ISC Methods point form

Movie: Each participant watched an 10 min clip from the movie ͚Despicable Me͛- fMRI data were collected using the Siemens Prisma (TR = 800ms, TE = 30ms) - Data was preprocessed using SPM, and artifact corrected using 6 motion parameters, Volterra expansion, plus CSF, WM time courses as regressors in a GLM - ISC computed using time course of whole-brain in a leave-one-out manner -Social Responsiveness Scale (SRS)-2: score > 59 suggest deficits in social cognition, social awareness, social communication, social motivation & restricted interests and repetitive behavior

Realign: motion correction – realignment based on first image – using spm\_realign

Coreg\_noss – coregistration of structural to mean EPI output using realignment param. – using spm\_coreg

Norm\_noss – normalizes the subj structural to T1.nii (MNI?) – using spm\_preproc, spm\_normalise

Aamod\_bet – runs FSL brain extraction toolbox on structural

Aamod\_bet\_reslicing – runs epi slicing after BET – spm\_reslice – applies BET parameters to functional data

compSignal – creates regressors for different segmented compartments – (WM, CSF, Out of Brain)

When using these regressors, you could cite my HBM abstract:
% Verhagen L, Grol MJ, Dijkerman HC, Toni I. (2006) Studying visually-
% guided reach to grasp movements in an MR-environment. Human Brain
% Mapping.
%
% or cite my research paper which describes the methods superficially:
% Verhagen L, Dijkerman HC, Grol MJ, Toni I (2008) Perceptuo-motor
% interactions during prehension movements. J Neurosci 28(18):4726-4735
%
% or wait for the upcoming methods paper (a little patience required):
% Verhagen L, Grol MJ, Dijkerman HC, Toni I. Studying visually-guided
% reach to grasp movements in an MR-environment. Manuscript in
% preparation.
%

Norm\_write – spm\_write\_sn – write out warped images

Smooth – Gaussian smoothing – aap.spm\_analysis.FWHM – spm\_smooth (kernel size 8x8x8)

Highpassfilter – high pass filters the data (K)

Listspikes – assesses time series variance, lists all scans with high deviations from mean (parameters defined elsewhere)

Scrubbing model: - ASK BOBBY

-This module creates a first level model intended to denoise fMRI

% timeseries. Columns of the GLM can include: Bandpass filter regressors,

% CSF and WM signals, motion parameters, their lag-3 2nd order volteraa

% expansion, and "spike" regressors".

What is aamod\_firstlevel\_modelestimate\_saveresids – where is the .m file??

Mean epi time course – calculates mean time course for each voxel per subject, and then mean across subjects

Moviecorr\_meantimecourse – correlation of each subject’s timecourse with the mean (Leave one out) – get one R value

– takes a mean of these correlations for an average correlation value across the group

Moviecorr\_summary - stats on individual R values – takes t-tests at each voxel (r values across subjects) to get a summary of which voxels are significantly correlated across the group (significant t values – large correlations across group, not sig. t values – correlations across the group don’t differ from 0)

Spm\_unlink?

Roi\_extract\_BS

Network Based ISC

- Used the Yeo 7 network parcellation to calculate the mean time course for each network, and then calculate a pearson’s correlation for each individual at each network, by using the leave one out method.

- Do the same for the Theory of Mind network from xxx

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Preprocessing:

-Aligned to MNI space

-Spatial smoothing

-High pass filter using a discrete cosine model

Whole brain exploratory ISC analysis

-Get a pearson’s correlation for each individual at each voxel using a leave one out method, by taking the time course for each individual at each voxel and correlate it with the mean time course of the group minus the participant, do a t-test on all the r values obtained for each voxel (FDR corrected to .05), do this within group

Network Based ISC

- Used the Yeo 7 network parcellation to calculate the mean time course for each network, and then calculate a pearson’s correlation for each individual at each network, by using the leave one out method.

- Do the same for the Theory of Mind network from xxx

- Between group ISC: take each individual from one group and calculate the Pearson’s correlation with the mean of the other two groups time courses in these 8 networks.

-calculate t-tests between the different within and between group r values to see if groups differ in how similar they are with their own and other groups.