dbtstmetaanalysis

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Load Packages

```
#install.packages("metafor")
library("metafor")
```

```
## Loading required package: Matrix
```

```
## Loading 'metafor' package (version 2.0-0). For an overview
## and introduction to the package please type: help(metafor).
```

```
#install.packages("esc")
library("esc")

#install.packages("effsize")
library("effsize")

#install.packages("compute.es")
library("compute.es")

#install.packages("ggplot2")
library("ggplot2")
```

Two group Pre and Post

Effect Size of Anxiety

```
# Soler et al. (2009): Hamilton Rating Scale for Anxiety
anxiety1 <- esc_mean_sd(grp1m = 13, grp1sd = 5.46, grp1n = 42, grp2m = 16.56, grp2sd = 5,
                  grp2n = 37, es.type = "d", study = "Soler et al 2009")

# Safer et al. (2010): Emotional Eating Scale-Anxiety
anxiety2 <- esc_mean_sd(grp1m = 1.51, grp1sd = 0.87, grp1n = 43, grp2m = 1.81, grp2sd = 0.89,
                  grp2n = 43, es.type = "d", study = "Safer et al 2010")

# Hirvikoski et al. (2011): Beck Anxiety Inventory
anxiety3 <- esc_mean_sd(grp1m = 15.08, grp1sd = 11.06, grp1n = 26, grp2m = 13.83, grp2sd = 10.14,
                  grp2n = 25, es.type = "d", study = "Hirvikoski et al 2011")



anxietyez <- combine_esc(anxiety1, anxiety2, anxiety3)

metafor::rma(yi = es, sei = se, method = "REML", data = anxietyez)
```

```
##
## Random-Effects Model (k = 3; tau^2 estimator: REML)
##
## tau^2 (estimated amount of total heterogeneity): 0.0845 (SE = 0.1434)
## tau (square root of estimated tau^2 value):      0.2907
## I^2 (total heterogeneity / total variability):   59.17%
## H^2 (total variability / sampling variability):  2.45
##
## Test for Heterogeneity:
## Q(df = 2) = 4.7878, p-val = 0.0913
##
## Model Results:
##
## estimate      se     zval    pval    ci.lb   ci.ub
##  -0.3231  0.2184  -1.4792  0.1391  -0.7512  0.1050
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
#  d =   -0.3231 (small)

# Small effect = 0.2, Medium Effect = 0.5, Large Effect = 0.8
```

Effect size of Depression

```
# Soler et al. (2009):  Hamilton Rating Scale for Depression
# Assumed N1, N2
depression1 <- esc_mean_sd(grp1m = 11.11, grp1sd = 3.99, grp1n = 23, grp2m = 16, grp2sd = 5.78,
                  grp2n = 26, es.type = "d", study = "Soler et al 2009")

# Hirvikoski et al. (2011): Beck Depression Inventory
depression2 <- esc_mean_sd(grp1m = 16.60, grp1sd = 10.19, grp1n = 26, grp2m = 14.36, grp2sd = 11.41,
                  grp2n = 25, es.type = "d", study = "Hirvikoski et al 2011")

# Safer et al. (2010): Emotional Eating Scale-Depression
depression3 <- esc_mean_sd(grp1m = 2.06, grp1sd = 0.99, grp1n = 43, grp2m = 1.81, grp2sd = 0.89,
                  grp2n = 43, es.type = "d", study = "Safer et al 2010")

# Safer et al. (2010): Beck Depression Inventory
depression4 <- esc_mean_sd(grp1m = 9.10, grp1sd = 9.21, grp1n = 43, grp2m = 10.84, grp2sd = 6.86,
                  grp2n = 43, es.type = "d", study = "Safer et al 2010")

# Safer et al. (2001): Beck Depression Inventory
depression5 <- esc_mean_sd(grp1m = 13.4, grp1sd = 11.6, grp1n = 14, grp2m = 17.4, grp2sd = 11.8,
                  grp2n = 15, es.type = "d", study = "Safer et al 2001")

# Telch et al. (2001): Beck Depression Inventory
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
depression6 <- esc_mean_sd(grp1m = 9.9, grp1sd = 10, grp1n = 18, grp2m = 12.8, grp2sd = 8.3,
                  grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Harley et al. (2008): Hamilton Rating Scale for Depression
```

```r
depression7 <- esc_mean_sd(grp1m = 11.30, grp1sd = 5.31, grp1n = 10, grp2m = 17.11, grp2sd = 6.3,
                  grp2n = 9, es.type = "d", study = "Harley et al 2008")

# Harley et al. (2008): Beck Depression Inventory
depression8 <- esc_mean_sd(grp1m = 15.10, grp1sd = 12.13, grp1n = 10, grp2m = 25.89, grp2sd = 16.30,
                  grp2n = 9, es.type = "d", study = "Harley et al 2008")

# Feldman et al. (2009): Hamilton Rating Scale for Depression
depression9 <- esc_mean_sd(grp1m = 11.30, grp1sd = 5.31, grp1n = 10, grp2m = 17.11, grp2sd = 6.23,
                  grp2n = 9, es.type = "d", study = "Harley et al 2008")

# Safer & Joyce (2011): Beck Depression Inventory
depression10 <- esc_mean_sd(grp1m = 7, grp1sd = 6, grp1n = 41, grp2m = 12, grp2sd = 8.8,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

depressionez <- combine_esc(depression1, depression2, depression3, depression4, depression5, depression

metafor::rma(yi = es, sei = se, method = "REML", data = depressionez)
```

```
##
## Random-Effects Model (k = 10; tau^2 estimator: REML)
##
## tau^2 (estimated amount of total heterogeneity): 0.1363 (SE = 0.1118)
## tau (square root of estimated tau^2 value):      0.3692
## I^2 (total heterogeneity / total variability):   60.63%
## H^2 (total variability / sampling variability):  2.54
##
## Test for Heterogeneity:
## Q(df = 9) = 22.9322, p-val = 0.0064
##
## Model Results:
##
## estimate      se     zval    pval    ci.lb    ci.ub
##  -0.4017  0.1559  -2.5772  0.0100  -0.7072  -0.0962  **
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
#  d =  -0.4017 (medium)

# Small effect = 0.2, Medium Effect = 0.5, Large Effect = 0.8
```

