Data_Analysis.R

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2025-06-04

```r
library(ggpmisc)
```

```
## Loading required package: ggpp

## Loading required package: ggplot2

## Registered S3 methods overwritten by 'ggpp':
##   method                  from
##   heightDetails.titleGrob ggplot2
##   widthDetails.titleGrob  ggplot2

##
## Attaching package: 'ggpp'

## The following object is masked from 'package:ggplot2':
##
##     annotate
```

```r
library(readxl)
library(tibble)
library(tinytex)
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v lubridate 1.9.3     v tidyr     1.3.1
## v purrr     1.0.2

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x ggpp::annotate() masks ggplot2::annotate()
## x dplyr::filter()  masks stats::filter()
## x dplyr::lag()     masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become error
```

```r
library(afex)
```

```
## Loading required package: lme4
## Loading required package: Matrix
##
## Attaching package: 'Matrix'
##
## The following objects are masked from 'package:tidyr':
##
##     expand, pack, unpack
##
## ************
## Welcome to afex. For support visit: http://afex.singmann.science/
## - Functions for ANOVAs: aov_car(), aov_ez(), and aov_4()
## - Methods for calculating p-values with mixed(): 'S', 'KR', 'LRT', and 'PB'
## - 'afex_aov' and 'mixed' objects can be passed to emmeans() for follow-up tests
## - Get and set global package options with: afex_options()
## - Set sum-to-zero contrasts globally: set_sum_contrasts()
## - For example analyses see: browseVignettes("afex")
## ************
##
## Attaching package: 'afex'
##
## The following object is masked from 'package:lme4':
##
##     lmer
```

```r
library(emmeans)
```

```
## Welcome to emmeans.
## Caution: You lose important information if you filter this package's results.
## See '? untidy'
```

```r
library(ggbeeswarm)
library(cowplot)
```

```
##
## Attaching package: 'cowplot'
##
## The following object is masked from 'package:lubridate':
##
##     stamp
```

```r
library(ggplot2)
library(psych)
```

```
##
## Attaching package: 'psych'
##
## The following objects are masked from 'package:ggplot2':
##
##     %+%, alpha
```

```r
theme_set(theme_bw(base_size = 15) + theme(legend.position = "bottom"))
setwd("/Users/maximelebourgeois/Desktop/experience_of_trust_final/Results")
data <- read_excel("Cleaned_Data_R.xlsx")
glimpse(data)
```

```
## Rows: 180
## Columns: 26
## $ Prolific_ID                <chr> "572f526c3c27e7000e0b8aaa", "5b6db242d2eae0~
## $ Condition                  <chr> "DG", "DG", "TG", "DG", "TG", "DG", "TG", "~
## $ List                       <chr> "Low start", "Low end", "Low middle", "Low ~
## $ Expected_Amount            <dbl> 4, 12, 6, 2, 12, 4, 8, 10, 6, 5, 12, 3, 2, ~
## $ Average_Amounts_Received   <dbl> 24, 24, 24, 24, 24, 24, 24, 24, 24, 24, 24,~
## $ Average_Amounts_Before     <dbl> 36, 36, 36, 36, 36, 36, 36, 36, 36, 36, 36,~
## $ Average_Amounts_Sent_Back  <dbl> NA, NA, 10.6, NA, 8.6, NA, 17.7, 16.4, 14.6~
## $ Average_Amounts_at_the_end <dbl> 36.0, 36.0, 25.4, 36.0, 27.4, 36.0, 18.3, 1~
## $ Average_Received           <dbl> 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8~
## $ Bonus                      <chr> "0.72", "0.72", "0.51", "0.72", "0.55000000~
## $ PANAS_Pre                  <dbl> 25, 16, 15, 12, 20, 13, 22, 23, 10, 22, 16,~
## $ PANAS_Post                 <dbl> 29, 19, 12, 12, 20, 16, 20, 22, 13, 31, 17,~
## $ STAIS_Pre                  <dbl> 12, 17, 14, 11, 20, 20, 12, 15, 17, 21, 4, ~
## $ STAIS_Post                 <dbl> 11, 13, 13, 11, 15, 18, 11, 13, 20, 12, 5, ~
## $ SSVS                       <dbl> 2.9, 1.8, 2.3, 2.8, 3.0, 2.7, 3.0, 3.4, 2.1~
## $ DV_PANAS                   <dbl> 4, 3, -3, 0, 0, 3, -2, -1, 3, 9, 1, -1, 0, ~
## $ DV_STAIS                   <dbl> -1, -4, -1, 0, -5, -2, -1, -2, 3, -9, 1, 1,~
## $ IV_Dif._Expected           <dbl> 4, -4, 2, 6, -4, 4, 0, -2, 2, 3, -4, 5, 6, ~
## $ IV_Average                 <dbl> 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8~
## $ Fluent_languages           <chr> "English", "English", "English", "Bulgarian~
## $ Age                        <dbl> 35, 33, 26, 32, 27, 32, 31, 20, 33, 31, 33,~
## $ Sex                        <chr> "Male", "Female", "Female", "Female", "Male~
## $ Ethnicity_simplified       <chr> "White", "White", "Black", "White", "White"~
## $ Country_of_birth           <chr> "United Kingdom", "United Kingdom", "United~
## $ Country_of_residence       <chr> "United Kingdom", "United Kingdom", "United~
## $ Nationality                <chr> "United Kingdom", "United Kingdom", "United~
```

```r
## I - Data Cleaning

# 1) Factorisation of the categorical variable
data$Prolific_ID <- factor(data$Prolific_ID)
data$List <- factor(data$List)
data$Condition <- factor(data$Condition, levels = c("DG", "TG"), labels = c("Dictator Game", "Trust Game
data$Sex <- factor(data$Sex)
data$Ethnicity_simplified <- factor(data$Ethnicity_simplified)
data$Nationality <- factor(data$Nationality)

# 2) Ensure DV variables are numeric
data$PANAS_Pre <- as.numeric(data$PANAS_Pre)
data$PANAS_Post <- as.numeric(data$PANAS_Post)
data$STAIS_Pre <- as.numeric(data$STAIS_Pre)
data$STAIS_Post <- as.numeric(data$STAIS_Post)
data$DV_PANAS <- as.numeric(data$DV_PANAS)
data$DV_STAIS <- as.numeric(data$DV_STAIS)
data$IV_Dif._Expected <- as.numeric(data$IV_Dif._Expected)
data$Age <- as.numeric(data$Age)
```

```r
## II - Data Analysis

# 1) Demographics Data Analysis

data_condition <- data %>%
  group_by(Condition) %>%
  summarise(n = n()) %>%
  mutate(proportion = n / sum(n))
data_condition
```

```
## # A tibble: 2 x 3
##   Condition         n proportion
##   <fct>         <int>      <dbl>
## 1 Dictator Game    90        0.5
## 2 Trust Game       90        0.5
```

```r
data_list <- data %>%
  group_by(List) %>%
  summarise(n = n()) %>%
  mutate(proportion = n / sum(n))
data_list
```

```
## # A tibble: 3 x 3
##   List           n proportion
##   <fct>      <int>      <dbl>
## 1 Low end       49      0.272
## 2 Low middle    72      0.4
## 3 Low start     59      0.328
```

```r
data_sex <- data %>%
  group_by(Sex) %>%
  summarise(n = n()) %>%
  mutate(proportion = n / sum(n))
data_sex
```

```
## # A tibble: 2 x 3
##   Sex        n proportion
##   <fct>  <int>      <dbl>
## 1 Female    89      0.494
## 2 Male      91      0.506
```

```r
data_ethnicity <- data %>%
  group_by(Ethnicity_simplified) %>%
  summarise(n = n()) %>%
  mutate(proportion = n / sum(n))
data_ethnicity
```

```
## # A tibble: 5 x 3
##   Ethnicity_simplified     n proportion
```

```
##   <fct>                  <int>      <dbl>
## 1 Asian                      8    0.0444
## 2 Black                     17    0.0944
## 3 Mixed                      4    0.0222
## 4 Other                      1    0.00556
## 5 White                    150    0.833
```

