

## F05\_mci\_style\_neu\_descriptives.R

2020-09-19

```
## MCI_STYLE_NEU DESCRIPTIVES SCRIPT ##
```

```
# Gives descriptive information about the number of (a) rejected ERP epochs and (b) errors or unrealistically short  
# reaction times per participant. For the latter, an ANOVA also checks whether the number of errors differs between  
# experimental conditions.
```

```
# Load packages
```

```
library(Rmisc)      # version 1.5  
library(tidyverse)  # Version 1.3.0  
library(magrittr)   # Version 1.5
```

```
# Load preprocessed data
```

```
a1 <- readRDS("EEG/export/a1.RDS")
```

```
# Add a column for artifact-rejected ERPs
```

```
a1 %<>% mutate(rejected = is.na(N400_verb) | is.na(N400_pict))
```

```
# Check number of rejected ERPs participant
```

```
mean(table(a1$rejected, a1$participant)[2,]) # Mean
```

```
## [1] 10.29167
```

```
mean(table(a1$rejected, a1$participant)[2,])/300 # Percent
```

```
## [1] 0.03430556
```

```
median(table(a1$rejected, a1$participant)[2,])    # Median
```

```
## [1] 3
```

```
min(table(a1$rejected, a1$participant)[2,])      # Min
```

```
## [1] 0
```

```
max(table(a1$rejected, a1$participant)[2,])      # Max
```

```
## [1] 116
```

```
# Remove rejected ERPs from the data
```

```
a1 %<>% filter(!rejected)
```

```
# Check number of errors per participant
```

```
mean(table(a1$error, a1$participant)[2,])        # Mean
```

```
## [1] 1.5
```

```
mean(table(a1$error, a1$participant)[2,])/300    # Percent
```

```
## [1] 0.005
```

```
median(table(a1$error, a1$participant)[2,])      # Median
```

```
## [1] 1
```

```
min(table(a1$error, a1$participant)[2,])         # Min
```

```
## [1] 0
```

```
max(table(a1$error, a1$participant)[2,])      # Max
```

```
## [1] 8
```

```
# Check if error rates differ between conditions
```

```
accuracy <- summarySEwithin(a1, measurevar = "error", withinvars = c("semantics", "style"),  
                             betweenvars = "participant", idvar = "participant", na.rm = TRUE)  
summary(aov(error ~ semantics*style + Error(participant/(semantics*style)), data = accuracy))
```

```
##
```

```
## Error: participant
```

```
##           Df    Sum Sq   Mean Sq F value Pr(>F)
```

```
## Residuals 23 3.735e-07 1.624e-08
```

```
##
```

```
## Error: participant:semantics
```

```
##           Df    Sum Sq   Mean Sq F value Pr(>F)
```

```
## semantics  2 0.000396 0.0001978   1.849  0.169
```

```
## Residuals 46 0.004921 0.0001070
```

```
##
```

```
## Error: participant:style
```

```
##           Df    Sum Sq   Mean Sq F value Pr(>F)
```

```
## style       1 0.000008 8.030e-06   0.063  0.805
```

```
## Residuals 23 0.002955 1.285e-04
```

```
##
```

```
## Error: participant:semantics:style
```

```
##           Df    Sum Sq   Mean Sq F value Pr(>F)
```

```
## semantics:style  2 0.000111 5.533e-05   0.643  0.53
```

```
## Residuals       46 0.003958 8.605e-05
```

```
# System specs and package versions
```

```
sessionInfo()
```

```
## R version 4.0.2 (2020-06-22)
```

```
## Platform: x86_64-w64-mingw32/x64 (64-bit)
```

```
## Running under: Windows 10 x64 (build 18362)
```

```
##
```

```
## Matrix products: default
```

```
##
```

```
## locale:
```

```
## [1] LC_COLLATE=German_Germany.1252 LC_CTYPE=German_Germany.1252 LC_MONETARY=German_Germany.1252 LC_NUMERIC=C
```

```
## [5] LC_TIME=German_Germany.1252
```

```
##
```

```
## attached base packages:
```

```
## [1] stats      graphics  grDevices datasets  utils      methods    base
```

```
##
```

```
## other attached packages:
```

```
## [1] magrittr_1.5      forcats_0.5.0    stringr_1.4.0    dplyr_1.0.0      purrr_0.3.4      readr_1.3.1      tidyr_1.1.0      tibble_3.0.3      gg
```

```
## [10] tidyverse_1.3.0 Rmisc_1.5        plyr_1.8.6       lattice_0.20-41
```

```
##
```

```
## loaded via a namespace (and not attached):
```

```
## [1] tidyselect_1.1.0 xfun_0.16        haven_2.3.1      colorspace_1.4-1 vctrs_0.3.2      generics_0.0.2   htmltools_0.5.0  yaml_2.2.1
```

```
## [9] blob_1.2.1        rlang_0.4.7      pillar_1.4.6     glue_1.4.1        withr_2.2.0      DBI_1.1.0        dbplyr_1.4.4     modelr_0.1.
```

```
## [17] readxl_1.3.1      lifecycle_0.2.0  munsell_0.5.0    gtable_0.3.0      cellranger_1.1.0 rvest_0.3.6      evaluate_0.14    knitr_1.29
```

```
## [25] fansi_0.4.1       highr_0.8        broom_0.7.0      Rcpp_1.0.5        renv_0.12.0      scales_1.1.1     backports_1.1.8  jsonlite_1.
```

```
## [33] fs_1.5.0          hms_0.5.3        digest_0.6.25    stringi_1.4.6     grid_4.0.2       cli_2.0.2        tools_4.0.2      crayon_1.3.
```

```
## [41] pkgconfig_2.0.3   ellipsis_0.3.1   xml2_1.3.2       reprex_0.3.0      lubridate_1.7.9  assertthat_0.2.1 rmarkdown_2.3    httr_1.4.2
```

```
## [49] rstudioapi_0.11  R6_2.4.1         compiler_4.0.2
```