Statistics in Clinical Psychology

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2025-03-31

```r
library(readxl)
library(moments)
library(writexl)
library(apaTables)
library(rempsyc)
library(officer)
library(flextable)


DATA <- read_excel("C:/YL-Data/DATARAW.xlsx")

## TASK 1

# We are creating the inverse dimensions.

DATA$BF1R <- 7 - DATA$BF1
DATA$BF3R <- 7 - DATA$BF3
DATA$BF4R <- 7 - DATA$BF4
DATA$BF7R <- 7 - DATA$BF7
DATA$BF14R <- 7 - DATA$BF14
DATA$BF2R <- 7 - DATA$BF2
DATA$BF5R <- 7 - DATA$BF5
DATA$BF9R <- 7 - DATA$BF9
DATA$BF20R <- 7 - DATA$BF20


### FOR CR:

# Protective Sexism subscale score.
DATA$CR_Protective_Sexism <- rowMeans(DATA[, c("CR1", "CR3", "CR6", "CR9",
"CR12", "CR13", "CR17", "CR20")],
                                          na.rm = TRUE)
# CONTROL
summary(DATA$CR_Protective_Sexism)

##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   2.250   3.375   3.296   4.375   6.000
```

```r
# Heterosexual Closeness subscale score.
DATA$CR_Heterosexual_Closeness <- rowMeans(DATA[, c("CR1", "CR6", "CR12",
"CR13")],
                                            na.rm = TRUE)
# CONTROL
summary(DATA$CR_Heterosexual_Closeness)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   1.750   3.250   3.208   4.500   6.000
```

```r
# Protective Patriarchy subscale score.
DATA$CR_Protective_Patriarchy <- rowMeans(DATA[, c("CR3", "CR9", "CR17",
"CR20")],
                                          na.rm = TRUE)
# CONTROL
summary(DATA$CR_Protective_Patriarchy)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   2.500   3.500   3.384   4.250   6.000
```

```r
# Intergender Complementary Differentiation subscale score.
DATA$CR_Intergender_Complementary_Differentiation <- rowMeans(DATA[, c("CR8",
"CR19", "CR22")],
                                                              na.rm = TRUE)
# CONTROL
summary(DATA$CR_Intergender_Complementary_Differentiation)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   2.667   4.000   3.781   5.000   6.000
```

```r
### FOR BF:

# The 'Self' Position (No Reverse Scoring) Subscale Score
DATA$BF_The_Self_Position <- rowMeans(DATA[, c("CR6", "CR10", "CR12", "CR13",
"CR16")],
                                      na.rm = TRUE)
# CONTROL
summary(DATA$BF_The_Self_Position)
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   2.000   3.200   3.156   4.200   6.000

# Emotional Detachment (Reverse Scored) Subscale Score
DATA$BF_Emotional_Detachment <- rowMeans(DATA[, c("BF1R", "BF3R", "BF4R",
"BF7R", "BF14R")],
                                        na.rm = TRUE)
# CONTROL
summary(DATA$BF_Emotional_Detachment)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   3.400   4.200   4.105   5.000   6.000
```

```
# Dependency on Others (Reverse Scored) Subscale Score
DATA$BF_Dependency_on_Others <- rowMeans(DATA[, c("BF2R", "BF5R", "BF9R",
"BF14R", "BF20R")],
                                            na.rm = TRUE)
# CONTROL
summary(DATA$BF_Dependency_on_Others)

##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   3.000   3.800   3.777   4.600   6.000

## TASK 2

# "The 'I' Position Subscale Normality Test"
BF_The_Self_Position_shapiro_test <- shapiro.test(DATA$BF_The_Self_Position)
BF_The_Self_Position_shapiro_test

##
##  Shapiro-Wilk normality test
##
## data:  DATA$BF_The_Self_Position
## W = 0.96896, p-value = 4.435e-05

formatC(BF_The_Self_Position_shapiro_test$p.value,
        format = "f",
        digits = 3)

## [1] "0.000"

## INTERPRETATION: It does not show a normal distribution, as p = 0.000 <
alpha = 0.05.

