

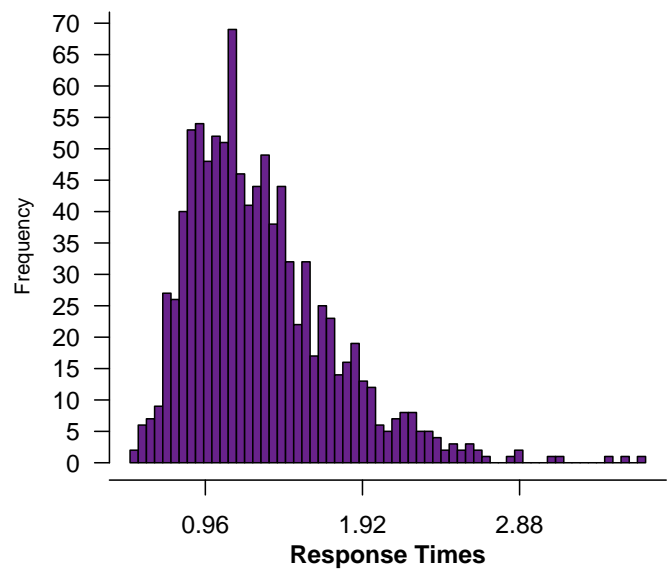
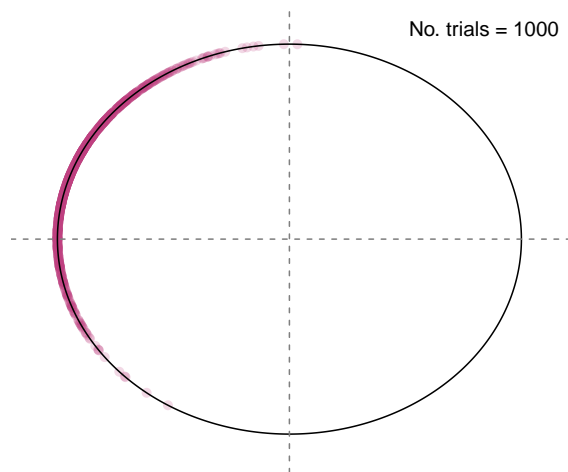
# Circular Drift Diffusion Model on JAGS: Full example

JV, AFCP

2022-07-08

## 1. Generate/load simulated data

```
# Establish no. of trials  
trials <- 1000  
# Call Rscript to generate simulated data / load it if already existing  
source("./getData.R")
```



```
# Print parameter values used to generate this data  
par
```

```
## $driftAngle  
## [1] 2.823  
##  
## $ndt  
## [1] 0.17  
##  
## $driftLength  
## [1] 2.36  
##  
## $thresh  
## [1] 2.85
```

## 2. Write JAGS model

```
modelFile <- "cddm.bug"
write('
    model{
        # Likelihood
        for (i in 1:N) {
            X[1:2,i] ~ dcddm(drift, bound, ter0, theta0)
        }

        # Priors
        drift ~ dnorm(0,1)T(0,)
        bound ~ dunif(0,5)
        ter0 ~ dexp(1)T(,0.4)
        theta0 ~ dunif(0,6.283185)
    },
modelFile)
```

where:

- **drift** is the magnitude of the drift vector composed by the individual drift rates related to the average motion observed across the x and y axes, according to the CDDM.
- **bound** is the threshold (i.e. the radius of the circle)
- **ter0** is the non-decision time (a.k.a. “time for encoding and response”)
- **theta0** is the direction of the drift vector, in radians.

## Prepare Settings to be passed to JAGS

```
n.chains = 4
n.iter = 1000
n.burnin = 0
n.thin = 1
perParticipant = FALSE
perTask = FALSE

sampling.Settings <- list(n.chains,n.iter,n.burnin,n.thin,perParticipant,perTask)
names <- c("n.chains","n.iter","n.burnin","n.thin","perParticipant","perTask")
```

## Prepare data

```
X <- t(data)
N <- ncol(X)
```