Distribution of choices in pipelines for signal processing and statistical analysis based on their (dis-)agreement with expected hypotheses outcomes In Agreement In Disagreement Study 2 all Hypotheses (high & low confidence) Study 1 Hypotheses 1, 2 & 7 (high confidence) Study 1 Hypotheses 3, 4, 5 & 6 (low confidence) Single Metric Single Metric Single Metric LowPass Manual Pruning Manual Pruning 40 40 Preprocessing 30 20 20 10 10 Filtering No Filter ed Methods Single Method Single Method Single Method Motion Artifacts Block Averaging Block Averaging AR-IRLS AR-IRLS PCA of the Short Channels PCA of the Short Channels PCA of the Short Chan **HRF** Extraction Short Cha Short Char 15 20 20 20 30 Multiple Regress Other Regressors Estimation Glover Glover Glover **HRF Regressors** HbO only HbO only HbO only Signals for Statistical 15 20 25 30 Metric Signal Type Signal Space Multiple Methods Multiple Methods Multiple Methods Other/Unknow Stat. Method Other/Unknow Stat. Method Statistical Tests 60 60

Mixed Effects Models

Correction

Mixed Effects Models

Correction

Mixed Effects Models

Correction

Significance Level

Statistical

Mult. Comparisons
Correction