TER - Résultats - nback

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.3     v purrr   0.3.4
## v tibble  3.1.2     v dplyr   1.0.6
## v tidyr   1.1.3     v stringr 1.4.0
## v readr   1.4.0     v forcats 0.5.1
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(ggpubr)
library(rstatix)
```

```
##
## Attachement du package : 'rstatix'
```

```
## L'objet suivant est masqué depuis 'package:stats':
##
##     filter
```

N-Back

```
nback <- read.csv2("data/nback.csv", sep = ",", fileEncoding="UTF-8-BOM")

nback$groupe <- as.factor(nback$groupe)
nback$subject_id <- as.factor(nback$subject_id)
nback$part <- factor(nback$part, levels = c("2-back-pre", "2-back-post"))
nback$id_2_back <- as.factor(nback$id_2_back)
nback$trial_id <- as.factor(nback$trial_id)

nback[is.na(nback)] <- 0

nback <- nback %>%
  filter(subject_id != 13) # trop de no-input

nback_summary <- nback %>%
  group_by(groupe, part) %>%
  summarize_if(is.numeric, mean)

nback_transc <- nback %>%
  filter(groupe == "transc")

nback_control <- nback %>%
  filter(groupe == "control")
```

```
nback_summary
```

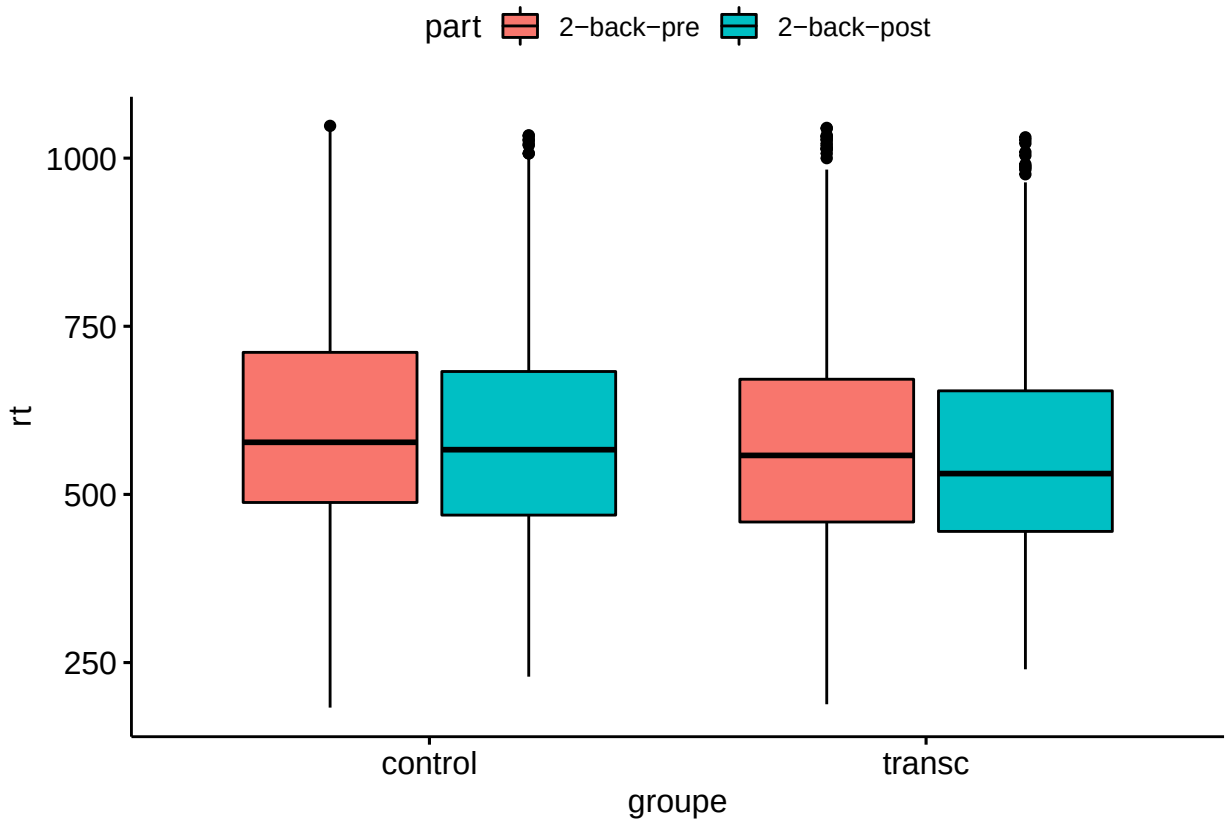
```
## # A tibble: 4 x 9
## # Groups:   groupe [2]
##   groupe  part       False.alarm Mismatch No.input Non.target Target Score    rt
##   <fct>   <fct>            <dbl>    <dbl>    <dbl>      <dbl>  <dbl> <dbl> <dbl>
## 1 control 2-back-pre      0.0506   0.0655  0.00893      0.704  0.171 0.75   643.
## 2 control 2-back-po~      0.0327   0.0580  0.0134       0.717  0.179 0.792  607.
## 3 transc  2-back-pre      0.0417   0.0452  0.0226       0.698  0.193 0.781  591.
## 4 transc  2-back-po~      0.0429   0.0488  0.0262       0.696  0.186 0.764  571.
```

Temps de réponse

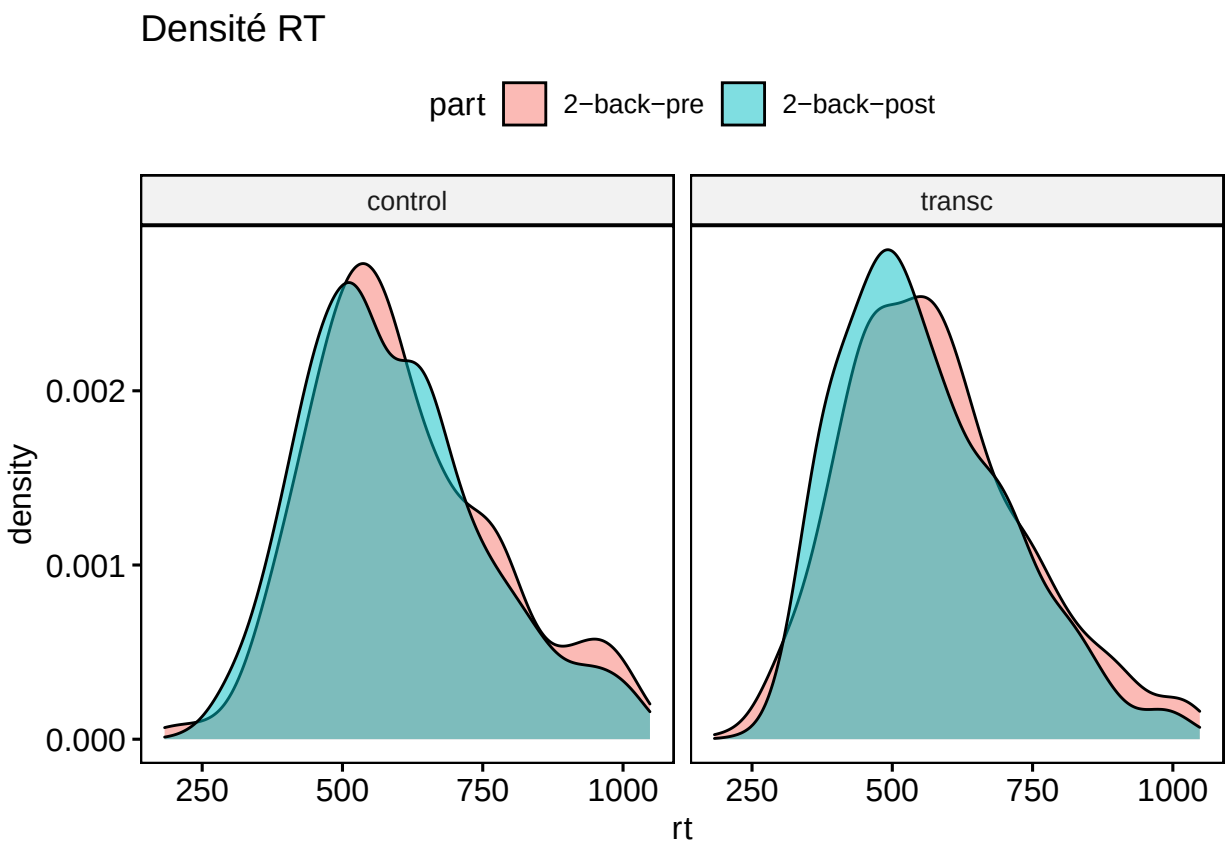
```
nback_rt <- nback

