

Supplementary Table 1: All published functional peaks surveyed in the article. Abbreviations: Hem: Hemisphere, AAL: Automatic anatomical labelling.

Study	N	Population	Control Condition	Interpreting Direction	Hem	Authors' Label	Automatically Assigned labels		MNI (x, y, z mm)
							AAL	Brodmann Area	
Rinne et al. (2000)	8	Professional interpreters (age: 32-56 years, SI Experience: 5-20 years)	Shadowing L2	L2 -> L1	L	Premotor cortex [BA6]	Frontal_Sup_L	BA6	-20, 6, 56
					L	DLPFC [BA46]	Frontal_Inf_Tri_L	BA45	-52, 22, 24
			Shadowing L1	L1 -> L2	L	VLPFC [BA45]	Frontal_Inf_Tri_L		-58, 20, 4
					L	ITG [BA20/28]	Fusiform_L	BA20	-32, -20, -28
					L	Premotor Cortex [BA6]	Frontal_Sup_L	BA6	-18, 6, 52
					R	Cerebellum	Cerebellum_8_R		10, -63, -52
Ahrens, Kalderon, Krick, & Reith (2010)	6	Trainee interpreters (age: 22-30, with some previous experience of interpreting)	Free speech production	L2 -> L1	L	Left STS [BA21/22]	Temporal_Mid_L	BA21	-60, -24, -2
					L	LIFG [BA44]	Frontal_Inf_Oper_L		-44, 14, 16
					R	Transverse Temporal Gyrus [BA41]	Heschl_R		44, -16, 8
					L	Cuneus [BA18]	Cuneus_L	BA17	-8, -96, 16
					L	Fusiform Gyrus [BA37]	Temporal_Inf_L	BA37	-44, -50, -10
					L	Inferior Poscentral Gyrus [BA43]	Temporal_Sup_L		-58, -12, 14
					R	Superior Frontal Gyrus (premotor) [BA6]	Frontal_Sup_R	BA6	18, -10, 64

					L	Precentral Gyrus (Hand Area) [BA4]	Precentral_L	BA4	-28, -28, 64
					R	Precentral Gyrus (Hand Area) [BA4]	Postcentral_R	BA6	30, -26, 58
					R	Cerebellum	Cerebelum_4_5_R	BA19	10, -50, -14
Hervais-Adelman, Moser-Mercer, Michel, & Golestani (2015)	50	23 Trainee interpreters and 27 Multilingual Controls (age: 18-33, SI Experience; 0);	Shadowing L2	L2 -> L1	R	Presupplementary motor area	Supp_Motor_Area_L	BA6	-6, 14, 60
					R	Premotor cortex	Precentral_L	BA6	-40, 2, 48
					R	Inferior frontal gyrus	Frontal_Inf_Tri_L		-48, 20, 24
					R	Inferior frontal gyrus	Frontal_Inf_Oper_L	BA44	-46, 12, 30
					R	Superior frontal sulcus	Frontal_Mid_L	BA6	-26, -2, 54
					R	Inferior frontal sulcus	Frontal_Mid_L	BA45	-42, 32, 32
					R	Anterior cingulate cortex	Cingulum_Mid_R	BA32	14, 24, 38
					R	Anterior cingulate cortex	Frontal_Sup_R	BA32	14, 12, 48
					R	Superior frontal sulcus	Frontal_Mid_L	BA6	-30, 6, 64
					R	Anterior insula	Insula_L	BA47	-28, 26, -2
					R	White matter [inferior fronto-occipital fasciculus]	Frontal_Inf_Orb_R	BA47	22, 34, -2
					R	White matter [anterior	Caudate_R	BA47	22, 28, 6

