Behavioral Interpretations of Intrinsic Connectivity Networks

Supplemental Materials

Supplemental Table 1. Metadata Fields in the BrainMap Taxonomy

Metadata Category	Category Definition	Included Metadata Fields
Citation (*f*=13)	Describes publication details	Title, Journal, Month, Year, Medline Number, Volume, Page (From), Page (To), Keywords, Authors, Institution, City, County
Submitter (*f*=6)	Describes individual who submitted to BrainMap	Name, Email, Phone, Academic Level, Institution/Address, Author Status
Prose Description (f=1)	Short text summary of the experimental design	Prose Description
Subjects (*f*=11)	Describes subject group(s) scanned	Group Name, Diagnosis†, ICD Code, Size, Gender, Gender Ratio, Handedness, Native Language, Minimum, Maximum, and Mean Age
Conditions (*f*=10)	Describes experimental set-up for a single scanning period	Condition Name, Stimulus Modality†, Stimulus Type†, Stimulus Description, Response Modality†, Response Type†, Response Description, Instructions†, Instructions Description, External Variable†
Sessions (*f*=3)	Describes multiple periods of scanning and release of subjects (i.e. "before-and-after" investigations)	Single/Multiple Session, Session Name, Session Description
Brain Template (*f*=2)	Describes standard space of the brain after group normalization	Brain Template/Software†, Template Description
Experiments (*f*=20)	Describes contrast of one or more conditions that results in a statistical parametric image	Experiment Name, Context†, Pharmacology†, Imaging Modality†, Modality Description, Subjects, Condition, Activations/Deactivations, Low-Level/High-Level Control, Session, Contrast†, Paradigm†, Behavioral Domain†, Group/Individual Results, Hemisphere, Peak Coordinates (*x*,*y*,*z*), Statistical Unit, Statistical Values, Cluster Extent
Results Synopsis (*f*=1)	Short text summary of findings (taken from published abstract)	Results Synopsis

†Fields selected for quantifying functional properties of ICNs

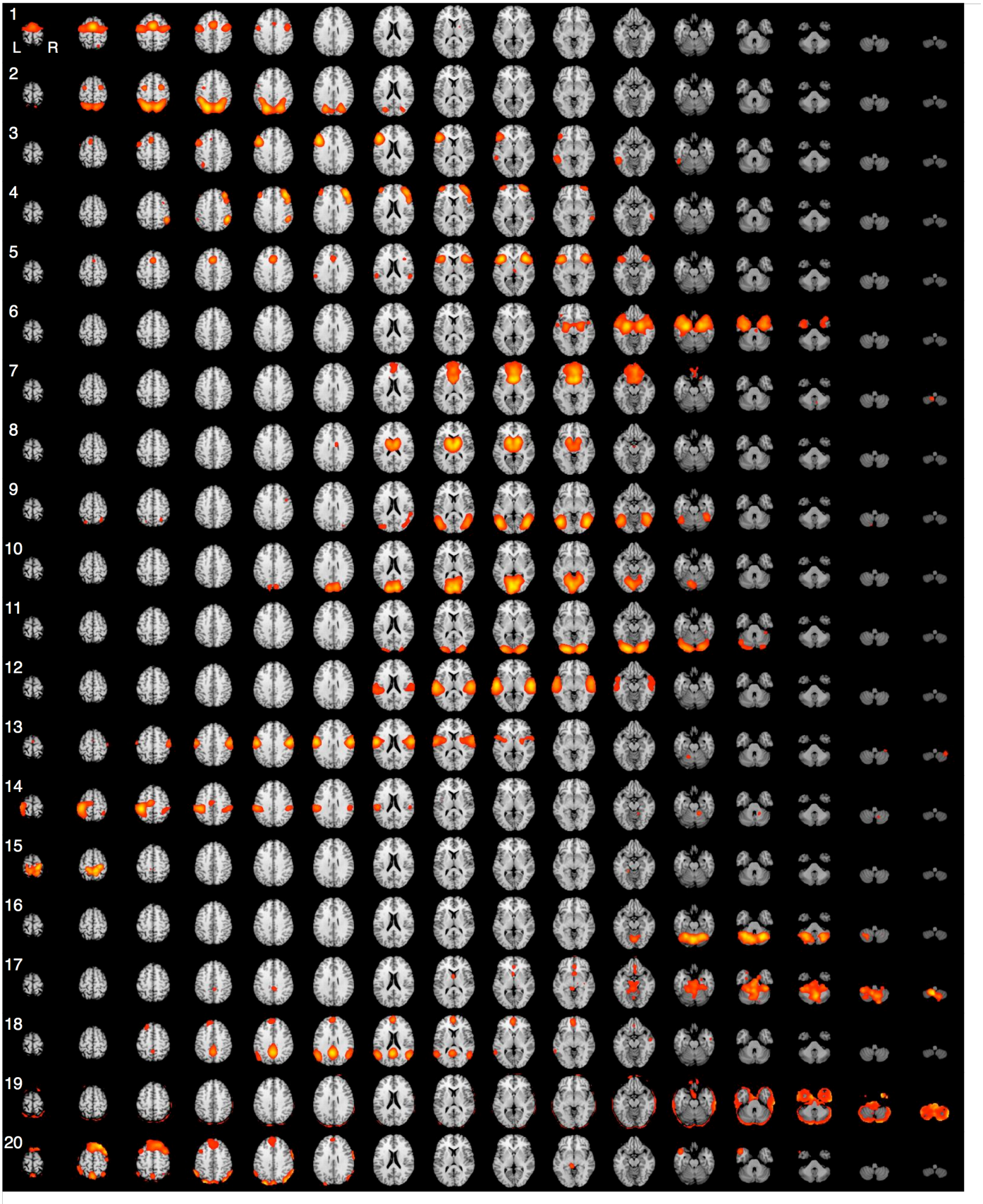
Supplemental Table 2. Metadata Classes in the BrainMap Taxonomy

