Norming Analysis for Turkish Materials

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```
library(tidyverse)
```

```
# function for reading PCIBEX
read.pcibex <- function(filepath, auto.colnames = TRUE, fun.col = function(col, cols) {
                            cols[cols == col] <- paste(col, "Ibex", sep = ".")
                            return(cols)
                        }) {
    n.cols <- max(count.fields(filepath, sep = ",", quote = NULL), na.rm = TRUE)
    if (auto.colnames) {
        cols <- c()
        con <- file(filepath, "r")
        while (TRUE) {
            line <- readLines(con, n = 1, warn = FALSE)
            if (length(line) == 0) {
                break
            }
            m <- regmatches(line, regexec("^# (\\d+)\\. (.+)\\.$", line))[[1]]
            if (length(m) == 3) {
                index <- as.numeric(m[2])
                value <- m[3]
                if (index < length(cols)) {
                    cols <- c()
                }
                if (is.function(fun.col)) {
                    cols <- fun.col(value, cols)
                }
                cols[index] <- value
                if (index == n.cols) {
                    break
                }
            }
        }
```

```
        close(con)
        return(read.csv(filepath, comment.char = "#", header = FALSE, col.names = cols))
    } else {
        return(read.csv(filepath, comment.char = "#", header = FALSE, col.names = seq(1:n.co
    }
}
```

```
# read the data
Data <- read.pcibex("../results_NOV23.csv")

# janitor clean names
Data <- janitor::clean_names(Data)

Data$subject <- with(Data, paste(results_reception_time, md5_hash_of_participant_s_ip_addres
    as.factor() %>%
    as.integer() %>%
    sprintf("S[%s]", .) %>%
    as.factor()

Data <- Data %>% dplyr::select(-results_reception_time, -md5_hash_of_participant_s_ip_addres

TypData <- Data %>%
    filter(penn_element_type == "Scale")



TypData$value <- as.numeric(as.character(TypData$value))

length(unique(TypData$subject))
```

```
[1] 20
```

```
# Show how many NAs in condition column
sum(is.na(TypData$condition))
```

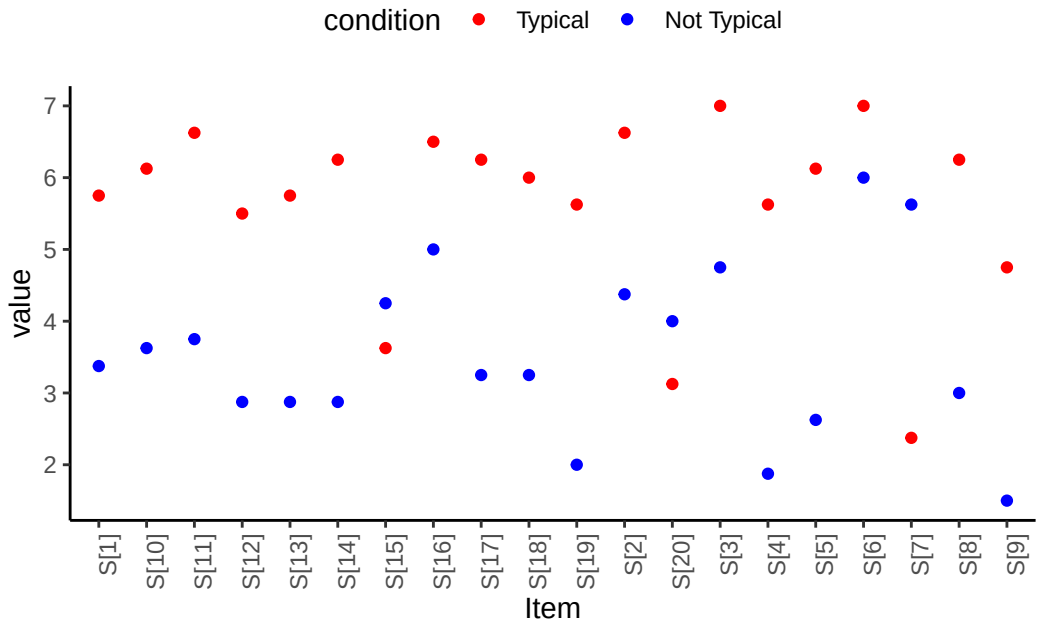
```
[1] 20
```

```
# Delete rows with NA
TypData <- TypData %>% filter(!is.na(condition))
```

```r
TypData %>%
    group_by(condition) %>%
    summarize(Rating = mean(value), Min = min(value), Max = max(value), n = length(value))
```

```
# A tibble: 2 x 5
  condition Rating   Min   Max     n
      <int>  <dbl> <dbl> <dbl> <int>
1         1   5.64     1     7   160
2         2   3.54     1     7   160
```

