

Stroke Mechanism	Naming	Semantic Decision
Ischemic	44	25
Hemorrhagic	7	5
Ischemic+ Hem	0	1

Supplemental Table 1. Stroke mechanism in the two study patient cohorts.

Vascular Territory Involvement	Naming	Semantic Decision
MCA only	20	13
ACA only	1	0
PCA only	0	0
MCA and ACA	23	9
MCA and PCA	3	6
MCA and ACA and PCA	4	3

Supplemental Table 2. Vascular territory involvement for each patient lesion. A territory is considered involved if at least 5% of the lesion volume overlaps with the vascular territory.

Aphasia Subtype	Naming	Semantic Decision
None	0	10
Anomic	26	11
Conduction	4	3
Broca's	16	4
Transcortical Sensory	1	0
Transcortical Motor	0	3
Wernicke's	2	0
Global	2	0

Supplemental Table 3. Prevalence of aphasia diagnosis subtype in the two study patient cohorts based on the Western Aphasia Battery – Revised (Kertesz, 2007).

AoS Severity	Naming ¹	Semantic Decision ²
None	2	18
Mild	26	5
Moderate	4	4
Severe	16	4

Supplemental Table 4. Prevalence of apraxia of speech symptoms in the two study patient cohorts.

¹Based on Apraxia Battery for Adults 2nd edition (Dabul, 2000) subtest 2A severity

²Based on Apraxia of Speech Rating Scale 3rd edition (Strand, 2014) severity

Tissue Type	Distance from Lesion (mm)	fMRI Task			
		Naming		Semantic Decision	
		$\hat{\beta}_{group}$ (SE)	$t(df)$, p value	$\hat{\beta}_{group}$ (SE)	$t(df)$, p value
Language	0-4	-1.60 (0.29)	$t(1972) = -5.57$, $p < .001$	-2.70 (0.57)	$t(1174) = -4.71$, $p < .001$
	4-8	-1.23 (0.30)	$t(2014) = -4.14$, $p < .001$	-1.99 (0.58)	$t(1174) = -3.4$, $p < .001$
	8-12	-0.95 (0.30)	$t(2056) = -3.17$, $p = .002$	-1.26 (0.56)	$t(1216) = -2.27$, $p = .02$
	12-16	-0.70 (0.32)	$t(1930) = -2.18$, $p = .029$	-0.82 (0.53)	$t(1258) = -1.54$, $p = .12$
	>16	-0.44 (0.30)	$t(2140) = -1.45$, $p = .146$	-0.65 (0.47)	$t(1300) = -1.39$, $p = .16$
Language Capable	0-4	-1.20 (0.21)	$t(2098) = -5.60$, $p < .001$	-1.42 (0.37)	$t(1216) = -3.82$, $p < .001$
	4-8	-0.84 (0.23)	$t(2098) = -3.72$, $p < .001$	-0.97 (0.36)	$t(1258) = -2.71$, $p = .007$
	8-12	-0.60 (0.23)	$t(2140) = -2.56$, $p = .010$	-0.86 (0.37)	$t(1258) = -2.33$, $p = .02$
	12-16	-0.45 (0.23)	$t(2140) = -1.96$, $p = .049$	-0.63 (0.37)	$t(1258) = -1.72$, $p = .09$
	>16	-0.20 (0.22)	$t(2140) = -0.92$, $p = .356$	-0.36 (0.32)	$t(1300) = -1.13$, $p = .257$

Non-language	0-4	-0.43 (0.11)	$t(2140) = -3.84, p < .001$	0.13 (0.19)	$t(1300) = 0.71, p = .477$
	4-8	-0.25 (0.11)	$t(2140) = -2.30, p = .021$	0.17 (0.19)	$t(1300) = 0.91, p = .365$
	8-12	-0.11 (0.11)	$t(2140) = -1.02, p = .309$	0.10 (0.19)	$t(1300) = 0.54, p = .589$
	12-16	-0.05 (0.12)	$t(2140) = -0.39, p = .694$	0.07 (0.19)	$t(1300) = 0.36, p = .716$
	>16	-0.12 (0.10)	$t(2140) = -1.26, p = .208$	0.08 (0.14)	$t(1300) = 0.60, p = .549$

Supplemental Table 5. Model estimates for whole-brain comparison of people with aphasia and controls (β_{group}) with standard error, and t statistic. The table shows each tissue type at each distance from the lesion (grouped by rows) for the whole-brain analysis of people with aphasia versus control task-relevant activation. The effect size and P value is given for the main effect of interest, which is the fixed effect of aphasia status. These results are graphically shown in Figure 1.

Distance from lesion	Parcel Region	$\hat{\beta}_{group}$ (SE)	t(df), p value	Center of mass (MNI)
Near lesion (4-16mm)	Inferior precentral gyrus	-1.43 (0.39)	t(1510) = -3.69, P = .006	-56, -3, 27
	Frontal operculum	-1.07 (0.34)	t(1636) = -3.11, P = .03	-56, -3, 6
	Posterior middle frontal gyrus	-0.91 (0.23)	t(1468) = -4.02, P = .003	-46, -1, 49
	Sup. supramarginal gyrus	-0.71 (0.22)	t(1384) = -3.24, P = .02	-52, -43, 39
	Posterior superior temporal sulcus	-0.76 (0.27)	t(1510) = -2.8, P = .04	-58, -29, 3
	Inferior occipital gyrus	-1.41 (0.32)	t(712) = -4.36, P = .001	-41, -51, -17
	Lateral occipital gyrus	-2.50 (0.68)	t(502) = -3.67, P = .006	-32, -86, 14
	Post fusiform gyrus	-2.09 (0.65)	t(460) = -3.24, P = .02	-44, -70, -14
	Posterolateral inferior occipital lobe	-1.77 (0.63)	t(544) = -2.84, P = .04	-35, -84, -7
	Occipital pole	-2.63 (0.91)	t(292) = -2.89, P = .04	-15, -97, 7
	Parahippocampal gyrus	-0.81 (0.29)	t(418) = -2.84, P = .04	-22, -37, 7
	Hippocampus (mid)	-0.61 (0.19)	t(1187) = -3.19, P = .02	-36, -24, -15
Distant from lesion (>16mm)	Posterior SFS	0.70 (0.18)	t(1468) = 3.89, P = .01	-29, -10, 55
	Lateral occipital cortex	-1.56 (0.47)	t(1930) = -3.34, P = .04	-32, -86, 14
	Posterior fusiform cortex	-1.22 (0.37)	t(2140) = -3.27, P = .04	-44, -70, -14

