



An Incomplete Guide to Figure-Making

Wednesday Analysis Meeting

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Goals and Rules of figure-making

- 6. Don't trust the default
- 7. Avoid "chart-junk"

- 8. Use color effectively

- 4. Adapt to medium
- 5. Captions are not optional

To convey a clear, honest and striking message at first glance.

- 10. Use the right tools

- 9. Don't mislead

- 1. Know your audience
- 2. Identify the message
- 3. Message trumps beauty



Message

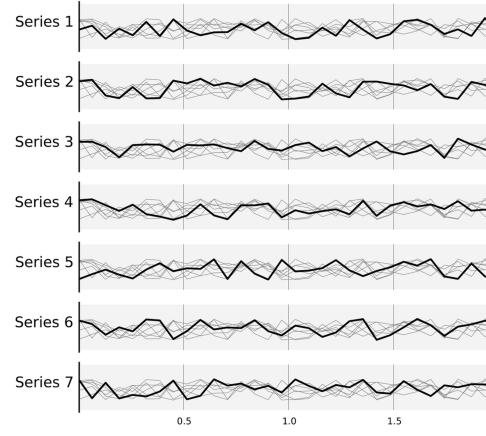
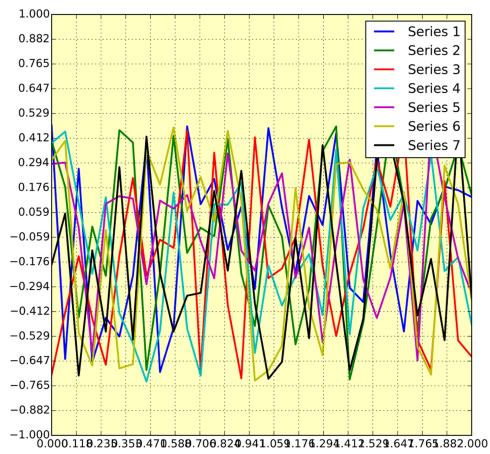
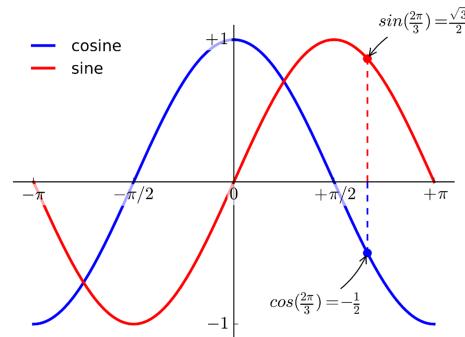
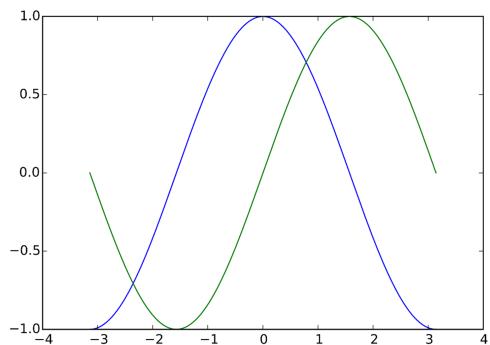
- Who is your audience?
- What is the underlying message and how can a figure best express this message?
- Use this message as a strong guide for the design of the figure.

