Preregistered tests

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> This script requires access to csv files which are created during data preprocessing Please use the Rmd file "Data_preprocessing" first to export the files to your current directory

R environment and data files

Install and/or load required R packages

```r
# Required R packages are shown below
required.packages <- c("plyr", "here", "jmv", "MBESS", "BayesFactor")

# If there are packages which are not already in your library these will be installed from CRAN
new.packages <- required.packages[!(required.packages %in% installed.packages()[,"Package"])]
if(length(new.packages) > 0) {install.packages(required.packages)}

require(plyr)
require(here)
require(jmv)
require(MBESS)
require(BayesFactor)

# Current directory will be the same as the folder in which the R code is located
here::dr_here()
here::set_here()
```

Import summary data files

```r
# Main summary data (priming measures and ratings)
sum1 <- read.csv(here("sum_data_expt1.csv"), header = TRUE)
sum2 <- read.csv(here("sum_data_expt2.csv"), header = TRUE)

# Rating data without outliers
sum1_iqr <- read.csv(here("sum_data_expt1_iqr.csv"), header = TRUE)
sum2_iqr <- read.csv(here("sum_data_expt2_iqr.csv"), header = TRUE)

# Log transformed RTs (priming)
sum1_log <- read.csv(here("sum_data_expt1_log.csv"), header = TRUE)
sum2_log <- read.csv(here("sum_data_expt2_log.csv"), header = TRUE)
```

Effect size calculation

> The code below has been adapted from https://github.com/Lakens/anchor_based_methods_SESOI/blob/master/effect_size_d_paired_function.R (https://github.com/Lakens/anchor_based_methods_SESOI/blob/master/effect_size_d_paired_function.R)

> I have created a custom function for calculating Cohen's dav and the CI for dav as there are too many tests to run these calculations for manually each time.

```r
CohensDav <- function(measure1, measure2, N, data, ttest) {

  # Calculate SDs
  sd1 <- sd(data[[measure1]])
  sd2 <- sd(data[[measure2]])

  # Calculate mean differences
  mdiff <- mean(data[[measure1]] - data[[measure2]])

  # Calculate average SD
  sav <- sqrt((sd1^2 + sd2^2) / 2)

  # Calculate Cohen's dav
  dav <- mdiff / sav

  # Number of observations
  N = nrow(data)

  # T-values from performed t-test
  tval <- as.numeric(ttest[[1]]$asDF[4])

  # SDs of the difference scores
  sdiff <- sd(data[[measure1]] - data[[measure2]])

  # Confidence limits
  limits <- conf.limits.nct(t.value = tval, df = N - 1, conf.level = 0.95)

  # Lower and upper limits for Cohen's dav
  # lci: lower CI / uci: upper CI

  lci <- limits$Lower.Limit * sdiff / (sav * sqrt(N))
  uci <- limits$Upper.Limit * sdiff / (sav * sqrt(N))

  # Result to print
  result <- paste("dav =", round(dav,4),
                  "lower CI =", round(lci, 4),
                  "upper CI =", round(uci, 4))

  return(result)
}
```

Preregistered tests

Bayesian t-tests for Experiment 1

```r
H1a.BF1 <- ttestBF(x = sum1$DL_nogo, y = sum1$DL_go, paired = TRUE, rscale = "medium", nullInterval = c(-Inf, 0
))

H1b.BF1 <- ttestBF(x = sum1$DL_nogo, y = sum1$DL_untr, paired = TRUE, rscale = "medium", nullInterval = c(-Inf,
0))

paste("H1a;", "BF10 =", round(as.numeric(exp(H1a.BF1@bayesFactor$bf[1])),2))
```

```r
## [1] "H1a; BF10 = 109.42"
```

```r
paste("H1b;", "BF10 =", round(as.numeric(exp(H1b.BF1@bayesFactor$bf[1])),2))
```

```r
## [1] "H1b; BF10 = 678.73"
```

```
H2a.BF1 <- ttestBF(x = sum1$DRT_nogo, y = sum1$DRT_go, paired = TRUE, rscale = "medium", nullInterval = c(-Inf,
0))

H2b.BF1 <- ttestBF(x = sum1$DRT_nogo, y = sum1$DRT_untr, paired = TRUE, rscale = "medium", nullInterval = c(-Inf
, 0))

paste("H2a;", "BF10 =", round(as.numeric(exp(H2a.BF1@bayesFactor$bf[1])),2))
```

```
## [1] "H2a; BF10 = 44.3"
```

```
paste("H2b;", "BF10 =", round(as.numeric(exp(H2b.BF1@bayesFactor$bf[1])),2))
```

```
## [1] "H2b; BF10 = 30.06"
```

```
H3.BF1 <- ttestBF(x = sum1$RTcon_NF, y = sum1$RTinc_NF, paired = TRUE, rscale = "medium", nullInterval = c(-Inf,
0))

paste("H3;", "BF10 =", round(as.numeric(exp(H3.BF1@bayesFactor$bf[1])),2))
```

```
## [1] "H3; BF10 = 158.99"
```

Frequentist t-tests for Experiment 1

```
H1a.ST1 <- ttestPS(sum1, pairs = list(list(i1 = "DL_nogo", i2 = "DL_go")), hypothesis = "twoGreater", desc = TRU
E)

H1b.ST1 <- ttestPS(sum1, pairs = list(list(i1 = "DL_nogo", i2 = "DL_untr")), hypothesis = "twoGreater", desc = T
RUE)

c("H1a", H1a.ST1,
  CohensDav(measure1 = 'DL_nogo', measure2 = 'DL_go',
        N = nrow(sum1), data = sum1, ttest = H1a.ST1))
```

```
