Modeling 101: A simple Bernoulli model

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Load the data

```
datos <- read.csv("../00_RawMaterial/datos.csv")

I <- length(unique(datos$subID))
J <- length(unique(datos$cond))
N <- nrow(datos)

Y <- datos$rt
C <- datos$acc
cond <- as.numeric(datos$cond)
sub <- as.numeric(datos$subID)
```

Write up the model

The response observed for any participant i on the k^{th} trial of condition j can be modeled as the outcome of a Bernoulli process as:

$$Y_{ijk} \sim \text{Bernoulli}(\theta_j)$$

with uninformative prior:

$$\theta_j \sim \text{Uniform}(0, 1)$$

```
write('
model{
    # Likelihood
    for (i in 1:N) {
        C[i] ~ dbern(theta[cond[i]])
    }
    # Priors
      for(j in 1:J) {
        theta[j] ~ dunif(0,1)
      }
}',  'bernoulli.txt')
```

```r
data <- list("C", "cond","J","N")

myinits <-  list(list(theta = rep(0,J)))

parameters <- c("theta")

samples <- jags(data, inits=myinits, parameters, model.file = "bernoulli.txt",
             n.chains=1, n.iter=5000, n.burnin=500, n.thin=1)
```

```
## module glm loaded
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 2214
##    Unobserved stochastic nodes: 2
##    Total graph size: 4434
##
## Initializing model
```

```r
theta <- samples$BUGSoutput$sims.list$theta
```

```r
apply(theta,2,mean)
```

```
## [1] 0.8563890 0.6957514
```

```r
tapply(datos$acc,datos$cond,mean)
```

```
##    control relational
##  0.8569106  0.6961382
```