# Emotional Detachment Subscale Normality Test.
BF_Emotional_Detachment_shapiro_test <-
shapiro.test(DATA$BF_Emotional_Detachment)
BF_Emotional_Detachment_shapiro_test

##
##  Shapiro-Wilk normality test
##
## data:  DATA$BF_Emotional_Detachment
## W = 0.98133, p-value = 0.003082

formatC(BF_Emotional_Detachment_shapiro_test$p.value,
        format = "f",
        digits = 3)

## [1] "0.003"

## INTERPRETATION: It does not show a normal distribution, as p = 0.003 <
alpha = 0.05.

# Normality test for the "Dependency on Others" subscale
```

```r
BF_Dependency_on_Others_shapiro_test <-
shapiro.test(DATA$BF_Dependency_on_Others)
BF_Dependency_on_Others_shapiro_test
```

```
##
##  Shapiro-Wilk normality test
##
## data:  DATA$BF_Dependency_on_Others
## W = 0.98398, p-value = 0.008559
```

```r
formatC(BF_Dependency_on_Others_shapiro_test$p.value,
        format = "f",
        digits = 3)
```

```
## [1] "0.009"
```

```r
## INTERPRETATION: It does not show a normal distribution, as p = 0.009 <
alfa = 0.05

# Normality test for the "Protective Sexism" subscale
Protective_Sexism_shapiro_test <- shapiro.test(DATA$CR_Protective_Sexism)
Protective_Sexism_shapiro_test
```

```
##
##  Shapiro-Wilk normality test
##
## data:  DATA$CR_Protective_Sexism
## W = 0.97251, p-value = 0.0001377
```

```r
formatC(Protective_Sexism_shapiro_test$p.value,
        format = "f",
        digits = 3)
```

```
## [1] "0.000"
```

```r
## INTERPRETATION: It does not show a normal distribution, as p = 0.000 <
alfa = 0.05


## TASK 3

names(DATA)
```

```
##  [1] "SN"
##  [2] "Consent"
##  [3] "Gender"
##  [4] "I_Experience"
##  [5] "Age"
##  [6] "CR1"
##  [7] "CR2"
##  [8] "CR3"
```

```
##  [9] "CR4"
## [10] "CR5"
## [11] "CR6"
## [12] "CR7"
## [13] "CR8"
## [14] "CR9"
## [15] "CR10"
## [16] "CR11"
## [17] "CR12"
## [18] "CR13"
## [19] "CR14"
## [20] "CR15"
## [21] "CR16"
## [22] "CR17"
## [23] "CR18"
## [24] "CR19"
## [25] "CR20"
## [26] "CR21"
## [27] "CR22"
## [28] "BF1"
## [29] "BF2"
## [30] "BF3"
## [31] "BF4"
## [32] "BF5"
## [33] "BF6"
## [34] "BF7"
## [35] "BF8"
## [36] "BF9"
## [37] "BF10"
## [38] "BF11"
## [39] "BF12"
## [40] "BF13"
## [41] "BF14"
## [42] "BF15"
## [43] "BF16"
## [44] "BF17"
## [45] "BF18"
## [46] "BF19"
## [47] "BF20"
## [48] "BF1R"
## [49] "BF3R"
## [50] "BF4R"
## [51] "BF7R"
## [52] "BF14R"
## [53] "BF2R"
## [54] "BF5R"
## [55] "BF9R"
## [56] "BF20R"
## [57] "CR_Protective_Sexism"
## [58] "CR_Heterosexual_Closeness"
```

```
## [59] "CR_Protective_Patriarchy"
## [60] "CR_Intergender_Complementary_Differentiation"
## [61] "BF_The_Self_Position"
## [62] "BF_Emotional_Detachment"
## [63] "BF_Dependency_on_Others"


## FOR Heterosexual Intimacy:

table(DATA$CR_Heterosexual_Closeness)

##
##    1 1.25  1.5 1.75    2 2.25  2.5 2.75    3 3.25  3.5 3.75    4 4.25  4.5
4.75
##   27    6   15   14    7   11    9    6   11   14   18   16   11   12   10
19
##    5 5.25  5.5 5.75    6
##   16    6    2    3    6

class(DATA$CR_Heterosexual_Closeness)

## [1] "numeric"

DATA$GenderF <- factor(DATA$Gender,
                         levels = c(1,2),
                         labels = c("Woman","Man"))

table(DATA$GenderF)

##
## Woman   Man
##   208    31

class(DATA$GenderF)

## [1] "factor"

apa.1way.table(iv = GenderF,
               dv = CR_Heterosexual_Closeness,
               data = DATA,
               filename = "Table_CR_Heterosexual_Closeness.doc",
               table.number = 4)

##
##
## Table 4
##
## Descriptive statistics for CR_Heterosexual_Closeness as a function of
GenderF.