## [[1]]
## [1] "H1a"
##
## [[2]]
##
##   PAIRED SAMPLES T-TEST
##
##   Paired Samples T-Test
##   ---------------------------------------------------------------------
##                                   statistic     df          p
##   ---------------------------------------------------------------------
##     DL_nogo    DL_go    Student's t    -3.684831    112.0000    0.0001771
##   ---------------------------------------------------------------------
##     Note. Hₐ Measure 1 < Measure 2
##
##
##   Descriptives
##   ---------------------------------------------------------------------
##              N       Mean       Median       SD        SE
##   ---------------------------------------------------------------------
##     DL_nogo    113    -18.94248    -15.000000    21.88999    2.059237
##     DL_go      113    -11.28872    -7.875000     18.26937    1.718638
##   ---------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3796 lower CI = -0.5868 upper CI = -0.1709"
```

```
c("H1b", H1b.ST1,
  CohensDav(measure1 = 'DL_nogo', measure2 = 'DL_untr',
          N = nrow(sum1), data = sum1, ttest = H1b.ST1))
```

```
## [[1]]
## [1] "H1b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ---------------------------------------------------------------------
##                                      statistic    df         p
##  ---------------------------------------------------------------------
##    DL_nogo    DL_untr    Student's t    -4.222525    112.0000    0.0000247
##  ---------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  ------------------------------------------------------------------
##               N       Mean       Median      SD        SE
##  ------------------------------------------------------------------
##    DL_nogo    113    -18.94248    -15.000000    21.88999    2.059237
##    DL_untr    113    -11.52655     -8.125000    15.64233    1.471507
##  ------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3898 lower CI = -0.577 upper CI = -0.201"
```

```
H2a.ST1 <- ttestPS(sum1, pairs = list(list(i1 = "DRT_nogo", i2 = "DRT_go")), hypothesis = "twoGreater", desc = T
RUE)

H2b.ST1 <- ttestPS(sum1, pairs = list(list(i1 = "DRT_nogo", i2 = "DRT_untr")), hypothesis = "twoGreater", desc =
TRUE)

c("H2a", H2a.ST1,
  CohensDav(measure1 = 'DRT_nogo', measure2 = 'DRT_go',
          N = nrow(sum1), data = sum1, ttest = H2a.ST1))
```

```
## [[1]]
## [1] "H2a"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ----------------------------------------------------------------------------
##                                       statistic     df          p
##  ----------------------------------------------------------------------------
##    DRT_nogo    DRT_go     Student's t   -3.394584    112.0000    0.0004757
##  ----------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  ----------------------------------------------------------------------
##                N       Mean         Median        SD          SE
##  ----------------------------------------------------------------------
##    DRT_nogo    113     0.2876106    0.5000000     38.57604    3.628928
##    DRT_go      113     14.7787611   18.0000000    40.68262    3.827099
##  ----------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3655 lower CI = -0.5812 upper CI = -0.1484"
```

```
c("H2b", H2b.ST1,
  CohensDav(measure1 = 'DRT_nogo', measure2 = 'DRT_untr',
         N = nrow(sum1), data = sum1, ttest = H2b.ST1))
```

```
## [[1]]
## [1] "H2b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ----------------------------------------------------------------------------
##                                       statistic     df          p
##  ----------------------------------------------------------------------------
##    DRT_nogo    DRT_untr    Student's t   -3.263717    112.0000    0.0007292
##  ----------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  ----------------------------------------------------------------------
##                N       Mean         Median        SD          SE
##  ----------------------------------------------------------------------
##    DRT_nogo    113     0.2876106    0.5000000     38.57604    3.628928
##    DRT_untr    113     12.2300885   10.0000000    36.95600    3.476528
##  ----------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3162 lower CI = -0.5098 upper CI = -0.1212"
```

```
H3.ST1 <- ttestPS(sum1, pairs = list(list(i1 = "RTcon_NF", i2 = "RTinc_NF")), hypothesis = "twoGreater", desc =
TRUE)

c("H3", H3.ST1,
  CohensDav(measure1 = 'RTcon_NF', measure2 = 'RTinc_NF',