nback_rt %>%
  group_by(groupe, part) %>%
  get_summary_stats(rt)
```

```
## # A tibble: 4 x 15
##   groupe  part   variable     n   min   max median    q1    q3   iqr   mad  mean
##   <fct>   <fct>  <chr>    <dbl> <dbl> <dbl>  <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1 control 2-bac~ rt         672     0  1852   587   494.  750.  256   173.  643.
## 2 control 2-bac~ rt         672     0  1809   572.  469   702.  232.  163.  607.
## 3 transc  2-bac~ rt         840     0  1784   559   457.  685   228.  163.  591.
## 4 transc  2-bac~ rt         840     0  1993   532.  440   671   231   166.  571.
## # ... with 3 more variables: sd <dbl>, se <dbl>, ci <dbl>
```

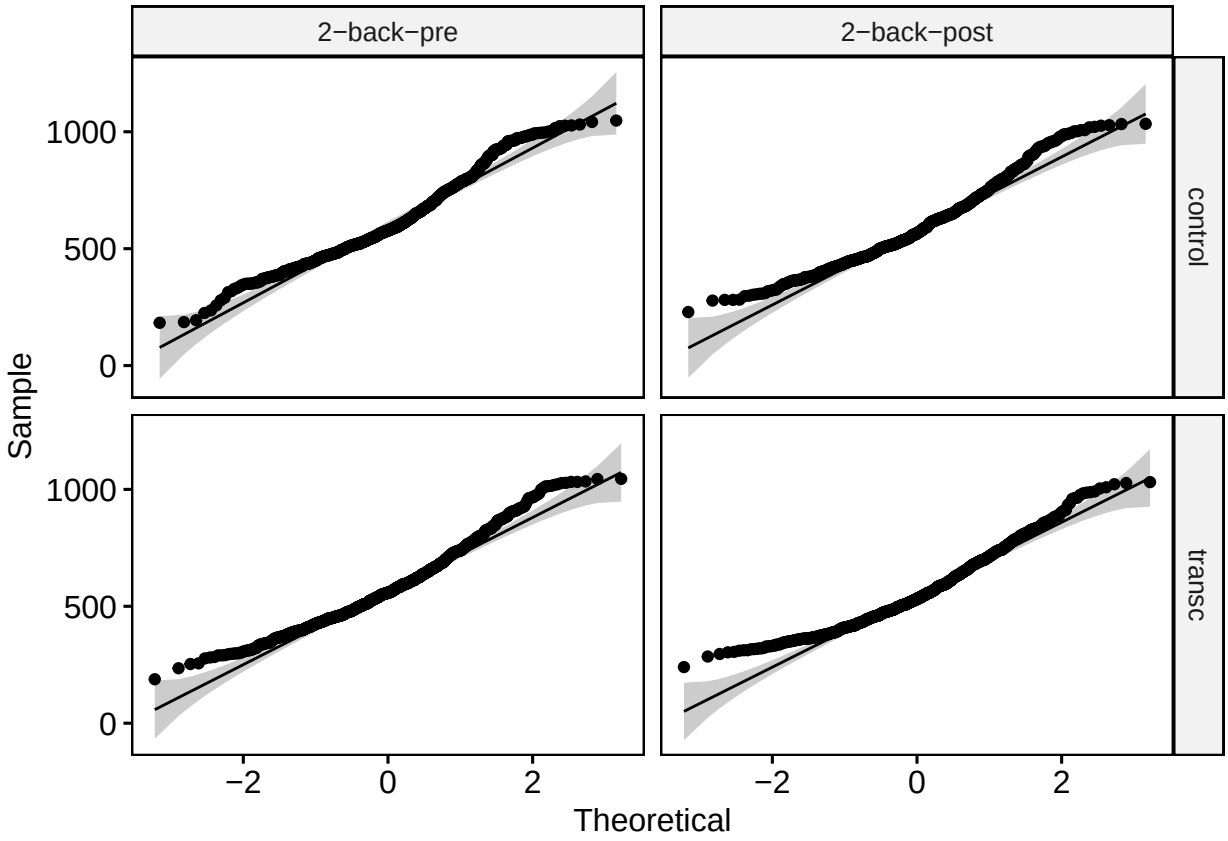
```
out_rt <- boxplot.stats(nback_rt$rt)$out


nback_rt <- nback_rt %>%
  filter(!rt %in% out_rt)

ggboxplot(nback_rt, x = "groupe", y = "rt", fill = "part")
```




```
ggdensity(nback_rt, x = "rt", fill = "part", main = "Densité RT", facet.by = "groupe")
```