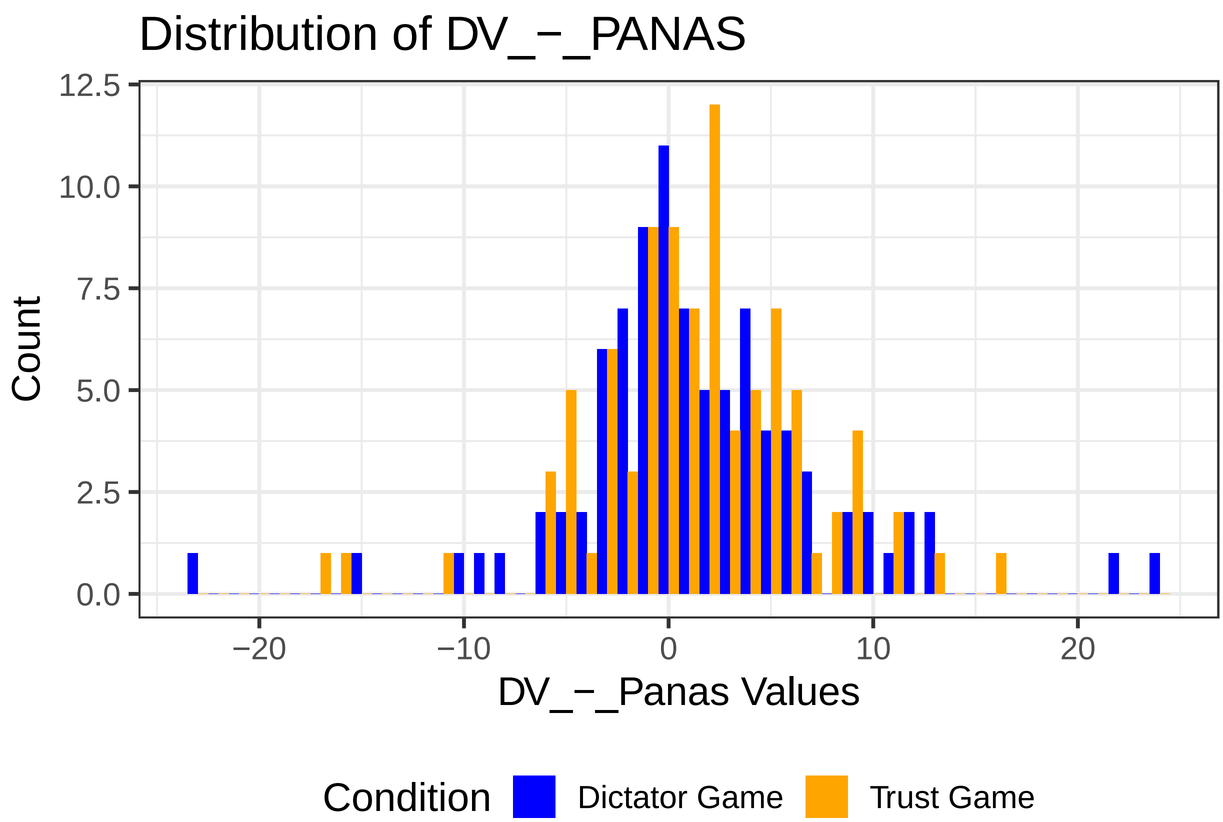
```r
data_age <- data %>%
  summarise(mean = mean(Age),
            sd = sd(Age),
            min = min(Age),
            max = max(Age),
            )
data_age
```

```
## # A tibble: 1 x 4
##    mean    sd   min   max
##   <dbl> <dbl> <dbl> <dbl>
## 1  28.7  4.42    18    35
```

```r
data_nationality <- data %>%
  group_by(Nationality) %>%
  summarise(n = n()) %>%
  mutate(proportion = n / sum(n))
data_nationality
```

```
## # A tibble: 5 x 3
##   Nationality        n proportion
##   <fct>          <int>      <dbl>
## 1 Albania            1    0.00556
## 2 Bulgaria           3    0.0167
## 3 France             1    0.00556
## 4 Ireland            1    0.00556
## 5 United Kingdom   174    0.967
```

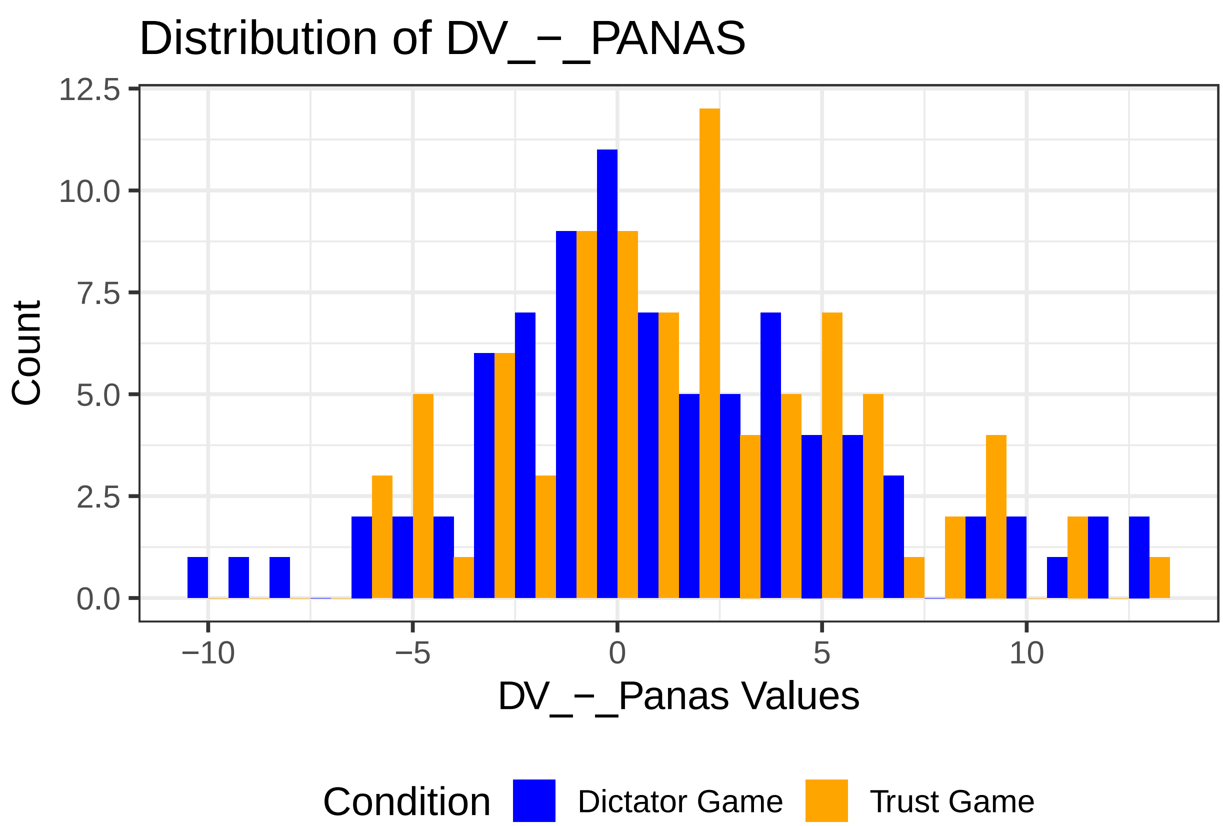
```r
# 2) Plot for DV_-_PANAS
h_PANAS <- ggplot(data, aes(x = DV_PANAS, fill = Condition)) +
  geom_histogram(position = "dodge", binwidth = 1) +
  labs(title = "Distribution of DV_-_PANAS", x = "DV_-_Panas Values", y = "Count") +
  scale_fill_manual(values = c("Dictator Game" = "blue", "Trust Game" = "orange"))
h_PANAS
```




```r
summary_stats_PANAS <- data %>%
  group_by(Condition) %>%
  summarise(
    n = n(),
    Mean_PANAS_Pre = mean(PANAS_Pre, na.rm = TRUE),
    Mean_PANAS_Post = mean(PANAS_Post, na.rm = TRUE),
    Mean_Dif_PANAS = Mean_PANAS_Post - Mean_PANAS_Pre,
    Median_PANAS_Pre = median(PANAS_Pre, na.rm = TRUE),
    Median_PANAS_Post = mean(PANAS_Post, na.rm = TRUE),
    Median_Dif_PANAS = Median_PANAS_Post - Median_PANAS_Pre,
    SD_Dif_PANAS = sd(DV_PANAS, na.rm = TRUE),
    .groups = "drop"
  )
glimpse(summary_stats_PANAS)
```

```
## Rows: 2
## Columns: 9
## $ Condition         <fct> Dictator Game, Trust Game
## $ n                 <int> 90, 90
## $ Mean_PANAS_Pre    <dbl> 15.66667, 15.38889
## $ Mean_PANAS_Post   <dbl> 17.15556, 16.65556
## $ Mean_Dif_PANAS    <dbl> 1.488889, 1.266667
## $ Median_PANAS_Pre  <dbl> 15.5, 16.5
## $ Median_PANAS_Post <dbl> 17.15556, 16.65556
## $ Median_Dif_PANAS  <dbl> 1.6555556, 0.1555556
## $ SD_Dif_PANAS      <dbl> 6.524361, 5.341800
```

```r
# Correcting extreme values > or < than 2 * sd_diff_panas

# Compute mean and standard deviation of DV_PANAS
mean_diff_panas <- mean(data$DV_PANAS, na.rm = TRUE)
sd_diff_panas <- sd(data$DV_PANAS, na.rm = TRUE)

# Define the lower and upper bounds
lower_bound <- mean_diff_panas - 2 * sd_diff_panas
upper_bound <- mean_diff_panas + 2 * sd_diff_panas

# Filter the data
data_corrected_panas <- data %>%
  filter(DV_PANAS >= lower_bound & DV_PANAS <= upper_bound)

h_PANAS_corrected <- ggplot(data_corrected_panas, aes(x = DV_PANAS, fill = Condition)) +
  geom_histogram(position = "dodge", binwidth = 1) +
  labs(title = "Distribution of DV_-_PANAS", x = "DV_-_Panas Values", y = "Count") +
  scale_fill_manual(values = c("Dictator Game" = "blue", "Trust Game" = "orange"))
h_PANAS_corrected
```

