

Supplementary Materials:

Supplementary Tables S1-5

Supplementary Figure S1-S4

Supplementary References

Table S1: Dementia Studies

Reference	Imaging Modality	Contrast
<i>Alzheimer's Disease</i>		
Baron et al, 2001 (Baron <i>et al.</i> , 2001)	MRI, atrophy	AD vs. controls
Boxer et al, 2003a (A. L. Boxer <i>et al.</i> , 2003)	MRI, atrophy	AD vs. controls
Boxer et al, 2003b (A. L. Boxer <i>et al.</i> , 2003)	MRI, atrophy	AD vs. controls
Bozzali et al, 2006 (Bozzali <i>et al.</i> , 2006)	MRI, atrophy	AD vs. controls
Grossman et al, 2004 (Grossman <i>et al.</i> , 2004)	MRI, atrophy	AD vs. controls
Ohnishi et al, 2001 (Ohnishi <i>et al.</i> , 2001)	MRI, atrophy	AD vs. controls
Matsuda et al, 2002 (Matsuda <i>et al.</i> , 2002)	MRI, atrophy	AD vs. controls
Zahn et al, 2005 (Zahn <i>et al.</i> , 2005)	MRI, atrophy	AD vs. controls
Benoit et al, 2002 (Benoit <i>et al.</i> , 2002)	SPECT, perfusion	AD vs. controls
Ebmeier et al, 1998 (Ebmeier <i>et al.</i> , 1998)	SPECT, perfusion	AD vs. controls
Ishii et al, 1997 (Ishii <i>et al.</i> , 1997)	SPECT, perfusion	AD vs. controls
Kogure et al, 2000 (Kogure <i>et al.</i> , 2000)	SPECT, perfusion	AD vs. controls
Lee et al, 2003 (Lee <i>et al.</i> , 2003)	SPECT, perfusion	AD vs. controls
Matsuda et al, 2009 (Matsuda <i>et al.</i> , 2002)	SPECT, perfusion	AD vs. controls

Nakano et al, 2005 (Nakano <i>et al.</i> , 2005)	SPECT, perfusion	AD vs. controls
Sakamoto et al, 2003 (Sakamoto <i>et al.</i> , 2002)	SPECT, perfusion	AD vs. controls
Ibanez et al, 1998 (Ibáñez <i>et al.</i> , 1998)	PET, metabolism	AD vs. controls
Ishii et al, 1998 (Ishii <i>et al.</i> , 1998)	PET, metabolism	AD vs. controls
Ishii et al, 2005 (Ishii <i>et al.</i> , 2005)	PET, metabolism	AD vs. controls
Kalpouzos et al, 2005 (Kalpouzos <i>et al.</i> , 2005)	PET, metabolism	AD vs. controls
Kim et al, 2005 (Kim <i>et al.</i> , 2005)	PET, metabolism	AD vs. controls
Mosconi et al, 2004 (Mosconi <i>et al.</i> , 2004)	PET, metabolism	AD vs. controls
Sakamoto et al, 2002 (Sakamoto <i>et al.</i> , 2002)	PET, metabolism	AD vs. controls
Salmon et al, 2000 (Salmon <i>et al.</i> , 2000)	PET, metabolism	AD vs. controls
Zahn et al, 2005 (Zahn <i>et al.</i> , 2005)	PET, metabolism	AD vs. controls
<i>Frontotemporal Dementia</i>		
Amanzio et al, 2016 (Amanzio <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls
Baez et al, 2016a (Baez, Kanske, <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls
Baez et al, 2016b (Baez, Morales, <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls
Boccardi et al, 2005 (Boccardi <i>et al.</i> , 2005)	MRI, atrophy	FTD vs. controls

