

PsychoPhysiological Interactions

(a.k.a. PPI)

What is PPI?

- Interactions between tasks (psychology) ...
- ... and BOLD signal (physiology)
- Similar to functional connectivity with resting state analysis, but might focus on difference between 2 task conditions
- Measured above and beyond main task effects

Example: what has a larger component of the left auditory time series during Arel than during Vrel?

- Might be evaluated using difference between PPI betas
- PPI betas are measured above and beyond main (average) task responses
- PPI betas are also measured above overall seed effects

Betas as measures of effect

- Rather than correlation coefficients (r)
- Meaning are more like a task effects
- Not affected by relative cumulative durations of classes
- Should have more reasonable distributions

Compute betas for all task conditions at once

Could temporally partition seed per task, except that the seed contains task convolved with IRF

Work on over-sampled time grid (e.g. 0.1 s)

- Allows for non-TR-locked events and durations
- Decon/Recon steps are almost inverses
- not relying on deconvolution to decide what is BOLD

Overview of processing steps

Generate seed time series

- ROI average of errts from original regression

Deconvolve seed TS to “neural” timing

- Cannot cross run breaks
- Deconvolve using consistent basis function (BLOCK?)

Partition neural seed TS

- Yields one neural time series per task

Re-convolve with basis (per task)

- convolve per run, then concatenate

Add PPI regressors and seed to original regression model

Blame confusing results on literature generated seed location