F06_mci_emotion_descriptives.R

2020-09-22

```r
## MCI EMO 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.

## SETUP ## ----------------------------------------------------------------------------------------------

# 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] 3.6
```

```r
mean(table(a1$rejected, a1$participant)[2,])/366  # Percent
```

```
## [1] 0.009836066
```

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

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

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

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

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

```
## [1] 27
```

```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] 23.86667
```

```r
mean(table(a1$error, a1$participant)[2,])/366  # Percent
```

```
## [1] 0.06520947
```

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

```
## [1] 20
```

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

```
## [1] 5
```

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

```
## [1] 69
```

```r
# Check if error tates differ between conditions
accuracy <- summarySEwithin(a1, measurevar = "error", withinvars = c("semantics", "context"),
                            betweenvars = "participant", idvar = "participant", na.rm = TRUE)
summary(aov(error ~ semantics*context + Error(participant/(semantics*context)), data = accuracy))
```

```
##
## Error: participant
##           Df    Sum Sq   Mean Sq F value Pr(>F)
## Residuals 29 3.986e-06 1.374e-07
##
## Error: participant:semantics
##           Df  Sum Sq   Mean Sq F value Pr(>F)
## semantics  2 0.00107 0.0005335   0.551   0.58
## Residuals 58 0.05620 0.0009689
##
## Error: participant:context
##           Df  Sum Sq   Mean Sq F value Pr(>F)
## context    1 0.00090 0.0009002   0.848  0.365
## Residuals 29 0.03077 0.0010610
##
## Error: participant:semantics:context
##                   Df  Sum Sq   Mean Sq F value Pr(>F)
## semantics:context  2 0.00005 0.0000264   0.039  0.961
## Residuals         58 0.03876 0.0006683
```

```r
# 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     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
## [10] 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_0.1.8    readxl_1.3.
## [19] munsell_0.5.0    gtable_0.3.0     cellranger_1.1.0 rvest_0.3.5      evaluate_0.14    knitr_1.29       fansi_0.4.1     highr_0.8
## [28] Rcpp_1.0.5       renv_0.12.0      scales_1.1.1     backports_1.1.8  jsonlite_1.7.0   fs_1.4.2         hms_0.5.3       digest_0.6.
## [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   xml2_1.3.2      reprex_0.3.
## [46] assertthat_0.2.1 rmarkdown_2.3    httr_1.4.2       rstudioapi_0.11  R6_2.4.1         compiler_4.0.2
```