         N = nrow(sum1), data = sum1, ttest = H3.ST1))
```

```
## [[1]]
## [1] "H3"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ----------------------------------------------------------------------
##                                        statistic    df        p
##  ----------------------------------------------------------------------
##    RTcon_NF    RTinc_NF    Student's t   -3.799634   112.0000   0.0001180
##  ----------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  ------------------------------------------------------------------
##              N       Mean       Median      SD         SE
##  ------------------------------------------------------------------
##    RTcon_NF   113   561.0133    553.0000    77.75070   7.314171
##    RTinc_NF   113   573.1416    562.0000    73.03835   6.870870
##  ------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1608 lower CI = -0.246 upper CI = -0.0749"
```

Frequentist t-tests for Experiment 2

```
H1a.ST2 <- ttestPS(sum2, pairs = list(list(i1 = "DL_nogo", i2 = "DL_go")), hypothesis = "twoGreater", desc = TRU
E)

H1b.ST2 <- ttestPS(sum2, pairs = list(list(i1 = "DL_nogo", i2 = "DL_untr")), hypothesis = "twoGreater", desc = T
RUE)

c("H1a", H1a.ST2,
  CohensDav(measure1 = 'DL_nogo', measure2 = 'DL_go',
        N = nrow(sum2), data = sum2, ttest = H1a.ST2))
```

```
## [[1]]
## [1] "H1a"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ------------------------------------------------------------------------
##                                      statistic    df          p
##  ------------------------------------------------------------------------
##    DL_nogo    DL_go    Student's t   -4.696893    189.0000    0.0000025
##  ------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  -------------------------------------------------------------------
##              N      Mean       Median       SD          SE
##  -------------------------------------------------------------------
##    DL_nogo   190    -17.94079  -11.625000   22.47383    1.630423
##    DL_go     190    -11.56711   -9.125000   19.50436    1.414995
##  -------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3029 lower CI = -0.4326 upper CI = -0.1725"
```

```
c("H1b", H1b.ST2,
  CohensDav(measure1 = 'DL_nogo', measure2 = 'DL_untr',
          N = nrow(sum2), data = sum2, ttest = H1b.ST2))
```

```
## [[1]]
## [1] "H1b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ------------------------------------------------------------------------
##                                      statistic    df          p
##  ------------------------------------------------------------------------
##    DL_nogo    DL_untr    Student's t   -2.364875    189.0000    0.0095248
##  ------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  -------------------------------------------------------------------
##              N      Mean       Median      SD          SE
##  -------------------------------------------------------------------
##    DL_nogo   190    -17.94079  -11.62500   22.47383    1.630423
##    DL_untr   190    -14.97105  -11.12500   22.40903    1.625722
##  -------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1323 lower CI = -0.2426 upper CI = -0.0217"
```

```
H2a.ST2 <- ttestPS(sum2, pairs = list(list(i1 = "DRT_nogo", i2 = "DRT_go")), hypothesis = "twoGreater", desc = T
RUE)

H2b.ST2 <- ttestPS(sum2, pairs = list(list(i1 = "DRT_nogo", i2 = "DRT_untr")), hypothesis = "twoGreater", desc =
TRUE)

c("H2a", H2a.ST2,
  CohensDav(measure1 = 'DRT_nogo', measure2 = 'DRT_go',
          N = nrow(sum2), data = sum2, ttest = H2a.ST2))
```

```
## [[1]]
## [1] "H2a"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ------------------------------------------------------------------------
##                                     statistic    df         p
##  ------------------------------------------------------------------------
##    DRT_nogo   DRT_go    Student's t   -5.002764   189.0000   0.0000006
##  ------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  ------------------------------------------------------------------------
##              N       Mean        Median      SD         SE
##  ------------------------------------------------------------------------
##    DRT_nogo  190    -0.8184211  -1.750000   38.56473   2.797779
##    DRT_go    190    14.5500000  13.250000   40.35742   2.927835
##  ------------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3894 lower CI = -0.5464 upper CI = -0.2314"
```

```
c("H2b", H2b.ST2,
  CohensDav(measure1 = 'DRT_nogo', measure2 = 'DRT_untr',