Metadata Field	Field Definition	Included Metadata Classes
Behavioral Domain[†] (*n*=50[††])	Describes the mental operation or process isolated by the experimental contrast	Action.Execution, Action.Observation, Action.Preparation, Cognition.Attention, Cognition.Language.Semantics, Cognition.Language.Phonology, Cognition.Memory.Working, Cognition.Memory.Explicit, Cognition.Music, Cognition.Reasoning, Cognition.Space, Emotion.Anger, Emotion.Happiness, Emotion.Sadness, Interoception.Air-Hunger, Interoception.Bladder, Interoception.Sexuality, Perception.Audition, Perception.Olfaction, Perception.Vision
Paradigm (*n*=75[††])	Describes the experimental task designed to elicit the targeted behavioral domain	Acupuncture, Anti-Saccades, Breath-Holding, Cued Explicit Recognition, Deception Task, Deductive Reasoning, Episodic Recall, Flanker Task, Go/No-Go, Grasping, Mental Rotation, Micturition Task, Oddball Discrimination, Paired Associate Recall, Rest, Simon Task, Stroop Task, Task Switching, Theory of Mind, Wisconsin Card Sorting Test
Stimulus Modality (*n*=7)	Describes the sensory modality of the stimulus	Auditory, Gustatory, Interoceptive, Olfactory, Tactile, Visual, None
Stimulus Type (*n*=38[††])	Describes the stimulus presented to the subjects being scanned	Asian Characters, Braille Dots, Chord Sequences, Clicks, Digits, Eye Puffs, Faces, False Fonts, Film Clip, Heat, Letters, Music, Noise, Odor, Pictures, Pseudowords, Random Dots, Shapes, Tones, Words
Response Modality (*n*=8)	Describes the body part through which subjects make an overt response	Arm, Foot, Hand, Ocular, Oral/Facial, Pelvis, Torso, None
Response Type (*n*=13)	Describes the response required for successful completion of the task	Button Press, Draw, Finger Tapping, Flexion/Extension, Grasp, Manipulate, Point, Saccades, Smile, Speech, Swallow, Write, None
Instructions (*n*=17)	Describes the rules for producing the desired response	Attend, Count, Detect, Discriminate, Encode, Fixate, Generate, Imagine, Move, Name, Read, Recall, Repeat, Rest, Sing, Smile, Track
External Variable (*n*=15)	Describes any non-imaging measurements acquired during scanning	Accuracy, Behavioral Data, Blood Pressure, Disease Symptom Assessment, Electromyography, Electrooculogram, Heart Rate, None, Pain Rating, Penile Tumescence, Respiratory Data, Response Time, Skin Conductance, Stuttering Rate, Syllable Rate
Contrast (*n*=9)	Describes the experimental features compared when contrasting multiple conditions	Experience Dependent Change, External Variable, Group, Instructions, Response Modality, Response Type, Session, Stimulus Modality, Stimulus Type
Context (*n*=9)	Describes the purpose of the experiment in broad terms	Age Effects, Disease Effects, Drug Effects, Experimental Design Effects, Gender Effects, Learning, Linguistic Effects, Normal Mapping, Treatment Effects
Diagnosis (*n*=18)	Describes the specific disease, disorder, or	Alcoholism, Alzheimer's Disease, Attention Deficit/Hyperactivity Disorder, Autism Spectrum Disorder, Bipolar Disorder, Blindness, Borderline