##
##  GenderF    M   SD
##    Woman 3.17 1.48
```

```
##      Man 3.49 1.14
##
## Note. M and SD represent mean and standard deviation, respectively.
##

CR_Heterosexual_Closeness_ttest <- nice_t_test(data = DATA,
                                               response =
c("CR_Heterosexual_Closeness"),
                                               group = "Gender",
                                               warning = FALSE,
                                               var.equal = TRUE)

## Using Student t-test.
##

## Using independent samples t-test.
##

CR_Heterosexual_Closeness_ttest

##          Dependent Variable         t  df         p          d   CI_lower
## 1 CR_Heterosexual_Closeness -1.174334 237 0.2414401 -0.2260882 -0.6037399
##    CI_upper
## 1 0.1520389

save_as_docx(nice_table(CR_Heterosexual_Closeness_ttest),
             path = "Table_CR_Heterosexual_Closeness_t_test.docx")

# INTERPRETATION:
# The scores for Heterosexual Intimacy did not show a significant difference
between gender groups, t(237) = -1.17, p = 0.24, d = -0.22. Although the
scores for men (M = 3.49, SD = 1.14) were slightly higher than those for
women (M = 3.17, SD = 1.48), this difference was not statistically
significant. The effect size (Cohen’s d) is small, indicating that the
practical impact of the gender difference is minimal.


## FOR PROTECTIVE PATRIARCHY:

table(DATA$CR_Protective_Patriarchy)

##    1 1.25  1.5 1.75    2 2.25  2.5 2.75    3 3.25  3.5 3.75    4 4.25  4.5
4.75
##   15    4   10   12    9    5   14   13   19   17   14   20   14   14   13
14
##    5 5.25  5.5 5.75    6
##    7    6    7    4    8
class(DATA$CR_Protective_Patriarchy)

## [1] "numeric"
```

```r
apa.1way.table(iv = GenderF,
               dv = CR_Protective_Patriarchy,
               data = DATA,
               filename = "Table_CR_Protective_Patriarchy.doc",
               table.number = 4)

##
##
## Table 4
##
## Descriptive statistics for CR_Protective_Patriarchy as a function of
GenderF.
##
##  GenderF    M   SD
##    Woman 3.34 1.35
##      Man 3.70 1.18
##
## Note. M and SD represent mean and standard deviation, respectively.
##

CR_Protective_Patriarchy_ttest <- nice_t_test(data = DATA,
                                            response =
c("CR_Protective_Patriarchy"),
                                            group = "Gender",
                                            warning = FALSE,
                                            var.equal = TRUE)

## Using Student t-test.
##
## Using independent samples t-test.
##

CR_Protective_Patriarchy_ttest

##          Dependent Variable         t  df         p          d   CI_lower
## 1 CR_Protective_Patriarchy -1.426149 237 0.1551412 -0.2745689 -0.6524299
##    CI_upper
## 1 0.1038687

save_as_docx(nice_table(CR_Protective_Patriarchy_ttest),
             path = "Table_CR_Protective_Patriarchy_t_test.docx")

# INTERPRETATION:
# The scores for Protective Patriarchy did not show a significant difference
between gender groups, t(42.68) = -1.57, p = 0.12, d = -0.27. Although the
scores for men (M = 3.70, SD = 1.18) were slightly higher than those for
women (M = 3.34, SD = 1.35), this difference was not statistically
significant. The effect size (Cohen’s d) is small, indicating that the
practical impact of the gender difference is minimal.