          N = nrow(sum2), data = sum2, ttest = H2b.ST2))
```

```
## [[1]]
## [1] "H2b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  -------------------------------------------------------------------------
##                                            statistic    df           p
##  -------------------------------------------------------------------------
##    DRT_nogo    DRT_untr    Student's t    -1.729250    189.0000    0.0426986
##  -------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  -------------------------------------------------------------------
##                 N         Mean         Median        SD          SE
##  -------------------------------------------------------------------
##    DRT_nogo    190    -0.8184211    -1.750000    38.56473    2.797779
##    DRT_untr    190     4.5052632     6.000000    36.79494    2.669386
##  -------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1412 lower CI = -0.3018 upper CI = 0.0197"
```

```
H3.ST2 <- ttestPS(sum2, pairs = list(list(i1 = "RTcon_NF", i2 = "RTinc_NF")), hypothesis = "twoGreater", desc =
TRUE)

c("H3", H3.ST2,
  CohensDav(measure1 = 'RTcon_NF', measure2 = 'RTinc_NF',
        N = nrow(sum2), data = sum2, ttest = H3.ST2))
```

```
## [[1]]
## [1] "H3"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  -------------------------------------------------------------------------
##                                            statistic    df           p
##  -------------------------------------------------------------------------
##    RTcon_NF    RTinc_NF    Student's t    -5.075120    189.0000    0.0000005
##  -------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  -------------------------------------------------------------------
##                 N        Mean        Median        SD          SE
##  -------------------------------------------------------------------
##    RTcon_NF    190    570.3105    570.5000    75.88765    5.505468
##    RTinc_NF    190    582.6974    576.7500    77.23524    5.603233
##  -------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1618 lower CI = -0.2262 upper CI = -0.097"
```

```
H4a.ST2 <- ttestPS(sum2, pairs = list(list(i1 = "RTcon_go", i2 = "RTinc_go")), hypothesis = "twoGreater", desc =
TRUE)

H4b.ST2 <- ttestPS(sum2, pairs = list(list(i1 = "RTcon_untr", i2 = "RTinc_untr")), hypothesis = "twoGreater", de
sc = TRUE)

H4c.ST2 <- ttestPS(sum2, pairs = list(list(i1 = "RTcon_nogo", i2 = "RTinc_nogo")), hypothesis = "twoGreater", de
sc = TRUE)

c("H4a", H4a.ST2,
  CohensDav(measure1 = 'RTcon_go', measure2 = 'RTinc_go',
            N = nrow(sum2), data = sum2, ttest = H4a.ST2))
```

```
## [[1]]
## [1] "H4a"
##
## [[2]]
##
##   PAIRED SAMPLES T-TEST
##
##   Paired Samples T-Test
##   --------------------------------------------------------------------
##                                       statistic    df         p
##   --------------------------------------------------------------------
##     RTcon_go    RTinc_go    Student's t    -4.969543    189.0000    0.0000007
##   --------------------------------------------------------------------
##     Note. Hₐ Measure 1 < Measure 2
##
##
##   Descriptives
##   ----------------------------------------------------------------
##                N       Mean       Median      SD        SE
##   ----------------------------------------------------------------
##     RTcon_go   190     572.8737   566.5000   84.08932   6.100480
##     RTinc_go   190     587.4237   577.2500   79.68195   5.780736
##   ----------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1776 lower CI = -0.2497 upper CI = -0.1051"
```

```
c("H4b", H4b.ST2,
  CohensDav(measure1 = 'RTcon_untr', measure2 = 'RTinc_untr',
            N = nrow(sum2), data = sum2, ttest = H4b.ST2))
```

```
## [[1]]
## [1] "H4b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
## Paired Samples T-Test
## -----------------------------------------------------------------------------
##                                            statistic    df          p
## -----------------------------------------------------------------------------
##   RTcon_untr    RTinc_untr    Student's t    -1.687753    189.0000    0.0465541
## -----------------------------------------------------------------------------
##   Note. H<U+2090> Measure 1 < Measure 2
##
##
## Descriptives
## -------------------------------------------------------------------
##                  N       Mean       Median      SD          SE
## -------------------------------------------------------------------
##   RTcon_untr    190     579.2105    575.0000    77.56254    5.626978
##   RTinc_untr    190     583.7158    572.5000    77.70098    5.637022
## -------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.058 lower CI = -0.1256 upper CI = 0.0097"
```