		thalamic radiation]			
R	Head of the caudate	Caudate_R	BA25	12, 20, 6	
R	Head of the caudate	Caudate_R		10, 4, 16	
R	Head of the caudate	Caudate_R	BA25	8, 12, 8	
R	White matter [callosal body]	Insula_R	BA11	12, 32, 8	
R	White matter [superior corona radiata]	Cingulum_Ant_L		-20, 4, 30	
R	Head of the caudate	Caudate_L		-14, 0, 22	
R	Cerebellum crus I	Cerebellum_Crus1_R	BA37	48, -66, -28	
R	Head of the caudate	Caudate_L	BA25	-8, 20, 4	
R	Superior frontal sulcus	Frontal_Mid_R	BA6	24, 0, 50	
R	White matter [superior corona radiata]	Frontal_Inf_Oper_R		22, 4, 28	
R	Inferior frontal gyrus (between pars orbitals and pars triangularis)	Frontal_Inf_Orb_L	BA38	-52, 22, -4	
	Modulation By Duration of	R Anterior superior temporal sulcus	Temporal_Sup_R	BA22	60, -4, -8

overlapping speech input and output	R	Heschl's gyrus	Heschl_R		44, -20, 10
	R	Mid superior temporal gyrus	Temporal_Sup_R	BA22	52, -18, -2
	R	Planum temporale	Temporal_Sup_R	BA21	68, -22, 2
	R	Mid superior temporal gyrus	Temporal_Sup_R	BA22	56, -22, 10
	R	Posterior superior temporal gyrus	Temporal_Sup_R	BA22	64, -32, 8
	R	Posterior superior temporal sulcus	Temporal_Mid_R	BA21	50, -38, 4
	R	Deep sylvian fissure [between parietal operculum and planum temporale]	Insula_R	BA48	34, -28, 22
	L	Mid superior temporal sulcus	Temporal_Mid_L	BA22	-52, -30, 4
	L	Anterior superior temporal sulcus	Temporal_Mid_L	BA22	-58, -14, -4
	L	Posterior superior temporal gyrus	Temporal_Mid_L	BA22	-56, -36, 8
L	Heschl's gyrus	Temporal_Sup_L		-48, -18, 6	
L	Anterior superior temporal sulcus	Temporal_Sup_L	BA38	-52, 4, -8	

L	Planum temporale	Temporal_Sup_L	BA42	-58, -34, 16
L	Deep sylvian fissure [between parietal operculum and planum temporale]	Rolandic_Oper_L		-34, -28, 18
L	Anterior middle temporal gyrus	Temporal_Mid_L	BA21	-52, -2, -18
R	Putamen	Putamen_R		28, 6, -4
R	White matter [anterior limb of internal capsule] Right	Putamen_R		20, 16, 6
	White matter [anterior limb of internal capsule] (BA0) Right	Pallidum_R		12, 8, -4
L	Anterior ventral paracingulate cortex	Frontal_Mid_Orb_L	BA11	-8, 32, -10
L	Putamen	Putamen_L		-24, 4, -4
L	Putamen	Putamen_L		-22, 10, 2
L	White matter [anterior limb of internal capsule] Left	Putamen_L		-18, 4, 14
L	Putamen (BA0) Left	Putamen_L		-24, 2, 8
R	Cerebellum lobule IV/V	Cerebellum_4_5_R	BA30	22, -32, -24

					R	Precentral gyrus	Precentral_R	BA6	30, -16, 50
					L	Cerebellum lobule VI	Cerebelum_6_L	BA37	-28, -54, -24
					L	Cerebellum lobule VI	Cerebelum_6_L	BA19	-16, -62, -24
					L	Medial superior frontal gyrus	Frontal_Sup_Medial_L	BA10	-2, 60, 26
					L	Dorsal anterior cingulate gyrus	Frontal_Sup_Medial_L	BA32	-10, 54, 24
					R	Cerebellum lobule VI	Cerebelum_6_R		36, -62, -26
					R	Cerebellum crus II	Cerebelum_Crus2_R		10, -82, -38
					R	Cerebellum crus II	Cerebelum_Crus2_R		22, -78, -38
					L	Superior parietal lobule	Precuneus_L	BA5	-16, -44, 64
					L	Cerebellum lobule IV/V	Cerebelum_4_5_L		-20, -36, -22
					L	Inferior occipital cortex	Occipital_Inf_L	BA18	-22, -94, -10
Hervais-Adelman, Moser-Mercer & Golestani (2015). Longitudinal follow-up of	35	19 Trained Interpreters (age: 22-32, SI Experience: Master's Degree); 16 Multilingual Controls	Shadowing L2	Timepoint [1,2] * Group [Trainee, Control] * Condition [L2->L1 SI, Shadow L2]	L	Inferior Frontal Gyrus	Frontal_Inf_Orb_L	BA47	-42, 32, -2
					R	Caudate Nucleus	Caudate_R		21, 14, 13
					R	Middle Cingulate Cortex	Cingulum_Mid_R	BA24	15, 2, 37
					R	Middle Cingulate Cortex	Cingulum_Mid_R	BA24	18, -7, 43