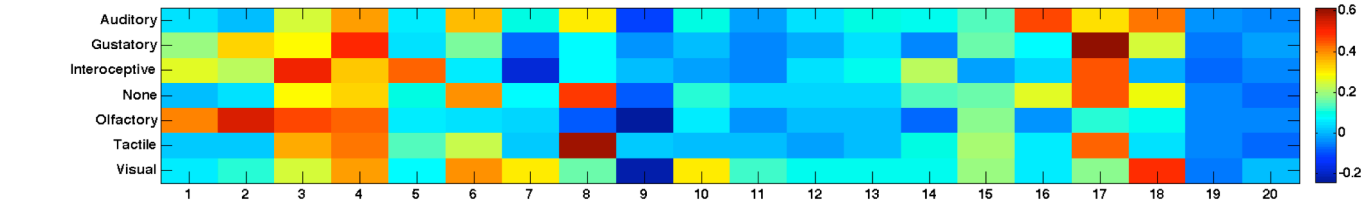
	syndrome investigated	Personality Disorder, Deafness, Depression, Development Stuttering, Normals, Obsessive Compulsive Disorder, Parkinson's Disease, Post-Traumatic Stress Disorder, Recreational Drug Users, Schizophrenia, Smokers, Specific Phobia
Pharmacology (*n*=7)	Describes the specific drug or class of drugs investigated	Alcohol, Amphetamines, Marijuana, Nicotine, Anti-Depressants, Anti-Psychotics, Steroids and Hormones
Imaging Modality (*n*=4)	Describes the functional imaging modality utilized	Magnetoencephalography (MEG), Positron Emission Tomography (PET), Single Photon Emission Computed tomography (SPECT), Functional Magnetic Resonance Imaging (FMRI)
Template (*n*=30[††])	Describes the target brain template utilized during spatial normalization, includes target brain space, software package (also indicates use of Brett Transform to convert MNI/Tal coordinates)	Brett Transform – SPM2, Brett Transform – SPM5, Brett Transform – SPM96, Brett Transform – SPM99, MNI – FSL, MNI – SPM2, MNI – SPM5, MNI – SPM96, MNI – SPM99, Talairach 1967:HD6, Talairach 1967:vf25, Talairach 1988 – AFNI, Talairach 1988 – AIR, Talairach 1988 – BRAINS, Talairach 1988 – Brain Voyager, Talairach 1988 – Human Brain Atlas, Talairach 1988 – LIPSIA, Talairach 1988 – MedX, Talairach 1988 – SPM94, Talairach 1988 – SPM95

[†]Distinct from other metadata fields, the behavioral domains are organized hierarchically, with different levels of the hierarchy indicated as "Domain.Sub-Domain". [††]A random subset of classes is shown for fields with greater than 20 classes; the full description of metadata classes can be found on (http://brainmap.org/taxonomy).