Supplemental Table 6. Regions of perilesional (4-16mm) and distant (>16mm) abnormal aphasia activation vs control activity during the naming task ($\hat{\beta}_{group}$) and standard error of the estimate, including the t statistic, degrees of freedom, equivalent P value, and MNI coordinates of the relevant parcel (rows).

Distance from lesion	Parcel Region	$\hat{\beta}_{group}$ (SE)	$t(df), p\ value$	Center of mass (MNI)
Near lesion (4-16mm)	Posterior superior frontal sulcus	2.19 (0.70)	$t(334) = 3.11, P = .04$	-29, -10, 55
	Supramarginal gyrus	-2.14 (0.66)	$t(586) = -3.23, P = .04$	-52, -56, 20
	Posterior STG	-2.85 (0.89)	$t(754) = -3.22, P = .04$	-56, -50, 6
	Lateral occipital cortex	3.49 (0.97)	$t(334) = 3.59, P = .03$	-32, -86, 14
Distant from lesion (>16mm)	Perirhinal cortex (anterior)	-0.83 (0.30)	$t(1300) = -2.74, P = .03$	-10, 41, -22
	Ventromedial prefrontal cortex	-1.14 (0.38)	$t(1258) = -3.02, P = .02$	-8, 46, 15
	Anterior superior frontal gyrus	-2.07 (0.60)	$t(1174) = -3.44, P = .008$	-12, 56, 29
	Posterior middle frontal gyrus	1.80 (0.62)	$t(964) = -2.91, P = .02$	-46, -1, 49
	Posterior superior frontal sulcus	1.35 (0.44)	$t(1048) = 3.06, P = 0.02$	-29, -10, 55
	Superior parietal lobule	1.48 (0.50)	$t(1216) = 2.95, P = .02$	-27, -55, 66
	Medial superior parietal lobe	1.86 (0.64)	$t(1258) = 2.90, P = .02$	-13, -66, 60
	Intraparietal sulcus	1.81 (0.50)	$t(1048) = 3.64, P = .007$	-35, -39, 47
	Angular gyrus	-1.56 (0.53)	$t(1006) = -2.96, P = .02$	-41, -67, 42
	Mid anterior temporal pole	-0.95 (0.29)	$t(1258) = -3.33, P = .01$	-33, 18, -33
	Lateral occipital cortex	2.16 (0.63)	$t(1090) = 3.45, P = .01$	-32, -86, 14
	Medial fusiform gyrus	1.75 (0.38)	$t(1258) = 4.67, P < .001$	-25, -64, -12
	Posterolateral inferior occipital lobe	2.10 (0.59)	$t(1132) = 3.56, P = .008$	-35, -84, -7
	Inferior occipital lobe	1.38 (0.37)	$t(1258) = 3.78, P = .005$	-17, -84, -12
	Occipital pole	2.21 (0.49)	$t(1258) = 4.50, P < .001$	-20, -96, -9
	Medial suprasplenic cortex	-0.97 (0.35)	$t(1258) = -2.80, P = .03$	-6, -36, 32
	Retrosplenic cortex	-1.51 (0.46)	$t(1300) = -3.29, P = .01$	-8, -55, 37
	Hippocampal formation (anterior)	-0.67 (0.20)	$t(1300) = -3.37, P = .01$	-23, -14, -18

Supplemental Table 7. Regions of perilesional (4-16mm) and distant (>16mm) abnormal aphasia activation vs control activity during the semantic decision task ($\hat{\beta}_{group}$) and standard error of the estimate, including the t statistic, degrees of freedom, equivalent P value, and MNI coordinates of the relevant parcel (rows).

Task	Lesion group	<i>N</i>	Distance from lesion	$\hat{\beta}_{group} (SE)$	<i>T</i> statistic	<i>P</i> value
Naming	Large (>100cc)	27	Perilesional	-1.35 (0.36)	t(1132) = -3.74	P < .001**
			Far	-0.81 (0.36)	t(1132) = -2.26	P = .024*
	Small (<50cc)	12	Perilesional	-0.16 (0.53)	t(460) = -0.30	P > .10
			Far	0.16 (0.48)	t(502) = 0.33	P > .10
Semantic Decision	Large (>100cc)	10	Perilesional	-2.86 (0.79)	t(418) = -3.61	P < .001**
			Far	-1.58 (0.73)	t(418) = -2.15	P = .031*
	Small (<50cc)	13	Perilesional	0.02 (0.74)	t(504) = 0.03	P > .10
			Far	-0.36 (0.63)	t(544) = -0.56	P > .10

Supplemental Table 8. Linear mixed model results of effect of lesion size (large > 100cc, small <50cc) on activity in language tissue, relative to controls, in the naming task and semantic decision task. Results are shown for activity near the lesion (perilesional) and far from the lesion. Results include both the effect of group (aphasia vs control) and its standard error, the t statistic, and p value. ** indicates P < .005, * indicates P < .05