Hervais-Adelman, Moser-Mercer, Michel & Golestani (2015)		(age:20-33, SI Experience: 0). Analysed to seek impact of SI training on SI performance, manifest as 3-way interaction between Timepoint, Group and Condition			L	Paracentral Lobule	Paracentral_Lobule_L	BA4	-12, -28, 58
					L	Precentral Gyrus	Precentral_L	BA6	-30, -10, 43
					L	Postcentral Gyrus	Postcentral_L	BA3	-39, -31, 58
					L	Postcentral Gyrus	Postcentral_L	BA3	-39, -25, 52
Elmer (2016)	5	Experienced interpreters (age: 31-50, SI Experience: 4-22 years); ROI analysis including: Broca's area, middle-anterior cingulate gyrus, caudate nuclei, supramarginal and angular gyri, and middle-anterior insula	Shadowing L2	L2 -> L1	R	IFG pars triangularis	Frontal_Inf_Tri_L		-46, 24, 20
	Shadowing L1		L1 -> L2	R	Anterior Insula	Insula_L		-30, 22, 6	

Supplementary Table 2: All structural peaks implicated in the surveyed literature. This table includes, in addition to the published literature, peaks of interest from Babcock (2015). Abbreviations: Hem: Hemisphere, AAL: Automatic anatomical labelling, GM: Grey matter, WM: White matter, VBM: Voxel-based morphometry.

Study	Population	Metric	Effect	Hem	Authors' Label	AAL Label	Brodman Area	JHU White Matter Tracts Label	MNI (x, y, z mm)
Elmer, Hanggi, Meyer, & Jäncke, 2011	12 Professional interpreters (mean age: 37.9 years, mean SI Experience: 5080 hours) and 12 Multilingual Controls (mean age: 28.4, mean SI Experience: 0 years)	White Matter (Fractional Anisotropy)	Control > Interpreter	R	Orbitofrontal cortex	Frontal_Sup_Orb_R	BA11		18, 30, -15
				L	Genu of corpus callosum		BA47	Anterior_corona_radiata_R	21, 30, -3
				L	Insula	Insula_L		Anterior_corona_radiata_L	-26, 23, 12
				L	Splenium of corpus callosum		BA30	Splenium_of_corpus_callosum	-5, -44, 20
				L	Splenium of corpus callosum		BA17	Splenium_of_corpus_callosum	-21, -57, 18
				L	Body of corpus callosum		BA26	Splenium_of_corpus_callosum	-13, -39, 19
				L	Cingulum	Cingulum_Mid_L	BA23		-3, -24, 30
				L	Corticospinal tract		BA6	Superior_corona_radiata_L	-22, -3, 38
				L	Cingulum	Cingulum_Mid_L	BA23	Cingulum_(cingulate_gyrus)_L	-10, -27, 38
				R	Inferior parietal lobe	Occipital_Mid_R	BA39		45, -76, 29
R	Inferior parietal lobe	Angular_R	BA39		51, -57, 35				