Dermody et al, 2016 (Dermody <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls
Flannagan et al, 2016 (Flanagan <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls
Grossman et al, 2004 (Grossman <i>et al.</i> , 2004)	MRI, atrophy	FTD vs. controls
Irish et al, 2013 (Irish <i>et al.</i> , 2013)	MRI, atrophy	FTD vs. controls
Irish et al, 2014 (Irish <i>et al.</i> , 2014)	MRI, atrophy	FTD vs. controls
Irish et al, 2016 (Irish <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls
Kanda et al, 2008 (Kanda <i>et al.</i> , 2008)	MRI, atrophy	FTD vs. controls
Kipps et al, 2009 (Kipps <i>et al.</i> , 2009)	MRI, atrophy	FTD vs. controls
Luis et al, 2016 (Luis <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls
Mandelli et al, 2016 (Mandelli, Vitali, <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls
Massimo et al, 2013 (Massimo <i>et al.</i> , 2013)	MRI, atrophy	FTD vs. controls
Ossenkoppele et al, 2015 (Ossenkoppele <i>et al.</i> , 2015)	MRI, atrophy	FTD vs. controls
Pardini et al, 2009 (Pardini <i>et al.</i> , 2009)	MRI, atrophy	FTD vs. controls
Tu et al, 2015 (Tu <i>et al.</i> , 2015)	MRI, atrophy	FTD vs. controls
Whitwell et al, 2011 (Whitwell <i>et al.</i> , 2011)	MRI, atrophy	FTD vs. controls
Wong et al, 2016 (Wong <i>et al.</i> , 2016)	MRI, atrophy	FTD vs. controls

Zamboni et al, 2008 (Zamboni <i>et al.</i> , 2008)	MRI, atrophy	FTD vs. controls
<i>Corticobasal Syndrome</i>		
Boxer et al, 2006 (Boxer <i>et al.</i> , 2006)	MRI, atrophy	CBS vs. controls
Garraux et al, 2000 (Garraux <i>et al.</i> , 2000)	MRI, atrophy	CBS vs. controls
Gross et al, 2010 (Gross <i>et al.</i> , 2010)	MRI, atrophy	CBS vs. controls
Grossman et al, 2004 (Grossman <i>et al.</i> , 2004)	MRI, atrophy	CBS vs. controls
Huey et al, 2009 (Huey <i>et al.</i> , 2009)	MRI, atrophy	CBS vs. controls
Hosaka et al, 2002 (Hosaka <i>et al.</i> , 2002)	MRI, atrophy	CBS vs. controls
Juh et al, 2005 (Juh <i>et al.</i> , n.d.)	MRI, atrophy	CBS vs. controls
Lee et al, 2011 (Lee <i>et al.</i> , 2011)	MRI, atrophy	CBS vs. controls
McMillan et al, 2016 (McMillan <i>et al.</i> , 2016)	MRI, atrophy	CBS vs. controls
Morgan et al, 2011 (Morgan <i>et al.</i> , 2011)	MRI, atrophy	CBS vs. controls
Pardini et al, 2009 (Pardini <i>et al.</i> , 2009)	MRI, atrophy	CBS vs. controls
Wolpe et al, 2014 (Wolpe <i>et al.</i> , 2014)	MRI, atrophy	CBS vs. controls
<i>Progressive Non-Fluent Aphasia</i>		
Gorno-Tempini et al, 2004 (Gorno-Tempini <i>et al.</i> , 2004)	MRI, atrophy	PNFA vs. controls
Gorno-Tempini et al, 2006 (Gorno-Tempini <i>et al.</i> , 2006)	MRI, atrophy	PNFA vs. controls

