In [1]:
```r
#install bda package if not already installed
install.packages('bda')

#load bda package
library(bda)

# Sample data frame 'data' with columns 'Panas..', 'Panas...1', 'BFI..E.', 'BFI.
data <- read.csv("Complete_Data_Modified.csv")

# Independent variables
independent_vars <- c('BFI..E.', 'BFI..A.', 'BFI..C.', 'BFI..N.', 'BFI..O.', 'EI

# Dependent variables
dependent_vars <- c('Panas..', 'Panas...1', 'CBCL')

# Mediator variable
mediator_var <- 'PAQ'

# Function to perform Sobel test for a given combination of variables
perform_sobel_test <- function(independent_var, dependent_var, mediator_var) {
  print(paste("Independent Variable:", independent_var))
  print(paste("Dependent Variable:", dependent_var))
  print(paste("Mediator Variable:", mediator_var))

  result <- mediation.test(data[[mediator_var]], data[[independent_var]], data[[
  print(result)
  cat("\n")
  print(paste("=================================================================
  cat("\n")
}

# Loop through all combinations of independent, dependent, and mediator variable
for (ind_var in independent_vars) {
  for (dep_var in dependent_vars) {
    perform_sobel_test(ind_var, dep_var, mediator_var)
  }
}
```

```
Updating HTML index of packages in '.Library'

Making 'packages.html' ...
 done

Loading required package: boot

bda v17 (Bin Wang, 2023)
```

```
[1] "Independent Variable: BFI..E."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
             Sobel      Aroian    Goodman
z.value -0.5319040 -0.4562377 -0.6644661
p.value  0.5947925  0.6482190  0.5063921


[1] "==========================================================================
======="


[1] "Independent Variable: BFI..E."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
             Sobel      Aroian    Goodman
z.value -0.5388716 -0.4751563 -0.6378040
p.value  0.5899754  0.6346755  0.5236013


[1] "==========================================================================
======="


[1] "Independent Variable: BFI..E."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
             Sobel      Aroian Goodman
z.value -0.4037597 -0.2536954      NA
p.value  0.6863894  0.7997309      NA


[1] "==========================================================================
======="


[1] "Independent Variable: BFI..A."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
               Sobel       Aroian     Goodman
z.value -1.71612477 -1.65522209 -1.78428597
p.value  0.08613921  0.09787946  0.07437721


[1] "==========================================================================
======="


[1] "Independent Variable: BFI..A."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
             Sobel      Aroian     Goodman
z.value -1.6182807 -1.5579053 -1.68626760
p.value  0.1056021  0.1192557  0.09174427


[1] "==========================================================================
======="


[1] "Independent Variable: BFI..A."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
             Sobel      Aroian     Goodman
z.value 0.04976157 0.04719688 0.05279564
p.value 0.96031239 0.96235632 0.95789474


[1] "==========================================================================
======="
```

```
[1] "Independent Variable: BFI..C."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
                Sobel       Aroian     Goodman
z.value -0.5642172 -0.4843911 -0.7034882
p.value  0.5726064  0.6281083  0.4817515


[1] "===============================================================================
======="


[1] "Independent Variable: BFI..C."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
                Sobel       Aroian     Goodman
z.value -0.5762369 -0.5144730 -0.6673943
p.value  0.5644551  0.6069213  0.5045203


[1] "===============================================================================
======="


[1] "Independent Variable: BFI..C."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
                Sobel       Aroian Goodman
z.value -0.3770128 -0.2306908      NA
p.value  0.7061641  0.8175550      NA


[1] "===============================================================================
======="


[1] "Independent Variable: BFI..N."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
                Sobel       Aroian     Goodman
z.value -1.0745376 -0.9742708 -1.2138926
p.value  0.2825818  0.3299221  0.2247887


[1] "===============================================================================
======="


[1] "Independent Variable: BFI..N."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
                Sobel       Aroian     Goodman
z.value -1.1871027 -1.0971515 -1.3035594
p.value  0.2351871  0.2725752  0.1923838


[1] "===============================================================================
======="


[1] "Independent Variable: BFI..N."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
                Sobel       Aroian     Goodman
z.value -0.7445991 -0.6470549 -0.9057793
p.value  0.4565141  0.5175964  0.3650527


[1] "===============================================================================
======="
```

```