Effect size of Eating

```r
# Safer et al. (2010): Eating Disorder Examination-Restraint
eating1 <- esc_mean_sd(grp1m = 1.29, grp1sd = 1.04, grp1n = 43, grp2m = 1.91, grp2sd = 1.23,
                  grp2n = 43, es.type = "d", study = "Safer et al 2010")

# Safer et al. (2010): Eating Disorder Examination-Weight Concerns
eating2 <- esc_mean_sd(grp1m = 2.54, grp1sd = 1.18, grp1n = 43, grp2m = 3, grp2sd = 1.25,
                  grp2n = 43, es.type = "d", study = "Safer et al 2010")
```

```r
# Safer et al. (2010): Eating Disorder Examination-Shape Concerns
eating3 <- esc_mean_sd(grp1m = 2.62, grp1sd = 1.15, grp1n = 43, grp2m = 3.03, grp2sd = 1.35,
                grp2n = 43, es.type = "d", study = "Safer et al 2010")

# Safer et al. (2010): Eating Disorder Examination-Eating Concerns
eating4 <- esc_mean_sd(grp1m = 0.54, grp1sd = 0.71, grp1n = 43, grp2m = 1.14, grp2sd = 1.39,
                grp2n = 43, es.type = "d", study = "Safer et al 2010")

# Safer et al. (2010): Weight (pounds)
eating5 <- esc_mean_sd(grp1m = 212.61, grp1sd = 52.60, grp1n = 43, grp2m = 221.87, grp2sd = 53.19,
                grp2n = 43, es.type = "d", study = "Safer et al 2010")

# Safer et al. (2010): Body Mass Index
eating6 <- esc_mean_sd(grp1m = 35.13, grp1sd = 9.03, grp1n = 43, grp2m = 36.65, grp2sd = 7.64,
                grp2n = 43, es.type = "d", study = "Safer et al 2010")

# Safer et al. (2001): Emotional Eating Scale subscore scores - Anger
eating7 <- esc_mean_sd(grp1m = 1.8, grp1sd = 0.8, grp1n = 14, grp2m = 2.6, grp2sd = 0.9,
                grp2n = 15, es.type = "d", study = "Safer et al 2001")

# Safer et al. (2001): Emotional Eating Scale subscore scores - Anxiety
eating8 <- esc_mean_sd(grp1m = 1.3, grp1sd = 0.9, grp1n = 14, grp2m = 2, grp2sd = 0.8,
                grp2n = 15, es.type = "d", study = "Safer et al 2001")

# Safer et al. (2001): Emotional Eating Scale subscore scores - Depression
eating9 <- esc_mean_sd(grp1m = 2.1, grp1sd = 1, grp1n = 14, grp2m = 2.6, grp2sd = 0.7,
                grp2n = 15, es.type = "d", study = "Safer et al 2001")

# Telch et al. (2001): Binge days
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating10 <- esc_mean_sd(grp1m = 0, grp1sd = 0, grp1n = 18, grp2m = 8.5, grp2sd = 10,
                grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Purge days
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating11 <- esc_mean_sd(grp1m = 0, grp1sd = 0, grp1n = 18, grp2m = 10, grp2sd = 14,
                grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Weight (pounds)
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating12 <- esc_mean_sd(grp1m = 209.2, grp1sd = 49, grp1n = 18, grp2m = 223.8, grp2sd = 37.8,
                grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Eating Disorder Examination-Weight Concerns
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating13 <- esc_mean_sd(grp1m = 2.2, grp1sd = 0.9, grp1n = 18, grp2m = 3.1, grp2sd = 1,
                grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Eating Disorder Examination-Shape Concerns
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating14 <- esc_mean_sd(grp1m = 2.3, grp1sd = 0.9, grp1n = 18, grp2m = 3.1, grp2sd = 1,
                grp2n = 16, es.type = "d", study = "Telch et al 2001")
```

```r
# Telch et al. (2001): Eating Disorder Examination-Eating Concerns
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating15 <- esc_mean_sd(grp1m = 0.4, grp1sd = 0.4, grp1n = 18, grp2m = 1.4, grp2sd = 0.9,
                  grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Eating Disorder Examination-Restraint
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating16 <- esc_mean_sd(grp1m = 1.4, grp1sd = 1, grp1n = 18, grp2m = 1.8, grp2sd = 1.3,
                  grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Binge Eating Scale