				L	Forceps minor		BA11	Anterior_corona_radiata_L	-17, 48, 2
				L	Forceps minor		BA10	Anterior_corona_radiata_L	-14, 57, 9
				L	Frontal pole	Frontal_Sup_L	BA11		-21, 56, 1
				R	Nucleus caudatus	Caudate_R			11, 7, 19
				R	Forceps minor corpus callosum		BA25	Genu_of_corpus_callosum	1, 31, 9
				L	Genu of corpus callosum		BA25	Genu_of_corpus_callosum	-5, 25, 5
Elmer, Hanggi, & Jäncke, 2014	12 Professional interpreters (mean age: 37.9 years, mean SI Experience: 5080 hours) and 12 Multilingual Controls (mean age: 28.4, mean SI Experience: 0 years)	Grey Matter Volume, limited to ROIs: cingulate gyrus, caudate nucleus, frontal operculum (pars triangularis and opercularis), inferior parietal lobe (supramarginal and angular	GM Density (VBM): Control > Interpreter	L	Middle insula	Insula_L			-42, -4, -2
				L	Middle insula	Insula_L			-42, 9, -12
				L	cingulum	Cingulum_Mid_L	BA23		-3, -9, 43
				L	cingulum	Cingulum_Mid_L	BA24		-9, -1, 43
				L	cingulum	Cingulum_Mid_L	BA24		0, 15, 40
				L	Supramarginal gyrus	Parietal_Inf_L	BA2		-50, -34, 51
				L	Broca pars triangularis	Frontal_Inf_Tri_L	BA45		-46, 38, 10
				L	Broca pars triangularis	Frontal_Inf_Tri_L	BA45		-48, 26, 13
				L	Broca pars opercularis	Frontal_Inf_Oper_L	BA44		-46, 11, 24
				R	Middle insula	Insula_R			45, -1, -3
R	Posterior insula	Insula_R			38, -10, -3				
R	Broca pars triangularis	Frontal_Inf_Tri_R	BA47		50, 28, 0				

		gyrus), insula		R	Broca pars triangularis	Frontal_Inf_Tri_R	BA45	51, 27, 12
			GM Density negatively Correlates with Interpreting Experience	L	Broca pars triangularis	Frontal_Inf_Tri_L	BA45	-47, 29, 9
				L	Middle Cingulum	Cingulum_Mid_L	BA24	-9, 5, 37
				L	Caudate	Caudate_L		-9, 5, 6
				R	Broca pars opercularis	Frontal_Inf_Oper_R		42, 12, 28
				R	Caudate	Caudate_R		18, 20, 3
Becker, Schubert, Strobach, Gallinat, & Kuhn, 2016	27 Professional SIs (mean age: 42.7 years, mean SI Experience: 13.33 years) and 23 Professional Consecutive Interpreters /Translators (mean age: 42.6, mean SI Experience: 0 years)	Grey Matter (VBM)	GM Density: SI > Control	L	Frontal Pole	Frontal_Sup_Orb_L	BA11	-25.5, 54, - 4.5
		Resting State Connectivity	Global Efficiency and Centrality: SI > Control	L	Frontal Pole	Frontal_Sup_Orb_L	BA11	-25.5, 54, - 4.5
			Connection Strength from Frontal Pole: SI > Control	L	Inferior Frontal Gyrus (pars opercularis)	Frontal_Inf_Oper_L		-51, 15, 51
			Connection Strength from Frontal Pole: SI > Control	L	Inferior Frontal Gyrus (pars triangularis)	Frontal_Inf_Tri_L	BA45	-50, 28, 9
			Connection Strength from Frontal	L	Middle Temporal Gyrus	Temporal_Mid_L	BA20	-61, -27, -11