Grossman et al, 2004 (Grossman <i>et al.</i> , 2004)	MRI, atrophy	PNFA vs. controls
Hu et al, 2010 (Hu <i>et al.</i> , 2010)	MRI, atrophy	PNFA vs. controls
Nestor et al, 2003 (Nestor <i>et al.</i> , 2003)	MRI, atrophy	PNFA vs. controls
Pereira et al, 2009 (Pereira <i>et al.</i> , 2009)	MRI, atrophy	PNFA vs. controls
Wilson et al, 2010 (Wilson <i>et al.</i> , 2010)	MRI, atrophy	PNFA vs. controls
Zahn et al, 2005 (Zahn <i>et al.</i> , 2005)	MRI, atrophy	PNFA vs. controls
<i>AD with Delusions</i>		
Bruen et al, 2008 (Bruen <i>et al.</i> , 2008)	MRI, atrophy	AD with vs. without delusions
Fukuhara et al, 2001 (Fukuhara <i>et al.</i> , 2001)	SPECT, perfusion	AD with vs. without delusions
Lee et al, 2016 (Lee <i>et al.</i> , 2016)	MRI, atrophy	AD with vs. without delusions
Mega et al, 2000 (Mega <i>et al.</i> , 2000)	SPECT, perfusion	AD with vs. without delusions
Moran et al, 2008 (Moran <i>et al.</i> , 2008)	SPECT, perfusion	AD with vs. without delusions
Nakaaki et al, 2013 (Nakaaki <i>et al.</i> , 2013)	MRI, atrophy	AD with vs. without delusions
Nakatsuka et al, 2013 (Nakatsuka <i>et al.</i> , 2013)	SPECT, perfusion	AD with vs. without delusions
Serra et al, 2010 (Serra <i>et al.</i> , 2010)	MRI, atrophy	AD with vs. without delusions
Staff et al, 2000 (Staff <i>et al.</i> , 2000)	SPECT, perfusion	AD with vs. without delusions
Matsuoka et al, 2010	SPECT, perfusion	AD with vs. without delusions

(Matsuoka <i>et al.</i> , 2010)		
Nakano et al, 2006 (Nakano <i>et al.</i> , 2006)	SPECT, perfusion	AD with vs. without delusions
Sultzer et al, 2014 (Sultzer <i>et al.</i> , 2014)	PET, metabolism	AD with vs. without delusions

Table S2: Shared network localization across PET, SPECT, and MRI studies in AD

Voxels	Overlap	X	Y	Z	Region
1769	26/26	-2	-54	14	Precuneus / Posterior Cingulate Cortex
449	25/26	-48	-64	24	Angular Gyrus
355	25/26	60	-60	24	Angular Gyrus
240	25/26	0	44	-10	Paracingulate Gyrus
145	25/26	56	-2	-20	Middle Temporal Gyrus
130	25/26	-56	-4	-22	Middle Temporal Gyrus
62	25/26	-18	28	44	Superior frontal gyrus
18	25/26	28	-22	-16	Hippocampus
18	25/26	-24	-22	-20	Hippocampus

Table S3: Distinct network localization for AD, FTD, CBS, and PNFA

Voxels	Cluster P (FWE)	Max T	X	Y	Z	Region
<i>AD vs. non-AD</i>						
24650	<0.001	6.45	36	-44	16	Supra-marginal Gyrus
		6.28	-30	-32	-14	Parahippocampal Gyrus
		6.22	30	-32	-14	Parahippocampal Gyrus
<i>FTD vs. non-FTD</i>						
2847	<0.001	4.70	32	-14	-10	Right putamen / amygdala
		4.53	18	36	-10	Frontal Pole / Orbitofrontal Cortex
		4.43	24	52	-16	Frontal Pole
<i>CBS vs. non-CBS</i>						
18232	<0.001	6.73	6	-40	76	Post-central Gyrus, Precuneus
		6.37	48	-26	50	Post-central, supramarginal gyrus
		6.32	42	-24	42	Post-central, supramarginal gyrus
3367	<0.001	6.07	-18	-12	48	Pre-central, superior frontal gyrus
		5.83	-26	-12	62	Pre-central, superior frontal gyrus
		5.79	-24	-18	52	Pre-central, superior frontal gyrus
<i>PNFA vs. non-PNFA</i>						

