Supplement 2

Experiment 1 – Group-level summary of measures of central tendency

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Contents

Here we provide group-level summary values for measures of central tendency and variance for SPARS ratings at each laser stimulus intensity. Please see Supplement 3 for definitions of these measures.

Import and inspect data

```
# Import
data <- read_rds('./data-cleaned/SPARS_A.rds')

# Inspect
glimpse(data)
```

```
## Observations: 1,927
## Variables: 19
## $ PID               <chr> "ID01", "ID01", "ID01", "ID01", "ID01", "ID0...
## $ block             <chr> "A", "A", "A", "A", "A", "A", "A", "A", "A",...
## $ block_order       <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,...
## $ trial_number      <dbl> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 1...
## $ intensity         <dbl> 3.75, 1.50, 3.25, 1.50, 3.00, 2.75, 1.00, 2....
## $ intensity_char    <chr> "3.75", "1.50", "3.25", "1.50", "3.00", "2.7...
## $ rating            <dbl> -10, -40, -10, -25, -20, -25, -40, 2, -40, -...
## $ rating_positive   <dbl> 40, 10, 40, 25, 30, 25, 10, 52, 10, 40, 54, ...
## $ EDA               <dbl> 18315.239, 13904.177, 11543.449, 20542.834, ...
## $ age               <dbl> 21, 21, 21, 21, 21, 21, 21, 21, 21, 21, 21, ...
## $ sex               <dbl> 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,...
## $ panas_positive    <dbl> 36, 36, 36, 36, 36, 36, 36, 36, 36, 36, 36, ...
## $ panas_negative    <dbl> 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, ...
## $ dass42_depression <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
## $ dass42_anxiety    <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,...
## $ dass42_stress     <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,...
```

```
## $ pcs_magnification <dbl> 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6,...
## $ pcs_rumination    <dbl> 11, 11, 11, 11, 11, 11, 11, 11, 11, 11, 11, ...
## $ pcs_helplessness  <dbl> 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, ...
```

Clean data

```
# Basic clean-up
data %<>%
  # Select required columns
  select(PID, block, block_order, intensity,
         intensity_char, rating, rating_positive)
```

Tabulate measures of central tendency and variance

```
# Specify tri.mean function (average of the median and mid-hinge)
tri.mean <- function(x) {
  # Calculate quantiles
  q1 <- quantile(x, probs = 0.25, na.rm = TRUE)[[1]]
  q2 <- median(x, na.rm = TRUE)
  q3 <- quantile(x, probs = 0.75, na.rm = TRUE)[[1]]
  # Calculate trimean
  tm <- (q2 + ((q1 + q3) / 2)) / 2
  # Convert to integer
  tm <- as.integer(round(tm))
  return(tm)
}
```

```
# Calculate group-level centrality and variance measures
central <- data %>%
  group_by(intensity_char) %>%
  summarise(mean = round(mean(rating_positive,
                              na.rm = TRUE), 1),
            median = round(median(rating_positive,
                                  na.rm = TRUE), 1),
            geometric_mean = round(psych::geometric.mean(rating_positive,
                                                         na.rm=TRUE), 1),
            tri_mean = round(tri.mean(rating_positive), 1),
            sd = round(sd(rating_positive,
                          na.rm = TRUE), 1),
            Q25 = round(quantile(rating_positive,
                                 probs =  0.25,
                                 na.rm = TRUE), 1),
            Q75 = round(quantile(rating_positive,
                                 probs = 0.75,
                                 na.rm = TRUE), 1)) %>%
```

```
  ungroup()

# Pretty column names
colnames(central) <- c("Intensity", "Arithmetic mean", "Median",
                       "Geometric mean", "Tukey trimean",
                       "Standard deviation", "Lower quartile boundary",
                       "Upper quartile boundary")

# Print table
knitr::kable(central,
             format = 'latex',
             booktabs = TRUE,
             align = rep('c', 8),
             caption = "Group-level measures of central tendency and variance for SPARS ra
  kable_styling(latex_options = c('striped',
                                  'hold_position',
                                  'scale_down'),
                stripe_color = 'gray!20') %>%
  row_spec(0,
           bold = TRUE)
```

Table 1: Group-level measures of central tendency and variance for SPARS ratings at each laser intensity (J)

Intensity	Arithmetic mean	Median	Geometric mean	Tukey trimean	Standard deviation	Lower quartile boundary	Upper quartile boundary
1.00	22.1	15.0	0.0	18	20.8	1.8	41.2
1.25	28.3	30.0	0.0	28	21.6	5.0	48.0
1.50	34.1	40.0	0.0	36	22.3	10.0	53.0
1.75	37.0	43.5	0.0	40	21.7	20.0	53.0
2.00	40.0	47.5	0.0	43	19.9	25.0	53.2
2.25	42.6	48.0	0.0	45	17.6	30.0	55.0
2.50	44.0	49.0	37.2	47	18.8	35.0	55.0
2.75	46.3	51.0	40.5	49	18.3	40.0	55.0
3.00	48.5	52.0	42.2	51	19.3	40.0	60.0
3.25	54.2	55.0	50.6	56	15.8	47.5	65.0
3.50	62.3	61.0	59.8	62	15.5	54.0	70.0
3.75	62.2	65.0	59.0	64	16.4	54.5	70.0
4.00	67.1	65.0	66.1	65	11.0	60.0	70.5

Session information

```
sessionInfo()
```

```
## R version 3.5.1 (2018-07-02)
## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: macOS  10.14
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRlapack.dylib
##
## locale:
```

```
## [1] en_GB.UTF-8/en_GB.UTF-8/en_GB.UTF-8/C/en_GB.UTF-8/en_GB.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
##  [1] bindrcpp_0.2.2   kableExtra_0.9.0 ggridges_0.5.1   forcats_0.3.0
##  [5] stringr_1.3.1    dplyr_0.7.6      purrr_0.2.5      readr_1.1.1
##  [9] tidyr_0.8.1      tibble_1.4.2     ggplot2_3.0.0    tidyverse_1.2.1
## [13] magrittr_1.5
##
## loaded via a namespace (and not attached):
##  [1] tidyselect_0.2.4  haven_1.1.2       lattice_0.20-35
##  [4] colorspace_1.3-2  htmltools_0.3.6   viridisLite_0.3.0
##  [7] yaml_2.2.0        rlang_0.2.2       pillar_1.3.0
## [10] foreign_0.8-71    glue_1.3.0        withr_2.1.2
## [13] modelr_0.1.2      readxl_1.1.0      bindr_0.1.1
## [16] plyr_1.8.4        munsell_0.5.0     gtable_0.2.0
## [19] cellranger_1.1.0  rvest_0.3.2       psych_1.8.4
## [22] evaluate_0.11     knitr_1.20        parallel_3.5.1
## [25] broom_0.5.0       Rcpp_0.12.19      scales_1.0.0
## [28] backports_1.1.2   jsonlite_1.5      mnormt_1.5-5
## [31] hms_0.4.2         digest_0.6.17     stringi_1.2.4
## [34] grid_3.5.1        rprojroot_1.3-2   cli_1.0.1
## [37] tools_3.5.1       lazyeval_0.2.1    crayon_1.3.4
## [40] pkgconfig_2.0.2   xml2_1.2.0        lubridate_1.7.4
## [43] assertthat_0.2.0  rmarkdown_1.10    httr_1.3.1
## [46] rstudioapi_0.8    R6_2.2.2          nlme_3.1-137
## [49] compiler_3.5.1
```