```
ggqqplot(nback_rt, x = "rt", facet.by = c("groupe", "part"))
```

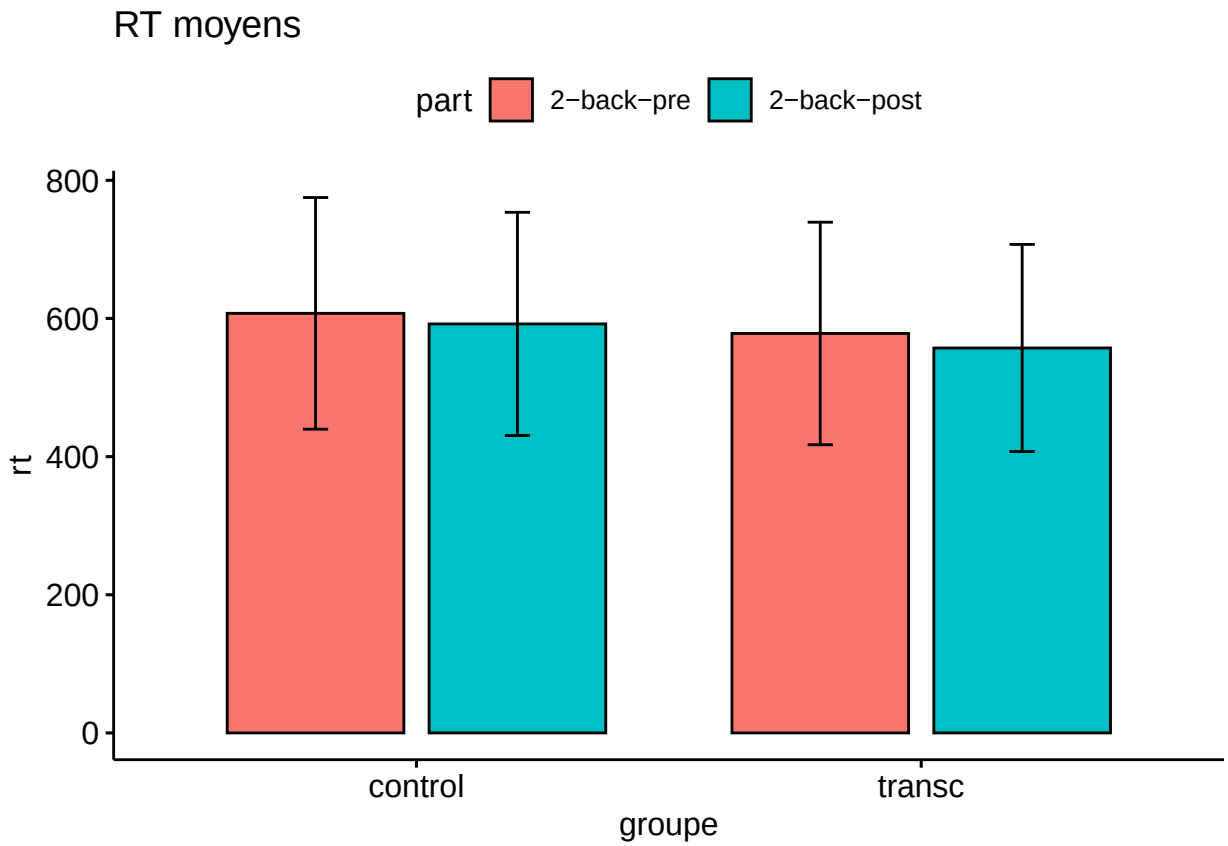


Shapiro

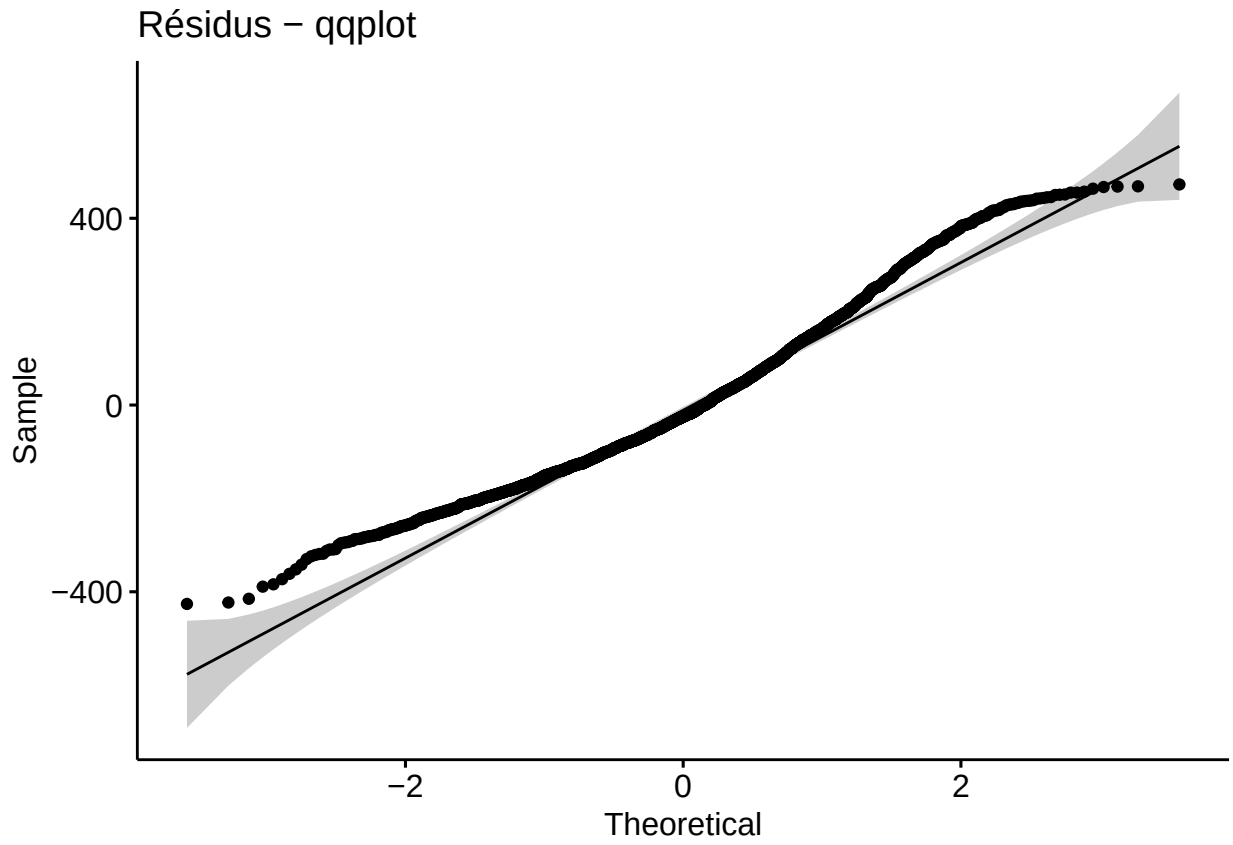
```
nback_rt %>%
  group_by(groupe, part) %>%
  shapiro_test(rt)
```

```
## # A tibble: 4 x 5
##   groupe  part        variable statistic        p
##   <fct>   <fct>       <chr>        <dbl>    <dbl>
## 1 control 2-back-pre  rt           0.969 3.67e-10
## 2 control 2-back-post rt           0.971 4.96e-10
## 3 transc  2-back-pre  rt           0.974 1.25e-10
## 4 transc  2-back-post rt           0.964 5.23e-13
```

```
ggbarplot(nback_rt, x = "groupe", y = "rt", fill = "part", position = position_dodge(0.8), add = "mean_s
```




```
rt_model <- lm(data = nback_rt, rt~part+groupe)
ggqqplot(residuals(rt_model), main = "Résidus - qqplot")
```



Wilconxon

