

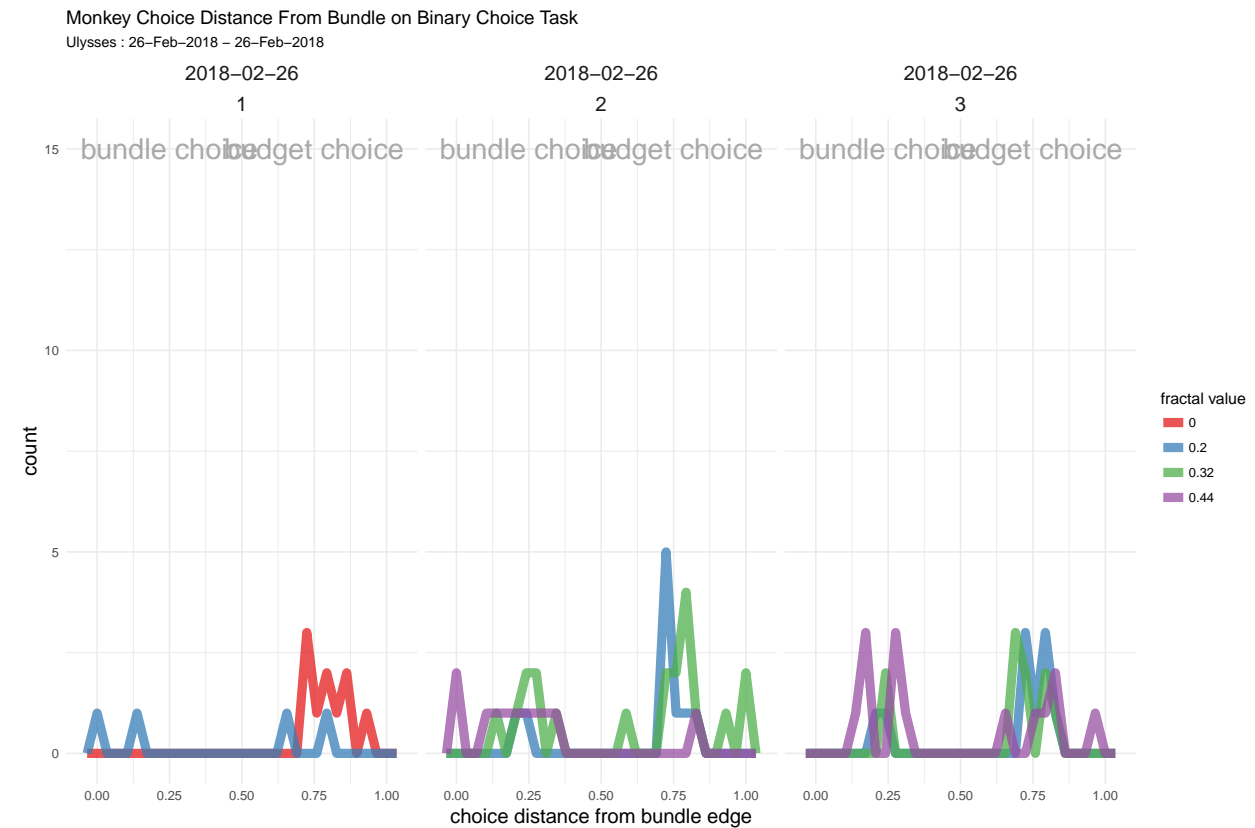
# Binary Choice Analysis

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*22 February 2018*

```
monkey <- "Ulysses"  
today <- "26-Feb-2018"  
look_back <- "26-Feb-2018"
```