Medium

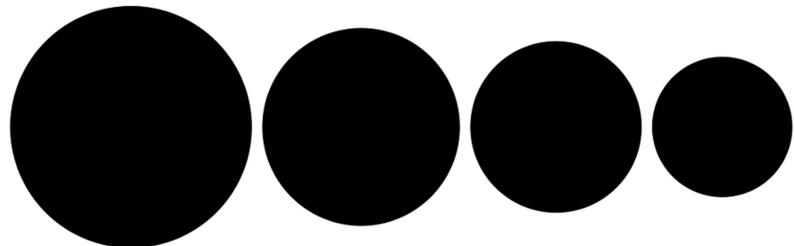
- manuscript vs. slides
- Captions



Clarity

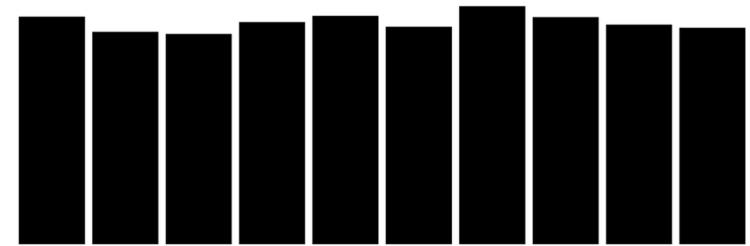
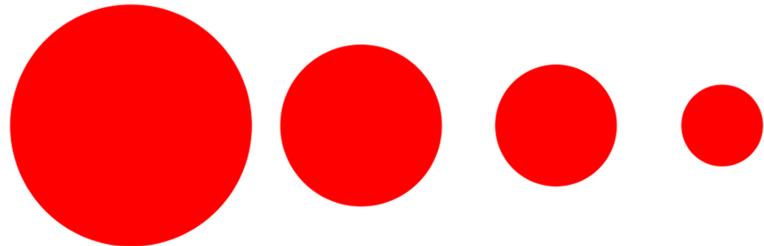


Honesty



Relative size using disc area

Relative size using disc radius

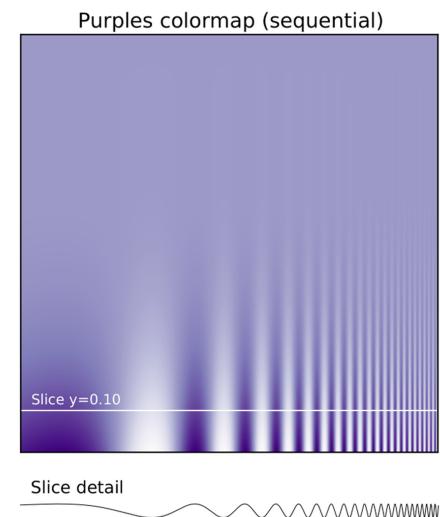
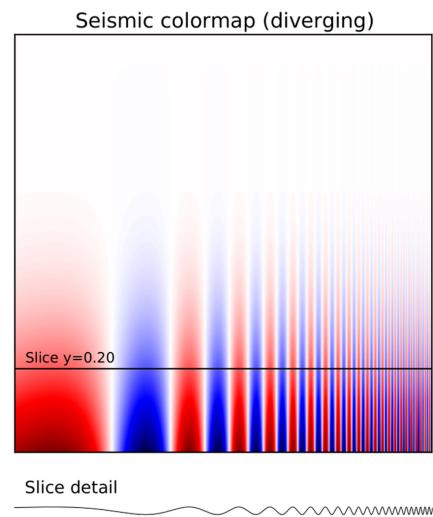
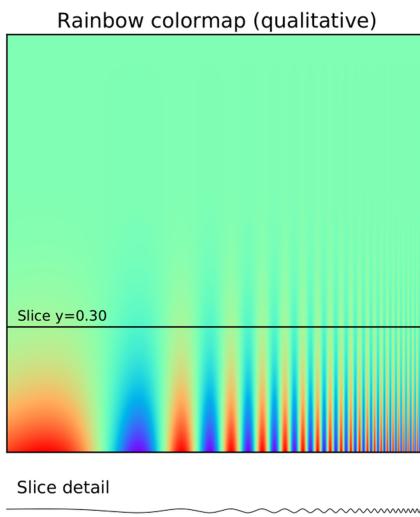