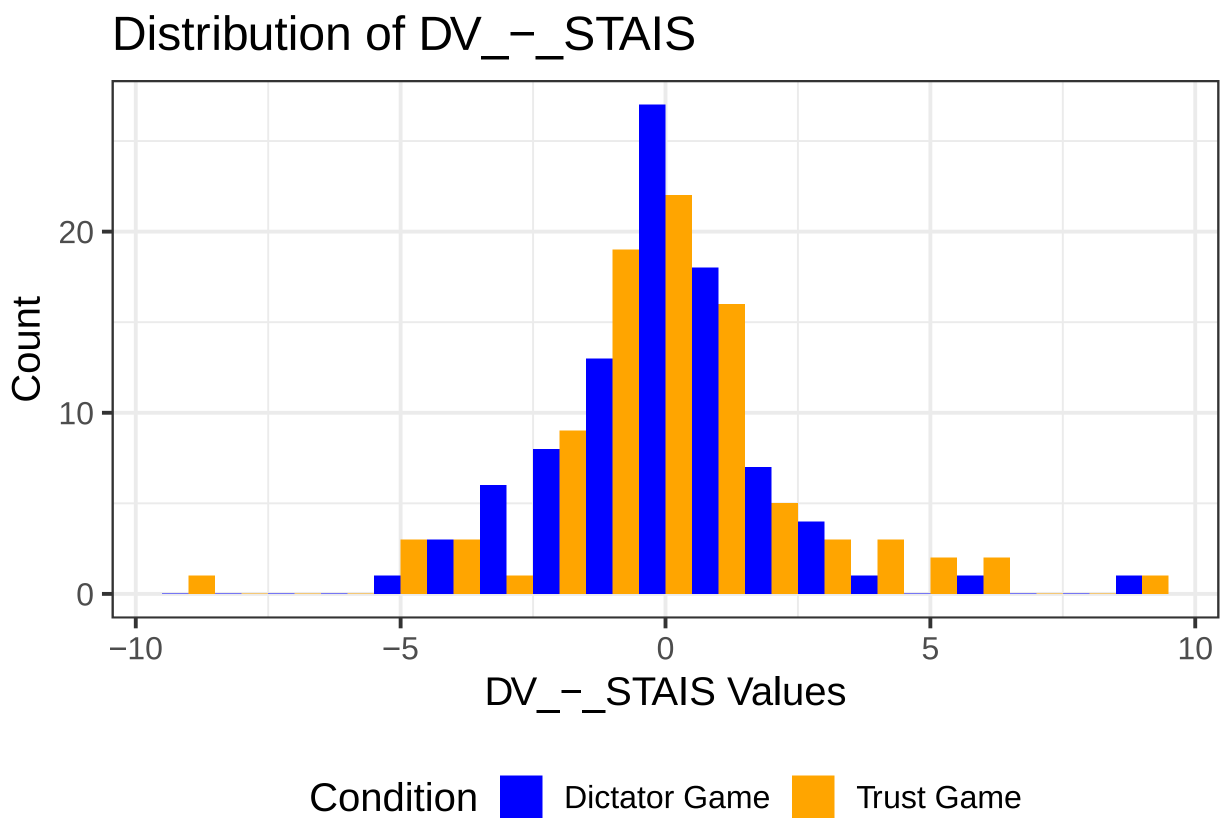



```r
summary_stats_PANAS_corrected <- data_corrected_panas %>%
  group_by(Condition) %>%
  summarise(
    n = n(),
    Mean_PANAS_Pre = mean(PANAS_Pre, na.rm = TRUE),
```

```r
    Mean_PANAS_Post = mean(PANAS_Post, na.rm = TRUE),
    Mean_Dif_PANAS = Mean_PANAS_Post - Mean_PANAS_Pre,
    Median_PANAS_Pre = median(PANAS_Pre, na.rm = TRUE),
    Median_PANAS_Post = mean(PANAS_Post, na.rm = TRUE),
    Median_Dif_PANAS = Median_PANAS_Post - Median_PANAS_Pre,
    SD_Dif_PANAS = sd(DV_PANAS, na.rm = TRUE),
    .groups = "drop"
  )
glimpse(summary_stats_PANAS_corrected)
```

```
## Rows: 2
## Columns: 9
## $ Condition         <fct> Dictator Game, Trust Game
## $ n                 <int> 86, 86
## $ Mean_PANAS_Pre    <dbl> 15.96512, 15.33721
## $ Mean_PANAS_Post   <dbl> 17.43023, 16.98837
## $ Mean_Dif_PANAS    <dbl> 1.465116, 1.651163
## $ Median_PANAS_Pre  <dbl> 15.5, 16.0
## $ Median_PANAS_Post <dbl> 17.43023, 16.98837
## $ Median_Dif_PANAS  <dbl> 1.9302326, 0.9883721
## $ SD_Dif_PANAS      <dbl> 4.837835, 4.239221
```