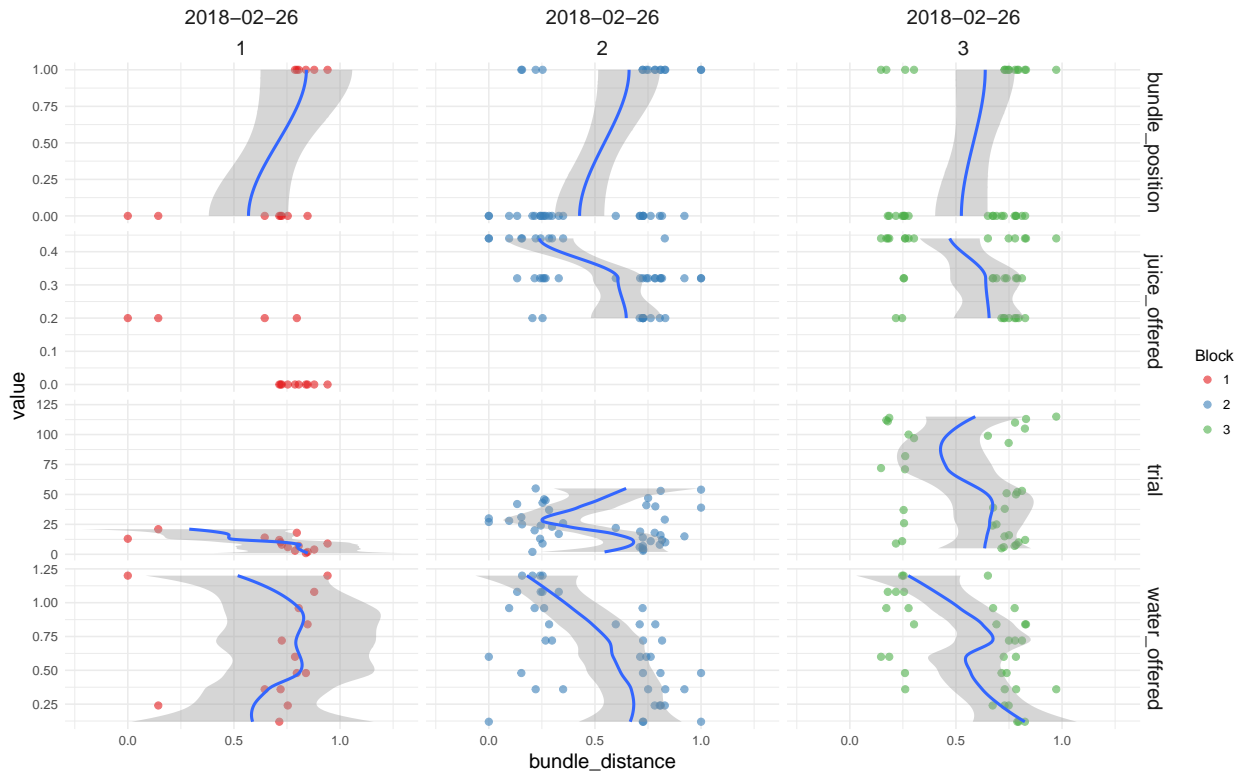
p1



p2

# Monkey Choice Distance From Bundle on Binary Choice Task

Ulysses : 26-Feb-2018 - 26-Feb-2018



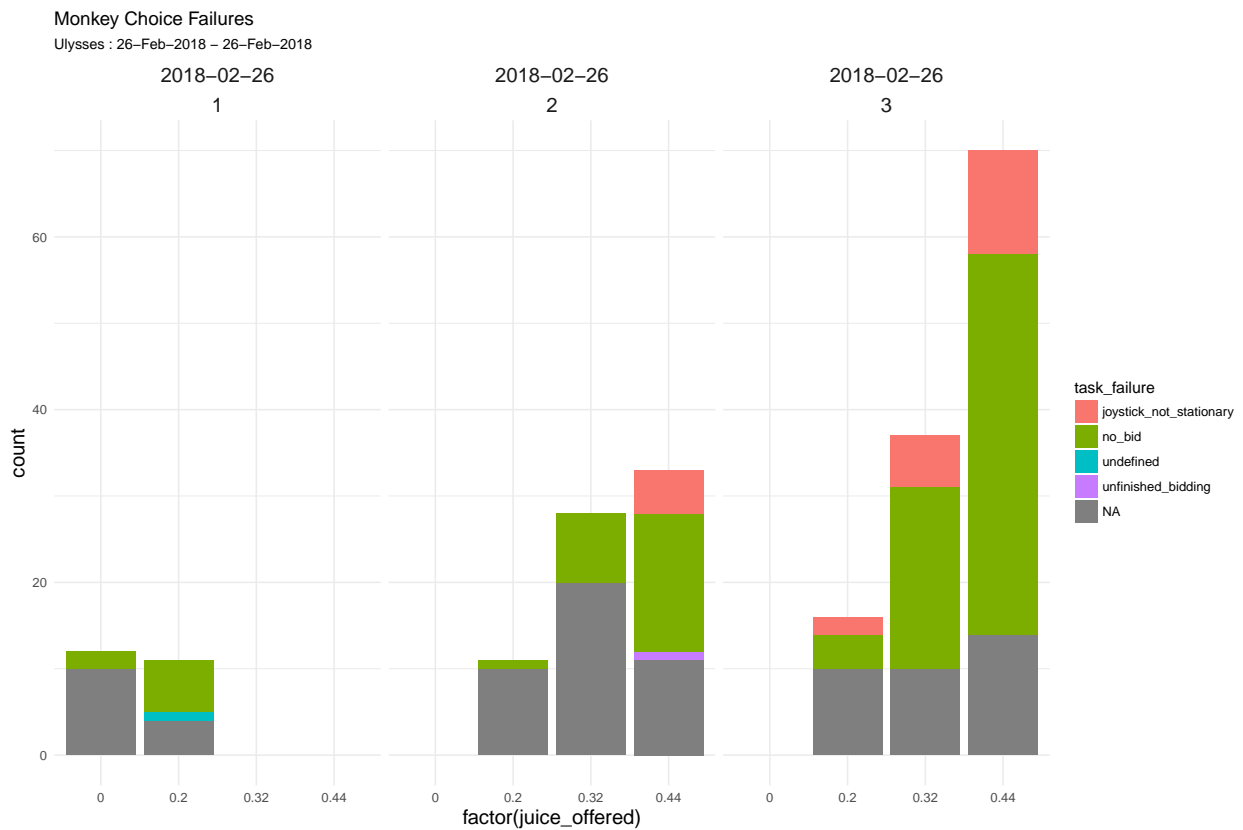
```
#generate a model of likelihood to choice for the fractal dependent on it's position,
#value and associated water
model <- glm(data = task_data,
             fractal_choice ~ bundle_position + water_offered + juice_offered + trial + date,
             family = "binomial")
```

```
#summarise the parameters
summary(model)
```

```
##
## Call:
## glm(formula = fractal_choice ~ bundle_position + water_offered +
##     juice_offered + trial + date, family = "binomial", data = task_data)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -2.5732  -0.5277  -0.1052   0.4742   2.9137
##
## Coefficients: (1 not defined because of singularities)
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)   -9.09730    2.23941  -4.062 4.86e-05 ***
## bundle_position -1.12141    0.76339  -1.469 0.141840
## water_offered  4.36713    1.24841   3.498 0.000469 ***
## juice_offered 21.62080    6.03335   3.584 0.000339 ***
## trial         -0.02407    0.01501  -1.603 0.108842
## date              NA           NA      NA      NA
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##    Null deviance: 117.368  on 88  degrees of freedom
## Residual deviance:  63.662  on 84  degrees of freedom
##    (129 observations deleted due to missingness)
## AIC: 73.662
##
## Number of Fisher Scoring iterations: 6
```

