s gap for overt responses). This constrained our data acquisition to 16 slices per individual, centered on the frontal lobe. Acquisition of superior and inferior areas varied between individuals depending on cortex size. Consequently, after normalizing the data to a common Montreal Neurological Institute (MNI) space, our analyses were limited to z planes −14 to +68.

All functional data were normalized to the 1-mm MNI template by using a set of affine transformations with smoothly nonlinear deformations, as implemented in SPM2. Functional images were resampled into 3-mm isotropic voxels and spatially smoothed with an 8-mm FWHM Gaussian filter. Individual t maps were calculated for contrasts of interest and then smoothed to 12-mm FWHM to facilitate averaging of between-subject differences in functional organization in addition to differences in anatomical organization, before being entered in the analysis. Areas of activation from the analysis were identified at an uncorrected significance level of $P < 0.01$ (critical t value $>$ 2.6025) and are listed in Table S1.

Table S1. Whole-brain group analysis: MNI coordinates significantly more involved in the semantic blocking effect compared to the phonological blocking effect (significant at the $P < 0.01$ level)

Hemisphere	Region	*X*	*Y*	*Z*	*t*
Left	Inferior frontal Gyrus (BA 45)	−48	21	24	3.35
	Insula (BA 13)	−33	15	−9	3.60
	Middle frontal gyrus (BA 9)	−51	9	39	3.76
	Middle temporal gyrus (BA 39)	−45	−66	30	3.32
Right	Lateral globus pallidus	21	−9	3	3.71
	Superior temporal gyrus (BA 22)	60	−51	15	4.05
	Superior temporal gyrus (BA 39)	48	−54	18	3.31

BA, Broca's area.

Table S2. Information on each individual included in Exp. 2

Subject	Aphasia classification	Age	Months postonset	Lesion information: Overall lesion volume and proportion damaged								Growth of blocking effect (*f* values)
				OLV 1 mm (cc)	Prop LIFG	Prop Oper	Prop Orbit	Prop Triang	Prop Temporal Cortex	Prop STL	Prop MTL	
DBu	Anomic	50	52	96	**0.15**	0.35	0.04	0.14	**0.35**	0.58	0.24	0.07
ND	Anomic	60	29	44	**0.35**	0.94	0	0.34	**0.01**	0.03	0	0.23
RK	Anomic	50	36	104	**0**	0	0	0	**0**	0	0	0.68
AB	Anomic	57	118	98	**0.56**	0.98	0.47	0.46	**0.08**	0.26	0	2.14
SA	Anomic	35	10	52	**0.5**	0.9	0.16	0.57	**0**	0	0	2.97
BS	Broca	41	22	196	**0.49**	0.98	0	0.62	**0.26**	0.69	0.06	0
CC	Broca	56	28	127	**0.75**	0.56	0.62	0.91	**0.43**	0.57	0.37	1.45
LN	Broca	60	135	146	**0.47**	0.82	0.31	0.44	**0.34**	0.54	0.24	1.51
DB	Broca	56	175	231	**0.51**	0.82	0.01	0.73	**0.44**	0.28	0.52	2.59
AS	Broca	68	82	163	**0.77**	0.75	0.74	0.8	**0.32**	0.49	0.23	3.72
LCW	Broca	39	49	140	**0.39**	0.55	0.01	0.59	**0.24**	0.03	0.34	3.95
JBr	Conduction	61	16	41	**0.01**	0.03	0	0	**0**	0	0	0.39

OVL, overall lesion volume; Prop, proportion of voxels in the region that are damaged; Oper, pars opercularis; Orbit, pars orbitalis; Triang, pars triangularis; STL, superior temporal lobe; MTL, medial temporal lobe.