```
c("H4c", H4c.ST2,
  CohensDav(measure1 = 'RTcon_nogo', measure2 = 'RTinc_nogo',
         N = nrow(sum2), data = sum2, ttest = H4c.ST2))
```

```
## [[1]]
## [1] "H4c"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
## Paired Samples T-Test
## -----------------------------------------------------------------------------
##                                            statistic    df          p
## -----------------------------------------------------------------------------
##   RTcon_nogo    RTinc_nogo    Student's t    0.2925252    189.0000    0.6148970
## -----------------------------------------------------------------------------
##   Note. H<U+2090> Measure 1 < Measure 2
##
##
## Descriptives
## -------------------------------------------------------------------
##                  N       Mean       Median      SD          SE
## -------------------------------------------------------------------
##   RTcon_nogo    190     582.9447    577.5000    81.59160    5.919277
##   RTinc_nogo    190     582.1263    573.2500    79.48463    5.766421
## -------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = 0.0102 lower CI = -0.0579 upper CI = 0.0782"
```

Tests with outliers removed (both experiments)

```
H1a.BF1_iqr <- ttestBF(x = sum1_iqr$DL_nogo, y = sum1_iqr$DL_go, paired = TRUE, rscale = "medium", nullInterval
 = c(-Inf, 0))

H1b.BF1_iqr <- ttestBF(x = sum1_iqr$DL_nogo, y = sum1_iqr$DL_untr, paired = TRUE, rscale = "medium", nullInterva
l = c(-Inf, 0))

paste("H1a;", "BF10 =", round(as.numeric(exp(H1a.BF1_iqr@bayesFactor$bf[1])),2))
```

```
## [1] "H1a; BF10 = 1126.94"
```

```
paste("H1b;", "BF10 =", round(as.numeric(exp(H1b.BF1_iqr@bayesFactor$bf[1])),2))
```

```
## [1] "H1b; BF10 = 162.36"
```

> Bayesian ttests not available here for Experiment 2

```
H1a.ST1_iqr <- ttestPS(sum1_iqr, pairs = list(list(i1 = "DL_nogo", i2 = "DL_go")), hypothesis = "twoGreater", de
sc = TRUE)

H1b.ST1_iqr <- ttestPS(sum1_iqr, pairs = list(list(i1 = "DL_nogo", i2 = "DL_untr")), hypothesis = "twoGreater",
 desc = TRUE)

c("H1a", H1a.ST1_iqr,
  CohensDav(measure1 = 'DL_nogo', measure2 = 'DL_go',
          N = nrow(sum1_iqr), data = sum1_iqr, ttest = H1a.ST1_iqr))
```

```
## [[1]]
## [1] "H1a"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  -----------------------------------------------------------------------
##                                      statistic     df          p
##  -----------------------------------------------------------------------
##    DL_nogo    DL_go    Student's t   -4.372362    102.0000    0.0000148
##  -----------------------------------------------------------------------
##    Note. Hₐ Measure 1 < Measure 2
##
##
##  Descriptives
##  -----------------------------------------------------------------------
##              N      Mean        Median        SD          SE
##  -----------------------------------------------------------------------
##    DL_nogo   103   -15.160194   -13.750000   15.79903    1.556725
##    DL_go     103   -7.746359    -6.750000    13.81940    1.361666
##  -----------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.4995 lower CI = -0.7325 upper CI = -0.2642"
```

```
c("H1b", H1b.ST1_iqr,
  CohensDav(measure1 = 'DL_nogo', measure2 = 'DL_untr',
          N = nrow(sum1_iqr), data = sum1_iqr, ttest = H1b.ST1_iqr))
```

```
## [[1]]
## [1] "H1b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  -------------------------------------------------------------------------
##                                         statistic    df          p
##  -------------------------------------------------------------------------
##    DL_nogo    DL_untr    Student's t    -3.807823    102.0000    0.0001198
##  -------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  -------------------------------------------------------------------
##               N       Mean        Median       SD          SE
##  -------------------------------------------------------------------
##    DL_nogo    103    -15.160194   -13.750000   15.79903    1.556725
##    DL_untr    103    -9.842233    -7.875000    13.27101    1.307632
##  -------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3645 lower CI = -0.5578 upper CI = -0.1695"
```

```
H1a.ST2_iqr <- ttestPS(sum2_iqr, pairs = list(list(i1 = "DL_nogo", i2 = "DL_go")), hypothesis = "twoGreater", de
