**Breakdown of summer activities**

**I. Study A – predictive properties**

Study components:

a. Simulation program - outputs predictions of performance data for different parameters combinations and association structures.

b. Analysis program – outputs graphs of correct/error densities, table of quantiles, table of response proportions for each data set.

c. Simulation – obtain 1296 sets of 10000 trials for each condition

d. Analysis of predictions

e. Write up

Time to complete each component:

a. Simulation program development – 1 day

b. Analysis program development – 2 day

c. Simulation – 5 days

d. Analysis – 3 days

e. Write up – 3 days

Total time to complete: 14 days

**II. Study B – estimation properties**

Study components:

a. Simulation program – reuse from Study A

b. MCMC sampler programs – DE-MCMC for three Bayesian models with results available for analysis after each fit

c. MCMC diagnostics program – traceplots, autocorrelation, Gelman – Rubin statistic

c. RMSE program – obtain a sampling distribution of RMSE

d. Analysis program – outputs tables with RMSE summaries and graphs of sampling distributions

e. Simulating and estimating - 1944 fits given number of participants, conditions, models

f. Analysis of estimation properties

g. Write up

Time to complete each component:

a. MCMC sampler and diagnostics programs – 4 days

b. Simulating and fitting – 10 days

c. RMSE and analysis programs – 2 days (done during the simulation)

d. Analyzing – 3 days (part done during the simulation)

e. Writing up – 3 days

Total time to completion: 18 days

**III. Study C – Benchmark data analysis**

Study components:

a. MCMC sampler programs – DE-MCMC samplers for three Bayesian models

b. MCMC diagnostics program – reuse from study B

c. Posterior inferences program – output graph of posterior densities, table with credible intervals and means

d. Model selection program – calculates BPIC for the three models

e. Posterior predictive program – simulates predictions

f. Predictions analysis program – outputs graphs of correct/error probability density predictions, response proportion predictions, psychometric functions relating stimulus strength to mean response time and response proportion

g. Analyze fits, model selection and predictive accuracy of the best model

h. Write up

Time to complete each component:

a. MCMC sampler programs – 3 days

b. Posterior inference and model selection programs – 2 days

c. Posterior predictive program – 1 day

d. Predictions analysis program – 3 days

e. Model fitting – 2 days

f. Analysis - 5 days

g. Write up – 5 days

Total time to completion: 21 days

**Total time: 53 days**