2731	0.003	6.06	-54	16	2	Left inferior frontal gyrus
		5.26	-38	36	-2	Left orbitofrontal, inferior frontal gyrus
		5.08	-52	20	-14	Left temporal pole, orbitofrontal, inferior frontal gyrus

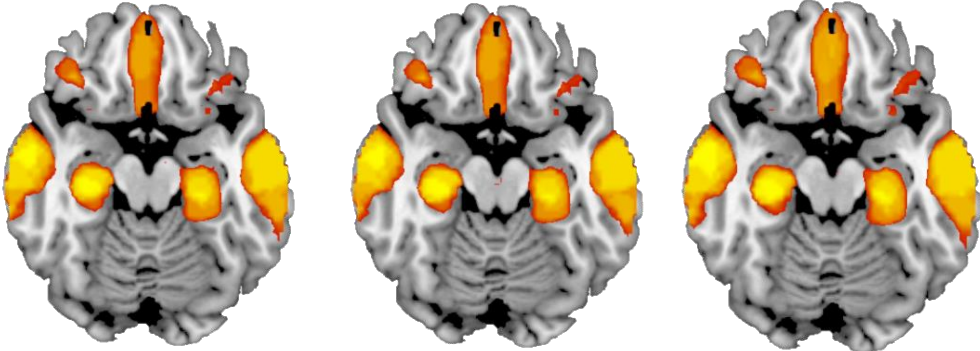
Cortical / subcortical gray voxels showing significantly stronger connectivity to neuroimaging findings in AD, FTD, CBS, or PNFA vs. all other dementia syndromes. Peak voxel coordinates and T-values are reported for up to 3 local maxima more than 8mm apart for each cluster.

Table S5: Network localization of delusions vs. no delusions in AD patients

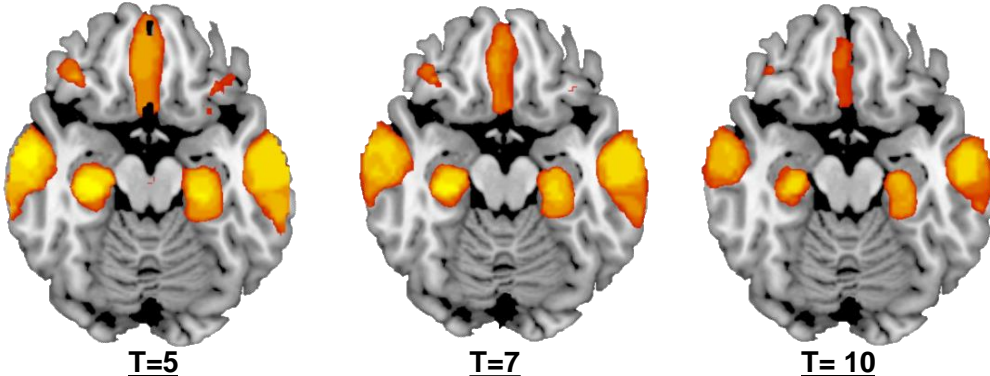
Voxels	Cluster P (FWE)	Max T	X	Y	Z	Region
7305	<0.001	6.83	50	2	52	Right precentral, middle frontal gyrus
		6.74	42	-2	60	Right precentral, Middle frontal gyrus
		6.62	30	32	2	Right inferior frontal, insula, orbitofrontal cortex
1883	0.005	6.48	62	-26	52	Right supramarginal gyrus
		5.78	56	-30	40	Right supramarginal gyrus
		5.2	40	-48	68	Right superior parietal lobule
1634	0.006	5.27	-62	10	10	Left precentral gyrus, inferior frontal gyrus
		5.01	-32	20	6	Left insula, frontal operculum
		4.61	-46	12	0	Left inferior frontal gyrus, frontal operculum
1123	0.02	5.1	-64	-30	46	Left supramarginal gyrus
		4.97	-68	-22	32	Left supramarginal gyrus

Cortical / subcortical gray voxels showing significantly stronger connectivity to neuroimaging findings in AD with delusion vs. without delusions. Peak voxel coordinates and T-values are reported for up to 3 local maxima more than 8mm apart for each cluster.

