CFA\_Children\_FactorChecks

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# Selection of task DVs

* All DVs have been scaled to values between 0 and 1 with higher values indicating better performance.
* Inhibition tasks: proportion correct searches in *first trial*. First trial performance shows signature of prepotent response. Comparability to chimpanzees with first session.
* Shifting tasks: Shifting Boxes: Proportion correct in the CD phase (as measure of susceptibility to interference from anonther stimulus dimension); Shifting Shelf task: proportion of platform switches; Shifting Trays task: proportion correct.
* Working memory: WM Boxes and WM Updating (both platforms): proportion of correct choices; WM Grid: proximity of first choice to the baited compartment (ranging between 0 and 1). DVs capture the test performance (in the presence of a secondary task).

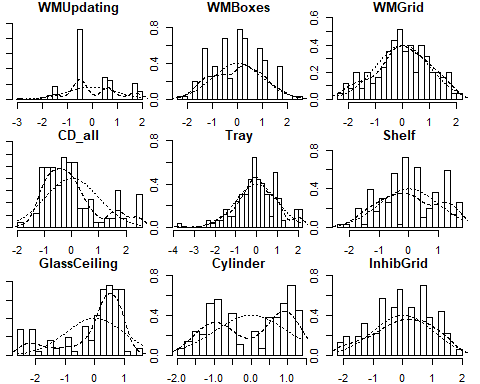
#LOAD DATA  
setwd("C:\\")#sets the working directory, this is where your datafile is  
CFA <-read.csv("CombinedFile\_CFA.csv",header=TRUE, sep = ";")

# We scale the variables according to testing location

Edi <- subset(CFA, TestingLocation == "Edinburgh")  
Fife <- subset(CFA, TestingLocation == "Fife")  
Edi$WMUpdating <- scale(Edi$WMUpdating)  
Edi$WMBoxes <- scale(Edi$WMBoxes)  
Edi$WMGrid <- scale(Edi$WMGrid)  
Edi$CD\_all <- scale(Edi$CD\_all)  
Edi$Tray <- scale(Edi$Tray)  
Edi$Shelf <- scale(Edi$Shelf)  
Edi$GlassCeiling <- scale(Edi$GlassCeiling)  
Edi$Cylinder <- scale(Edi$Cylinder)  
Edi$InhibGrid <- scale(Edi$InhibGrid)

Fife$WMUpdating <- scale(Fife$WMUpdating)  
Fife$WMBoxes <- scale(Fife$WMBoxes)  
Fife$WMGrid <- scale(Fife$WMGrid)  
Fife$CD\_all <- scale(Fife$CD\_all)  
Fife$Tray <- scale(Fife$Tray)  
Fife$Shelf <- scale(Fife$Shelf)  
Fife$GlassCeiling <- scale(Fife$GlassCeiling)  
Fife$Cylinder <- scale(Fife$Cylinder)  
Fife$InhibGrid <- scale(Fife$InhibGrid)  
  
CFA\_new <- rbind(Fife, Edi)

# Assumptions



# Fit models

fit\_model = function(model) {  
 fit = bcfa(model, data = CFA\_new, orthogonal=TRUE, adapt = 500, burnin = 2500, sample = 5000, n.chains = 4, control=list(adapt\_delta=0.95), bcontrol=list(cores=3))  
 return(fit)  
}  
  
  
model.WM <- 'F1 =~ WMUpdating + WMBoxes + WMGrid'  
model.WM.null <- 'F1 =~ WMUpdating   
 F2 =~ WMBoxes  
 F3 =~ WMGrid'  
  
model.Inhibition <- 'F1 =~ Cylinder + InhibGrid + GlassCeiling'   
model.Inhibition.null <- 'F1 =~ Cylinder  
 F2 =~ InhibGrid  
 F3 =~ GlassCeiling'   
  
  
model.Shifting <- 'F1 =~ CD\_all + Shelf + Tray'  
model.Shifting.null <- 'F1 =~ CD\_all  
 F2 =~ Shelf  
 F3 =~ Tray'  
  