```

```
## FOR INTERGENDER COMPLEMENTARY DIFFERENTIATION:

table(DATA$CR_Intergender_Complementary_Differentiation)

##
##                1 1.33333333333333 1.66666666666667                2
##               12                9                5                7
## 2.33333333333333 2.66666666666667                3 3.33333333333333
##               18               12               10               17
## 3.66666666666667                4 4.33333333333333 4.66666666666667
##               20               19               29               17
##                5 5.33333333333333 5.66666666666667                6
##               27               20                4               13

class(DATA$CR_Intergender_Complementary_Differentiation)

## [1] "numeric"

apa.1way.table(iv = GenderF,
               dv = CR_Intergender_Complementary_Differentiation,
               data = DATA,
               filename =
"Table_CR_Intergender_Complementary_Differentiation.doc",
               table.number = 4)

##
##
## Table 4
##
## Descriptive statistics for CR_Intergender_Complementary_Differentiation as
a function of GenderF.
##
##  GenderF    M   SD
##    Woman 3.81 1.39
##      Man 3.57 1.19
##
## Note. M and SD represent mean and standard deviation, respectively.
##

CR_Intergender_Complementary_Differentiation_ttest <- nice_t_test(data =
DATA,
                                                              response =
c("CR_Intergender_Complementary_Differentiation"),
                                                              group = "Gender",
                                                              warning = FALSE,
                                                              var.equal = TRUE)
## Using Student t-test.
##
## Using independent samples t-test.
```

```
## CR_Intergender_Complementary_Differentiation_ttest
##                               Dependent Variable         t  df         p
d
## 1 CR_Intergender_Complementary_Differentiation 0.9230247 237 0.3569331
0.177705
##     CI_lower  CI_upper
## 1 -0.2001621 0.5551981
```

```
save_as_docx(nice_table(CR_Intergender_Complementary_Differentiation_ttest),
             path =
"Table_CR_Intergender_Complementary_Differentiation_t_test.docx")

# INTERPRETATION:
# Intergender Complementary Differentiation scores did not show a significant
difference between gender groups, t(237) = 0.92, p = 0.35, d = 0.17. Although
males (M = 3.57, SD = 1.19) had slightly higher scores than females (M =
3.81, SD = 1.39), this difference was not statistically significant. The
effect size (Cohen’s d) was small, indicating that the practical impact of
the gender difference is minimal.


## FOR THE "SELF" POSITION:

table(DATA$BF_The_Self_Position)
```

```
##
##   1 1.2 1.4 1.6 1.8   2 2.2 2.4 2.6 2.8   3 3.2 3.4 3.6 3.8   4 4.2 4.4
4.6 4.8
##  16   6   6  11  10  16   5   5  12   9  15  14  10  14  11  18  14   9
12   7
##   5 5.2 5.4 5.6   6
##   8   4   2   3   2
```

```
class(DATA$BF_The_Self_Position)
```

```
## [1] "numeric"
```

```
apa.1way.table(iv = GenderF,
               dv = BF_The_Self_Position,
               data = DATA,
               filename = "Table_BF_The_Self_Position.doc",
               table.number = 4)
## Table 4
##
## Descriptive statistics for BF_The_Self_Position as a function of GenderF.
##
##  GenderF    M   SD
##    Woman 3.09 1.29
##      Man 3.57 0.93
```

```
##
## Note. M and SD represent mean and standard deviation, respectively.
##

BF_The_Self_Position_ttest <- nice_t_test(data = DATA,
                                          response = c("BF_The_Self_Position"),
                                          group = "Gender",
                                          warning = FALSE,
                                          var.equal = TRUE)

## Using Student t-test.
##
## Using independent samples t-test.
##

BF_The_Self_Position_ttest

##     Dependent Variable        t  df          p          d  CI_lower
CI_upper
## 1 BF_The_Self_Position -1.96629 237 0.05043228 -0.3785594 -0.757039
0.000712276

save_as_docx(nice_table(BF_The_Self_Position_ttest),
             path = "Table_BF_The_Self_Position_t_test.docx")

# INTERPRETATION:
# The "Self" Position scores did not show a statistically significant
difference between gender groups, t(237) = -1.96, p = 0.0504, d = -0.37.
Although male participants (M = 3.57, SD = 0.93) had slightly higher scores
than female participants (M = 3.09, SD = 1.29), this difference is at the
borderline of statistical significance (p = 0.0504) and is generally not
considered a meaningful difference. The effect size (Cohen’s d) is moderate,
suggesting that the practical impact of the gender difference may be limited.
```