Relative size using full range

Relative size using partial range



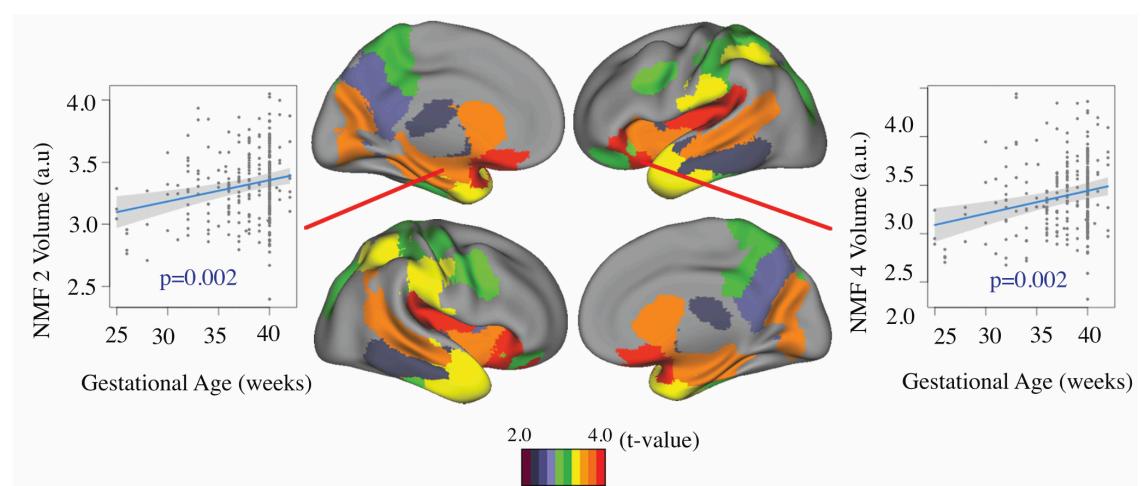
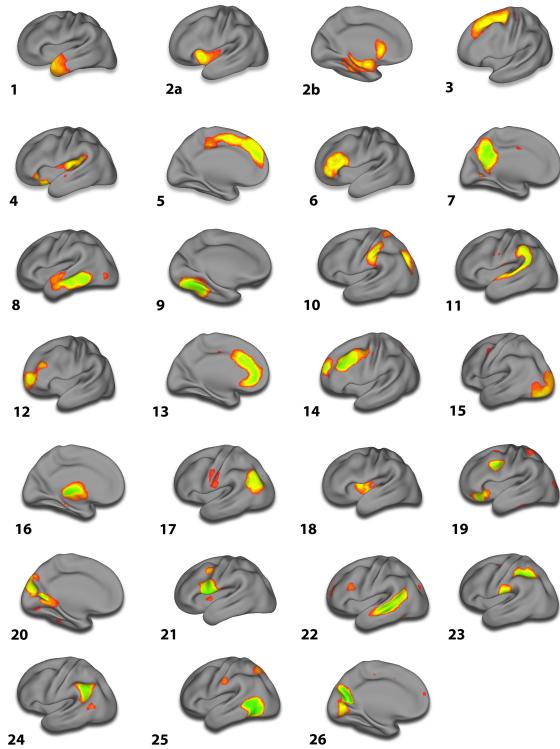
Color