  
  
# Fit each of the models  
bfit.model.WM = fit\_model(model.WM)

## blavaan NOTE: Posterior predictives with missing data are currently very slow.  
## Consider setting test="none".

## Warning: There were 284 divergent transitions after warmup. Increasing adapt\_delta above 0.8 may help. See  
## http://mc-stan.org/misc/warnings.html#divergent-transitions-after-warmup

## Warning: Examine the pairs() plot to diagnose sampling problems

## Computing posterior predictives...

bfit.model.WM.null = fit\_model(model.WM.null)

## blavaan NOTE: Posterior predictives with missing data are currently very slow.  
## Consider setting test="none".  
##   
## Computing posterior predictives...

bfit.model.Inhibition = fit\_model(model.Inhibition)

## blavaan NOTE: Posterior predictives with missing data are currently very slow.  
## Consider setting test="none".

## Warning: There were 205 divergent transitions after warmup. Increasing adapt\_delta above 0.8 may help. See  
## http://mc-stan.org/misc/warnings.html#divergent-transitions-after-warmup  
  
## Warning: Examine the pairs() plot to diagnose sampling problems

## Warning: The largest R-hat is 1.09, indicating chains have not mixed.  
## Running the chains for more iterations may help. See  
## http://mc-stan.org/misc/warnings.html#r-hat

## Warning: Bulk Effective Samples Size (ESS) is too low, indicating posterior means and medians may be unreliable.  
## Running the chains for more iterations may help. See  
## http://mc-stan.org/misc/warnings.html#bulk-ess

## Warning: Tail Effective Samples Size (ESS) is too low, indicating posterior variances and tail quantiles may be unreliable.  
## Running the chains for more iterations may help. See  
## http://mc-stan.org/misc/warnings.html#tail-ess

## Computing posterior predictives...

## Warning in blavaan(model, data = CFA\_new, orthogonal = TRUE, control =  
## list(adapt\_delta = 0.95), : blavaan WARNING: Small effective sample sizes  
## (< 100) for some parameters.

bfit.model.Inhibition.null = fit\_model(model.Inhibition.null)

## blavaan NOTE: Posterior predictives with missing data are currently very slow.  
## Consider setting test="none".  
##   
## Computing posterior predictives...

bfit.model.Shifting = fit\_model(model.Shifting)

## blavaan NOTE: Posterior predictives with missing data are currently very slow.  
## Consider setting test="none".

## Warning: There were 91 divergent transitions after warmup. Increasing adapt\_delta above 0.8 may help. See  
## http://mc-stan.org/misc/warnings.html#divergent-transitions-after-warmup

## Warning: Examine the pairs() plot to diagnose sampling problems

## Warning: Bulk Effective Samples Size (ESS) is too low, indicating posterior means and medians may be unreliable.  
## Running the chains for more iterations may help. See  
## http://mc-stan.org/misc/warnings.html#bulk-ess

## Warning: Tail Effective Samples Size (ESS) is too low, indicating posterior variances and tail quantiles may be unreliable.  
## Running the chains for more iterations may help. See  
## http://mc-stan.org/misc/warnings.html#tail-ess

## Computing posterior predictives...

bfit.model.Shifting.null = fit\_model(model.Shifting.null)

## blavaan NOTE: Posterior predictives with missing data are currently very slow.  
## Consider setting test="none".  
##   
## Computing posterior predictives...

save.image("~/CFA\_Blavaan\_ModelChecks.RData")

# Compare models

## WM

blavCompare(bfit.model.WM.null, bfit.model.WM)

## Warning: 1 (0.5%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

##   
## WAIC estimates:   
## object1: 1310.62   
## object2: 1310.491   
##   
## WAIC difference & SE:   
## -0.065 0.967   
##   
## LOO estimates:   
## object1: 1310.625   
## object2: 1310.521   
##   
## LOO difference & SE:   
## -0.052 0.968   
##   
## Laplace approximation to the log-Bayes factor  
## (experimental; positive values favor object1): 3.288

