Class 7 Lab

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#1. Install lme4 and lmerTest packages

```
#importing the libraries I need
library(lme4)
library(lmerTest)
library(gplots)
library(dplyr)
library(igraph)
library(performance)
```

#2. Importing Nodes and Edges

```
#reading in the nodes data
nodes <- read.csv('/Users/TomTheIntern/Desktop/Mendoza/Mod 4/Networks/Lab 2/nodelist.csv')
summary(nodes)
```

```
##        ID            Name                Age           Gender
##  Min.   : 1.00   Length:12          Min.   :21.00   Length:12
##  1st Qu.: 3.75   Class :character   1st Qu.:23.00   Class :character
##  Median : 6.50   Mode  :character   Median :36.50   Mode  :character
##  Mean   : 6.50                      Mean   :38.00
##  3rd Qu.: 9.25                      3rd Qu.:45.75
##  Max.   :12.00                      Max.   :65.00
```

```
#reading in the edges
edges <- read.csv('/Users/TomTheIntern/Desktop/Mendoza/Mod 4/Networks/Lab 2/edgelist.csv')
summary(edges)
```

```
##     ego_num         alter_num          ego                alter
##  Min.   : 1.000   Min.   : 1.000   Length:40          Length:40
##  1st Qu.: 2.750   1st Qu.: 2.750   Class :character   Class :character
##  Median : 5.000   Median : 5.000   Mode  :character   Mode  :character
##  Mean   : 5.575   Mean   : 5.575
##  3rd Qu.: 9.000   3rd Qu.: 9.000
##  Max.   :12.000   Max.   :12.000
##      type              strength
##  Length:40          Min.   :1.00
##  Class :character   1st Qu.:2.00
##  Mode  :character   Median :4.00
##                     Mean   :3.45
##                     3rd Qu.:4.25
##                     Max.   :5.00
```

#3. Merge the edge and node data frames

```
#merging the nodes and edges data by ego id
edges_nodes <- merge(edges, nodes, by.x  = 'ego_num', by.y = 'ID')
```

#4. Random Intercept Model

```
### 1. Random intercept model where I try to predict strencth with the relationship type
model1 <- lmer(strength ~ type + (1 | ego_num), #
               data = edges_nodes, REML = T,
               na.action = na.omit)
summary(model1)
```

```
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: strength ~ type + (1 | ego_num)
##    Data: edges_nodes
##
## REML criterion at convergence: 132
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -1.9328 -0.8665  0.2731  0.6622  1.3368
##
## Random effects:
##  Groups   Name        Variance Std.Dev.
##  ego_num  (Intercept) 0.1596   0.3995
##  Residual             1.4967   1.2234
## Number of obs: 40, groups:  ego_num, 12
##
## Fixed effects:
##               Estimate Std. Error         df t value Pr(>|t|)
## (Intercept)  3.4531292  0.4010414 10.9256273   8.610 3.38e-06 ***
## typeFriend  -0.0008205  0.4799066 11.0662193  -0.002    0.999
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##            (Intr)
## typeFriend -0.820
```

#5. Interpret the Model Results

Because the default type is friend, if you are a friend there is a slight dip in the relationship strength compared to the family type. However, it is not a statistically significant predictor, and has a relatively small impact on the regression, suggesting that the difference in type is not predictive of the strength of the relationship between egos.

#6. Calculate the ICC

```
#checking the ICC
performance::icc(model1)
```

```
## # Intraclass Correlation Coefficient
##
##     Adjusted ICC: 0.096
##   Unadjusted ICC: 0.096
```

#7. Interpret the ICC An ICC of 0.096 is rather low, meaning that the relationships within each ego are rather different, which makes sense as I tried to estimate relationships between employee and employer, which would have a different strength. The same is true of Marcus Freeman, who the staff spends a lot of time talking/thinking about and asking questions/observing, but Freeman only really interacts with them at a press conference. This type of relationship also works with fans.