

Binary Choice Analysis

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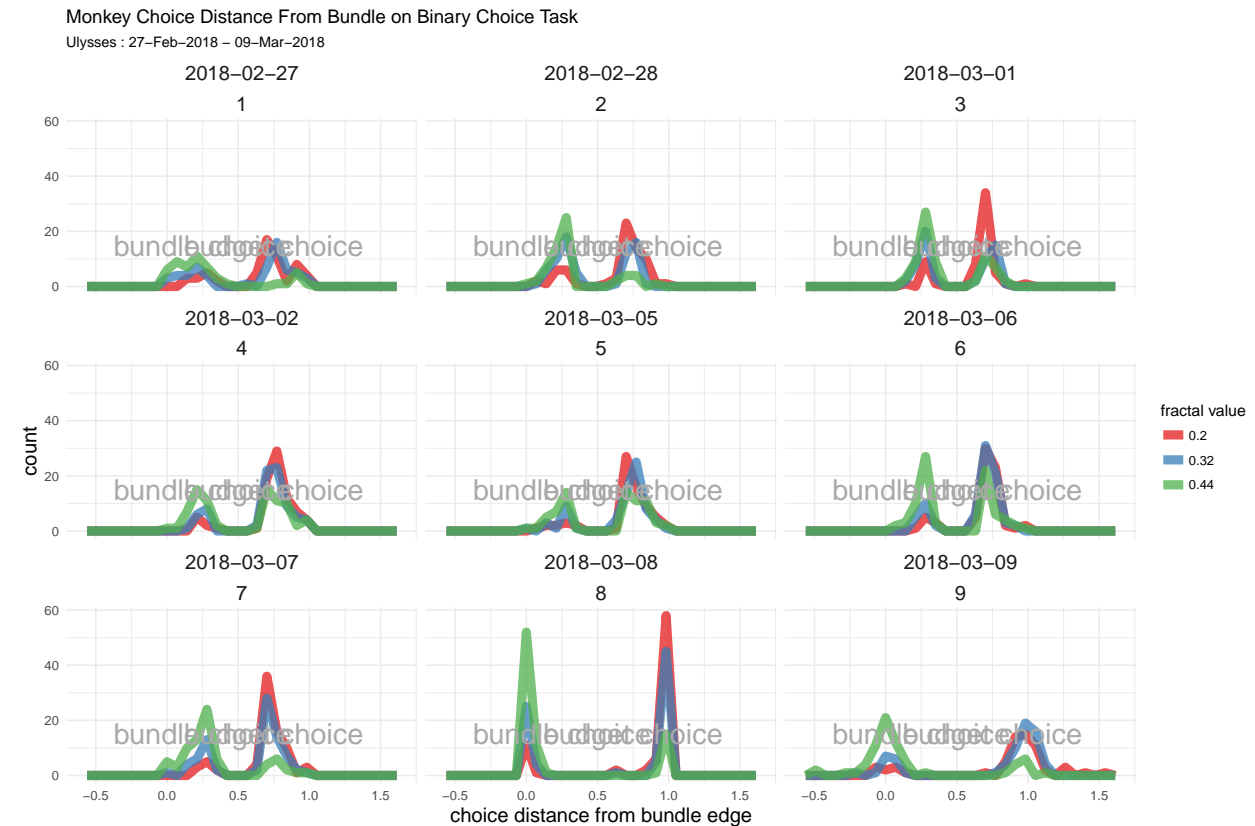
22 February 2018

```
monkey <- "Ulysses"  
today <- "09-Mar-2018"  
look_back <- "27-Feb-2018"
```

```
start_trial <- 0  
stop_trial <- 150
```

```
merge_days <- TRUE
```