sc = TRUE)

H1b.ST2_iqr <- ttestPS(sum2_iqr, pairs = list(list(i1 = "DL_nogo", i2 = "DL_untr")), hypothesis = "twoGreater",
 desc = TRUE)

c("H1a", H1a.ST2_iqr,
  CohensDav(measure1 = 'DL_nogo', measure2 = 'DL_go',
        N = nrow(sum2_iqr), data = sum2_iqr, ttest = H1a.ST2_iqr))
```

```
## [[1]]
## [1] "H1a"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  -------------------------------------------------------------------------
##                                        statistic    df          p
##  -------------------------------------------------------------------------
##    DL_nogo    DL_go    Student's t     -3.940590    172.0000    0.0000590
##  -------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  -------------------------------------------------------------------
##               N       Mean        Median       SD          SE
##  -------------------------------------------------------------------
##    DL_nogo    173    -13.791908   -10.375000   15.64794    1.189691
##    DL_go      173    -9.138728    -8.125000    15.55939    1.182958
##  -------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.2982 lower CI = -0.4494 upper CI = -0.1462"
```

```
c("H1b", H1b.ST2_iqr,
  CohensDav(measure1 = 'DL_nogo', measure2 = 'DL_untr',
          N = nrow(sum2_iqr), data = sum2_iqr, ttest = H1b.ST2_iqr))
```

```
## [[1]]
## [1] "H1b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  --------------------------------------------------------------------
##                                      statistic    df          p
##  --------------------------------------------------------------------
##    DL_nogo    DL_untr    Student's t   -2.687083   172.0000    0.0039577
##  --------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  ----------------------------------------------------------------
##              N      Mean       Median      SD         SE
##  ----------------------------------------------------------------
##    DL_nogo   173   -13.79191   -10.375000  15.64794   1.189691
##    DL_untr   173   -10.77023   -9.375000   15.44528   1.174283
##  ----------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1944 lower CI = -0.3373 upper CI = -0.0508"
```

Log transformed data

```
H2a.ST1_log <- ttestPS(sum1_log, pairs = list(list(i1 = "DRT_nogo", i2 = "DRT_go")), hypothesis = "twoGreater",
 desc = TRUE)
H2b.ST1_log <- ttestPS(sum1_log, pairs = list(list(i1 = "DRT_nogo", i2 = "DRT_untr")), hypothesis = "twoGreater"
, desc = TRUE)

c("H2a", H2a.ST1_log,
  CohensDav(measure1 = 'DRT_nogo', measure2 = 'DRT_go',
          N = nrow(sum1_log), data = sum1_log, ttest = H2a.ST1_log))
```

```
## [[1]]
## [1] "H2a"
##
## [[2]]
##
##   PAIRED SAMPLES T-TEST
##
##   Paired Samples T-Test
##   ------------------------------------------------------------------------
##                                         statistic    df          p
##   ------------------------------------------------------------------------
##     DRT_nogo    DRT_go    Student's t    -3.531798   112.0000   0.0003003
##   ------------------------------------------------------------------------
##     Note. H<U+2090> Measure 1 < Measure 2
##
##
##   Descriptives
##   -------------------------------------------------------------------------
##                 N        Mean          Median         SD           SE
##   -------------------------------------------------------------------------
##     DRT_nogo    113    0.002336589    8.661759e-4    0.06674060    0.006278428
##     DRT_go      113    0.027503780    0.03434212     0.06893676    0.006485025
##   -------------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3709 lower CI = -0.5816 upper CI = -0.1587"
```

```
c("H2b", H2b.ST1_log,
  CohensDav(measure1 = 'DRT_nogo', measure2 = 'DRT_untr',
        N = nrow(sum1_log), data = sum1_log, ttest = H2b.ST1_log))
```

```
## [[1]]
## [1] "H2b"
##
## [[2]]
##
##   PAIRED SAMPLES T-TEST
##
##   Paired Samples T-Test
##   -------------------------------------------------------------------------
##                                         statistic    df          p
##   -------------------------------------------------------------------------
##     DRT_nogo    DRT_untr    Student's t    -3.295631   112.0000   0.0006578
##   -------------------------------------------------------------------------
##     Note. H<U+2090> Measure 1 < Measure 2
##
##
##   Descriptives
##   -------------------------------------------------------------------------
##                 N        Mean          Median         SD           SE
##   -------------------------------------------------------------------------
##     DRT_nogo    113    0.002336589    8.661759e-4    0.06674060    0.006278428
##     DRT_untr    113    0.022519820    0.01807598     0.06368461    0.005990944
##   -------------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.3094 lower CI = -0.4972 upper CI = -0.1203"
```

