

MPT solution

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One-High Threshold Model ~ results

```
library(rjags)

data <- list(
  hits      = c( 8,  9, 14, 14, 13,  8, 13, 12, 11,
                4,  8, 13, 15, 12, 11,  9,  5,  5,
                6, 15, 11, 14, 12, 12, 11,  1, 14,
                13,  7, 11, 12,  8, 11) ,
  fas       = c( 4, 4, 0, 1, 2, 0, 3, 1, 3, 0, 0, 1,
                0, 0, 0, 0, 1, 0, 3, 0, 0, 1, 2, 1,
                2, 0, 0, 0, 2, 1, 2, 0, 2) ,
  nPeople   = 33 ,
  nOld      = 15 ,
  nNew      = 15 )
```

```

modelString = "
  # MPT single high threshold
  model{
    for (i in 1:nPeople){
      hits[i] ~ dbin(thetaHit, nOld)
      fas[i]  ~ dbin(thetaFA , nNew)
    }
    thetaHit = rho + (1-rho)*gamma
    thetaFA  = gamma
    rho      ~ dunif(0, 1)
    gamma    ~ dunif(0, 1)
  }
"

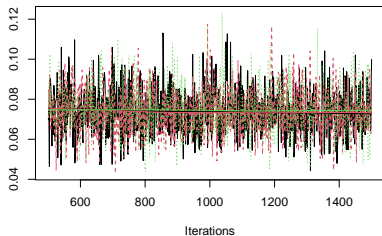
modelFile <- "mpt_solution.jags"
writeLines( modelString , con = modelFile)

```

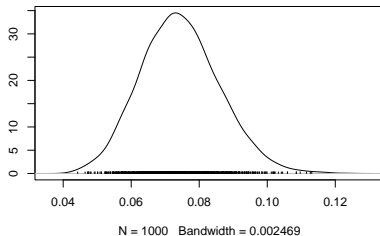
```
jagsModel = jags.model( file      = modelFile,  
                        data      =      data,  
                        n.chains  =      3 ,  
                        n.adapt   =      500 )  
  
set.seed(0)  
samples = coda.samples( jagsModel,  
                        variable.names = c("gamma",  
                                           "rho"),  
                        n.iter        = 1000 )  
  
plot(samples)
```

One-High Threshold Model ~ figures

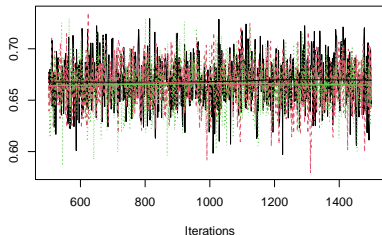
Trace of gamma



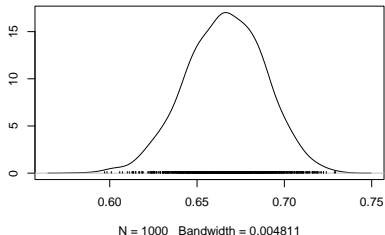
Density of gamma



Trace of rho



Density of rho



One-High Threshold Model ~ summary statistics

```
summary(samples)$statistics
```

##		Mean	SD	Naive SE	Time-series SE
##	gamma	0.0743824	0.01159926	0.0002117725	0.0002753438
##	rho	0.6660643	0.02250931	0.0004109619	0.0005245267

```
summary(samples)$quantiles
```

##		2.5%	25%	50%	75%	97.5%
##	gamma	0.05333377	0.06620266	0.07376768	0.08168157	0.09842377
##	rho	0.62125677	0.65089322	0.66648069	0.68176974	0.70834532

One-High Threshold Model ~ convergence

```
effectiveSize(samples)
```

```
##      gamma      rho  
## 1856.831 1836.440
```

```
gelman.diag(samples)
```

```
## Potential scale reduction factors:
```

```
##
```

```
##      Point est. Upper C.I.
```

```
## gamma          1      1.01
```

```
## rho            1      1.02
```

```
##
```

```
## Multivariate psrf
```

```
##
```

```
## 1.01
```