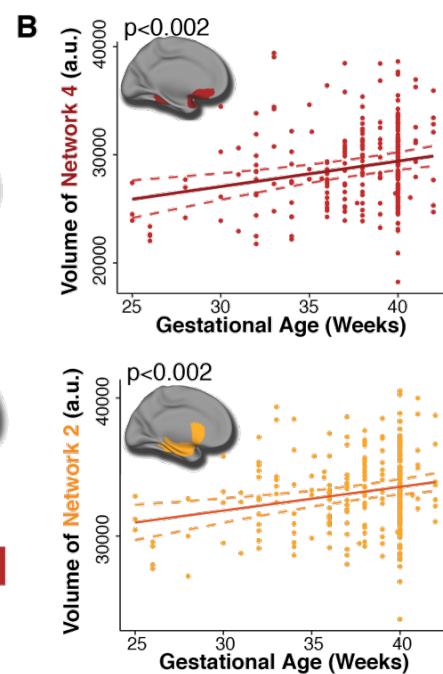
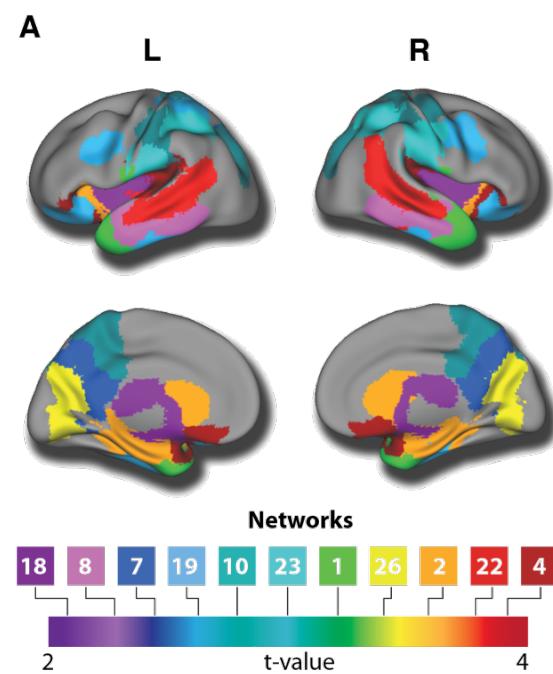
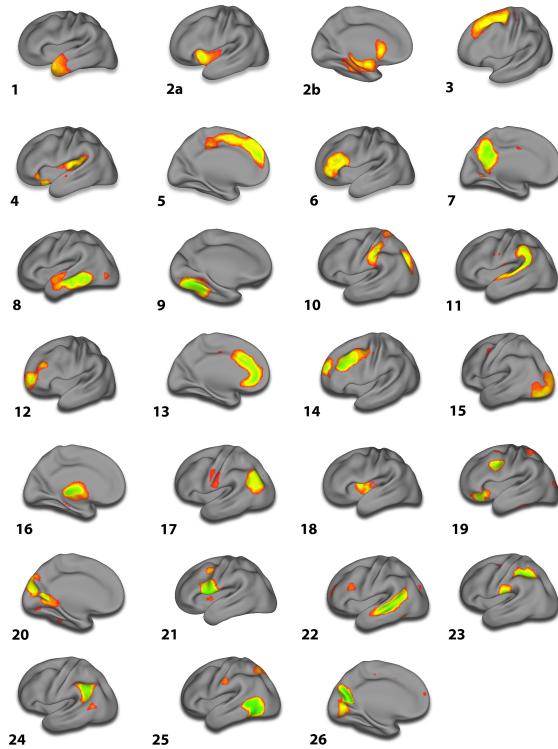




FIGURE

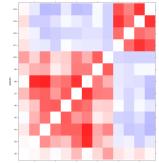






Tools and Workflow

- **R:** create basic components, try to automate as much as possible
 - ggplot2 (cheatsheet: <https://www.rstudio.com/wp-content/uploads/2015/03/ggplot2-cheatsheet.pdf>)
 - levelplot, circular
 - save the plot as a PDF (vector-based)
- **Specalized softwares:** BrainNet Viewer, Connectome Workbench, Gephi
- **Illustrator:** edit individual component of the figure
- **InDesign:** compile individual figures into a multi-panel figure
- **SharedLaTeX:** insert figure at their appropriate places and add figure legend