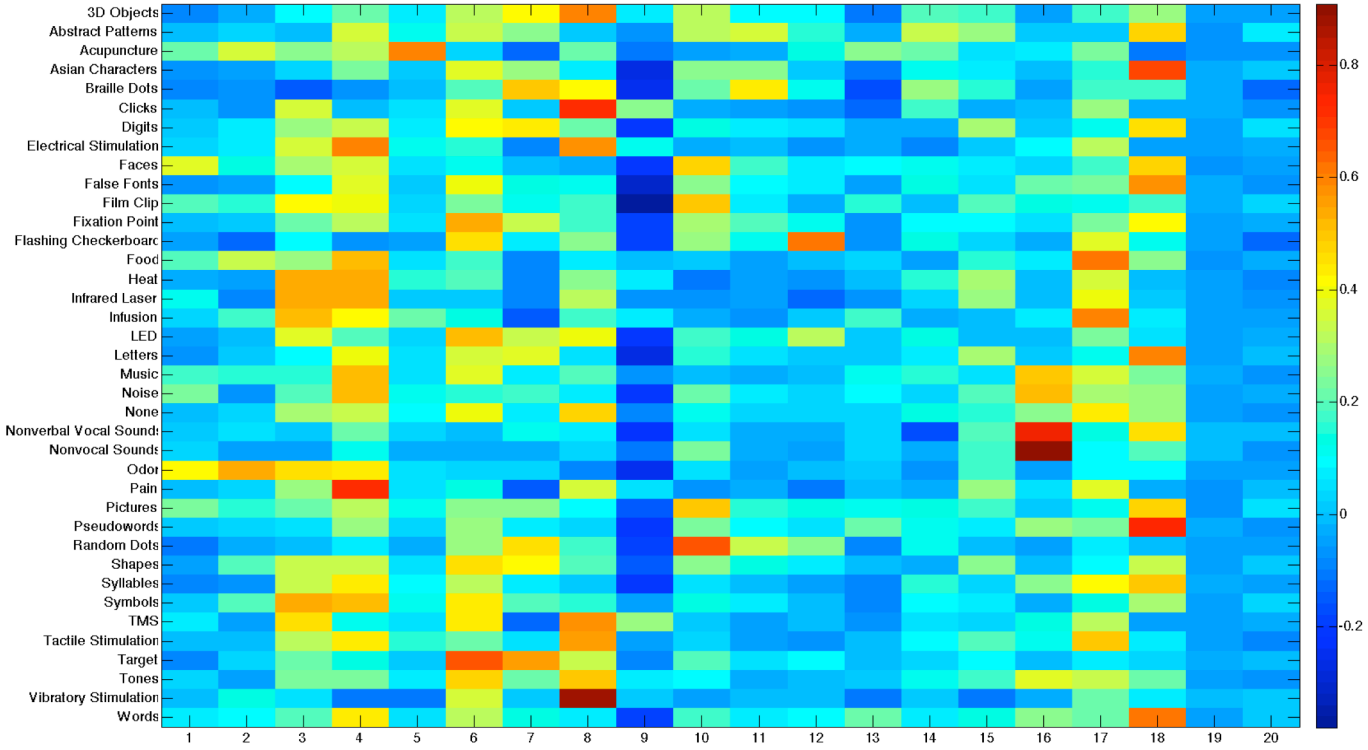
Supplemental Fig. 1. Spatial ICA maps from the 20-component decomposition of 8,637 experiment images extracted from the BrainMap database. ICA maps were converted to *z* statistic images via a normalized mixture-model fit, thresholded at $z > 4$, and viewed on a Talairach space template image (11). Axial slices are shown from z = 66 mm to z = -54 mm at increments of 8 mm.



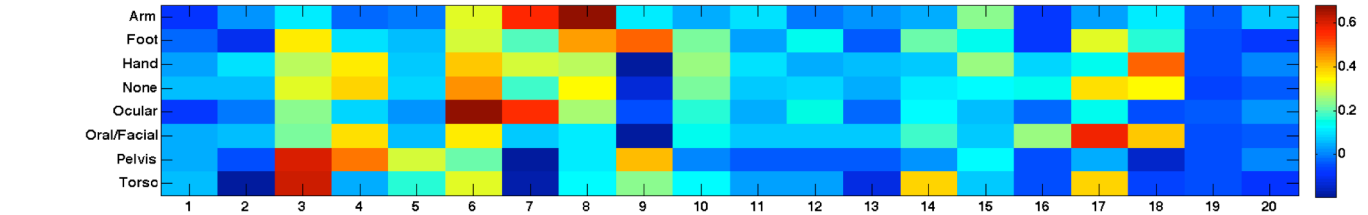
Supplemental Fig. 2. Metadata heat map for stimulus modality