```
rt_kruskal_g <- nback_rt %>%
  group_by(part) %>%
  wilcox_test(rt ~ groupe)

rt_kruskal_g
```

Effet du groupe

```
## # A tibble: 2 x 8
##   part        .y.   group1  group2    n1    n2 statistic         p
## * <fct>       <chr> <chr>   <chr>  <int> <int>     <dbl>     <dbl>
## 1 2-back-pre  rt    control transc   626   792   272232  0.00148
## 2 2-back-post rt    control transc   638   785   282118. 0.0000392
```

```
rt_kruskal_t <- nback %>%
  group_by(groupe) %>%
  wilcox_test(rt ~ part, paired = T)

rt_kruskal_t
```

Effet post-test

```
## # A tibble: 2 x 8
##   groupe  .y.   group1     group2         n1    n2 statistic      p
```

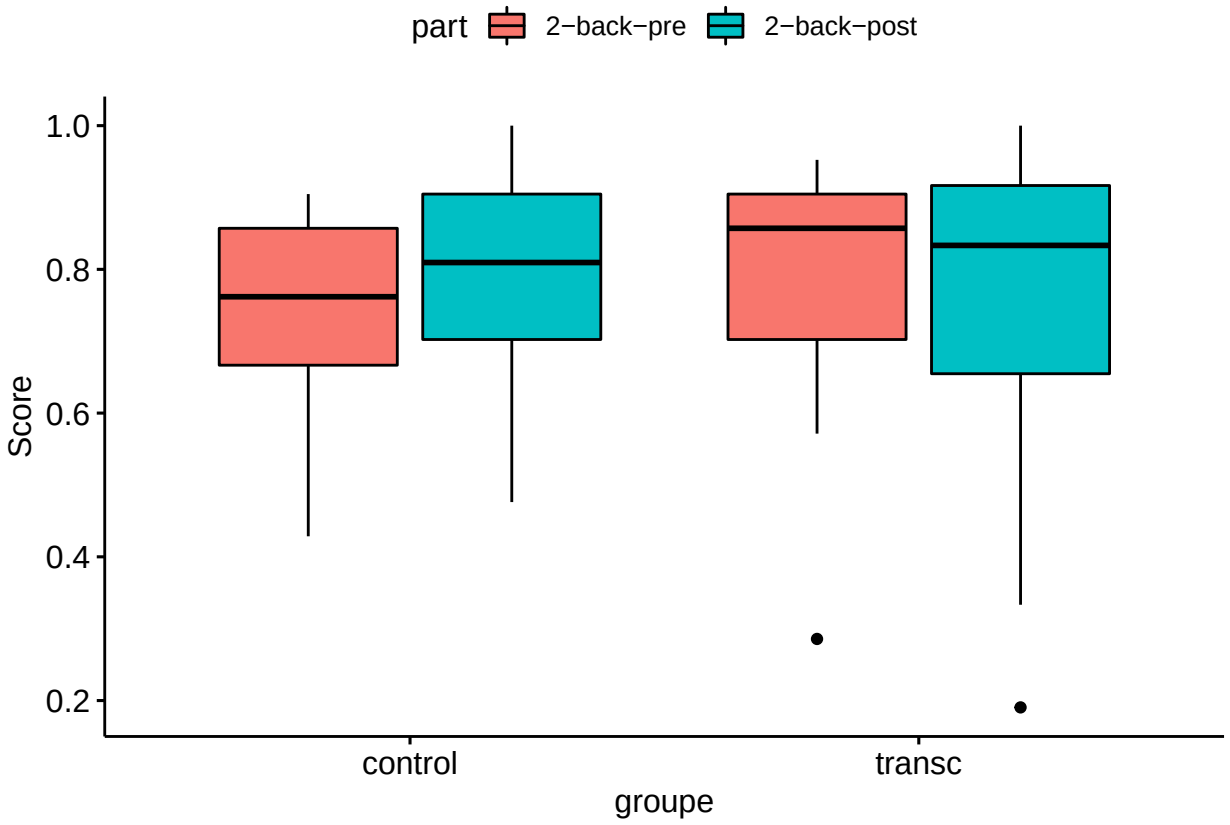
```
## * <fct>   <chr> <chr>      <chr>       <int> <int>     <dbl>  <dbl>
## 1 control rt    2-back-pre 2-back-post   672   672   126572. 0.0037
## 2 transc  rt    2-back-pre 2-back-post   840   840   191106. 0.0145
```

Performances

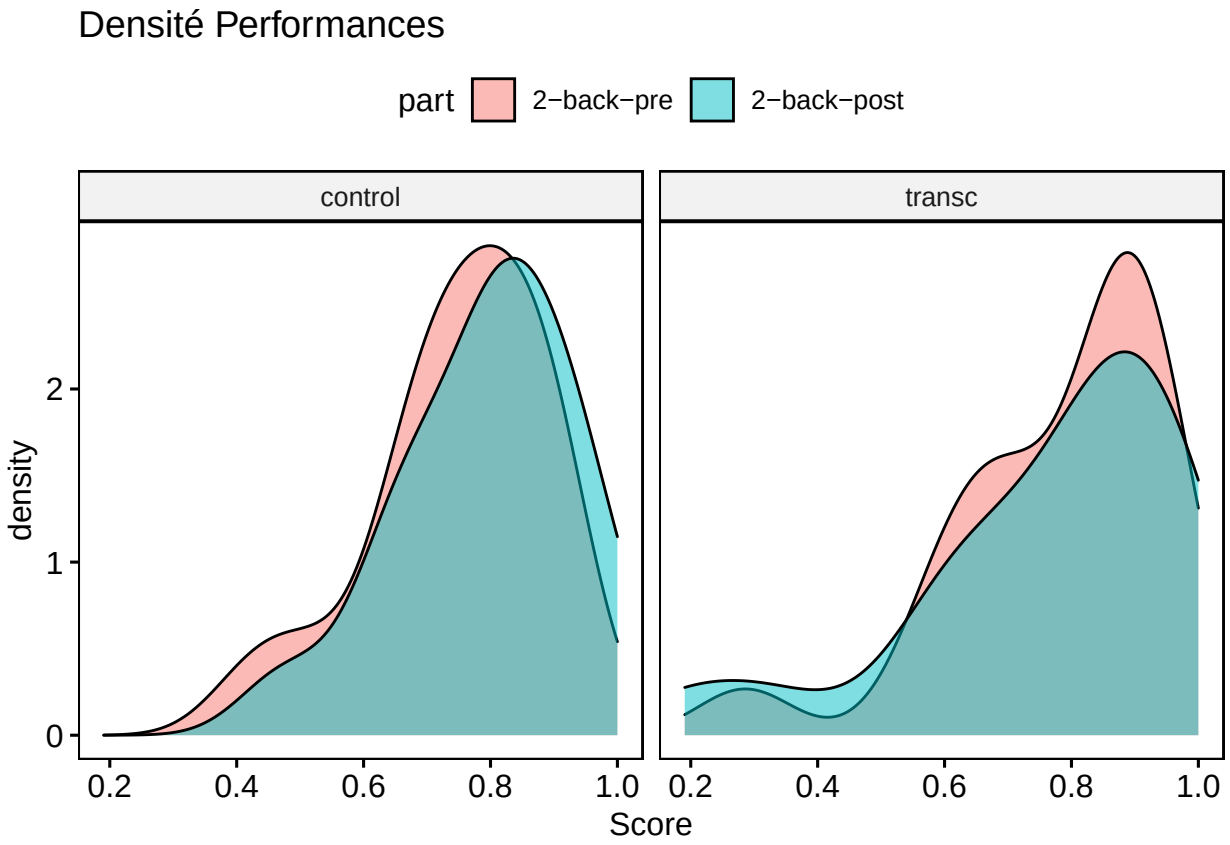
```
nback_score <- nback %>%
  group_by(groupe, subject_id, part, id_2_back) %>%
  summarise_if(is.numeric, mean)