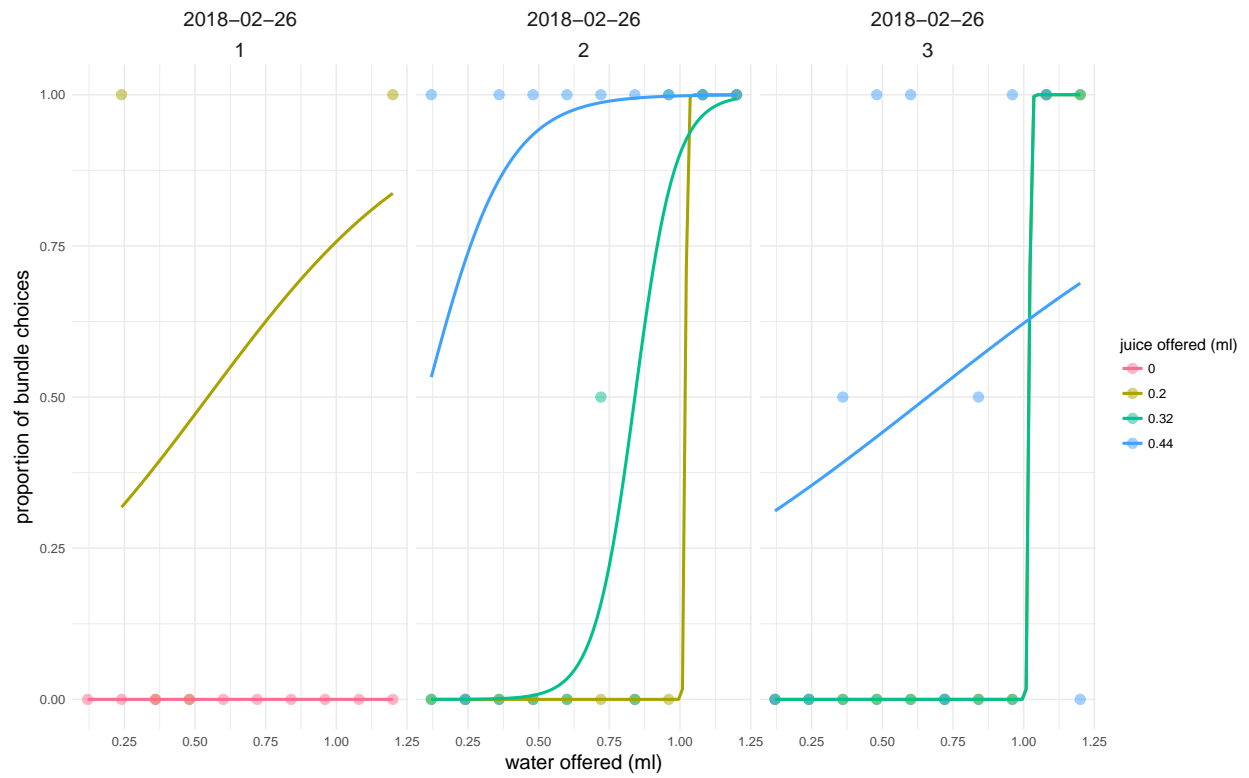
p3



p4

# Monkey Bundle Choice Binoimial Curves

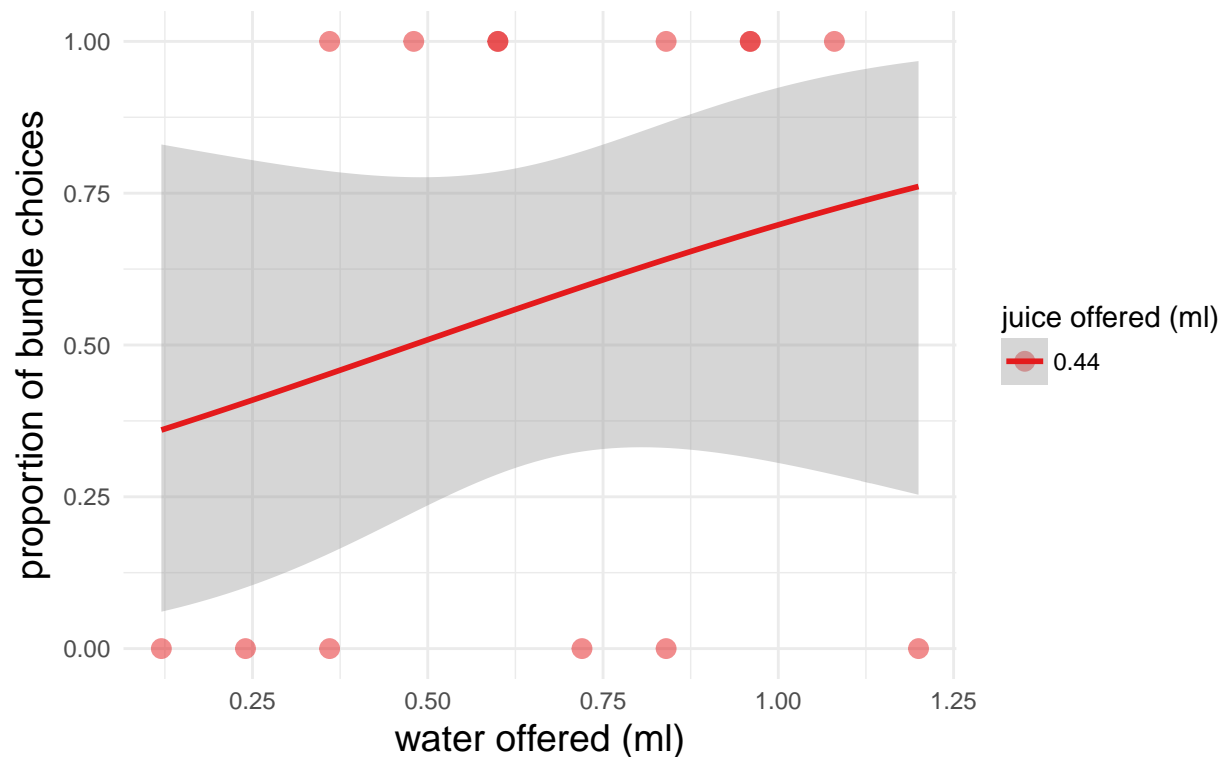
Ulysses : 26-Feb-2018 – 26-Feb-2018



p5

## Today's Monkey Bundle Choice Binoimial Curves

Ulysses : 26-Feb-2018



```
library(zoo)
```

```
## Warning: package 'zoo' was built under R version 3.4.3
```

```
##
```

```
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
```

```
##
```

```
##      as.Date, as.Date.numeric
```

```
p6 <- task_data %>%
  .[order(block_no, trial)] %>%
  .[,correct := cumsum(is.na(task_failure)), by = block_no] %>%
  .[,progression := correct - shift(correct), by = block_no] %>%
  .[,progression2 := rollapplyr(progression, mean, width = 10), by = block_no] %>%
  #.[, res := rollapplyr(progression, 1:N, mean), by = block_no]
ggplot(., aes(x = trial, y = correct)) +
  geom_path(size = 2, aes(colour = progression2)) +
  facet_wrap(~date + block_no)
```

```
## Warning in `[.data.table`(. , `:=`(progression2, rollapplyr(progression, :
```

```
## Supplied 14 items to be assigned to group 1 of size 23 in column
```

```
## 'progression2' (recycled leaving remainder of 9 items).
```

```
## Warning in `[.data.table`(. , `:=`(progression2, rollapplyr(progression, :
```

```
## Supplied 63 items to be assigned to group 2 of size 72 in column
```

```
## 'progression2' (recycled leaving remainder of 9 items).
```

```
## Warning in `[.data.table`(. , , `:=`(progression2, rollapplyr(progression, :
## Supplied 114 items to be assigned to group 3 of size 123 in column
## 'progression2' (recycled leaving remainder of 9 items).
```

p6