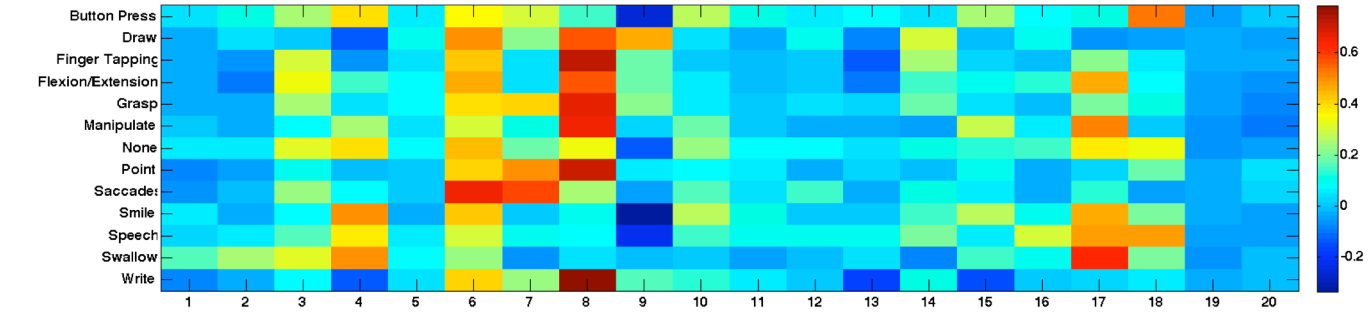
Supplemental Fig. 3. Metadata heat map for stimulus type



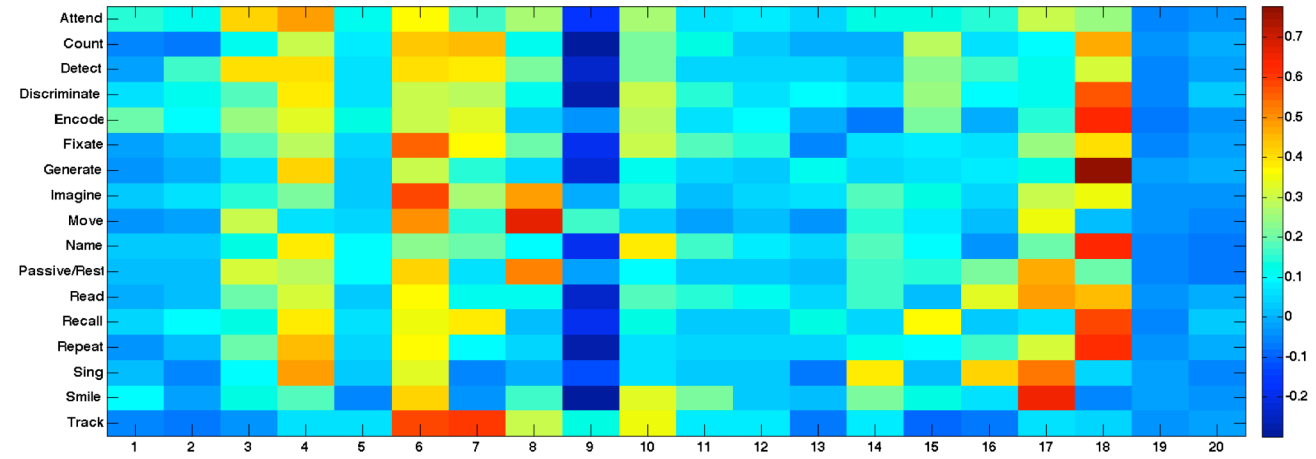
Supplemental Fig. 4. Metadata heat map for response modality