nback_score %>%
  group_by(groupe, part) %>%
  get_summary_stats(Score)
```

```
## # A tibble: 4 x 15
##   groupe  part   variable     n   min   max median    q1    q3   iqr   mad  mean
##   <fct>   <fct>  <chr>    <dbl> <dbl> <dbl>  <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1 control 2-bac~ Score       16 0.429 0.905  0.762 0.667 0.857 0.19  0.141 0.75
## 2 control 2-bac~ Score       16 0.476 1      0.81  0.702 0.905 0.202 0.141 0.792
## 3 transc  2-bac~ Score       20 0.286 0.952  0.857 0.702 0.905 0.202 0.141 0.781
## 4 transc  2-bac~ Score       20 0.19  1      0.833 0.655 0.917 0.262 0.177 0.764
## # ... with 3 more variables: sd <dbl>, se <dbl>, ci <dbl>
```

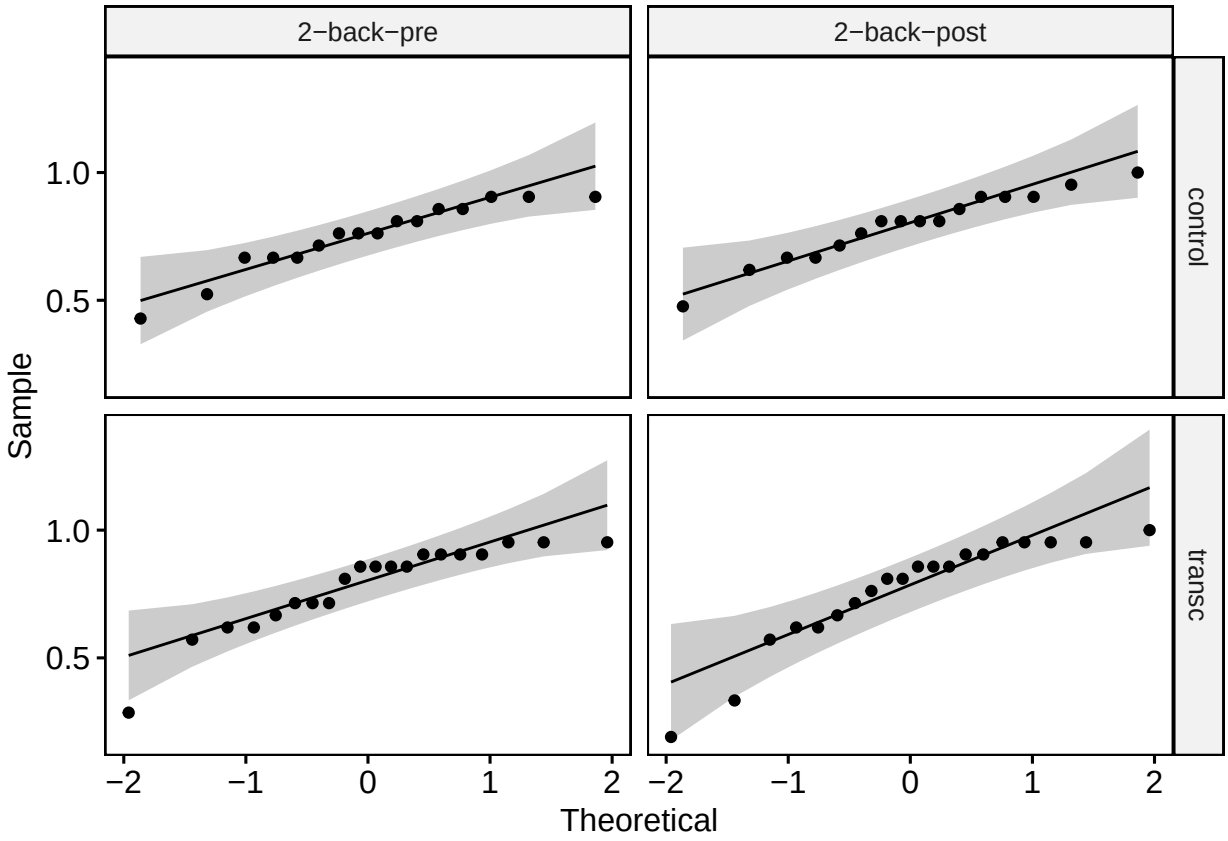
```
ggboxplot(nback_score, x = "groupe", y = "Score", fill = "part")
```