```
H3.ST1_log <- ttestPS(sum1_log, pairs = list(list(i1 = "RTcon_NF", i2 = "RTinc_NF")), hypothesis = "twoGreater",
desc = TRUE)

c("H3", H3.ST1_log,
  CohensDav(measure1 = 'RTcon_NF', measure2 = 'RTinc_NF',
        N = nrow(sum1_log), data = sum1_log, ttest = H3.ST1_log))
```

```
## [[1]]
## [1] "H3"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ------------------------------------------------------------------------
##                                        statistic    df         p
##  ------------------------------------------------------------------------
##    RTcon_NF    RTinc_NF    Student's t   -4.118696   112.0000    0.0000366
##  ------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  ---------------------------------------------------------------------
##              N       Mean       Median     SD           SE
##  ---------------------------------------------------------------------
##    RTcon_NF   113    6.320691   6.315358   0.1338930    0.01259560
##    RTinc_NF   113    6.343459   6.331502   0.1232167    0.01159126
##  ---------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.177 lower CI = -0.2639 upper CI = -0.0893"
```

```
H2a.ST2_log <- ttestPS(sum2_log, pairs = list(list(i1 = "DRT_nogo", i2 = "DRT_go")), hypothesis = "twoGreater",
 desc = TRUE)
H2b.ST2_log <- ttestPS(sum2_log, pairs = list(list(i1 = "DRT_nogo", i2 = "DRT_untr")), hypothesis = "twoGreater"
, desc = TRUE)

c("H2a", H2a.ST2_log,
  CohensDav(measure1 = 'DRT_nogo', measure2 = 'DRT_go',
          N = nrow(sum2_log), data = sum2_log, ttest = H2a.ST2_log))
```

```
## [[1]]
## [1] "H2a"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ------------------------------------------------------------------------
##                                        statistic    df         p
##  ------------------------------------------------------------------------
##    DRT_nogo    DRT_go    Student's t   -5.324145    189.0000    0.0000001
##  ------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  ----------------------------------------------------------------------------
##              N       Mean          Median          SD           SE
##  ----------------------------------------------------------------------------
##    DRT_nogo   190    -8.913164e-4   -0.003375093    0.06419061   0.004656876
##    DRT_go     190     0.02648979     0.024981551    0.06633128   0.004812177
##  ----------------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.4195 lower CI = -0.5791 upper CI = -0.2589"
```

```
c("H2b", H2b.ST2_log,
  CohensDav(measure1 = 'DRT_nogo', measure2 = 'DRT_untr',
           N = nrow(sum2_log), data = sum2_log, ttest = H2b.ST2_log))
```

```
## [[1]]
## [1] "H2b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ----------------------------------------------------------------------
##                                         statistic    df         p
##  ----------------------------------------------------------------------
##    DRT_nogo   DRT_untr    Student's t    -1.767321   189.0000   0.0393942
##  ----------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  --------------------------------------------------------------------------
##                 N       Mean         Median         SD           SE
##  --------------------------------------------------------------------------
##    DRT_nogo    190    -8.913164e-4   -0.003375093   0.06419061   0.004656876
##    DRT_untr    190    0.008040626     0.010084575   0.06167710   0.004474527
##  --------------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1419 lower CI = -0.2997 upper CI = 0.0163"
```

```
H3.ST2_log <- ttestPS(sum2_log, pairs = list(list(i1 = "RTcon_NF", i2 = "RTinc_NF")), hypothesis = "twoGreater",
desc = TRUE)

c("H3", H3.ST2_log,
  CohensDav(measure1 = 'RTcon_NF', measure2 = 'RTinc_NF',
           N = nrow(sum2_log), data = sum2_log, ttest = H3.ST2_log))
```

```