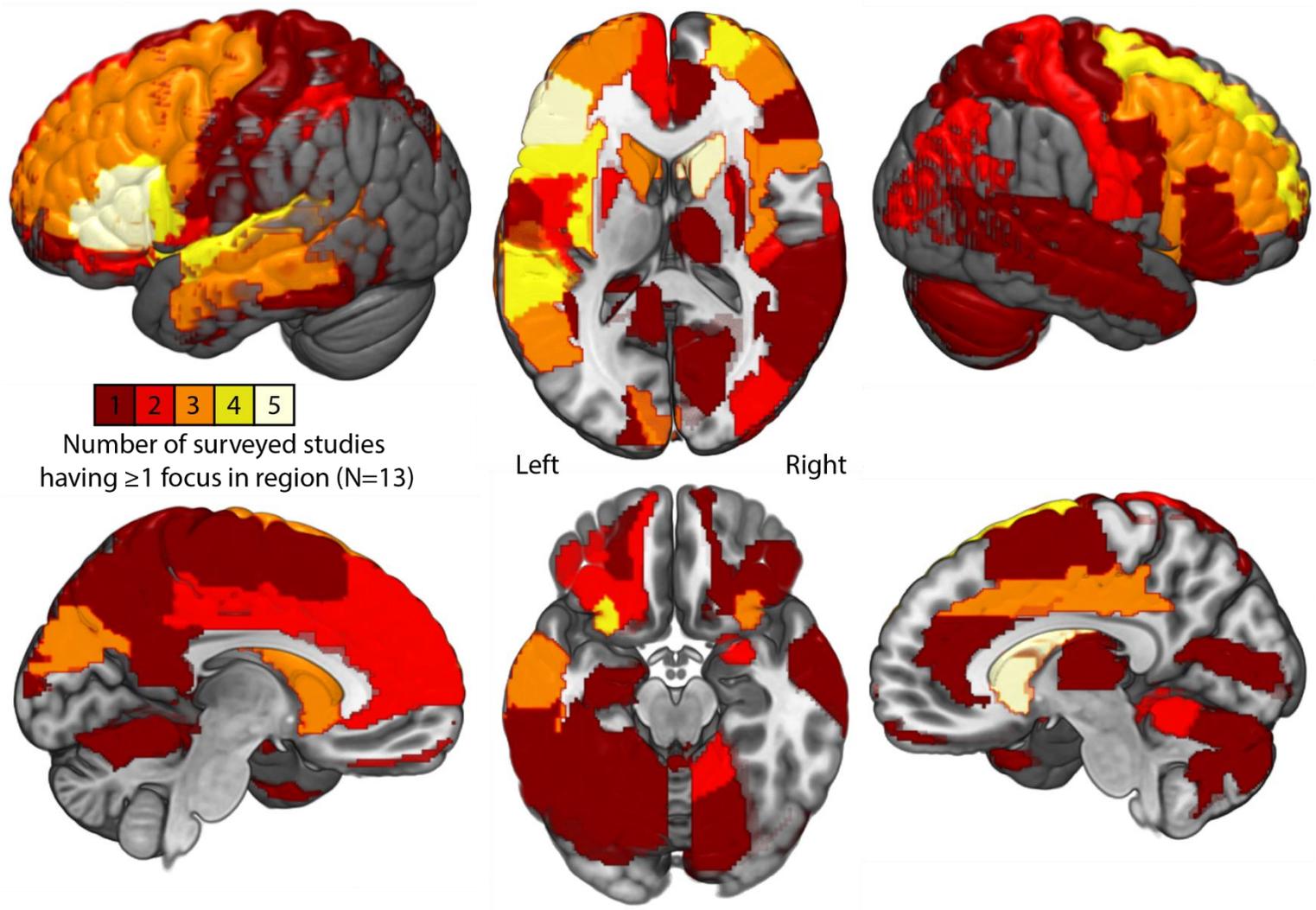
			Pole: SI > Control		(posterior division)			
Klein, Metz, Elmer, & Jäncke, 2018	16 SIs (mean age: 34.7 years, mean SI Experience: 7.7 years) and 16 Multilingual Controls (mean age: 34.3, mean SI Experience: 0 years)	Network based statistical analysis of source- localised EEG resting- state data	Connectivity in lower alpha band (8-10Hz): SI > Control	L	BA9; middle frontal gyrus (dorsolateral prefrontal cortex)	Frontal_Mid_L	BA9	-30, 30, 35
				R	BA9; middle frontal gyrus (dorsolateral prefrontal cortex)	Frontal_Mid_R	BA9	30, 30, 35
				L	BA44; Broca's area (pars opercularis)	Frontal_Inf_Oper_L	BA44	-50, 10, 15
				R	BA44; right homologue of Broca's area (pars opercularis)	Frontal_Inf_Oper_R	BA6	55, 10, 15
				L	BA45; Broca's area (pars triangularis)	Frontal_Inf_Oper_L		-50, 20, 15
				R	BA45; right homologue of Broca's area (pars triangularis)	Frontal_Inf_Oper_R		50, 20, 15
				L	BA46; middle frontal gyrus (dorsolateral	Frontal_Inf_Tri_L	BA45	-45, 35, 20