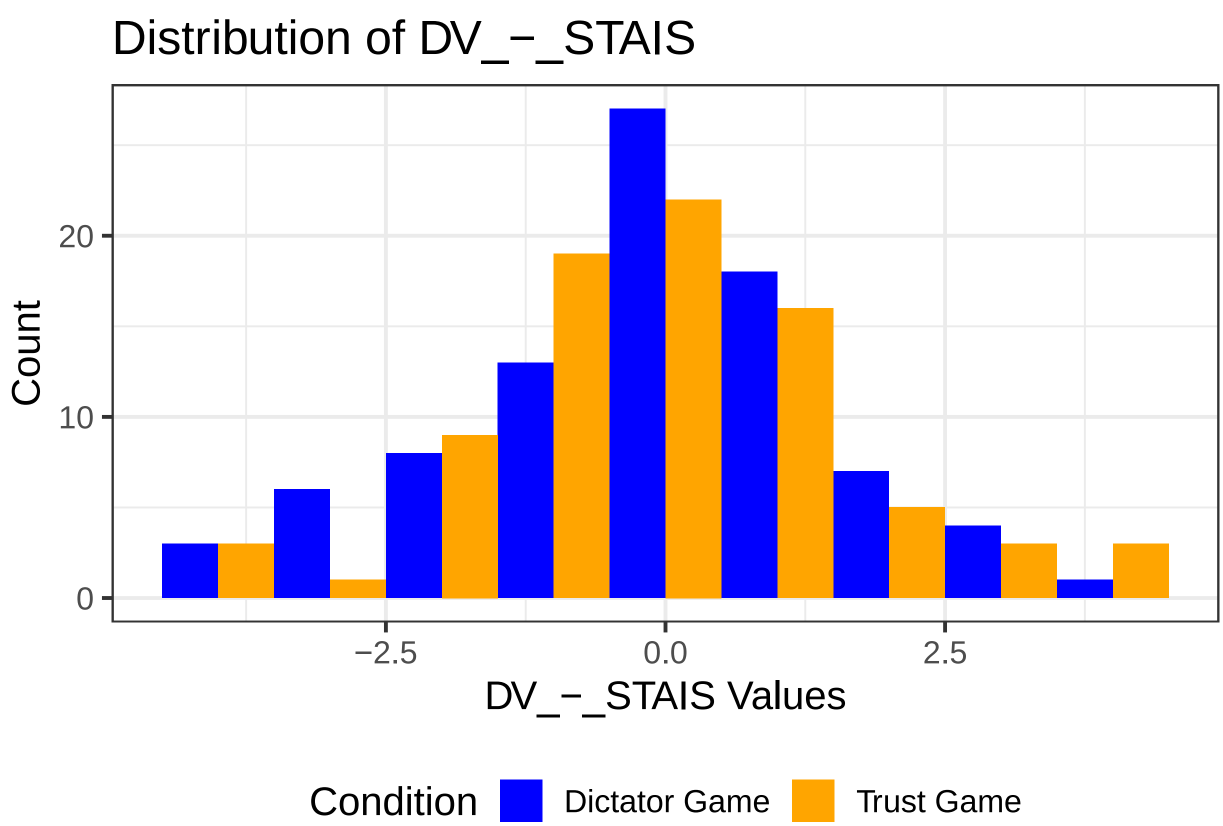
```r
# 3) Plot for DV_-_STAIS
h_STAIS <- ggplot(data, aes(x = DV_STAIS, fill = Condition)) +
  geom_histogram(position = "dodge", binwidth = 1) +
  labs(title = "Distribution of DV_-_STAIS", x = "DV_-_STAIS Values", y = "Count") +
  scale_fill_manual(values = c("Dictator Game" = "blue", "Trust Game" = "orange"))
h_STAIS
```




```r
summary_stats_STAIS <- data %>%
  group_by(Condition) %>%
  summarise(
    n = n(),
    Mean_STAIS_Pre = mean(STAIS_Pre, na.rm = TRUE),
    Mean_STAIS_Post = mean(STAIS_Post, na.rm = TRUE),
    Mean_Dif_STAIS = Mean_STAIS_Post - Mean_STAIS_Pre,
    Median_STAIS_Pre = median(STAIS_Pre, na.rm = TRUE),
    Median_STAIS_Post = mean(STAIS_Post, na.rm = TRUE),
    Median_Dif_STAIS = Median_STAIS_Post - Median_STAIS_Pre,
    SD_Dif_STAIS = sd(DV_STAIS, na.rm = TRUE),
    .groups = "drop"
  )
glimpse(summary_stats_STAIS)
```

```
## Rows: 2
## Columns: 9
## $ Condition         <fct> Dictator Game, Trust Game
## $ n                 <int> 90, 90
## $ Mean_STAIS_Pre    <dbl> 8.933333, 11.255556
## $ Mean_STAIS_Post   <dbl> 8.922222, 11.277778
## $ Mean_Dif_STAIS    <dbl> -0.01111111, 0.02222222
## $ Median_STAIS_Pre  <dbl> 8, 10
## $ Median_STAIS_Post <dbl> 8.922222, 11.277778
## $ Median_Dif_STAIS  <dbl> 0.9222222, 1.2777778
## $ SD_Dif_STAIS      <dbl> 2.085231, 2.557113
```

```r
# Correcting extreme values > or < than 2 * sd_diff_stais

# Compute mean and standard deviation of DV_PANAS
mean_diff_stais <- mean(data$DV_STAIS, na.rm = TRUE)
sd_diff_stais <- sd(data$DV_STAIS, na.rm = TRUE)

# Define the lower and upper bounds
lower_bound <- mean_diff_stais - 2 * sd_diff_stais
upper_bound <- mean_diff_stais + 2 * sd_diff_stais

# Filter the data
data_corrected_stais <- data %>%
  filter(DV_STAIS >= lower_bound & DV_STAIS <= upper_bound)

h_STAIS_corrected <- ggplot(data_corrected_stais, aes(x = DV_STAIS, fill = Condition)) +
  geom_histogram(position = "dodge", binwidth = 1) +
  labs(title = "Distribution of DV_-_STAIS", x = "DV_-_STAIS Values", y = "Count") +
  scale_fill_manual(values = c("Dictator Game" = "blue", "Trust Game" = "orange"))
h_STAIS_corrected
```




```r
summary_stats_STAIS_corrected <- data_corrected_stais %>%
  group_by(Condition) %>%
  summarise(
    n = n(),
    Mean_PANAS_Pre = mean(PANAS_Pre, na.rm = TRUE),
```

```r
    Mean_PANAS_Post = mean(PANAS_Post, na.rm = TRUE),
    Mean_Dif_PANAS = Mean_PANAS_Post - Mean_PANAS_Pre,
    Median_PANAS_Pre = median(PANAS_Pre, na.rm = TRUE),
    Median_PANAS_Post = mean(PANAS_Post, na.rm = TRUE),
    Median_Dif_PANAS = Median_PANAS_Post - Median_PANAS_Pre,
    SD_Dif_PANAS = sd(DV_PANAS, na.rm = TRUE),
    .groups = "drop"
  )
glimpse(summary_stats_STAIS_corrected)
```

```
## Rows: 2
## Columns: 9
## $ Condition         <fct> Dictator Game, Trust Game
## $ n                 <int> 87, 81
## $ Mean_PANAS_Pre    <dbl> 15.79310, 15.24691
## $ Mean_PANAS_Post   <dbl> 17.51724, 16.72840
## $ Mean_Dif_PANAS    <dbl> 1.724138, 1.481481
## $ Median_PANAS_Pre  <dbl> 15, 16
## $ Median_PANAS_Post <dbl> 17.51724, 16.72840
## $ Median_Dif_PANAS  <dbl> 2.5172414, 0.7283951
## $ SD_Dif_PANAS      <dbl> 5.382335, 4.321779
```

```r
### III - Statistical Analysis

#  1°) ANOVA Condition * Time Analysis

# ANOVA PANAS

data_long_PANAS <- data_corrected_panas %>%
  select(Prolific_ID, Condition, PANAS_Pre, PANAS_Post) %>%
  pivot_longer(cols = c(PANAS_Pre, PANAS_Post),
               names_to = "Time",
               values_to = "PANAS") %>%
  mutate(Time = factor(Time, levels = c("PANAS_Pre", "PANAS_Post"),
                       labels = c("Pre", "Post")))

res_ANOVA_PANAS <- aov_car(PANAS ~ Condition * Time + Error(Prolific_ID/Time), data = data_long_PANAS)
```

```
## Warning: More than one observation per design cell, aggregating data using `fun_aggregate = mean`.
## To turn off this warning, pass `fun_aggregate = mean` explicitly.

## Contrasts set to contr.sum for the following variables: Condition
```

```r
summary(res_ANOVA_PANAS)
```

```
##
## Univariate Type III Repeated-Measures ANOVA Assuming Sphericity
##
##                  Sum Sq num Df Error SS den Df  F value    Pr(>F)
## (Intercept)       91119      1    37078    168 412.8532 < 2.2e-16 ***
## Condition            37      1    37078    168   0.1672    0.6832
```

```
## Time                 197       1      1726     168   19.2032 2.064e-05 ***
## Condition:Time         0       1      1726     168    0.0140    0.9059
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

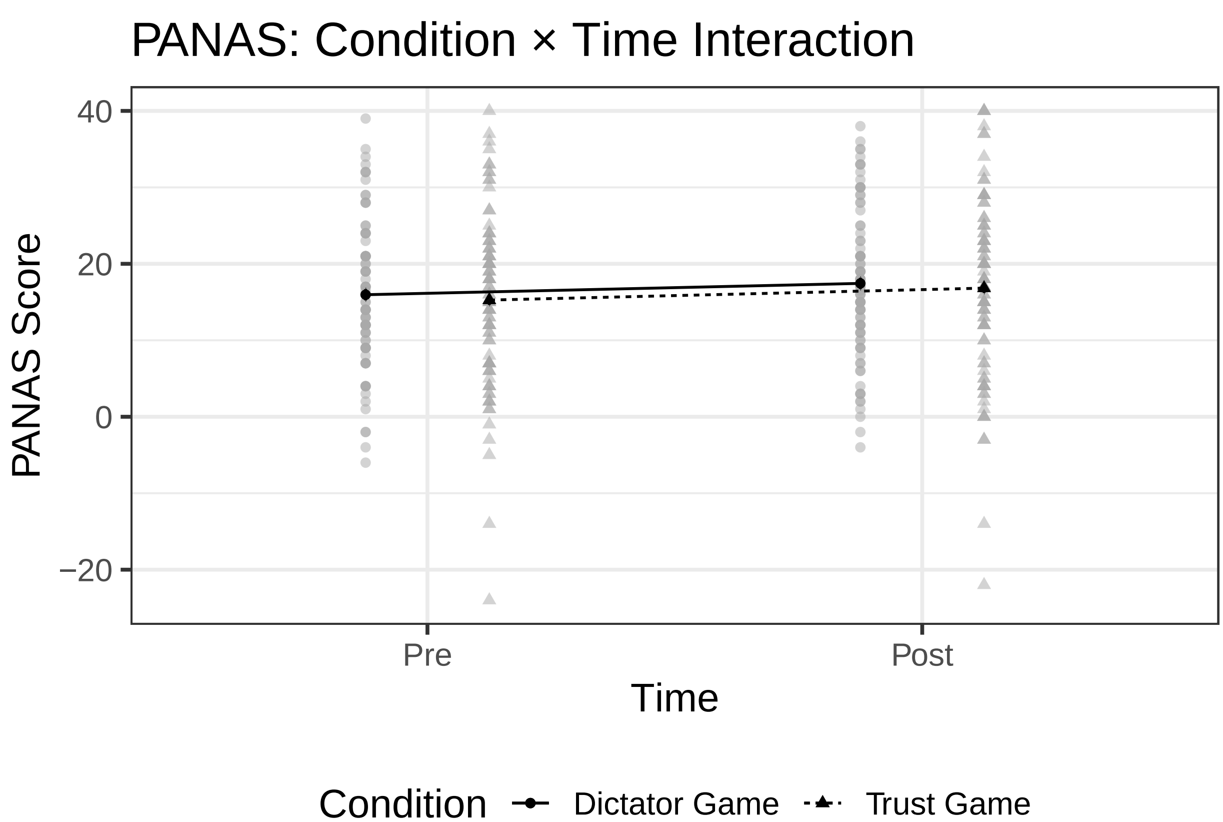
```r
Diff_ANOVA_PANAS = emmeans(res_ANOVA_PANAS,"Condition")
pairs(Diff_ANOVA_PANAS,adjust="holm")
```