## [[1]]
## [1] "H3"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  ----------------------------------------------------------------------
##                                         statistic    df         p
##  ----------------------------------------------------------------------
##    RTcon_NF   RTinc_NF    Student's t    -5.264328   189.0000   0.0000002
##  ----------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  -----------------------------------------------------------------
##                 N      Mean       Median      SD          SE
##  -----------------------------------------------------------------
##    RTcon_NF    190    6.337585   6.346513    0.1309477   0.009499941
##    RTinc_NF    190    6.359179   6.357408    0.1300285   0.009433261
##  -----------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1655 lower CI = -0.2291 upper CI = -0.1015"
```

```
H4a.ST2_log <- ttestPS(sum2_log, pairs = list(list(i1 = "RTcon_go", i2 = "RTinc_go")), hypothesis = "twoGreater"
, desc = TRUE)

H4b.ST2_log <- ttestPS(sum2_log, pairs = list(list(i1 = "RTcon_untr", i2 = "RTinc_untr")), hypothesis = "twoGrea
ter", desc = TRUE)

H4c.ST2_log <- ttestPS(sum2_log, pairs = list(list(i1 = "RTcon_nogo", i2 = "RTinc_nogo")), hypothesis = "twoGrea
ter", desc = TRUE)

c("H4a", H4a.ST2_log,
  CohensDav(measure1 = 'RTcon_go', measure2 = 'RTinc_go',
          N = nrow(sum2_log), data = sum2_log, ttest = H4a.ST2_log))
```

```
## [[1]]
## [1] "H4a"
##
## [[2]]
##
##   PAIRED SAMPLES T-TEST
##
##   Paired Samples T-Test
##   -------------------------------------------------------------------------
##                                        statistic     df          p
##   -------------------------------------------------------------------------
##     RTcon_go    RTinc_go    Student's t    -5.504742    189.0000    < .0000001
##   -------------------------------------------------------------------------
##     Note. H<U+2090> Measure 1 < Measure 2
##
##
##   Descriptives
##   ----------------------------------------------------------------------
##               N       Mean       Median     SD           SE
##   ----------------------------------------------------------------------
##     RTcon_go    190    6.340372    6.339477    0.1428077    0.010360361
##     RTinc_go    190    6.366862    6.358273    0.1330694    0.009653865
##   ----------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.1919 lower CI = -0.2627 upper CI = -0.1207"
```

```
c("H4b", H4b.ST2_log,
  CohensDav(measure1 = 'RTcon_untr', measure2 = 'RTinc_untr',
          N = nrow(sum2_log), data = sum2_log, ttest = H4b.ST2_log))
```

```
## [[1]]
## [1] "H4b"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  -----------------------------------------------------------------------------
##                                                statistic   df         p
##  -----------------------------------------------------------------------------
##    RTcon_untr   RTinc_untr   Student's t    -1.796978   189.0000   0.0369679
##  -----------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  --------------------------------------------------------------------------
##                  N       Mean       Median      SD          SE
##  --------------------------------------------------------------------------
##    RTcon_untr   190    6.352931   6.354370   0.1321396   0.009586417
##    RTinc_untr   190    6.360972   6.350012   0.1292414   0.009376153
##  --------------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = -0.0615 lower CI = -0.1288 upper CI = 0.0059"
```

```
c("H4c", H4c.ST2_log,
  CohensDav(measure1 = 'RTcon_nogo', measure2 = 'RTinc_nogo',
        N = nrow(sum2_log), data = sum2_log, ttest = H4c.ST2_log))
```

```
## [[1]]
## [1] "H4c"
##
## [[2]]
##
##  PAIRED SAMPLES T-TEST
##
##  Paired Samples T-Test
##  -----------------------------------------------------------------------------
##                                                statistic   df         p
##  -----------------------------------------------------------------------------
##    RTcon_nogo   RTinc_nogo   Student's t     0.1913979   189.0000   0.5757903
##  -----------------------------------------------------------------------------
##    Note. H<U+2090> Measure 1 < Measure 2
##
##
##  Descriptives
##  --------------------------------------------------------------------------
##                  N       Mean       Median      SD          SE
##  --------------------------------------------------------------------------
##    RTcon_nogo   190    6.358681   6.358708   0.1366809   0.009915877
##    RTinc_nogo   190    6.357790   6.351321   0.1327396   0.009629944
##  --------------------------------------------------------------------------
##
##
## [[3]]
## [1] "dav = 0.0066 lower CI = -0.0611 upper CI = 0.0744"
```