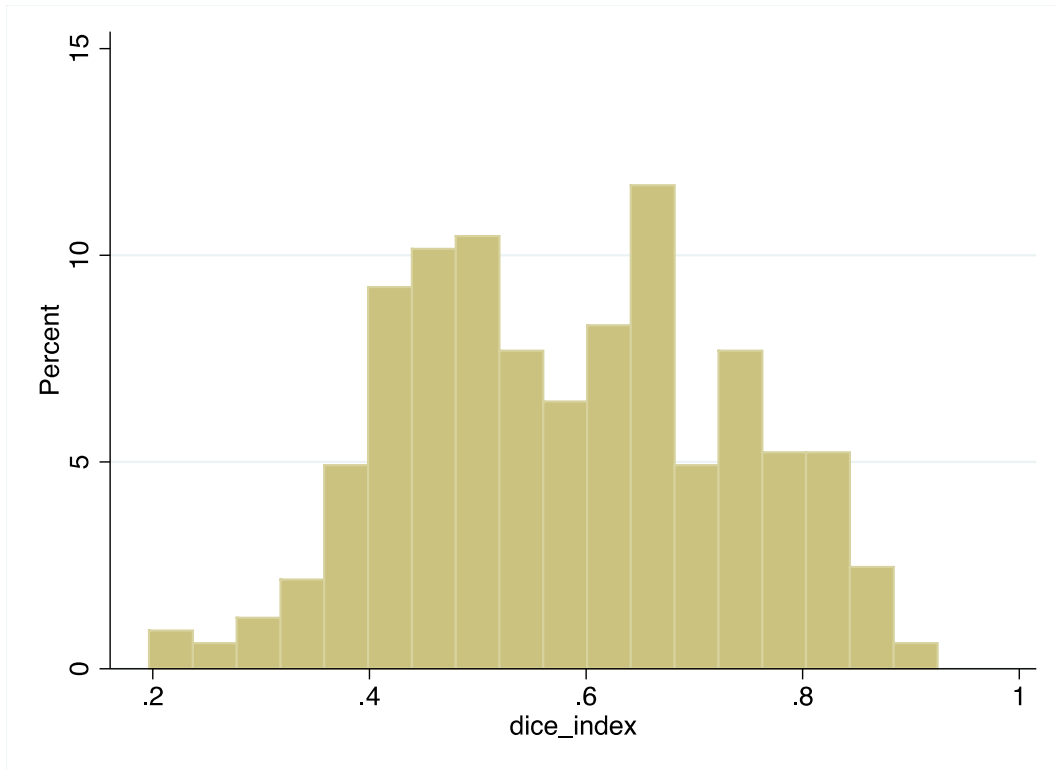
A. Seed Size



B. Threshold



Supplementary Figure S1: Effects of changing seed size and network map threshold on reproducibility of network localization in AD.



Supplementary Figure S2: distribution of dice indices between connectivity maps from studies of patients with Alzheimer's disease.