```
##  contrast                   estimate   SE  df t.ratio p.value
##  Dictator Game - Trust Game    0.659 1.61 168   0.409  0.6832
##
## Results are averaged over the levels of: Time
```

```r
plot_ANOVA_PANAS <- afex_plot(res_ANOVA_PANAS, x = "Time", trace = "Condition", error = "within") +
  labs(
    title = "PANAS: Condition × Time Interaction",
    x = "Time", y = "PANAS Score"
  )
```

```
## Warning: Panel(s) show a mixed within-between-design.
## Error bars do not allow comparisons across all means.
## Suppress error bars with: error = "none"
```

```r
plot_ANOVA_PANAS
```



```r
# ANOVA STAIS

data_long_STAIS <- data_corrected_stais %>%
  select(Prolific_ID, Condition, STAIS_Pre, STAIS_Post) %>%
  pivot_longer(cols = c(STAIS_Pre, STAIS_Post),
               names_to = "Time",
               values_to = "STAIS") %>%
  mutate(Time = factor(Time, levels = c("STAIS_Pre", "STAIS_Post"),
                       labels = c("Pre", "Post")))

res_ANOVA_STAIS <- aov_car(STAIS ~ Condition * Time + Error(Prolific_ID/Time),
                           data = data_long_STAIS)
```

```
## Warning: More than one observation per design cell, aggregating data using `fun_aggregate = mean`.
## To turn off this warning, pass `fun_aggregate = mean` explicitly.

## Contrasts set to contr.sum for the following variables: Condition
```

```r
summary(res_ANOVA_STAIS)
```

```
##
## Univariate Type III Repeated-Measures ANOVA Assuming Sphericity
##
##                 Sum Sq num Df Error SS den Df  F value    Pr(>F)
## (Intercept)     32533      1   7587.8    165 707.4375 < 2.2e-16 ***
## Condition         357      1   7587.8    165   7.7529  0.005989 **
## Time                1      1    229.9    165   0.4437  0.506253
## Condition:Time      0      1    229.9    165   0.0355  0.850685
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

