F05_mci_style_neu_descriptives.R

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```r
## 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
```

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

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

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

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

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

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

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

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

```r
# 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
```

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

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

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

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

```r
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-apple-darwin17.0 (64-bit)
## Running under: macOS Catalina 10.15.6
##
## Matrix products: default
```

```
## BLAS:    /System/Library/Frameworks/Accelerate.framework/Versions/A/Frameworks/vecLib.framework/Versions/A/libBLAS.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/4.0/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## 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
##  [8] tibble_3.0.3    ggplot2_3.3.2   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
##  [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
```