p1

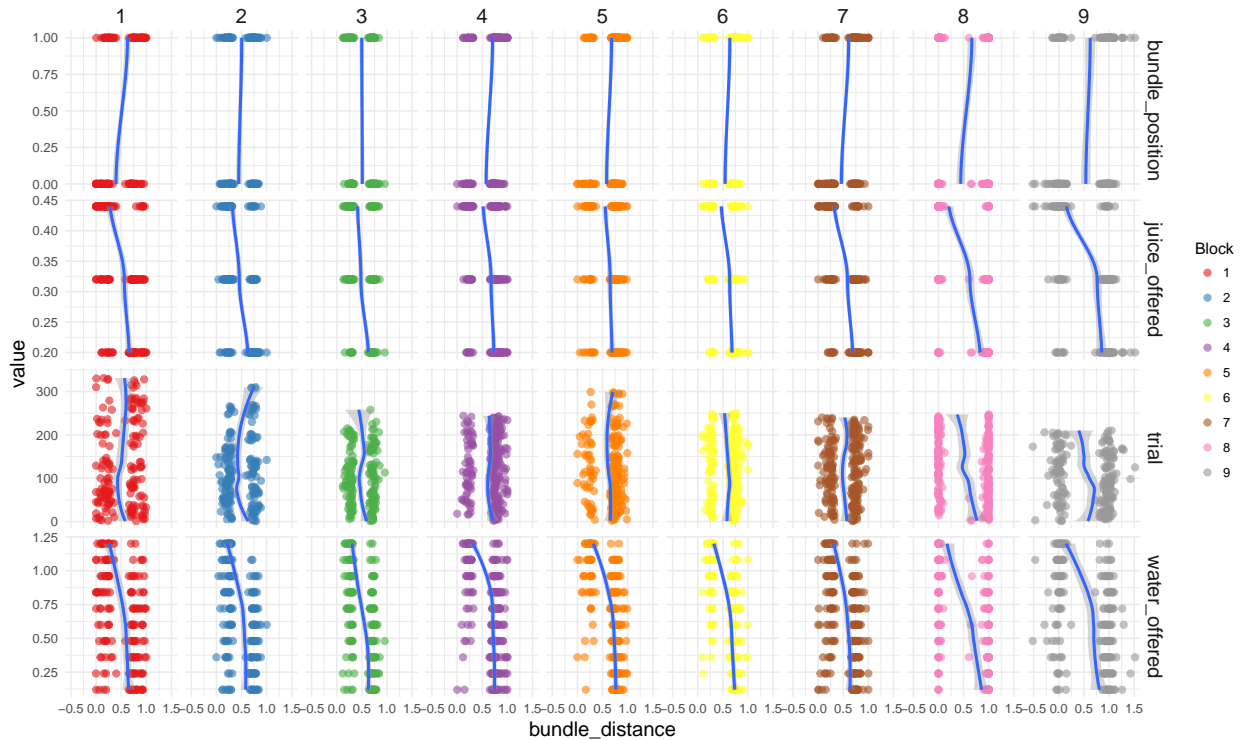


p2

Monkey Choice Distance From Bundle on Binary Choice Task

Ulysses : 27-Feb-2018 - 09-Mar-2018

2018-02-27 2018-02-28 2018-03-01 2018-03-02 2018-03-05 2018-03-06 2018-03-07 2018-03-08 2018-03-09



```
#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
## -2.5877  -0.5724  -0.1735   0.5282   2.8995
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)  1.055e+03  3.423e+02  3.083  0.00205 **
## bundle_position -1.234e+00  1.379e-01 -8.951 < 2e-16 ***
## water_offered  5.167e+00  2.625e-01 19.686 < 2e-16 ***
## juice_offered  1.705e+01  8.942e-01 19.068 < 2e-16 ***
## trial         1.825e-03  8.946e-04  2.040  0.04134 *
## date          -6.051e-02  1.946e-02 -3.110  0.00187 **
## ---
```