					prefrontal cortex)			
				R	BA46; middle frontal gyrus (dorsolateral prefrontal cortex)	Frontal_Mid_R	BA45	45, 35, 20
Hervais-Adelman, Moser-Mercer, Murray, & Golestani, 2017	34 Trainee Interpreters (mean age: 26 years at T1, mean SI Experience: 15 months training at T2) and 34 Multilingual Controls (mean age: 25.7 at T1, mean SI Experience: 0 months)	Longitudinal investigation of Grey Matter thickness	Changes in GM Thickness Trainee Interpreters > Multilingual Controls	L	Posterior Superior Temporal Gyrus	Temporal_Mid_L	BA22	-58, -45, 11
				R	Superior Parietal Lobule	Parietal_Sup_R	BA7	15, -70, 53
				R	Superior Frontal Gyrus	Frontal_Sup_R	BA6	23, 1, 60
				L	Supramarginal Gyrus	Rolandic_Oper_L		-41, -22, 19
				R	Angular Gyrus	Occipital_Mid_R	BA7	34, -72, 39
				R	Intraparietal Sulcus	Angular_R	BA7	29, -60, 46
				L	Planum Temporale	Temporal_Sup_L	BA41	-39, -37, 10
Babcock, 2015	15 Trainee Interpreters (mean age: 22.5 years at T1, mean SI Experience: 2 years training at	Longitudinal investigation of Grey Matter volume	Decrease in GM volume Trainee Translators > Trainee Interpreters	L	Putamen	Putamen_L	BA25	-12, 8, -8
				L	Hippocampus	Hippocampus_L	BA28	-15, -3, -21
				L	Hippocampus	Hippocampus_L	BA20	-30, -9, -20
				R	Calcarine Sulcus	Calcarine_R	BA17	10, -84, 13
				R	Calcarine Sulcus	Calcarine_R	BA17	8, -73, 16
				R	Calcarine Sulcus	Calcarine_R	BA18	12, -70, 7

T2) and 8 Trainee Translators (mean age: 24.6 at T1, mean SI Experience: 0 months)	R	Thalamus	Thalamus_R		18, -25, 1			
	R	Thalamus	Thalamus_R		14, -28, 18			
	R	Caudate	Caudate_R	Superior_corona_radiata_R	21, -18, 24			
	L	Cuneus	Cuneus_L	BA19	-9, -82, 24			
	L	Superior Occipital Lobe	Occipital_Sup_L	BA19	-24, -76, 24			
	L	Superior Occipital Lobe	Occipital_Sup_L	BA18	-16, -87, 24			
	L	Superior Temporal Lobe	Temporal_Sup_L	BA48	-52, -21, 4			
	L	Superior Temporal Lobe	Temporal_Sup_L	BA48	-58, -13, 7			
	L	Supramarginal Gyrus	SupraMarginal_L	BA48	-54, -24, 15			
	R	Amygdala	Amygdala_R	BA34	28, -3, -15			
	R	Putamen	Putamen_R		28, 0, 6			
	R	Insula	Insula_R	BA48	38, -6, -8			
	van de Putte et al., 2018*	18 Trainee Interpreters (mean age: 21.4 years at T1, mean SI Experience: 9 months training at T2) and 18	Longitudinal investigation of white matter connectivity	Changes in WM Connectivity : Trainee Interpreters > Trainee Translators (Network 1)	R	Pallidum	Pallidum_R	
				L	Superior frontal Gyrus (SFG Dor)	Frontal_Sup_L		-19, 35, 42
				L	Orbitofrontal Gyrus (SFG Orb)	Frontal_Sup_Orb_L		-18, 47, -13
				L	Middle Frontal Gyrus (SFG Med)	Frontal_Mid_L		-34, 33, 35

