Sundermann B, Pfleiderer B

Functional connectivity profile of the human inferior frontal junction: involvement in a cognitive control network

Supplementary Table 1

peak coordinates and Talairach atlas labels of brain areas exhibiting correlated activity with the IFJ in the resting-state fMRI analysis that do not conclusively correspond to the cognitive control network observed in the MACM analysis ($p < 0.001$, FWE corrected, cluster-size-threshold: 10 voxels)

Anatomical label	BA	x	y	z
Correlation with seed 1 (left IFJ)				
Left Cingulate Gyrus	24	-5	0	29
Right Cingulate Gyrus	24	4	-3	31
Right Superior Temporal Gyrus	22	63	-37	18
Left Claustrum		-34	-4	7
Left Putamen		-31	-14	-7
Left Anterior Cingulate	32	-17	39	-7
Left Claustrum		-29	-25	9
Right Postcentral Gyrus	3	60	-20	36
(Right Hemisphere)	10	44	44	-3
Right Postcentral Gyrus	1	63	-15	26
Right Postcentral Gyrus	2	39	-24	33
Right Postcentral Gyrus	2	60	-30	40
Right Middle Frontal Gyrus	11	21	37	-6
Right Cerebellum (Posterior Lobe)		8	-74	-28
Right Cerebellum (Posterior Lobe)		25	-65	-46
Right Cerebellum (Posterior Lobe)		23	-61	-30
Left Cerebellum (Posterior Lobe)		-10	-72	-30
Right Superior Temporal Gyrus	42	65	-25	10

Left Inferior Frontal Gyrus	47	-21	17	-18
(Right Hemisphere)		-25	-64	-49
Correlation with seed 2 (right IFJ)				
Left Cingulate Gyrus	24	-5	1	31
Left Cingulate Gyrus	24	2	1	30
Right Superior Temporal Gyrus		47	-43	19
Right Inferior Frontal Gyrus	47	20	35	-7
Right Claustrum		36	-2	8
Right Putamen		29	-14	-4
Right Red Nucleus		6	-18	-5
Right Inferior Frontal Gyrus	47	16	15	-19
Right Claustrum		27	-23	13
Right Superior Temporal Gyrus	22	38	-55	12
Left Red Nucleus		-5	-18	-5
Left Middle Occipital Gyrus	19	-35	-82	19
Left Cerebellum (Posterior Lobe)		-10	-70	-28
Left Cerebellum (Posterior Lobe)		-23	-64	-47
Left Cerebellum (Posterior Lobe)		-23	-61	-29
Left Right Cingulate Gyrus	24	12	-12	34
Left Claustrum		-38	-4	7
Right Cerebellum (Posterior Lobe)		20	-65	-47
Left Cingulate Gyrus	24	-14	-20	35
Right Hypothalamus		1	-2	-17
Correlation with seed 3 (left IFJ)				
Left Cingulate Gyrus	24	-5	0	29

Right Cingulate Gyrus	24	4	-3	31
Right Superior Temporal Gyrus	42	64	-29	10
Left Putamen		-31	-14	-7
Left Anterior Cingulate	32	-17	39	-7
Left Inferior Frontal Gyrus	47	-21	17	-18
Right Postcentral Gyrus	2	39	-24	33
Right Middle Frontal Gyrus	10	42	44	-5
Right Postcentral Gyrus	3	50	-16	34
Right Postcentral Gyrus	3	60	-18	32
Right Postcentral Gyrus	1	63	-15	26
Right Precentral Gyrus	6	58	-7	32
Right Postcentral Gyrus	2	60	-30	40
Right Inferior Frontal Gyrus	47	23	35	-6
Left Superior Temporal Gyrus	39	-42	-49	8
Left Cingulate Gyrus	24	-13	-12	34
Right Cerebellum (Posterior Lobe)		10	-72	-28
Right Cerebellum (Posterior Lobe)		25	-66	-47
Right Cerebellum (Posterior Lobe)		25	-59	-30
Left Claustrum		-34	-4	7
Left Claustrum		-29	-25	10
Left Cerebellum (Posterior Lobe)		-10	-72	-28
Correlation with seed 4 (right IFJ)				
Left Cingulate Gyrus	24	-7	1	31
Right Cingulate Gyrus	24	2	1	30
Right Superior Temporal Gyrus		47	-43	19
Right Claustrum		34	0	5

Right Putamen		31	-14	-6
Right Inferior Frontal Gyrus	47	20	33	-7
Left Cingulate Gyrus	24	-14	-20	35
Right Cingulate Gyrus	31	13	-33	36
Right Cingulate Gyrus	24	12	-18	33
Right Red Nucleus		6	-20	-3
Right Claustrum		27	-22	13
Right Cingulate Gyrus	31	8	-45	43
Right Inferior Frontal Gyrus	47	16	14	-19
Right Middle Temporal Gyrus	37	39	-63	12
Left Claustrum		-36	-4	7
Left Superior Occipital Gyrus	19	-29	-79	25
Left Middle Occipital Gyrus	19	-35	-82	19
Left Cerebellum (Posterior Lobe)		-23	-64	-47
Left Cerebellum (Posterior Lobe)		-10	-70	-28
Left Cerebellum (Anterior Lobe)		-25	-59	-29
Left Putamen		-32	-14	-7
Right Cerebellum (Posterior Lobe)		20	-65	-47
Right Hypothalamus		1	-2	-17
Left Subthalamic Nucleus		-10	-14	-3
Left Red Nucleus		-5	-20	-3

Supplementary Table 2

Behavioral analysis of BrainMap-data on IFJ and CCN activations using an automated method based on BrainMap metadata, introduced by Lancaster et al. (Lancaster JL, Laird AR, Eickhoff SB, Martinez MJ, Fox PM, Fox PT: Automated regional behavioral analysis for human brain images. Front Neuroinform 2012, 6:23.) and implemented in Mango [http://ric.uthscsa.edu/mango/].