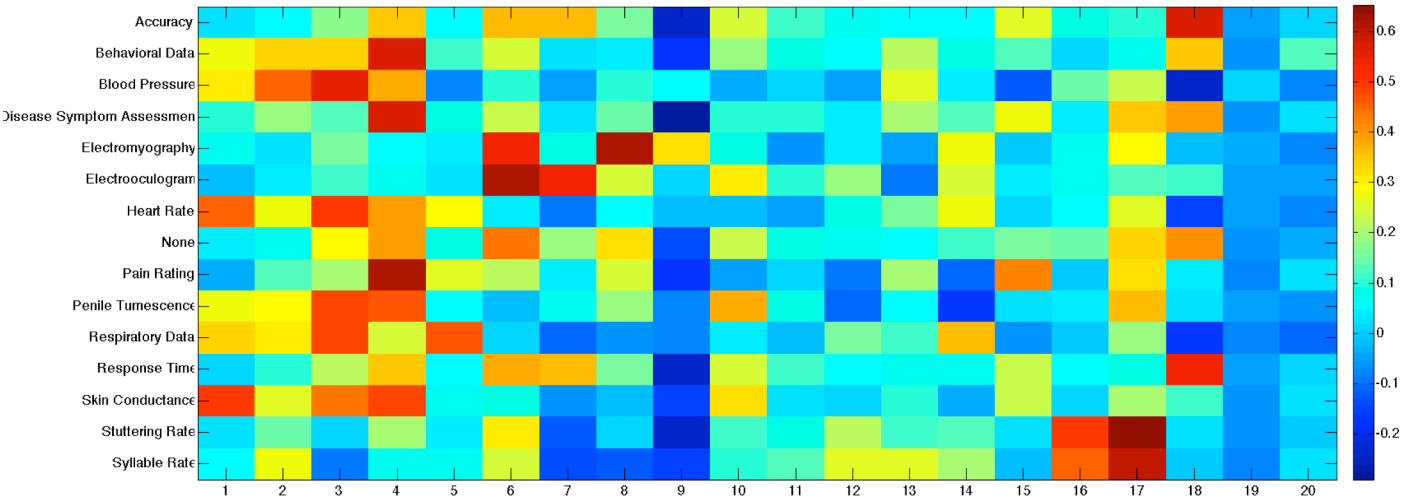
Supplemental Fig. 5. Metadata heat map for response type



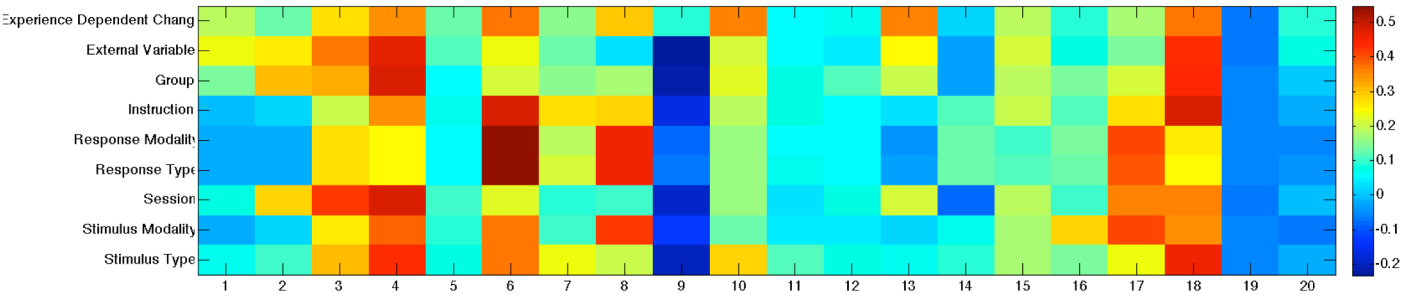
Supplemental Fig. 6. Metadata heat map for instructions



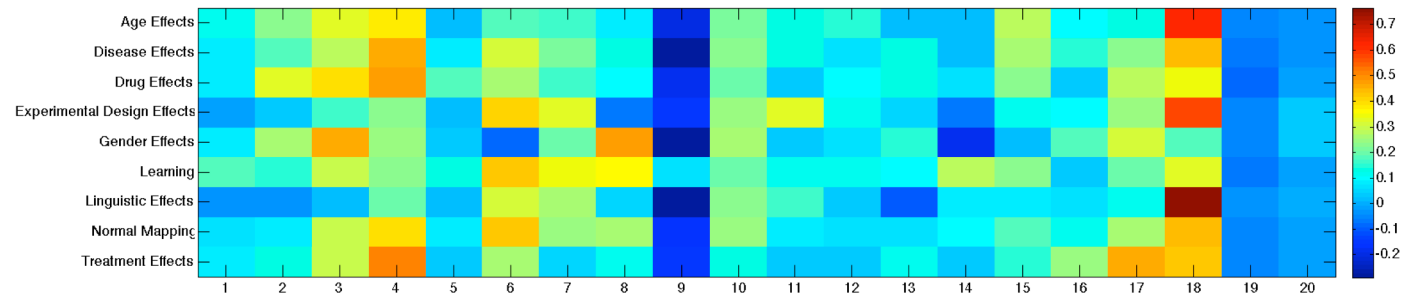
Supplemental Fig. 7. Metadata heat map for external variable