## Inhibition

blavCompare(bfit.model.Inhibition.null, bfit.model.Inhibition)

##   
## WAIC estimates:   
## object1: 1222.691   
## object2: 1223.454   
##   
## WAIC difference & SE:   
## -0.381 0.507   
##   
## LOO estimates:   
## object1: 1222.697   
## object2: 1223.46   
##   
## LOO difference & SE:   
## -0.381 0.507   
##   
## Laplace approximation to the log-Bayes factor  
## (experimental; positive values favor object1): 2.608

## Shifting

blavCompare(bfit.model.Shifting.null, bfit.model.Shifting)

## Warning: 1 (0.6%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.  
  
## Warning: 1 (0.6%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

##   
## WAIC estimates:   
## object1: 1231.986   
## object2: 1218.944   
##   
## WAIC difference & SE:   
## -6.521 4.295   
##   
## LOO estimates:   
## object1: 1231.999   
## object2: 1218.994   
##   
## LOO difference & SE:   
## -6.503 4.297   
##   
## Laplace approximation to the log-Bayes factor  
## (experimental; positive values favor object1): 1.254

# Calculate WAIC values for the models

get\_waic = function(object1) {  
 lavopt1 <- object1@Options  
 lavopt1$estimator <- "ML"  
 ll1 = case\_lls(object1@external$mcmcout, object1@Model,   
 object1@ParTable, object1@SampleStats, lavopt1, object1@Cache,   
 object1@Data, make\_mcmc(object1@external$mcmcout))  
 return(waic(ll1))  
}  
environment(get\_waic) <- asNamespace('blavaan')  
get\_waic(bfit.model.WM)

## Warning: 1 (0.5%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

##   
## Computed from 20000 by 185 log-likelihood matrix  
##   
## Estimate SE  
## elpd\_waic -655.2 19.8  
## p\_waic 7.4 0.8  
## waic 1310.5 39.5

## Warning: 1 (0.5%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

get\_waic(bfit.model.WM.null)

##   
## Computed from 20000 by 185 log-likelihood matrix  
##   
## Estimate SE  
## elpd\_waic -655.3 19.8  
## p\_waic 5.1 0.4  
## waic 1310.6 39.6

get\_waic(bfit.model.Inhibition)

##   
## Computed from 20000 by 166 log-likelihood matrix  
##   
## Estimate SE  
## elpd\_waic -611.7 16.7  
## p\_waic 6.1 0.5  
## waic 1223.5 33.5

get\_waic(bfit.model.Inhibition.null)

##   
## Computed from 20000 by 166 log-likelihood matrix  
##   
## Estimate SE  
## elpd\_waic -611.3 16.8  
## p\_waic 5.1 0.4  
## waic 1222.7 33.5

get\_waic(bfit.model.Shifting)

## Warning: 1 (0.6%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

##   
## Computed from 20000 by 172 log-likelihood matrix  
##   
## Estimate SE  
## elpd\_waic -609.5 21.0  
## p\_waic 8.4 1.2  
## waic 1218.9 42.0

## Warning: 1 (0.6%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

get\_waic(bfit.model.Shifting.null)

## Warning: 1 (0.6%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

##   
## Computed from 20000 by 172 log-likelihood matrix  
##   
## Estimate SE  
## elpd\_waic -616.0 21.6  
## p\_waic 5.9 0.8  
## waic 1232.0 43.1

## Warning: 1 (0.6%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

# Get fit measures

fm.WM<-fitMeasures(bfit.model.WM)

## Warning: 1 (0.5%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

fm.WM.null<-fitMeasures(bfit.model.WM.null)  
fm.Inhibition<-fitMeasures(bfit.model.Inhibition)  
fm.Inhibition.null<-fitMeasures(bfit.model.Inhibition.null)  
fm.Shifting<-fitMeasures(bfit.model.Shifting)

## Warning: 1 (0.6%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

fm.Shifting.null<-fitMeasures(bfit.model.Shifting.null)

