Study #2: BFI-10

Initialise framework

```
knitr::read_chunk("start3.R")
```

```
library(puttytat4R)
source("init/database.R")
# outputString("* Connecting to database ...")
# dbConnect_operator()
# outputDone(step = T)
source("init/data-manipulation.R")
```

Analysis

Preparatory settings

Connect to database

```
dbConnect_operator("Study2")
```

```
## * Connected to database: URBAN-MV-VIE_UniBw_Study2
## ** See object: dbconn_study2
```

Load libaries

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

Load data

```
dat_bfi <- dbGetSrc(dbconn_study2, "t_q_bfi10")
```

```
## * Queried data from source: t_q_bfi10
```

```
head(dat_bfi)
```

```
##   subid bfi01 bfi02 bfi03 bfi04 bfi05 bfi06 bfi07 bfi08 bfi09 bfi10
## 1     1     2     5     2     4     3     4     2     4     2     5
## 2     2     2     2     2     2     3     4     2     4     2     4
## 3     3     3     4     4     3     4     4     4     3     2     4
## 4     4     4     3     2     2     4     4     4     4     3     4
## 5     5     4     2     4     5     5     3     3     4     2     1
## 6     6     2     3     2     5     4     4     3     4     2     4
```

Process data

Recode items

```
items2recode <- names(dat_bfi)[c(1, 3, 4, 5, 7) + 1]
dat_bfi <- recodeItems(dat_bfi, items2recode, 5)
head(dat_bfi)
```

```
##   subid bfi01 bfi02 bfi03 bfi04 bfi05 bfi06 bfi07 bfi08 bfi09 bfi10
## 1     1     4     5     4     2     3     4     4     4     2     5
## 2     2     4     2     4     4     3     4     4     4     2     4
## 3     3     3     4     2     3     2     4     2     3     2     4
## 4     4     2     3     4     4     2     4     2     4     3     4
## 5     5     2     2     2     1     1     3     3     4     2     1
## 6     6     4     3     4     1     2     4     3     4     2     4
```

Compute scores

```
scales2compute <-
  c("bfi_e",
    "bfi_n",
    "bfi_o",
    "bfi_c",
    "bfi_a")

items4scales <-
  list(paste0("bfi", sprintf("%02d", c(1, 6))),
       paste0("bfi", sprintf("%02d", c(4, 9))),
       paste0("bfi", sprintf("%02d", c(5, 10))),
       paste0("bfi", sprintf("%02d", c(3, 8))),
       paste0("bfi", sprintf("%02d", c(2, 7))))

dat_bfi <-
  computeScores(dat_bfi,
                scales2compute,
                items4scales,
                "mean",
                compZ = T)

head(dat_bfi[, c(scales2compute)])
```

```
##   bfi_e bfi_n bfi_o bfi_c bfi_a
## 1   4.0   2.0   4.0   4.0   4.5
## 2   4.0   3.0   3.5   4.0   3.0
## 3   3.5   2.5   3.0   2.5   3.0
## 4   3.0   3.5   3.0   4.0   2.5
## 5   2.5   1.5   1.0   3.0   2.5
## 6   4.0   1.5   3.0   4.0   3.0
```

```
head(dat_bfi[, c(paste0(scales2compute, ".z"))])
```

```
##      bfi_e.z    bfi_n.z    bfi_o.z    bfi_c.z     bfi_a.z
## 1  0.5435573 -0.3832787  0.8325775  0.3027937  1.94786225
```

```
## 2  0.5435573  0.9498647  0.2042171  0.3027937 -0.01636859
## 3  0.0000000  0.2832930 -0.4241432 -1.6095876 -0.01636859
## 4 -0.5435573  1.6164364 -0.4241432  0.3027937 -0.67111220
## 5 -1.0871146 -1.0498505 -2.9375847 -0.9721272 -0.67111220
## 6  0.5435573 -1.0498505 -0.4241432  0.3027937 -0.01636859
```

Visualisation and analysis

Gather data

```
dat_bfi.long <-
  dat_bfi %>%
  select(subid, bfi_e:bfi_a) %>%
  gather(key = subid) %>%
  setNames(., c("subid", "scale", "score")) %>%
  mutate(scale = factor(scale,
                        levels = scales2compute,
                        labels = c("Extraversion",
                                   "Neurotiscm",
                                   "Openness",
                                   "Consiousness",
                                   "Agreeableness")))
```