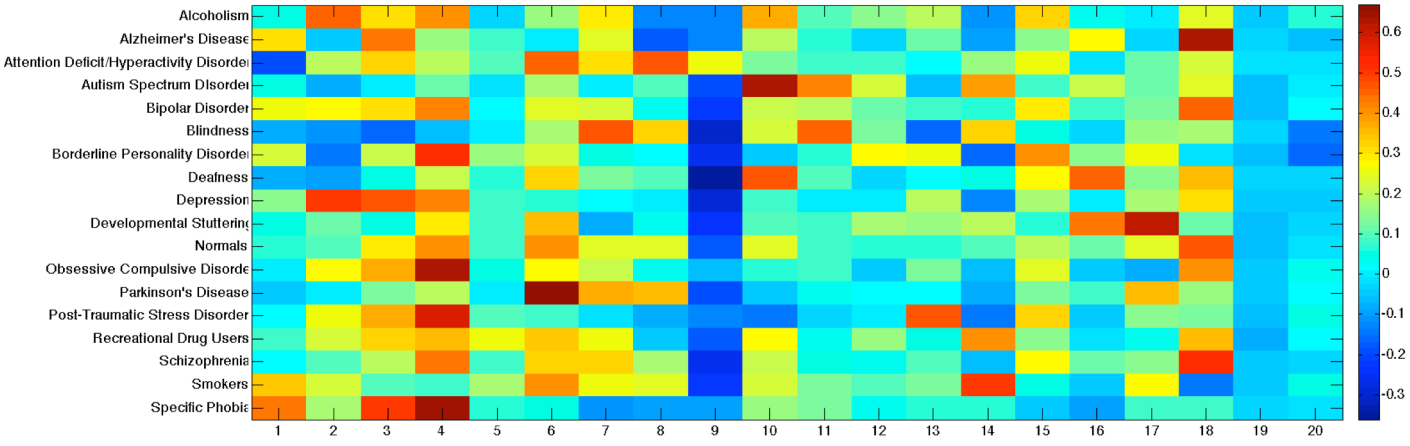
Supplemental Fig. 8. Metadata heat map for experimental contrast



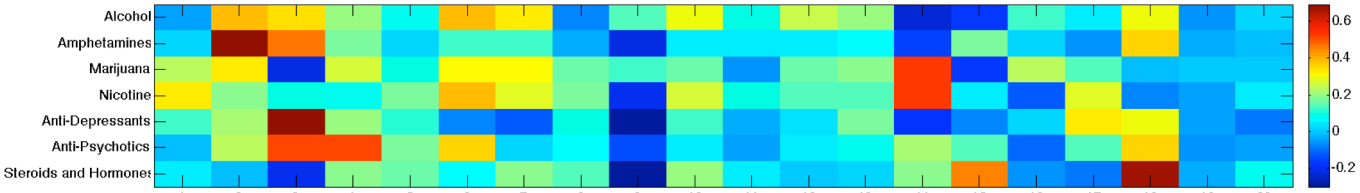
Supplemental Fig. 9. Metadata heat map for experimental context



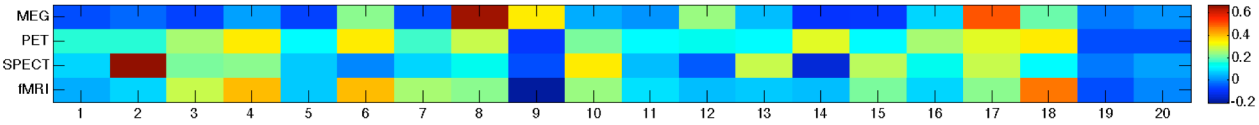
Supplemental Fig. 10. Metadata heat map for subject diagnosis



Supplemental Fig. 11. Metadata heat map for pharmacology



Supplemental Fig. 12. Metadata heat map for functional imaging modality



Supplemental Fig. 13. Metadata heat map for standard brain template and spatial normalization software