BrainNet Viewer



ShareLaTeX



Ai: <https://www.youtube.com/watch?v=EOOmA9DeMb4>

Id: https://www.youtube.com/watch?v=iHDy_nEvgd4



Anatomy of a figure

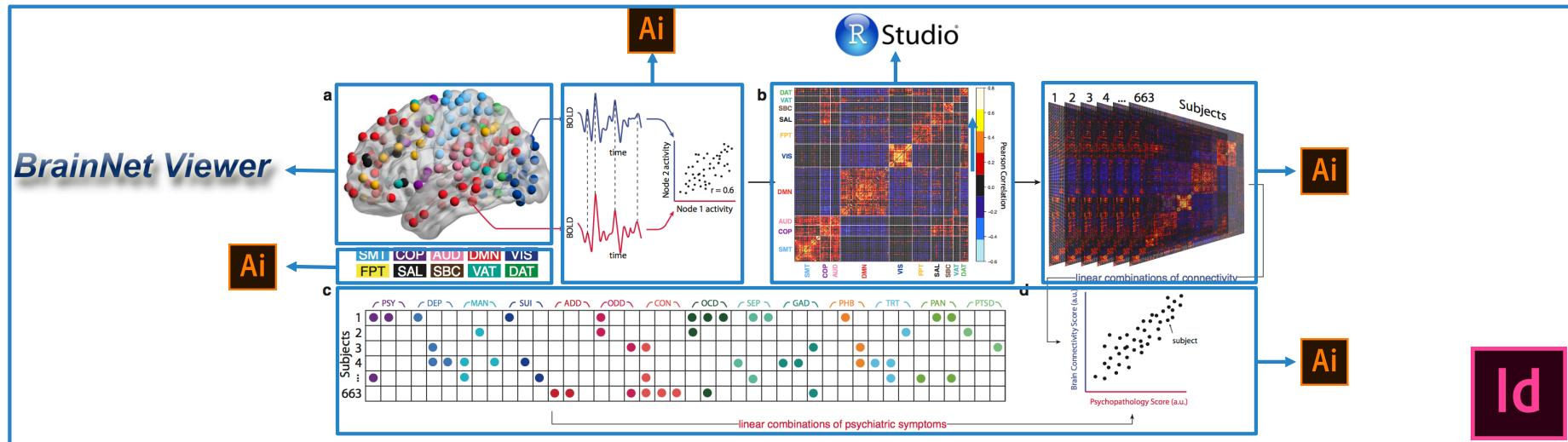
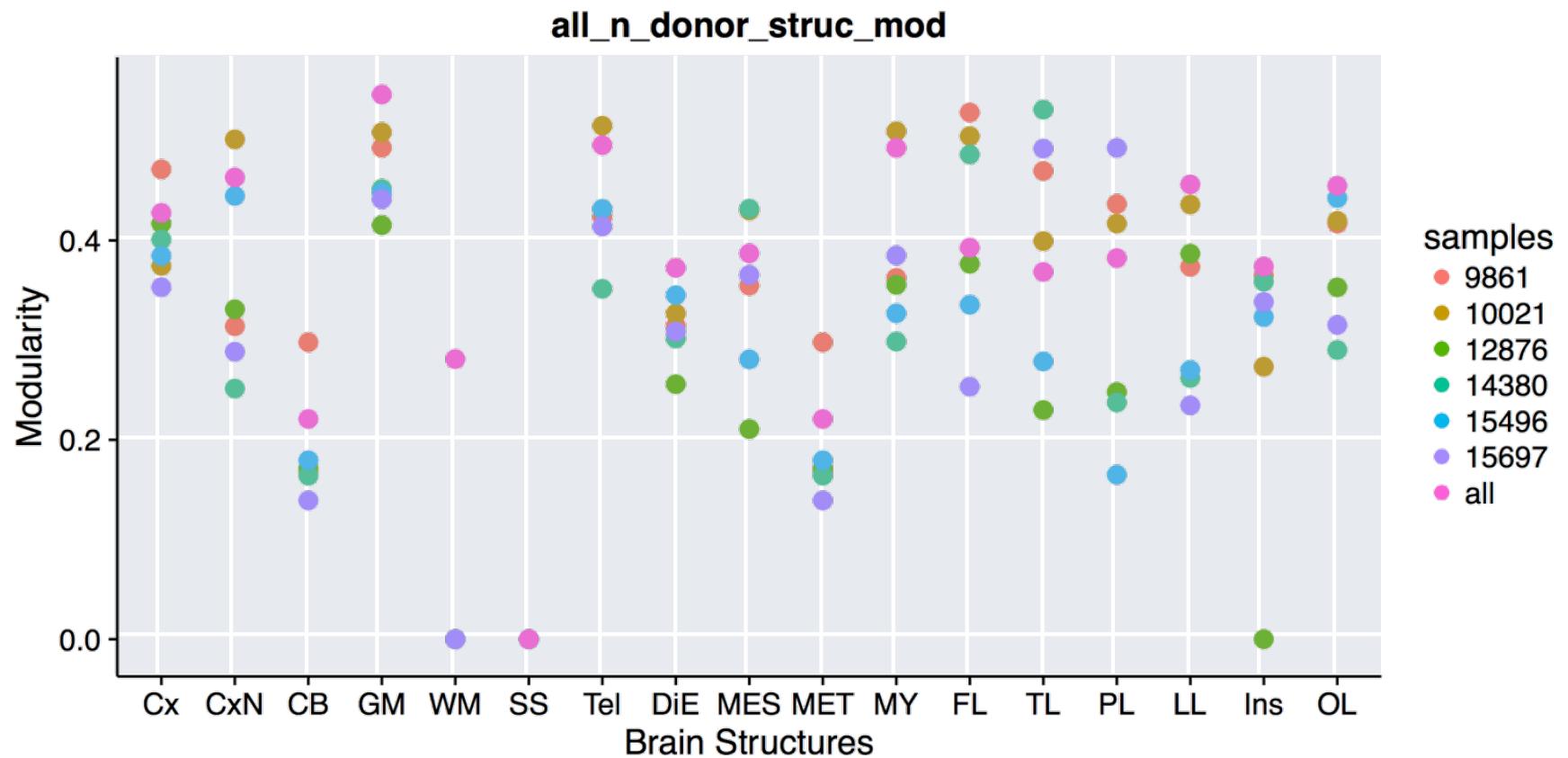
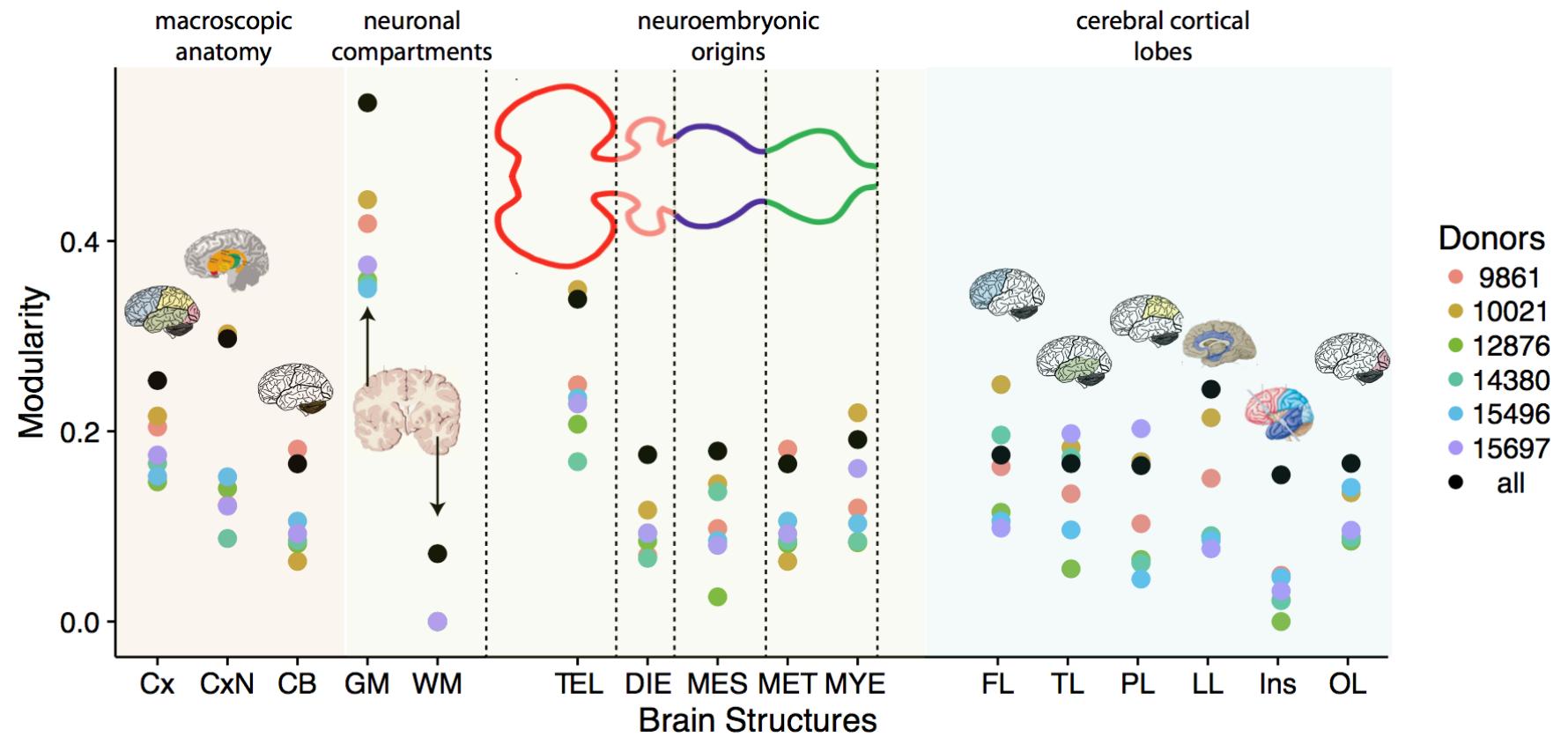
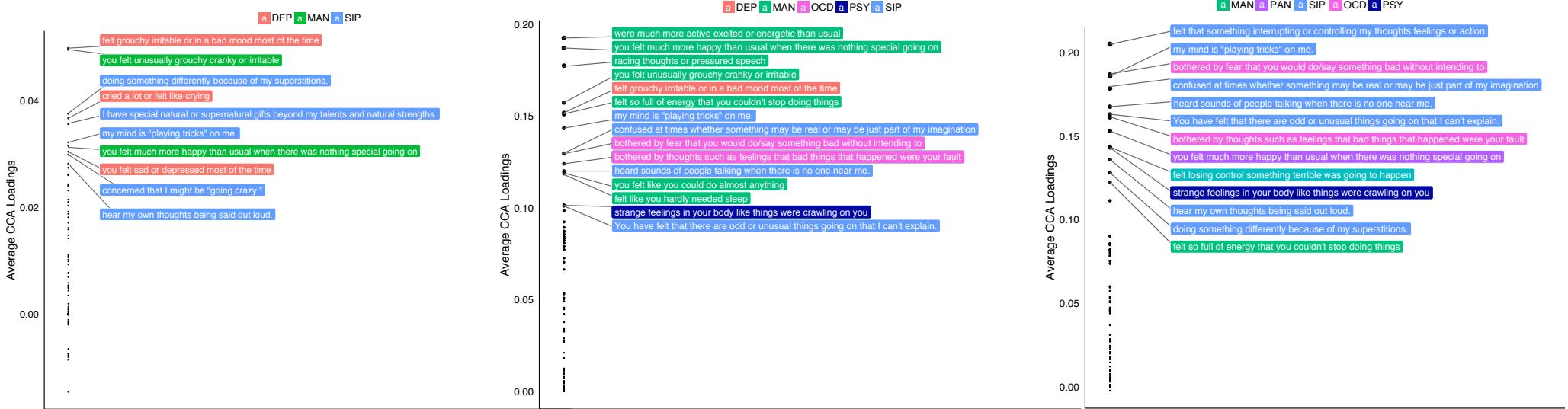