Adjust values for plotting points and lines

```
dat_bfi.long$scale.jittered <-
  jitter(as.numeric(dat_bfi.long$scale), factor = 0.4)
dat_bfi.long$score.jittered <-
  jitter(dat_bfi.long$score, factor = 1.5)

head(dat_bfi.long)
```

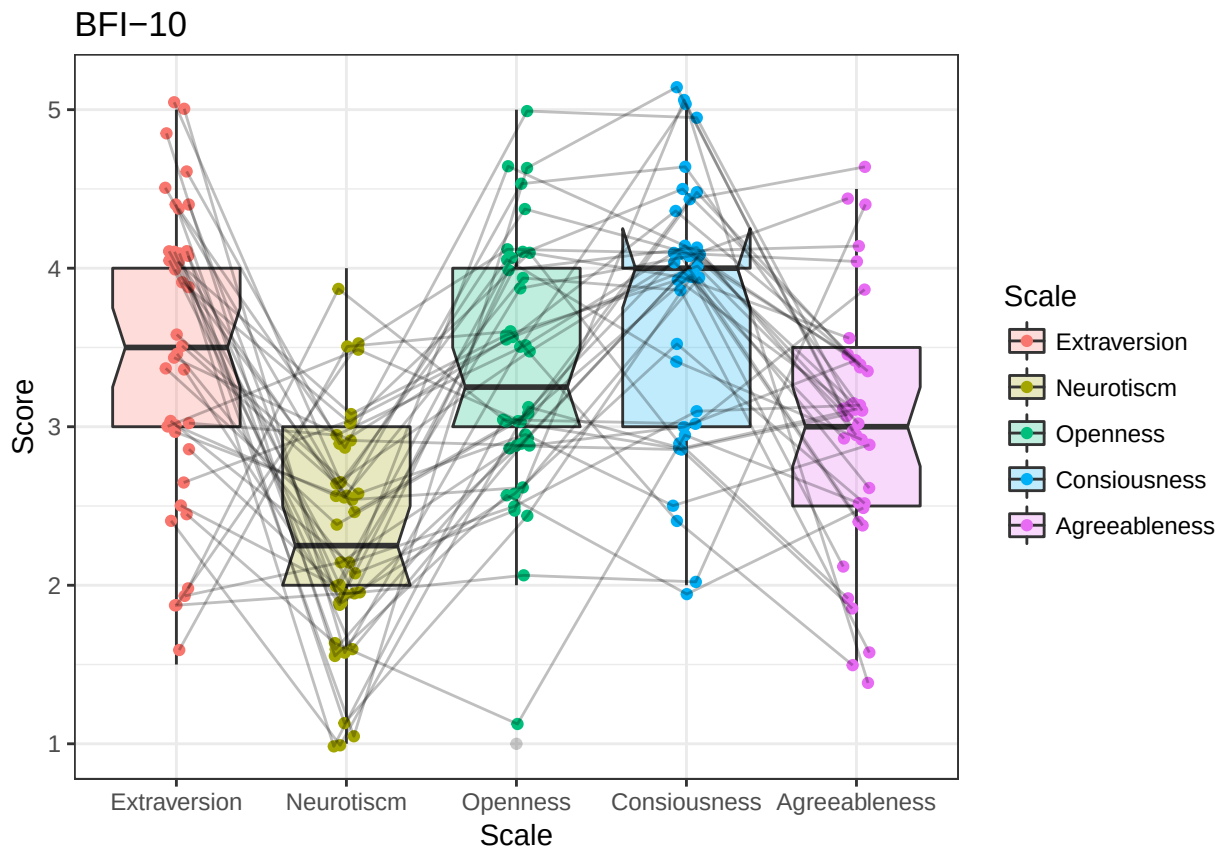
```
##   subid        scale score scale.jittered score.jittered
## 1     1 Extraversion   4.0      1.0692823       4.077918
## 2     2 Extraversion   4.0      1.0054728       4.040807
## 3     3 Extraversion   3.5      1.0020948       3.581384
## 4     4 Extraversion   3.0      0.9485018       3.001864
## 5     5 Extraversion   2.5      1.0604407       2.448190
## 6     6 Extraversion   4.0      0.9888089       4.103330
```