## Warning: 1 (0.6%) p\_waic estimates greater than 0.4. We recommend trying  
## loo instead.

# Put fit measures into a table

rbind(fm.WM, fm.WM.null, fm.Inhibition, fm.Inhibition.null, fm.Shifting, fm.Shifting.null)

## npar logl ppp bic dic p\_dic  
## fm.WM 9 -651.4926 0.15935 1349.920 1302.847 -0.06934704  
## fm.WM.null 6 -649.7549 0.06320 1330.799 1311.333 5.91140399  
## fm.Inhibition 9 -605.3936 0.48585 1256.741 1223.752 6.48255557  
## fm.Inhibition.null 6 -605.7724 0.47930 1242.181 1223.420 5.93746264  
## fm.Shifting 9 -607.9393 0.45200 1262.154 1204.573 -5.65262698  
## fm.Shifting.null 6 -610.0251 0.00445 1250.900 1231.822 5.88606963  
## waic p\_waic se\_waic looic p\_loo se\_loo  
## fm.WM 1310.491 7.447855 39.51194 1310.521 7.462922 39.51757  
## fm.WM.null 1310.620 5.120201 39.60275 1310.625 5.122733 39.60312  
## fm.Inhibition 1223.454 6.085795 33.47972 1223.460 6.088996 33.48008  
## fm.Inhibition.null 1222.691 5.116874 33.51158 1222.697 5.120065 33.51218  
## fm.Shifting 1218.944 8.442160 41.99473 1218.994 8.466812 42.00614  
## fm.Shifting.null 1231.986 5.916162 43.14572 1231.999 5.922815 43.14844  
## margloglik  
## fm.WM -678.2101  
## fm.WM.null -674.9221  
## fm.Inhibition -633.3396  
## fm.Inhibition.null -630.7317  
## fm.Shifting -636.2961  
## fm.Shifting.null -635.0421

# Summaries for all models

## WM

summary(bfit.model.WM, neff=TRUE)

## blavaan (0.3-10) results of 5000 samples after 2500 adapt/burnin iterations  
##   
## Number of observations 185  
##   
## Number of missing patterns 4  
##   
## Statistic MargLogLik PPP  
## Value -678.210 0.159  
##   
## Latent Variables:  
## Estimate Post.SD pi.lower pi.upper Rhat neff  
## F1 =~   
## WMUpdating 1.000 NA NA  
## WMBoxes -1.289 6.712 -16.561 12.903 1.002 3261.695  
## WMGrid 2.533 6.823 -12.284 16.683 1.003 3220.478  
## Prior   
##   
##   
## normal(0,10)  
## normal(0,10)  
##   
## Intercepts:  
## Estimate Post.SD pi.lower pi.upper Rhat neff  
## .WMUpdating -0.000 0.075 -0.151 0.148 1.000 7214.606  
## .WMBoxes 0.003 0.084 -0.16 0.169 1.001 7493.228  
## .WMGrid -0.007 0.090 -0.185 0.17 1.000 6960.671  
## F1 0.000 NA NA  
## Prior   
## normal(0,32)  
## normal(0,32)  
## normal(0,32)  
##   
##   
## Variances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff  
## .WMUpdating 0.981 0.118 0.759 1.215 1.001 2582.981  
## .WMBoxes 0.813 0.322 0.016 1.217 1.004 1756.283  
## .WMGrid 0.708 0.378 0.003 1.229 1.009 1426.847  
## F1 0.027 0.057 0 0.176 1.006 901.881  
## Prior   
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]

## WM null

summary(bfit.model.WM.null, neff=TRUE)