Figure 1 | Schematic of sparse canonical correlation analysis (sCCA). (a) Resting-state fMRI data analysis schematic and workflow. After preprocessing, blood-oxygen-level dependent (BOLD) signal time series were extracted from 264 spherical regions of interest distributed across the cortex and subcortical structures. Nodes of the same color belong to the same *a priori* community as defined by Power et al.¹⁹ (b) A whole-brain, 264×264 functional connectivity matrix was constructed for each subject in the discovery sample ($n = 663$ subjects). (c) Item-level data from a psychiatric screening interview (111 items, based on K-SADS⁸¹) were entered into sCCA as clinical features. (d) sCCA seeks linear combinations of connectivity and clinical symptoms that maximize their correlation. *A priori* community assignment: SMT: somatosensory/motor network; COP: cingulo-opercular network; AUD: auditory network; DMN: default mode network; VIS: visual network; FPT: fronto-parietal network; SAL: salience network; SBC: subcortical network; VAT: ventral attention network; DAT: dorsal attention network; Cerebellar and unsorted nodes not visualized. Psychopathology domains: PSY: psychotic and subthreshold symptoms; DEP: depression; MAN: mania; SUI: suicidality; ADD: attention-deficit hyperactivity disorder; ODD: oppositional defiant disorder; CON: conduct disorder; OCD: obsessive-compulsive disorder; SEP: separation anxiety; GAD: generalized anxiety disorder; PHB: specific phobias; TRT: mental health treatment; PAN: panic disorder; PTSD: post-traumatic stress disorder.











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