```
ggdensity(nback_score, x = "Score", fill = "part", main = "Densité Performances", facet.by = "groupe")
```




```
ggqqplot(nback_score, x = "Score", facet.by = c("groupe", "part"))
```

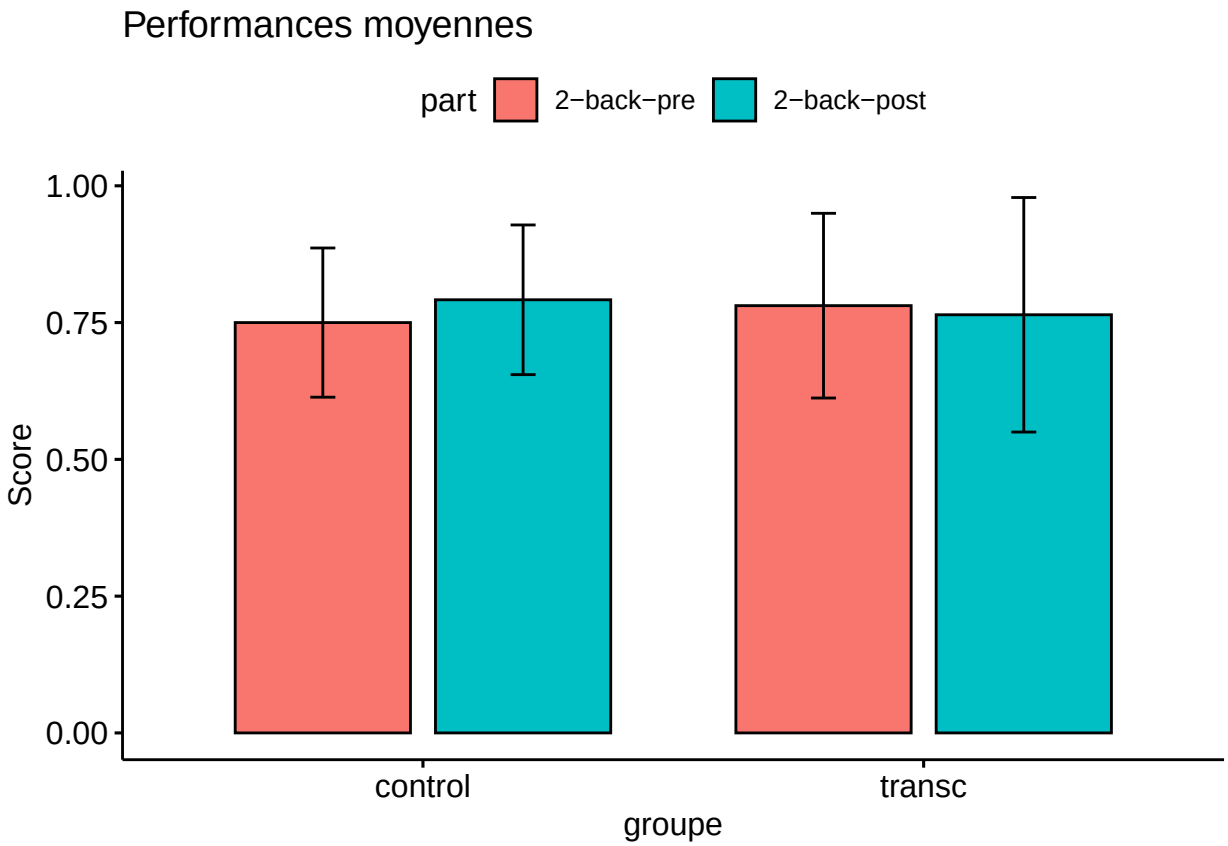


Shapiro

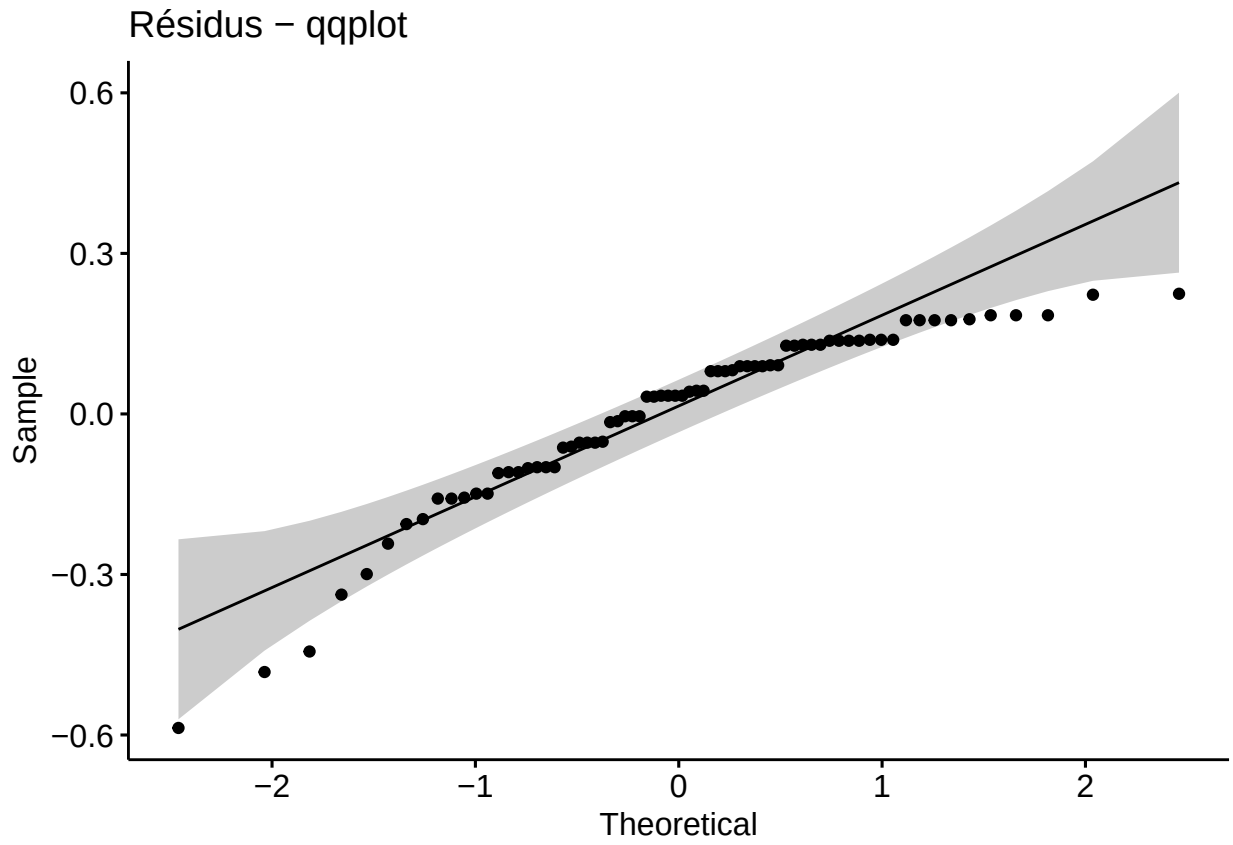
```
nback_score %>%
  group_by(groupe, part) %>%
  shapiro_test(Score)
```