## blavaan (0.3-10) results of 5000 samples after 2500 adapt/burnin iterations  
##   
## Number of observations 185  
##   
## Number of missing patterns 4  
##   
## Statistic MargLogLik PPP  
## Value -674.922 0.063  
##   
## Latent Variables:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## F1 =~   
## WMUpdating 1.000 NA NA  
## F2 =~   
## WMBoxes 1.000 NA NA  
## F3 =~   
## WMGrid 1.000 NA NA  
## Prior   
##   
##   
##   
##   
##   
##   
##   
## Covariances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## F1 ~~   
## F2 0.000 NA NA  
## F3 0.000 NA NA  
## F2 ~~   
## F3 0.000 NA NA  
## Prior   
##   
##   
##   
##   
##   
##   
## Intercepts:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## .WMUpdating 0.001 0.074 -0.144 0.148 1.000 25145.721  
## .WMBoxes -0.001 0.083 -0.165 0.161 1.000 24641.503  
## .WMGrid 0.000 0.089 -0.176 0.174 1.000 26308.841  
## F1 0.000 NA NA  
## F2 0.000 NA NA  
## F3 0.000 NA NA  
## Prior   
## normal(0,32)  
## normal(0,32)  
## normal(0,32)  
##   
##   
##   
##   
## Variances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## .WMUpdating 0.000 NA NA  
## .WMBoxes 0.000 NA NA  
## .WMGrid 0.000 NA NA  
## F1 1.009 0.106 0.822 1.238 1.000 28032.286  
## F2 1.011 0.120 0.804 1.27 1.000 27004.756  
## F3 1.011 0.129 0.789 1.296 1.000 27649.342  
## Prior   
##   
##   
##   
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]

## Inhibition

summary(bfit.model.Inhibition, neff=TRUE)

## blavaan (0.3-10) results of 5000 samples after 2500 adapt/burnin iterations  
##   
## Used Total  
## Number of observations 166 185  
##   
## Number of missing patterns 6  
##   
## Statistic MargLogLik PPP  
## Value -633.340 0.486  
##   
## Latent Variables:  
## Estimate Post.SD pi.lower pi.upper Rhat neff  
## F1 =~   
## Cylinder 1.000 NA NA  
## InhibGrid 2.299 7.510 -14.204 18.851 1.030 128.726  
## GlassCeiling 1.479 7.061 -14.315 17.097 1.006 1631.268  
## Prior   
##   
##   
## normal(0,10)  
## normal(0,10)  
##   
## Intercepts:  
## Estimate Post.SD pi.lower pi.upper Rhat neff  
## .Cylinder -0.002 0.081 -0.161 0.158 1.006 1400.408  
## .InhibGrid -0.011 0.087 -0.188 0.157 1.046 93.914  
## .GlassCeiling 0.004 0.087 -0.167 0.171 1.012 750.416  
## F1 0.000 NA NA  
## Prior   
## normal(0,32)  
## normal(0,32)  
## normal(0,32)  
##   
##   
## Variances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff  
## .Cylinder 0.992 0.121 0.772 1.253 1.019 202.218  
## .InhibGrid 0.837 0.275 0.198 1.211 1.159 22.934  
## .GlassCeiling 0.914 0.213 0.378 1.25 1.017 394.979  
## F1 0.012 0.024 0 0.073 1.032 143.619  
## Prior   
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]

## Inhibition.null

summary(bfit.model.Inhibition.null, neff=TRUE)

## blavaan (0.3-10) results of 5000 samples after 2500 adapt/burnin iterations  
##   
## Used Total  
## Number of observations 166 185  
##   
## Number of missing patterns 6  
##   
## Statistic MargLogLik PPP  
## Value -630.732 0.479  
##   
## Latent Variables:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## F1 =~   
## Cylinder 1.000 NA NA  
## F2 =~   
## InhibGrid 1.000 NA NA  
## F3 =~   
## GlassCeiling 1.000 NA NA  
## Prior   
##   
##   
##   
##   
##   
##   
##   
## Covariances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## F1 ~~   
## F2 0.000 NA NA  
## F3 0.000 NA NA  
## F2 ~~   
## F3 0.000 NA NA  
## Prior   
##   
##   
##   
##   
##   
##   
## Intercepts:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## .Cylinder 0.000 0.084 -0.163 0.164 1.000 28430.778  
## .InhibGrid 0.000 0.079 -0.156 0.155 1.000 29320.611  
## .GlassCeiling -0.000 0.091 -0.179 0.178 1.000 28306.204  
## F1 0.000 NA NA  
## F2 0.000 NA NA  
## F3 0.000 NA NA  
## Prior   
## normal(0,32)  
## normal(0,32)  
## normal(0,32)  
##   
##   
##   
##   
## Variances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## .Cylinder 0.000 NA NA  
## .InhibGrid 0.000 NA NA  
## .GlassCeiling 0.000 NA NA  
## F1 1.011 0.121 0.798 1.277 1.000 26384.862  
## F2 1.010 0.114 0.81 1.257 1.000 28137.201  
## F3 1.014 0.132 0.788 1.304 1.000 27497.123  
## Prior   
##   
##   
##   
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]