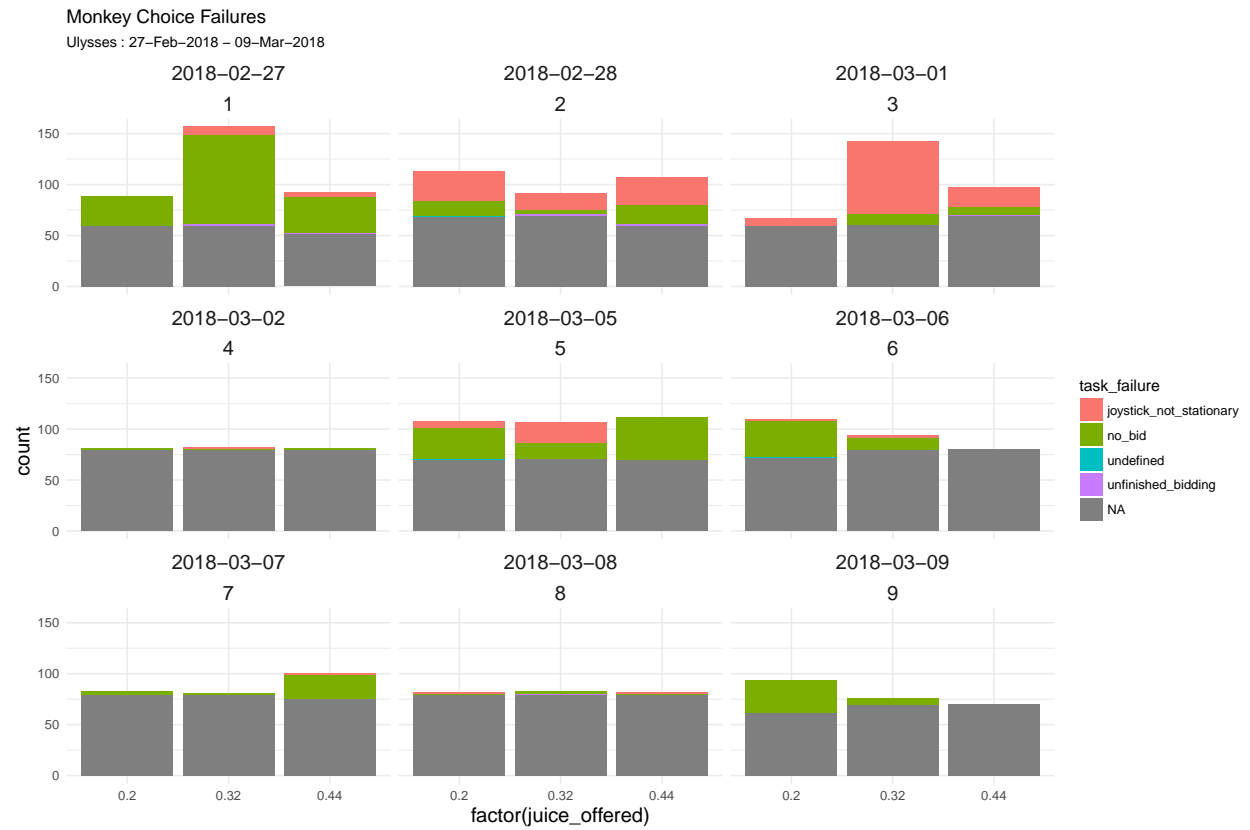
```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##    Null deviance: 2567.4  on 1921  degrees of freedom
## Residual deviance: 1454.7  on 1916  degrees of freedom
##    (638 observations deleted due to missingness)
## AIC: 1466.7
##
## Number of Fisher Scoring iterations: 6

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

#summarise the parameters
summary(model)

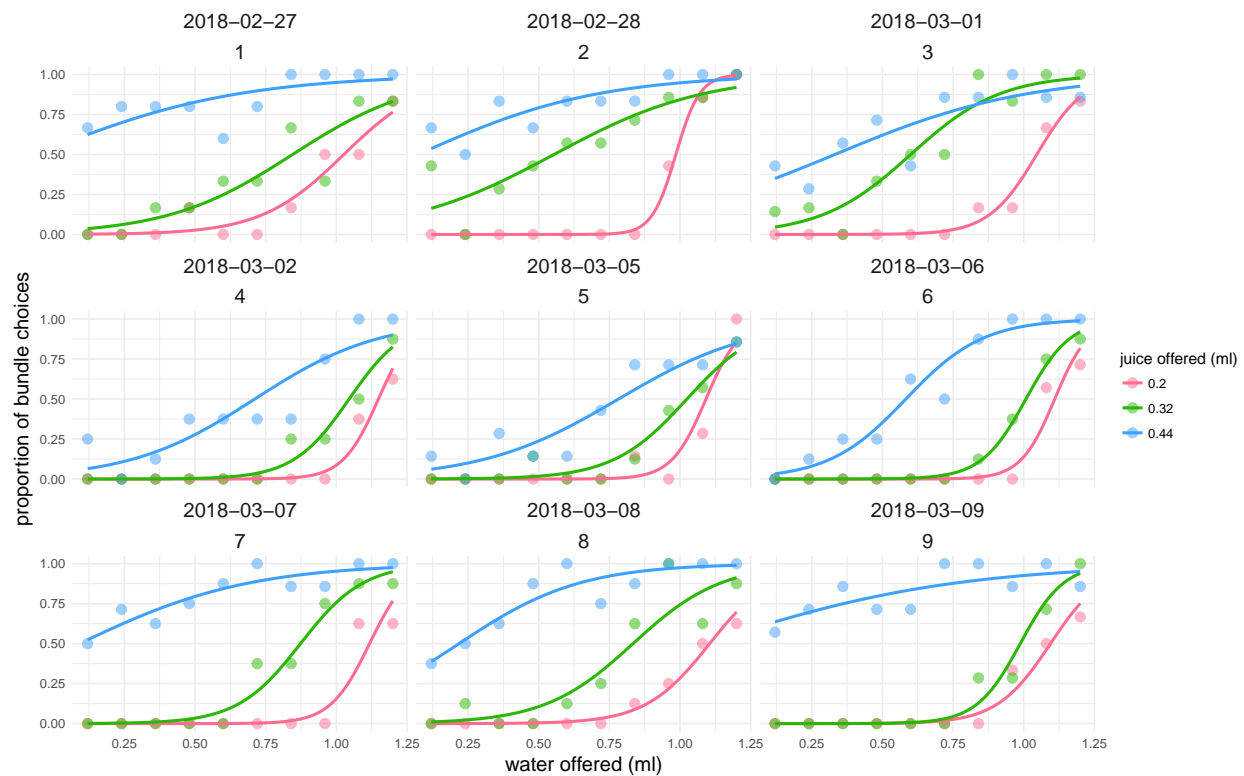
##
## Call:
## glm(formula = fractal_choice ~ bundle_position + water_offered +
##      as.factor(juice_offered) + trial + date, family = "binomial",
##      data = dplyr::filter(task_data, block_no == max(block_no)))
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -3.02741  -0.38122  -0.06907   0.25599   1.63805
##
## Coefficients: (1 not defined because of singularities)
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    -8.564560    1.407118  -6.087 1.15e-09 ***
## bundle_position -1.238723    0.512956  -2.415 0.015741 *
## water_offered    6.696773    1.189918   5.628 1.82e-08 ***
## as.factor(juice_offered)0.32  0.614446    0.601864   1.021 0.307300
## as.factor(juice_offered)0.44  6.231358    0.989599   6.297 3.04e-10 ***
## trial           0.015444    0.004637   3.331 0.000866 ***
## 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: 273.58  on 201  degrees of freedom
## Residual deviance: 113.74  on 196  degrees of freedom
##    (38 observations deleted due to missingness)
## AIC: 125.74
##
## Number of Fisher Scoring iterations: 6
```