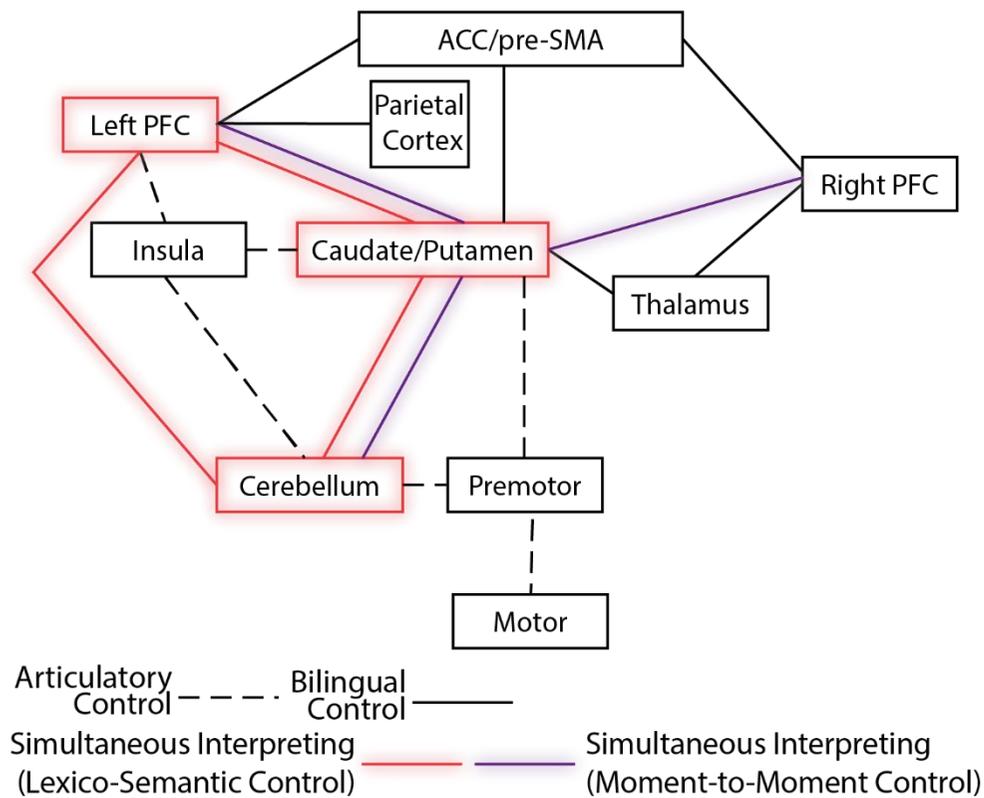
Trainee Translators (mean age: 21.9 at T1, mean SI Experience: 0 months)	R	Middle Frontal Gyrus (SFG Med)	Frontal_Mid_R	37, 33, 34	
	Changes in WM Connectivity : Trainee Interpreters > Trainee Translators (Network 2)	L	Superior Parietal Lobule (SPG)	Parietal_Sup_L	-24, -60, 59
		L	Inferior Parietal Lobue (IPG)	Parietal_Inf_L	-44, -46, 47
		R	Superior frontal Lobe (SFG Dor)	Frontal_Sup_R	20, 31, 44
		R	Amygdala	Amygdala_R	26, 1, -18
		R	Postcentral cortex (PoCG)	Postcentral_R	40, -25, 53
		R	Middle temporal Pole (TPOmid)	Temporal_Pole_Mid_R	43, 15, -32
		R	SMA	Supp_Motor_Area_R	8, 0, 62
		Mid line	Vermis 3	Vermis_3	1, -40, -11

* Coordinates not provided in publication. Coordinates listed are Centre of Gravity of AAL Labelled Region



Supplementary Figure 1: Illustration of the consistency with which AAL designated regions are linked to SI in the published literature. This image shows the proportion of all the studies surveyed in this paper (see Supplementary Tables 1 and 2) for which given regions are mentioned

at least once. Note that this illustration incorporates the unpublished peaks found in Babcock (2015), not shown in Figure 2. This illustrates the diversity of the neural substrates implicated and also the lack of consistency within the literature. Some portion of the lack of consistency is accounted for by the lack of methodological consistency of the studies included, which range from structural to functional to resting-state investigations, of novice, trainee, and expert interpreters, cross-sectionally and longitudinally.



Supplementary Figure 2: Schematic illustration of the model presented in Figure 3, formatted to be analogous to that presented by Calabria and colleagues (2018), for ease of comparison.