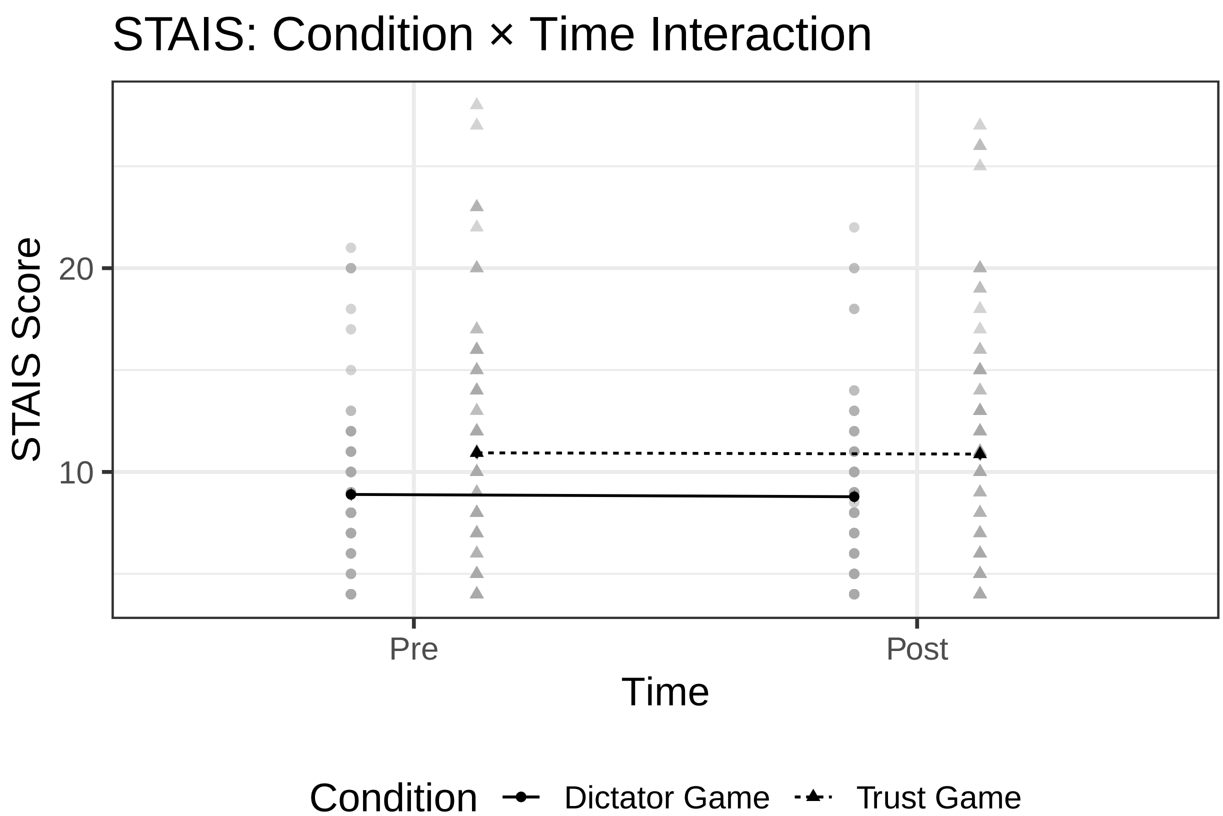
```r
Diff_ANOVA_STAIS <- emmeans(res_ANOVA_STAIS, ~ Condition * Time)
pairs(Diff_ANOVA_STAIS, adjust = "holm")
```

```
##  contrast                               estimate    SE  df t.ratio p.value
##  Dictator Game Pre - Trust Game Pre      -2.0429 0.763 165  -2.679  0.0325
##  Dictator Game Pre - Dictator Game Post   0.1105 0.180 165   0.614  1.0000
##  Dictator Game Pre - Trust Game Post     -1.9812 0.753 165  -2.630  0.0325
##  Trust Game Pre - Dictator Game Post      2.1534 0.754 165   2.856  0.0290
##  Trust Game Pre - Trust Game Post         0.0617 0.185 165   0.333  1.0000
##  Dictator Game Post - Trust Game Post    -2.0917 0.745 165  -2.809  0.0290
##
## P value adjustment: holm method for 6 tests
```

```r
plot_ANOVA_STAIS <- afex_plot(res_ANOVA_STAIS,
                              x = "Time",
                              trace = "Condition",
                              error = "within") +
  labs(x = "Time", y = "STAIS Score",
       title = "STAIS: Condition × Time Interaction")
```

```
## Warning: Panel(s) show a mixed within-between-design.
## Error bars do not allow comparisons across all means.
## Suppress error bars with: error = "none"
```

```
plot_ANOVA_STAIS
```



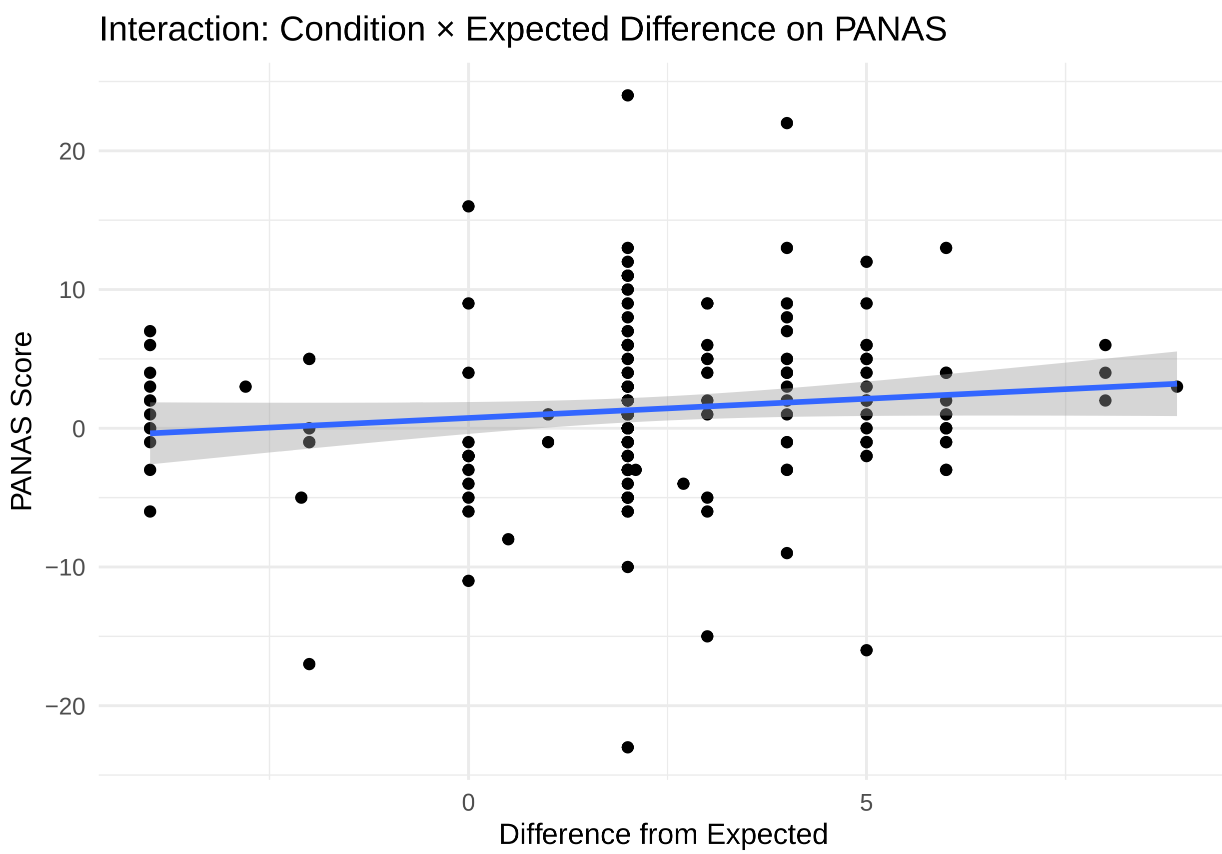

```
# 2°) LR Diff Expectation

# LR PANAS

res_LR_PANAS <- lm(DV_PANAS ~ IV_Dif._Expected, data = data_corrected_panas)
summary(res_LR_PANAS)
```

```
##
## Call:
## lm(formula = DV_PANAS ~ IV_Dif._Expected, data = data_corrected_panas)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -11.4796  -2.9911  -0.4796   2.7876  11.5204
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)        0.9911     0.4542   2.182   0.0305 *
## IV_Dif._Expected   0.2443     0.1281   1.907   0.0583 .
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 4.501 on 170 degrees of freedom
## Multiple R-squared:  0.02093,    Adjusted R-squared:  0.01518
## F-statistic: 3.635 on 1 and 170 DF,  p-value: 0.05827
```

```
plot_LR_PANAS <- ggplot(data, aes(x = IV_Dif._Expected, y = DV_PANAS)) +
  geom_point() +
  geom_smooth(method = "lm", se = TRUE) +
  theme_minimal() +
  labs(title = "Interaction: Condition × Expected Difference on PANAS",
       x = "Difference from Expected", y = "PANAS Score")
plot_LR_PANAS
```

```
## `geom_smooth()` using formula = 'y ~ x'
```