p3



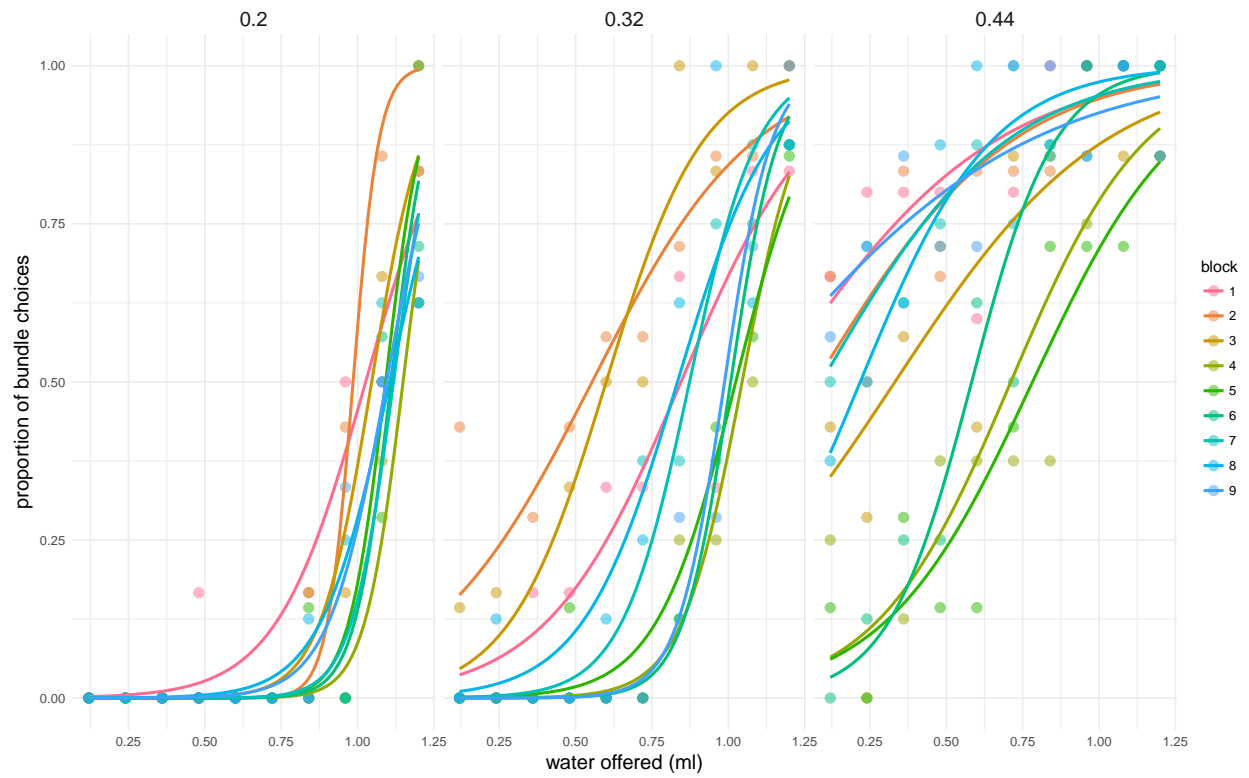
p4

Monkey Bundle Choice Binoimial Curves
 Ulysses : 27-Feb-2018 – 09-Mar-2018



p5

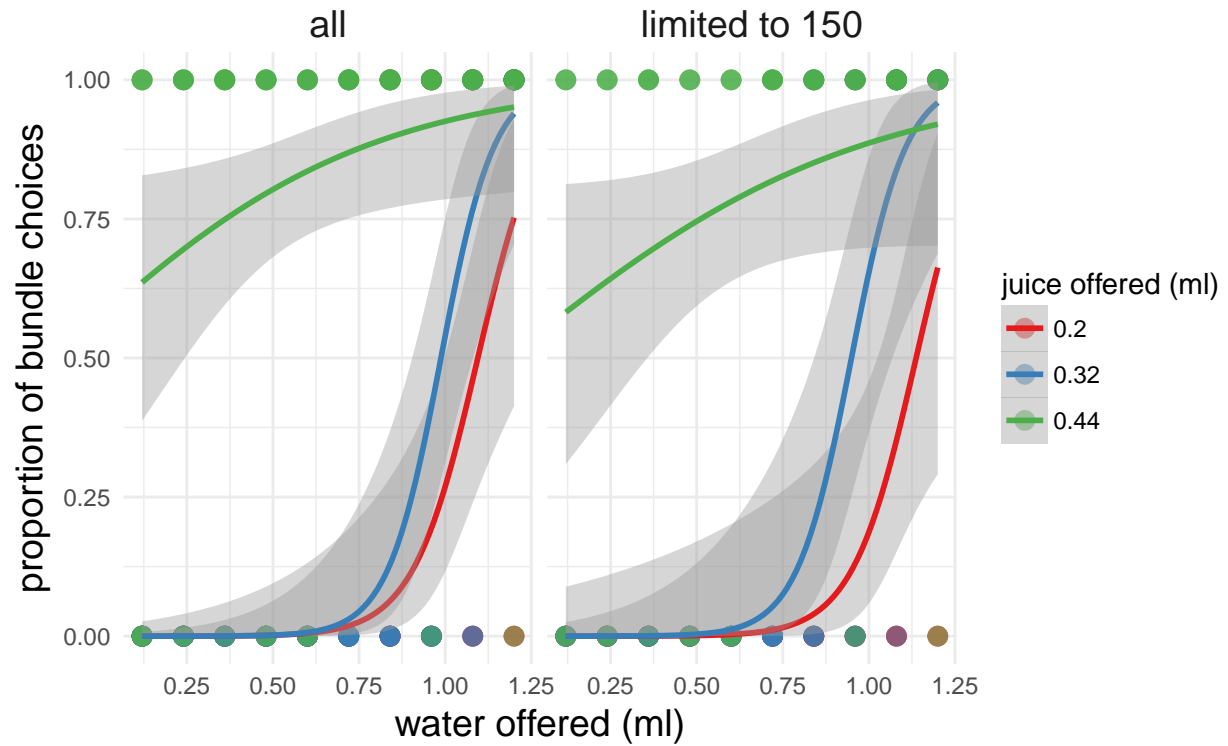
Monkey Bundle Choice Binoimial Curves
 Ulysses : 27-Feb-2018 – 09-Mar-2018



p6

Today's Monkey Bundle Choice Binoimial Curves

Ulysses : 09-Mar-2018



p7

Monkey Trial Progression and Bias

Ulysses : 27-Feb-2018 – 09-Mar-2018

