

## R-Script analysis experiment 2

```
library(lme4)

install.packages
library(lmerTest)
library(car)
library(MASS)
library(fitdistrplus)
library(survival)
library(fitdistrplus)
library(robustlmm)
library(arm)
library(MASS)
library(Matrix)
library(pscl)
library(R2admb)
library(glmmADMB)
library(MuMIn)
library(pbkrttest)
library(emmeans)
library(irr)
library(ggplot2)
```

### #First hurdle Binomial on Stress 1st Min#

```
StrBinMin1 <- glmer(StrBinMin1~Outcome+(1|Focal/Partner/Observer/Reward.type), data= xdata,
family = "binomial")

summary(StrBinMin1)

emmeans(StrBinMin1, list(pairwise ~ Outcome))

StrBinMin1Null <- glmer(StrBinMin1~(1|Focal/Partner/Observer/Reward.type), data= xdata, family =
"binomial")

anova(StrBinMin1,StrBinMin1Null)
```

### #Second hurdle Linear on Stress>0 1st Min#

```
StressMin1 <- glmer.nb(StressMin1~Outcome+(1|Focal/Partner/Observer/Reward.type),
data=subset(xdata,StressMin1>0))

summary(StressMin1)

StressMin1Null <- glmer.nb(StressMin1~(1|Focal/Partner),
data=subset(xdata,StressMin1>0))

anova(StressMin1,StressMin1Null)
```

### **#First hurdle Binomial on Aggr 1st Min#**

```
AggBinMin1 <- glmer(AggBinMin1~Outcome+(1|Focal/Partner/Observer/Reward.type), data= xdata,  
family = "binomial")
```

```
summary(AggBinMin1)
```

```
emmeans(AggBinMin1, list(pairwise ~ Outcome))
```

```
AggBinMin1Null <- glmer(AggBinMin1~(1|Focal/Partner/Observer/Reward.type), data= xdata, family  
= "binomial")
```

```
anova(AggBinMin1,AggBinMin1Null)
```

### **#Second hurdle Linear on Aggr>0 1st Min#**

```
AggMin1 <- glmer.nb(AggMin1~Outcome+(1|Focal/Partner/Observer/Reward.type),  
data=subset(xdata,AggMin1>0))
```

```
summary(AggMin1)
```

```
AggMin1Null <- glmer.nb(AggMin1~(1|Focal/Partner),  
data=subset(xdata,AggMin1>0))
```

```
anova(AggMin1,AggMin1Null)
```

### **#First hurdle Binomial on Stress over 3min#**

```
StressBin <- glmer(StressBin~Outcome+(1|Focal/Partner/Observer/Reward.type), data= xdata, family  
= "binomial")
```

```
summary(StressBin)
```

```
emmeans(StressBin, list(pairwise ~ Outcome))
```

```
StressBinNull <- glmer(StressBin~(1|Focal/Partner/Observer/Reward.type), data= xdata, family =  
"binomial")
```

```
anova(StressBin,StressBinNull)
```

```
anova(StressBin)
```

### **#Second hurdle Linear on Stress>0 over 3min#**

```
Stress3Min <- glmer.nb(Stress3Min~Outcome+(1|Focal/Partner/Observer/Reward.type),  
data=subset(xdata,Stress3Min>0))
```

```
summary(Stress3Min)
```

```
Stress3MinNull <- glmer.nb(Stress3Min~(1|Focal/Partner/Observer/Reward.type),  
data=subset(xdata,Stress3Min>0))
```

```
anova(Stress3Min,Stress3MinNull)
```

### **#First hurdle Binomial on Aggr#**

```
AggBin <- glmer(AggBin~Outcome+(1|Focal/Partner/Observer/Reward.type), data= xdata, family =  
"binomial")  
  
summary(AggBin)  
  
emmeans(AggBin, list(pairwise ~ Outcome))  
  
anova(AggBin)  
  
AggBinNull <- glmer(AggBin~(1|Focal/Partner/Observer/Reward.type), data= xdata, family =  
"binomial")  
  
anova(AggBin,AggBinNull)
```

### **#Second hurdle Linear on Aggr>0 3min#**

```
Agg3Min <- glmer.nb(Agg3Min~Outcome+(1|Focal/Partner/Observer/Reward.type),  
data=subset(xdata,Agg3Min>0))  
  
summary(Agg3Min)  
  
Agg3MinNull <- glmer.nb(Agg3Min~(1|Focal/Partner/Observer/Reward.type),  
data=subset(xdata,Agg3Min>0))  
  
anova(Agg3Min,Agg3MinNull)
```

### **#Effect of cumulative value of trial on stress#**

```
StressCondCumx<-glmer(`Stress bnm overall`~Con.worth+cu.worth+(1|Focal),data = cu_avx, family =  
binomial(link = logit))  
  
summary(StressCondCumx)  
  
StressCondx<-glmer(`Stress bnm overall`~Con.worth+(1|Focal),data = cu_avx, family = binomial(link =  
logit))  
  
summary(StressCondx)  
  
anova(StressCondx,StressCondCumx)  
  
StressCumx<-glmer(`Stress bnm overall`~cu.worth+(1|Focal),data = cu_avx, family = binomial(link =  
logit))  
  
summary(StressCumx)  
  
StressCumCondx<-glmer(`Stress bnm overall`~cu.worth+Con.worth+(1|Focal),data = cu_avx, family =  
binomial(link = logit))  
  
summary(StressCumCondx)  
  
anova(StressCondx,StressCumx)
```

```
Stressnullx<-glmer(`Stress bnm overall`~(1|Focal),data = cu_avx, family = binomial(link = logit))
anova(StressCondx, Stressnullx, StressCondCumx, StressCumx)
```

#### **#Effect of cumulative value of trial on aggression#**

```
AggCondCumx<-glmer(`Aggression bnm overall`~Con.worth+cu.worth+(1|Focal),data = cu_avx,
family = binomial(link = logit))

summary(AggCondCumx)

AggCondx= glmer(`Aggression bnm overall`~Con.worth+(1|Focal),data = cu_avx, family =
binomial(link = logit))

summary(AggCondx)

anova(AggCondx,AggCondCumx)

AggCumx= glmer(`Aggression bnm overall`~cu.worth+(1|Focal),data = cu_avx, family = binomial(link
= logit))

summary(AggCumx)

anova(AggCumx,AggCondx)

Aggnullx= glmer(`Aggression bnm overall`~(1|Focal),data = cu_avx, family = binomial(link = logit))
anova(AggCondx,Aggnullx, AggCondCumx, AggCumx)
```

#### **#Effect of looking in the box before cooperation that resulted in outcome B#**

##### **#first make a sub-dataset of only outcome B#**

##### **#on Stress**

```
StressBinLookB <- glmer(StressBin~Lookbox+(1|Focal/Partner/Observer/Reward.type), data= xdata,
family = "binomial")

summary(StressBinLookB)

StressBinNullB <- glmer(StressBin~(1|Focal/Partner/Observer/Reward.type), data= xdata, family =
"binomial")

anova(StressBinLook,StressBinNull)
```

##### **#on Aggression**

```
AggBinLookB <- glmer(AggBin~Lookbox+(1|Focal/Partner/Observer/Reward.type), data= xdata,
family = "binomial")

summary(AggBinLookB)

anova(StressBinLook,StressBin)

AggBinNullB <- glmer(AggBin~(1|Focal/Partner/Observer/Reward.type), data= xdata, family =
"binomial")

anova(AggBinLook,AggBinNull)
```