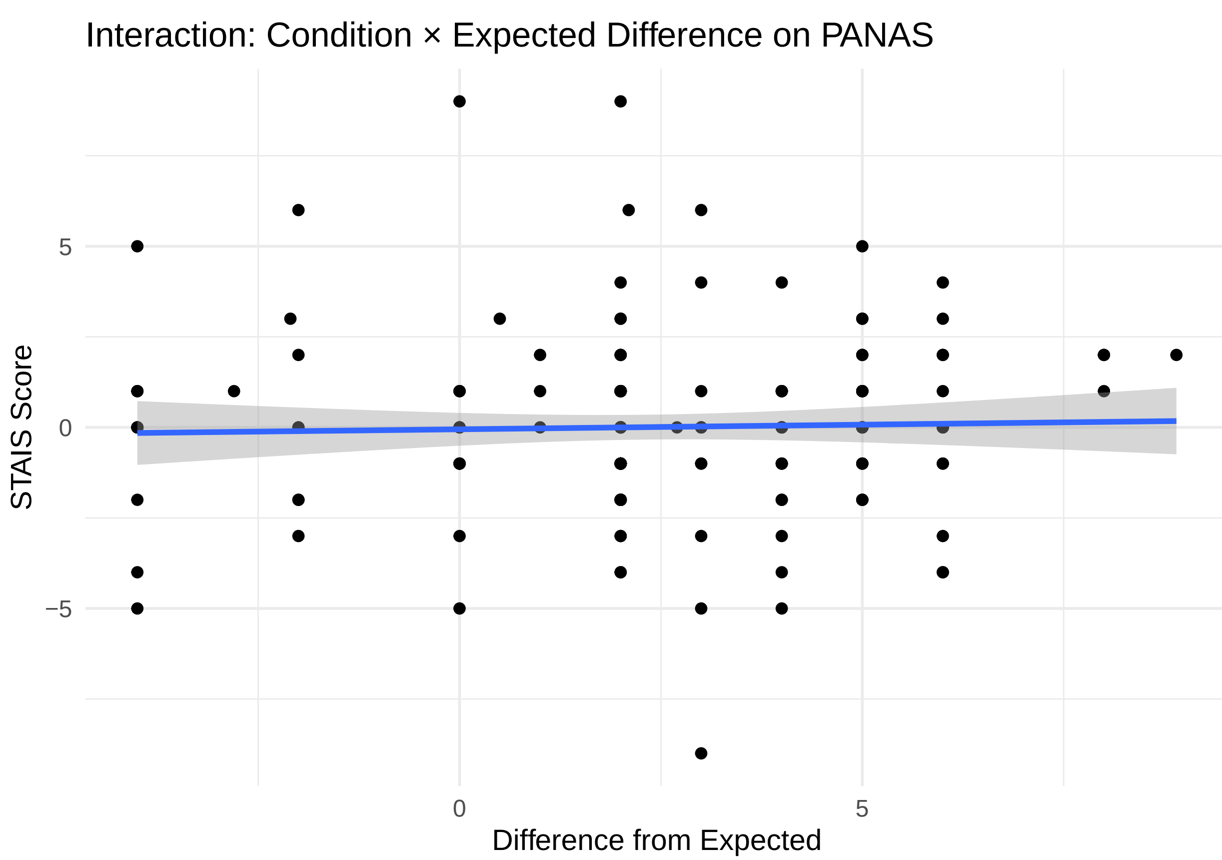

```
# LR STAIS

res_LR_STAIS <- lm(DV_STAIS ~ IV_Dif._Expected, data = data_corrected_stais)
summary(res_LR_STAIS)
```

```
##
## Call:
```

```
## lm(formula = DV_STAIS ~ IV_Dif._Expected, data = data_corrected_stais)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.1347 -0.8801  0.1199  1.1199  4.1199
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)      -0.24730    0.17413  -1.420    0.157
## IV_Dif._Expected  0.06367    0.04912   1.296    0.197
##
## Residual standard error: 1.668 on 166 degrees of freedom
## Multiple R-squared:  0.01002,    Adjusted R-squared:  0.004057
## F-statistic:  1.68 on 1 and 166 DF,  p-value: 0.1967
```

```r
plot_LR_STAIS <- ggplot(data, aes(x = IV_Dif._Expected, y = DV_STAIS)) +
  geom_point() +
  geom_smooth(method = "lm", se = TRUE) +
  theme_minimal() +
  labs(title = "Interaction: Condition × Expected Difference on PANAS",
       x = "Difference from Expected", y = "STAIS Score")
plot_LR_STAIS
```

```
## `geom_smooth()` using formula = 'y ~ x'
```



```r
# 3°) ANCOVA Amount Sent Back * Time Analysis

# ANCOVA PANAS

data_TG_PANAS <- data_corrected_panas %>%
  filter(Condition == "Trust Game")

summary(data_TG_PANAS$Average_Amounts_Sent_Back)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    0.00    8.15   12.25   12.20   15.47   36.00
```

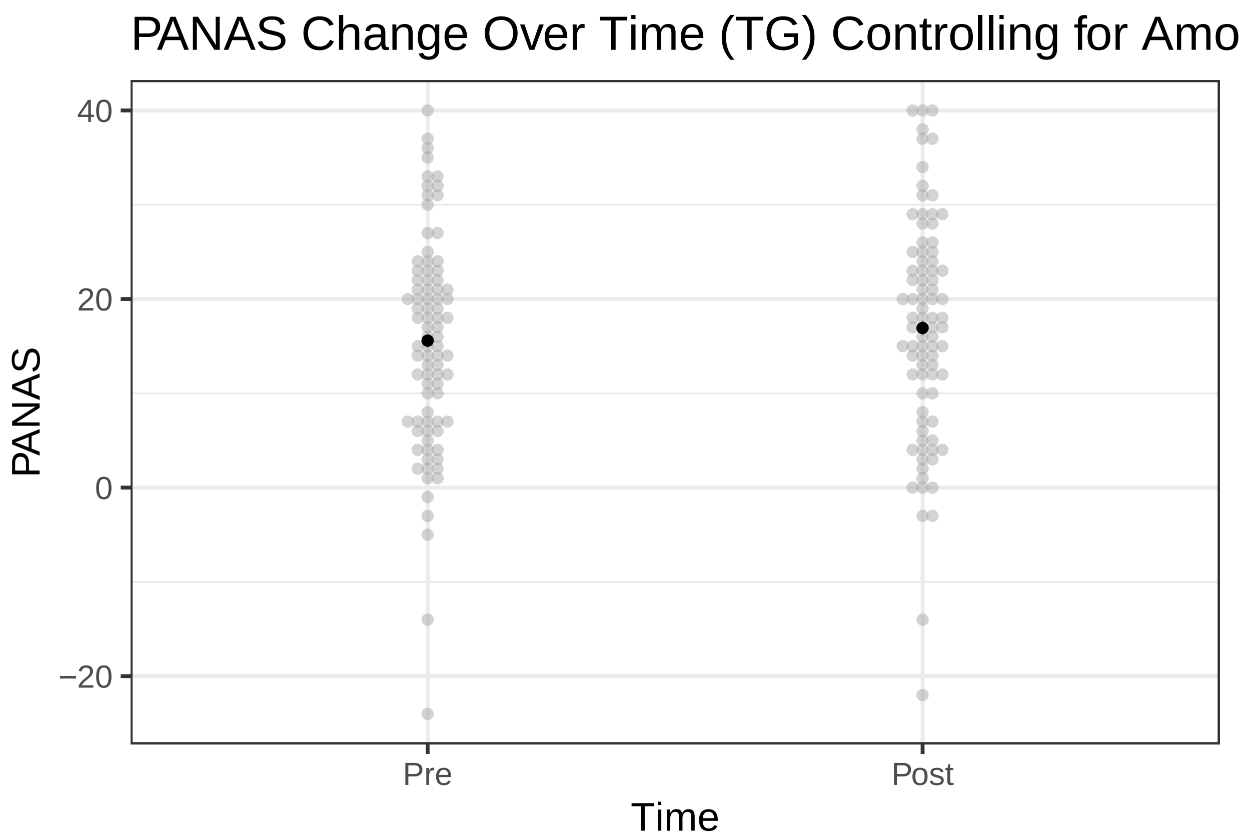
```r
data_long_TG_PANAS <- data_TG_PANAS %>%
  select(Prolific_ID, PANAS_Pre, PANAS_Post, Average_Amounts_Sent_Back) %>%
  pivot_longer(cols = c(PANAS_Pre, PANAS_Post),
               names_to = "Time",
               values_to = "PANAS") %>%
  mutate(
    Time = factor(Time, levels = c("PANAS_Pre", "PANAS_Post"),
                  labels = c("Pre", "Post"))
  )

res_ANCOVA_TG_PANAS <- aov_car(
  PANAS ~ Time + Average_Amounts_Sent_Back + Error(Prolific_ID/Time),
  data = data_long_TG_PANAS
)
```

```
## Converting to factor: Average_Amounts_Sent_Back

## Warning: More than one observation per design cell, aggregating data using `fun_aggregate = mean`.
## To turn off this warning, pass `fun_aggregate = mean` explicitly.

## Contrasts set to contr.sum for the following variables: Average_Amounts_Sent_Back
```

```r
summary(res_ANCOVA_TG_PANAS)
```

```
##
## Univariate Type III Repeated-Measures ANOVA Assuming Sphericity
##
##                                  Sum Sq num Df Error SS den Df  F value    Pr(>F)
## (Intercept)                       38634      1   7937.4     21 102.2149 1.599e-09
## Average_Amounts_Sent_Back         14273     63   7937.4     21   0.5994   0.93856
## Time                                 65      1    178.8     21   7.6846   0.01142
## Average_Amounts_Sent_Back:Time      558     63    178.8     21   1.0395   0.48088
##
## (Intercept)                      ***
## Average_Amounts_Sent_Back
## Time                             *
## Average_Amounts_Sent_Back:Time
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
plot_ANCOVA_TG_PANAS <- afex_plot(res_ANCOVA_TG_PANAS, x = "Time", error = "within") +
  labs(title = "PANAS Change Over Time (TG) Controlling for Amount Sent Back",
       y = "PANAS", x = "Time")
plot_ANCOVA_TG_PANAS
```




```r
# ANCOVA STAIS

data_TG_STAIS <- data_corrected_stais %>%
  filter(Condition == "Trust Game")

summary(data_TG_STAIS$Average_Amounts_Sent_Back)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    0.00    8.10   12.00   12.15   15.50   36.00
```

```r
data_long_TG_STAIS <- data_TG_STAIS %>%
  select(Prolific_ID, STAIS_Pre, STAIS_Post, Average_Amounts_Sent_Back) %>%
  pivot_longer(cols = c(STAIS_Pre, STAIS_Post),
               names_to = "Time",
               values_to = "STAIS") %>%
  mutate(
    Time = factor(Time, levels = c("STAIS_Pre", "STAIS_Post"),
                  labels = c("Pre", "Post"))
  )
```