## Shifting

summary(bfit.model.Shifting, neff=TRUE)

## blavaan (0.3-10) results of 5000 samples after 2500 adapt/burnin iterations  
##   
## Used Total  
## Number of observations 172 185  
##   
## Number of missing patterns 6  
##   
## Statistic MargLogLik PPP  
## Value -636.296 0.452  
##   
## Latent Variables:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## F1 =~   
## CD\_all 1.000 NA NA  
## Shelf 4.293 4.390 -3.685 14.615 1.033 120.373  
## Tray 3.465 4.216 -4.071 13.494 1.033 125.123  
## Prior   
##   
##   
## normal(0,10)  
## normal(0,10)  
##   
## Intercepts:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## .CD\_all -0.004 0.088 -0.175 0.169 1.000 10926.829  
## .Shelf -0.007 0.081 -0.171 0.15 1.000 13302.382  
## .Tray -0.005 0.082 -0.167 0.154 1.000 12195.864  
## F1 0.000 NA NA  
## Prior   
## normal(0,32)  
## normal(0,32)  
## normal(0,32)  
##   
##   
## Variances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## .CD\_all 0.960 0.130 0.731 1.236 1.001 10512.352  
## .Shelf 0.530 0.317 0.003 1.039 1.001 4510.751  
## .Tray 0.709 0.279 0.023 1.097 1.000 4061.471  
## F1 0.046 0.053 0.002 0.194 1.003 3757.411  
## Prior   
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]

## Shifting null

summary(bfit.model.Shifting.null, neff=TRUE)

## blavaan (0.3-10) results of 5000 samples after 2500 adapt/burnin iterations  
##   
## Used Total  
## Number of observations 172 185  
##   
## Number of missing patterns 6  
##   
## Statistic MargLogLik PPP  
## Value -635.042 0.004  
##   
## Latent Variables:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## F1 =~   
## CD\_all 1.000 NA NA  
## F2 =~   
## Shelf 1.000 NA NA  
## F3 =~   
## Tray 1.000 NA NA  
## Prior   
##   
##   
##   
##   
##   
##   
##   
## Covariances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## F1 ~~   
## F2 0.000 NA NA  
## F3 0.000 NA NA  
## F2 ~~   
## F3 0.000 NA NA  
## Prior   
##   
##   
##   
##   
##   
##   
## Intercepts:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## .CD\_all 0.000 0.087 -0.172 0.171 1.000 29546.931  
## .Shelf 0.001 0.081 -0.16 0.161 1.000 27620.163  
## .Tray 0.000 0.083 -0.164 0.163 1.000 27643.467  
## F1 0.000 NA NA  
## F2 0.000 NA NA  
## F3 0.000 NA NA  
## Prior   
## normal(0,32)  
## normal(0,32)  
## normal(0,32)  
##   
##   
##   
##   
## Variances:  
## Estimate Post.SD pi.lower pi.upper Rhat neff   
## .CD\_all 0.000 NA NA  
## .Shelf 0.000 NA NA  
## .Tray 0.000 NA NA  
## F1 1.011 0.126 0.793 1.286 1.000 26626.497  
## F2 1.010 0.118 0.804 1.267 1.000 27211.712  
## F3 1.011 0.118 0.807 1.273 1.000 27825.842  
## Prior   
##   
##   
##   
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]  
## gamma(1,.5)[sd]