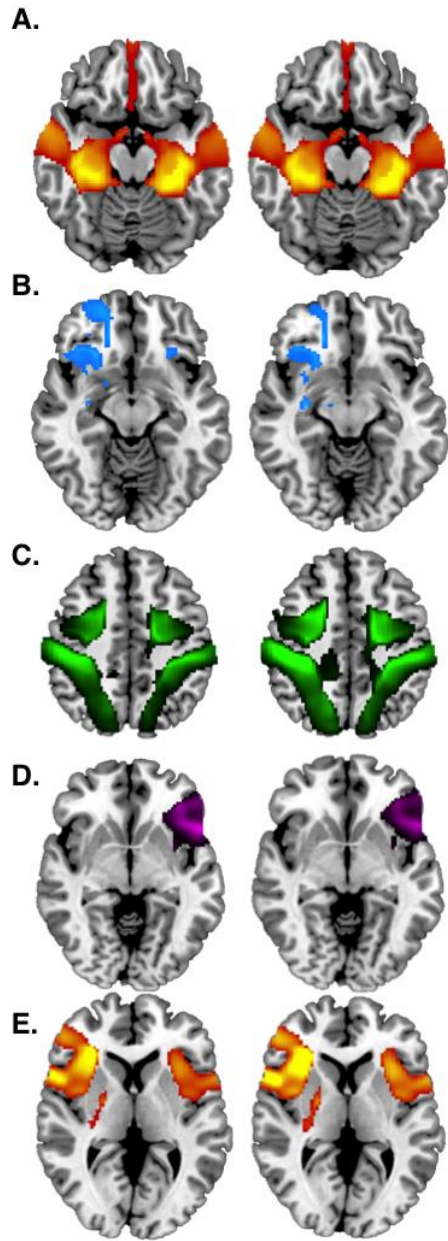
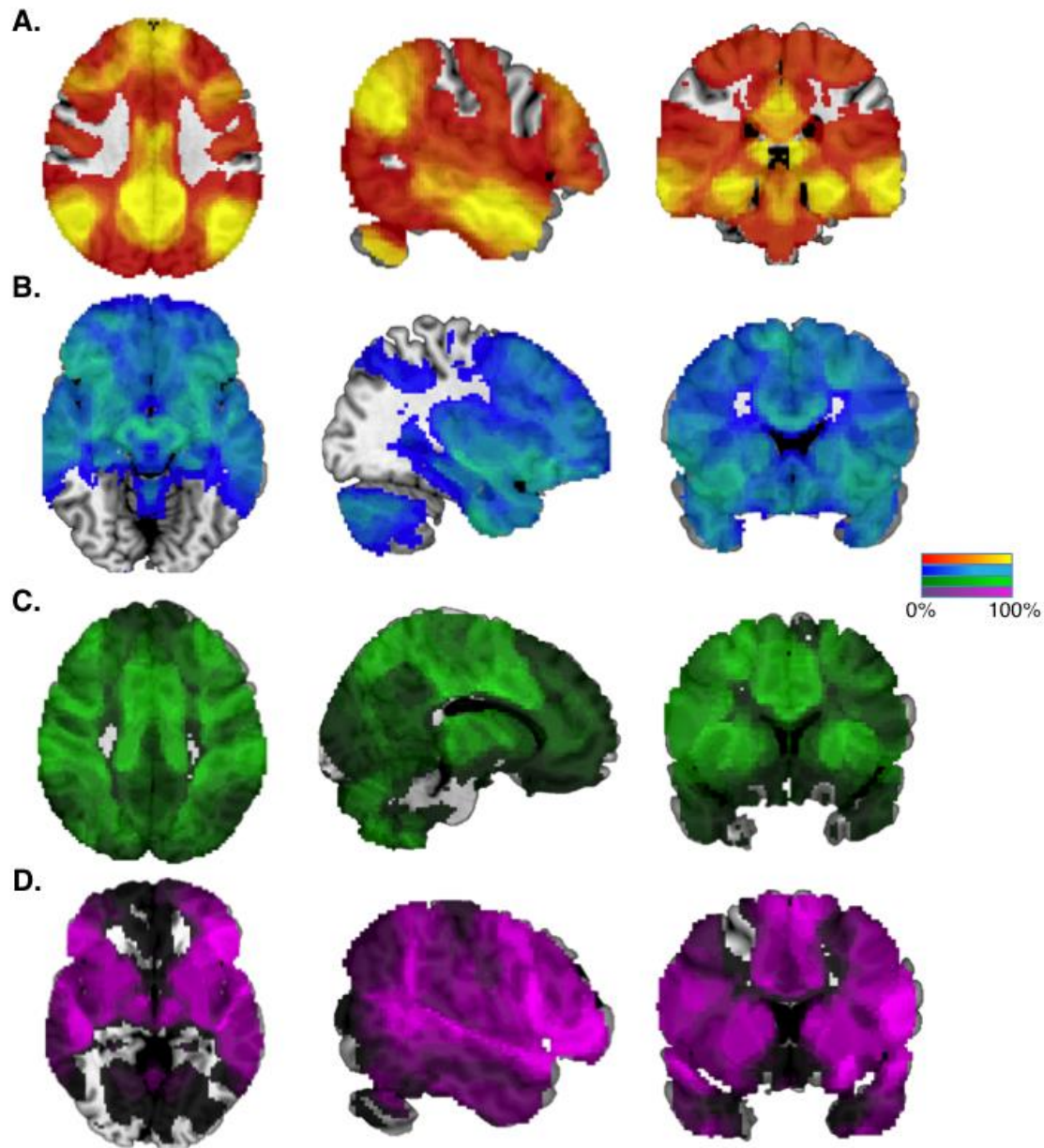
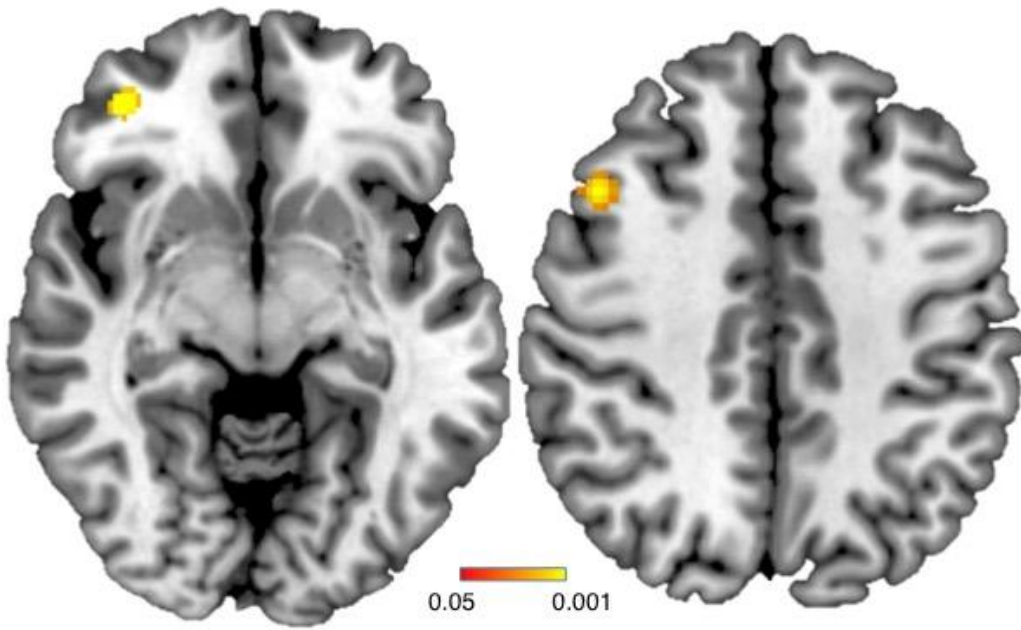


Figure S3: Specificity of network localization using parametric and nonparametric testing. Results did not differ when using standard settings to control for multiple comparisons using parametric testing (left) vs. nonparametric testing (right) for: (A) AD vs. other dementias; (B) FTD vs. other dementias; (C) CBS vs. other dementias; (D) PNFA vs. other dementias; or (E) AD+ delusions vs. AD – delusions.



Supplementary Figure 4: Network Localization Overlap for neuroimaging abnormalities in neurodegenerative disorders. Percentage of connectivity maps from studies of patients with a clinical diagnosis of Alzheimer's disease (A), behavioral-variant frontotemporal dementia (B), Corticobasal syndrome (C), or progressive nonfluent aphasia (D) connected to each brain region.



Supplementary Figure 5: ALE results for delusions in AD meta-analysis.

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