```
## # A tibble: 4 x 5
##   groupe  part        variable statistic       p
##   <fct>   <fct>       <chr>        <dbl>   <dbl>
## 1 control 2-back-pre  Score        0.907 0.106
## 2 control 2-back-post Score        0.956 0.584
## 3 transc  2-back-pre  Score        0.854 0.00621
## 4 transc  2-back-post Score        0.859 0.00763
```

```
ggbarplot(nback_score, x = "groupe", y = "Score", fill = "part", position = position_dodge(0.8), add =
```




```
sc_model <- lm(data = nback_score, Score~part+groupe)
ggqqplot(residuals(sc_model), main = "Résidus - qqplot")
```



Wilconxon

```
sc_kruskal_g <- nback_score %>%
  group_by(part) %>%
  wilcox_test(Score ~ groupe)
sc_kruskal_g
```

Effet du groupe

```
## # A tibble: 2 x 8
##   part        .y.   group1  group2    n1    n2 statistic     p
## * <fct>       <chr> <chr>   <chr>  <int> <int>     <dbl> <dbl>
## 1 2-back-pre  Score control transc    16    20       130 0.344
## 2 2-back-post Score control transc    16    20       157 0.936
```

```
sc_kruskal_t <- nback_score %>%
  group_by(groupe) %>%
  wilcox_test(Score ~ part, paired = T)
sc_kruskal_t
```

Effet post-test

```
## # A tibble: 2 x 8
##   groupe  .y.   group1     group2         n1    n2 statistic     p
## * <fct>   <chr> <chr>      <chr>       <int> <int>     <dbl> <dbl>
## 1 control Score 2-back-pre 2-back-post    16    16      28   0.07
```

```
## 2 transc  Score 2-back-pre 2-back-post    20    20      56.5 0.568
```