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating17 <- esc_mean_sd(grp1m = 15.7, grp1sd = 9.4, grp1n = 18, grp2m = 28.2, grp2sd = 8.3,
                  grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Emotional Eating Scale subscore scores - Anger
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating18 <- esc_mean_sd(grp1m = 1.8, grp1sd = 1, grp1n = 18, grp2m = 2.6, grp2sd = 0.9,
                  grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Emotional Eating Scale subscore scores - Anxiety
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating19 <- esc_mean_sd(grp1m = 1.5, grp1sd = 0.9, grp1n = 18, grp2m = 2.4, grp2sd = 1,
                  grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Telch et al. (2001): Emotional Eating Scale subscore scores - Depression
# Assumed N1 (22 - 4 = 18), N2 (22 - 6 = 16)
eating20 <- esc_mean_sd(grp1m = 2.4, grp1sd = 1, grp1n = 18, grp2m = 3, grp2sd = 0.8,
                  grp2n = 16, es.type = "d", study = "Telch et al 2001")

# Safer & Joyce (2011): Objective binge days
eating20 <- esc_mean_sd(grp1m = 1.7, grp1sd = 4.5, grp1n = 41, grp2m = 4.4, grp2sd = 5.3,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

# Safer & Joyce (2011): Eating Disorder Examination-Restraint
eating21 <- esc_mean_sd(grp1m = 1.4, grp1sd = 0.94, grp1n = 41, grp2m = 1.8, grp2sd = 1.3,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

# Safer & Joyce (2011): Eating Disorder Examination-Weight Concerns
eating22 <- esc_mean_sd(grp1m = 2.5, grp1sd = 1, grp1n = 41, grp2m = 3, grp2sd = 1.3,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

# Safer & Joyce (2011): Eating Disorder Examination-Shape Concerns
eating23 <- esc_mean_sd(grp1m = 2.3, grp1sd = 1.1, grp1n = 41, grp2m = 3.2, grp2sd = 1.3,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

# Safer & Joyce (2011): Eating Disorder Examination-Eating Concerns
eating24 <- esc_mean_sd(grp1m = 0.4, grp1sd = 0.6, grp1n = 41, grp2m = 1.1, grp2sd = 1.3,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

# Safer & Joyce (2011): Three Factor Eating Questionnaire-Cognitive Restraint
eating25 <- esc_mean_sd(grp1m = 10.9, grp1sd = 4, grp1n = 41, grp2m = 9.9, grp2sd = 3.8,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")
```

```r
# Safer & Joyce (2011): Three Factor Eating Questionnaire-Disinhibition
eating26 <- esc_mean_sd(grp1m = 9.7, grp1sd = 3.8, grp1n = 41, grp2m = 12.2, grp2sd = 3.1,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

# Safer & Joyce (2011): Three Factor Eating Questionnaire-Hunger
eating27 <- esc_mean_sd(grp1m = 6, grp1sd = 3.9, grp1n = 41, grp2m = 8.4, grp2sd = 3.8,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

# Safer & Joyce (2011): Body mass index
eating28 <- esc_mean_sd(grp1m = 35.6, grp1sd = 8.3, grp1n = 41, grp2m = 36.1, grp2sd = 8.4,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

# Safer & Joyce (2011): Weight
eating29 <- esc_mean_sd(grp1m = 214.6, grp1sd = 50.4, grp1n = 41, grp2m = 219.1, grp2sd = 54.8,
                  grp2n = 60, es.type = "d", study = "Safer & Joyce 2011")

eatingez <- combine_esc(eating1, eating2, eating3, eating4, eating5, eating6, eating7, eating8, eating9

metafor::rma(yi = es, sei = se, method = "REML", data = eatingez)
```

```
##
## Random-Effects Model (k = 29; tau^2 estimator: REML)
##
## tau^2 (estimated amount of total heterogeneity): 0.0683 (SE = 0.0364)
## tau (square root of estimated tau^2 value):      0.2614
## I^2 (total heterogeneity / total variability):   51.72%
## H^2 (total variability / sampling variability):  2.07
##
## Test for Heterogeneity:
## Q(df = 28) = 57.5527, p-val = 0.0008
##
## Model Results:
##
## estimate      se     zval    pval    ci.lb    ci.ub
##  -0.5377  0.0697  -7.7151  <.0001  -0.6744  -0.4011  ***
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
#  d =  -0.5377 (medium)

# Small effect = 0.2, Medium Effect = 0.5, Large Effect = 0.8
```