```r
bysubject <- TypData %>%
    group_by(subject, condition) %>%
    summarize(value = mean(value))

bysubject$condition <- as.factor(bysubject$condition)

ggplot(bysubject, aes(subject, value, color = condition)) +
    geom_point() +
    theme_classic() +
    theme(axis.text.x = element_text(angle = 90, vjust = 1, hjust = 1)) +
    scale_color_manual(labels = c("1" = "Typical", "2" = "Not Typical"), values = c("1" = "re
    theme(legend.position = "top") +
    xlab("Item") +
    # add y breaks and ticks
    scale_y_continuous(breaks = seq(0, 7, 1))
```

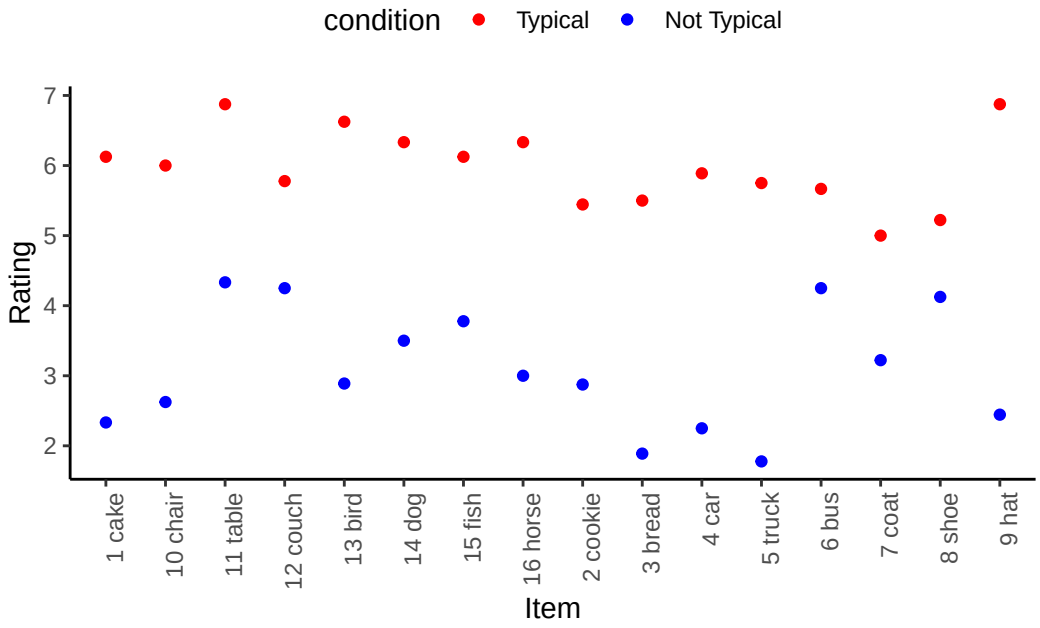



```
# S[7] misunderstood the task
# S[15] and S[20] is just bad
```

```
# delete  S[15] and S[20]
TypData <- TypData %>% filter(subject != "S[15]", subject != "S[20]", subject != "S[6]")

# for S[7], given an noun_en and condition, switch the values
TypData <- TypData %>%
    mutate(value = case_when(subject == "S[7]" ~ case_when(condition == 1 ~ 7 - value, condi
                             TRUE ~ value))

TypDataItem <- TypData %>%
    group_by(item, noun_en, condition) %>%
    summarize(Rating = mean(value), n = length(value))
```

```
TypDataItem$condition <- as.factor(TypDataItem$condition)

ggplot(TypDataItem, aes(paste(item, noun_en), Rating, color = condition)) +
    geom_point() +
    theme_classic() +
    theme(axis.text.x = element_text(angle = 90, vjust = 1, hjust = 1)) +
    scale_color_manual(labels = c("1" = "Typical", "2" = "Not Typical"), values = c("1" = "re
    theme(legend.position = "top") +
    xlab("Item") +
```

```
    # add y breaks and ticks
    scale_y_continuous(breaks = seq(0, 7, 1))
```




```
TypDataItem %>%
    select(c("item", "condition", "Rating")) %>%
    pivot_wider(names_from=condition, values_from = Rating) %>%
    mutate(Diff = `1`-`2`)%>%
   group_by()%>%
    summarize(mean(`1`), mean(`2`),min(`1`), min(`2`), max(`1`), max(`2`), mean(Diff), min(Di
```

```
# A tibble: 1 x 9
  `mean(\`1\`)` `mean(\`2\`)` `min(\`1\`)` `min(\`2\`)` `max(\`1\`)`
          <dbl>         <dbl>        <dbl>        <dbl>        <dbl>
1          5.97          3.10            5         1.78         6.88
# i 4 more variables: `max(\`2\`)` <dbl>, `mean(Diff)` <dbl>,
#   `min(Diff)` <dbl>, `max(Diff)` <dbl>
```

```
TypDataItem %>%
    select(c("item", "condition", "Rating")) %>%
    pivot_wider(names_from = condition, values_from = Rating) %>%
    mutate(Diff = `1` - `2`)
```

```
# A tibble: 16 x 5
```

```
# Groups:   item, noun_en [16]
   noun_en item    `1`   `2`  Diff
   <chr>   <chr> <dbl> <dbl> <dbl>
 1 cake    1      6.12  2.33  3.79
 2 chair   10     6     2.62  3.38
 3 table   11     6.88  4.33  2.54
 4 couch   12     5.78  4.25  1.53
 5 bird    13     6.62  2.89  3.74
 6 dog     14     6.33  3.5   2.83
 7 fish    15     6.12  3.78  2.35
 8 horse   16     6.33  3     3.33
 9 cookie  2      5.44  2.88  2.57
10 bread   3      5.5   1.89  3.61
11 car     4      5.89  2.25  3.64
12 truck   5      5.75  1.78  3.97
13 bus     6      5.67  4.25  1.42
14 coat    7      5     3.22  1.78
15 shoe    8      5.22  4.12  1.10
16 hat     9      6.88  2.44  4.43
```