

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

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```
## 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
## [4] LC_NUMERIC=C 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
## [7] tidyr_1.1.0 tibble_3.0.3 ggplot2_3.3.2 tidyverse_1.3.0 Rmisc_1.5 plyr_1.8.6
## [13] 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
## [7] htmltools_0.5.0 yaml_2.2.1 blob_1.2.1 rlang_0.4.7 pillar_1.4.6 glue_1.4.1
## [13] withr_2.2.0 DBI_1.1.0 dbplyr_1.4.4 modelr_0.1.8 readxl_1.3.1 lifecycle_0.2.0
## [19] 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
## [31] backports_1.1.8 jsonlite_1.7.0 fs_1.5.0 hms_0.5.3 digest_0.6.25 stringi_1.4.6
## [37] grid_4.0.2 cli_2.0.2 tools_4.0.2 crayon_1.3.4 pkgconfig_2.0.3 ellipsis_0.3.1
## [43] 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
```