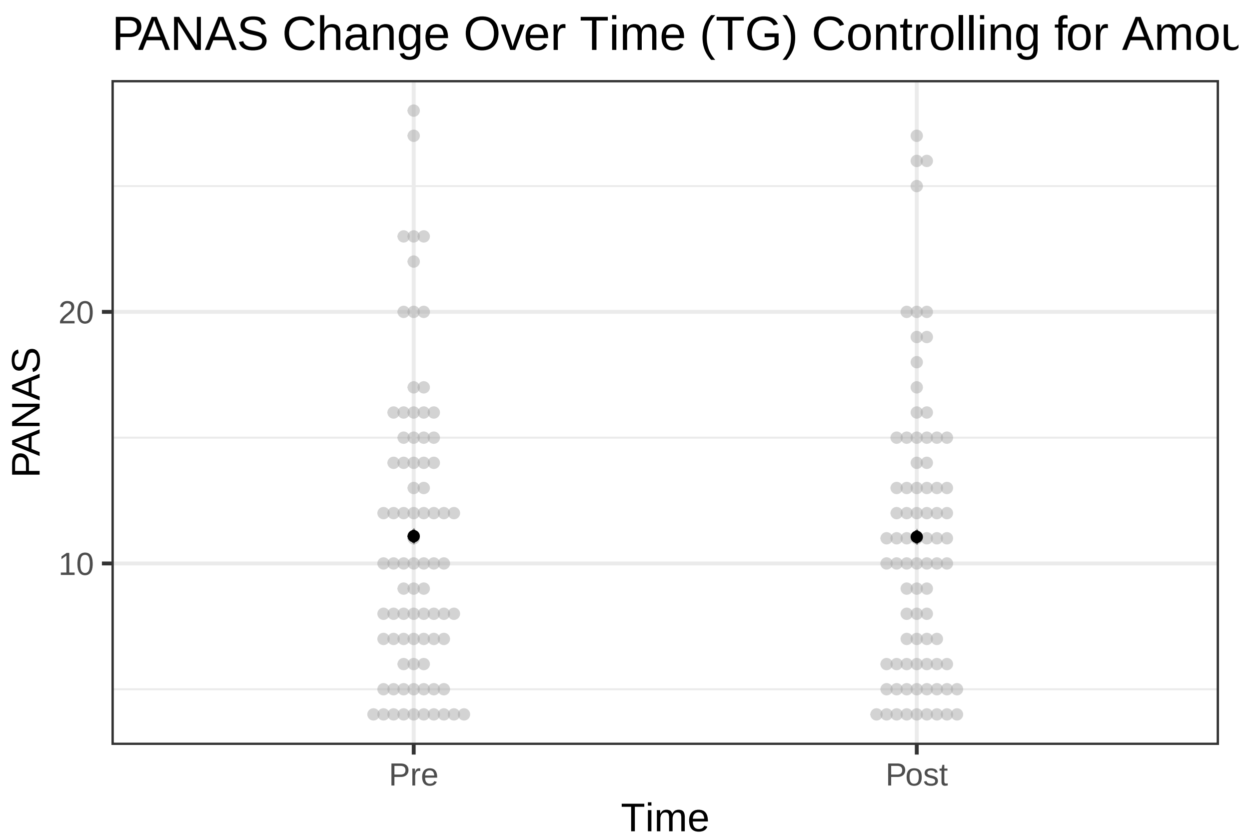
```r
res_ANCOVA_TG_STAIS <- aov_car(
  STAIS ~ Time + Average_Amounts_Sent_Back + Error(Prolific_ID/Time),
  data = data_long_TG_STAIS
)
```

```
## Converting to factor: Average_Amounts_Sent_Back
## Contrasts set to contr.sum for the following variables: Average_Amounts_Sent_Back
```

```r
summary(res_ANCOVA_TG_STAIS)
```

```
##
## Univariate Type III Repeated-Measures ANOVA Assuming Sphericity
##
##                                   Sum Sq num Df Error SS den Df  F value
## (Intercept)                      16956.9      1   1402.1     21 253.9723
## Average_Amounts_Sent_Back         3734.0     59   1402.1     21   0.9479
## Time                                 0.0      1     22.5     21   0.0249
## Average_Amounts_Sent_Back:Time      88.8     59     22.5     21   1.4055
##                                    Pr(>F)
## (Intercept)                      3.328e-13 ***
## Average_Amounts_Sent_Back           0.5814
## Time                                0.8761
## Average_Amounts_Sent_Back:Time      0.1957
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
plot_ANCOVA_TG_STAIS <- afex_plot(res_ANCOVA_TG_STAIS, x = "Time", error = "within") +
  labs(title = "PANAS Change Over Time (TG) Controlling for Amount Sent Back",
       y = "PANAS", x = "Time")
plot_ANCOVA_TG_STAIS
```


PANAS Change Over Time (TG) Controlling for Amou
PANAS
20
10
Pre
Post
Time