Plot boxplot

```
ggplot() +
  geom_boxplot(data = dat_bfi.long,
               aes(x = scale,
                   y = score,
                   fill = scale),
               alpha = 0.25,
               notch = T, notchwidth = 0.8) +
  geom_point(data = dat_bfi.long,
```

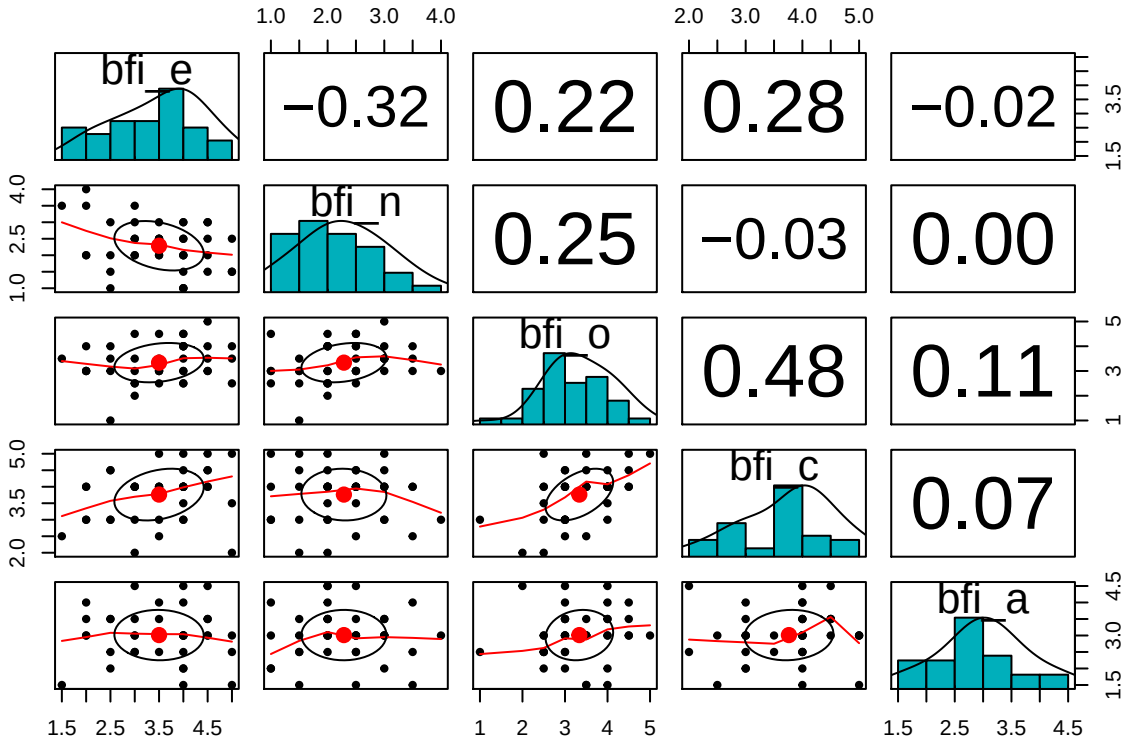
```
            aes(x = scale.jittered,
                y = dat_bfi.long$score.jittered,
                colour = scale)) +
  geom_line(data = dat_bfi.long,
            aes(x = scale.jittered,
                y = dat_bfi.long$score.jittered,
                group = subid),
            alpha = 0.25) +
  theme_bw() +
  ggtitle("BFI-10") +
  labs(x = "Scale",
       y = "Score",
       fill = "Scale", colour = "Scale")
```

```
## notch went outside hinges. Try setting notch=FALSE.
```



Correlation

```
pairs.panels(dat_bfi[, scales2compute],
             method = "pearson", # correlation method
             hist.col = "#00AFBB",
             density = TRUE,  # show density plots
             ellipses = TRUE # show correlation ellipses
)
```


bfi_e
bfi_n
bfi_o
bfi_c
bfi_a
−0.32
0.22
0.28
−0.02
0.25
−0.03
0.00
0.48
0.11
0.07