We searched these preformed results with 12 mm and 25 mm wide cubic ROIs centered at the IFJ in Talairach space (± 47, 5, 34) as well as masks of the whole connectivity map with the left or right IFJ as observed in this MACM analysis. Results were thresholded at Z = 3 as suggested by the authors of this method.

Category	Domain	Z-Score
Left IFJ, 12 mm		
Memory (Working)	Cognition	6.293
Language (Semantics)	Cognition	6.019
Attention	Cognition	5.714
Language (Speech)	Cognition	5.238
Memory (Explicit)	Cognition	4.625
Language (Orthography)	Cognition	4.372
Vision (Shape)	Perception	3.479
Language (Phonology)	Cognition	3.476
Other	Cognition	3.279
Other	Emotion	3.019
Left IFJ, 25 mm		
Language (Semantics)	Cognition	12.845
Memory (Working)	Cognition	12.036
Language (Speech)	Cognition	11.798
Language (Phonology)	Cognition	8.98
Attention	Cognition	8.389
Execution (Speech)	Action	7.037
Memory (Explicit)	Cognition	6.861
Language (Orthography)	Cognition	6.465
Language (Syntax)	Cognition	4.78
Execution (Other)	Action	4.643
Language (Other)	Cognition	4.309
Imagination	Action	4.138
Other	Cognition	3.948
Other	Emotion	3.857
Audition	Perception	3.5
Vision (Shape)	Perception	3.497
Space	Cognition	3.226

Reasoning	Cognition	3.137
Inhibition	Action	3.001

Right IFJ, 12 mm

Attention	Cognition	6.027
Memory (Working)	Cognition	5.654
Execution (Other)	Action	3.581
Language (Speech)	Cognition	3.109
Vision (Shape)	Perception	3.051
Memory (Explicit)	Cognition	3.03
Other	Emotion	3.019

Right IFJ, 25 mm

Attention	Cognition	8.513
Memory (Working)	Cognition	6.947
Execution (Other)	Action	6.488
Language (Speech)	Cognition	4.928
Execution (Speech)	Action	4.253
Memory (Explicit)	Cognition	4.162
Vision (Other)	Perception	3.945
Observation	Action	3.903
Inhibition	Action	3.745
Audition	Perception	3.5
Vision (Shape)	Perception	3.232
Space	Cognition	3.123
Anger	Emotion	3.078
Somesthesis (Other)	Perception	3.067

Whole network based on left IFJ seed

Memory (Working)	Cognition	36.855
Language (Semantics)	Cognition	34.253
Attention	Cognition	33.463
Language (Speech)	Cognition	30.915
Execution (Other)	Action	26.101
Memory (Explicit)	Cognition	24.188
Other	Cognition	22.153
Other	Emotion	20.529
Language (Phonology)	Cognition	19.682
Vision (Motion)	Perception	17.778
Language (Orthography)	Cognition	17.621

Inhibition	Action	17.323
Execution (Speech)	Action	16.502
Space	Cognition	16.443
Vision (Shape)	Perception	16.435
Somesthesis (Pain)	Perception	15.039
Reasoning	Cognition	12.93
Imagination	Action	12.475
Audition	Perception	12.196
Language (Other)	Cognition	11.186
Somesthesis (Other)	Perception	11.016
Vision (Other)	Perception	10.774
Language (Syntax)	Cognition	10.738
Observation	Action	9.809
Music	Cognition	9.349
Time	Cognition	7.822
Motor (Learning)	Action	7.176
Gustation	Perception	6.257
Social	Cognition	6.087
Preparation	Action	5.666
Soma	Cognition	5.375
Fear	Emotion	5.167
Anger	Emotion	5.092
Rest	Action	4.329
Vision (Color)	Perception	4.026
Disgust	Emotion	3.573
Sexuality	Interoception	3.426
Sleep	Interoception	3.224
Other	Interoception	3.118
Anxiety	Emotion	3.045
Sadness	Emotion	3.042

Whole network based on right IFJ seed

Memory (Working)	Cognition	36.904
Attention	Cognition	34.537
Language (Semantics)	Cognition	28.629
Execution (Other)	Action	26.795
Language (Speech)	Cognition	26.774
Memory (Explicit)	Cognition	22.148
Other	Cognition	21.577
Other	Emotion	20.614
Inhibition	Action	18.684
Vision (Motion)	Perception	18.403
Somesthesis (Pain)	Perception	18.069

Language (Phonology)	Cognition	17.505
Space	Cognition	17.205
Vision (Shape)	Perception	16.229
Execution (Speech)	Action	15.761
Language (Orthography)	Cognition	15.347
Audition	Perception	12.055
Imagination	Action	11.835
Vision (Other)	Perception	11.524
Reasoning	Cognition	11.483
Somesthesis (Other)	Perception	11.399
Music	Cognition	10.669
Observation	Action	10
Language (Syntax)	Cognition	9.405
Language (Other)	Cognition	8.809
Time	Cognition	8.339
Motor (Learning)	Action	7.243
Gustation	Perception	6.493
Social	Cognition	6.031
Preparation	Action	5.913
Fear	Emotion	5.371
Soma	Cognition	4.968
Anger	Emotion	4.791
Rest	Action	4.361
Vision (Color)	Perception	4.341
Bladder	Interoception	3.861
Sleep	Interoception	3.812
Sexuality	Interoception	3.691
Disgust	Emotion	3.68
Anxiety	Emotion	3.482
Sadness	Emotion	3.463
Other	Interoception	3.034

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