[1] "Independent Variable: BFI..O."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
              Sobel      Aroian    Goodman
z.value -0.6974171 -0.6164355 -0.8219139
p.value  0.4855418  0.5376071  0.4111259


[1] "===============================================================================
======="


[1] "Independent Variable: BFI..O."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
              Sobel      Aroian    Goodman
z.value -0.7025409 -0.6261863 -0.8159929
p.value  0.4823419  0.5311928  0.4145042


[1] "===============================================================================
======="


[1] "Independent Variable: BFI..O."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
              Sobel      Aroian Goodman
z.value -0.4108952 -0.2757016      NA
p.value  0.6811493  0.7827772      NA


[1] "===============================================================================
======="


[1] "Independent Variable: EI..Self.A."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
             Sobel     Aroian    Goodman
z.value 0.8225756 0.7255339 0.9730666
p.value 0.4107494 0.4681246 0.3305202


[1] "===============================================================================
======="


[1] "Independent Variable: EI..Self.A."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
             Sobel     Aroian    Goodman
z.value 0.8443953 0.7576594 0.9699051
p.value 0.3984485 0.4486549 0.3320938


[1] "===============================================================================
======="


[1] "Independent Variable: EI..Self.A."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
             Sobel     Aroian    Goodman
z.value 0.4664782 0.3446197 1.1389061
p.value 0.6408732 0.7303803 0.2547423


[1] "===============================================================================
======="
```

```
[1] "Independent Variable: EI..Self.M."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
            Sobel     Aroian    Goodman
z.value 1.2152927 1.1251510 1.3312723
p.value 0.2242545 0.2605251 0.1830994


[1] "===========================================================================
======="


[1] "Independent Variable: EI..Self.M."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
            Sobel    Aroian    Goodman
z.value 1.2375852 1.148157 1.3518011
p.value 0.2158699 0.250904 0.1764389


[1] "===========================================================================
======="


[1] "Independent Variable: EI..Self.M."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
            Sobel     Aroian    Goodman
z.value 0.3113143 0.2743201 0.3689175
p.value 0.7555617 0.7838387 0.7121892


[1] "===========================================================================
======="


[1] "Independent Variable: EI..Social.A."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
            Sobel     Aroian    Goodman
z.value 1.5180642 1.4480803 1.5992858
p.value 0.1289982 0.1475946 0.1097571


[1] "===========================================================================
======="


[1] "Independent Variable: EI..Social.A."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
            Sobel     Aroian    Goodman
z.value 1.2433315 1.1765699 1.3229212
p.value 0.2137457 0.2393672 0.1858616


[1] "===========================================================================
======="


[1] "Independent Variable: EI..Social.A."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
            Sobel     Aroian    Goodman
z.value 0.3895535 0.3633786 0.4223444
p.value 0.6968668 0.7163221 0.6727737


[1] "===========================================================================
======="
```

```
[1] "Independent Variable: EI..RM."
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
            Sobel    Aroian    Goodman
z.value 1.058405 0.9641457 1.1871119
p.value 0.289871 0.3349729 0.2351835


[1] "========================================================================
======="


[1] "Independent Variable: EI..RM."
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
             Sobel    Aroian    Goodman
z.value 1.0801928 0.9903086 1.2000408
p.value 0.2800563 0.3220233 0.2301235


[1] "========================================================================
======="


[1] "Independent Variable: EI..RM."
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
             Sobel    Aroian    Goodman
z.value 0.4631429 0.3777929 0.6568730
p.value 0.6432619 0.7055844 0.5112626


[1] "========================================================================
======="


[1] "Independent Variable: Total"
[1] "Dependent Variable: Panas.."
[1] "Mediator Variable: PAQ"
             Sobel    Aroian    Goodman
z.value 1.3469389 1.2640902 1.4485524
p.value 0.1779999 0.2061977 0.1474626


[1] "========================================================================
======="


[1] "Independent Variable: Total"
[1] "Dependent Variable: Panas...1"
[1] "Mediator Variable: PAQ"
             Sobel    Aroian    Goodman
z.value 1.2992223 1.2154524 1.4031032
p.value 0.1938676 0.2241936 0.1605861


[1] "========================================================================
======="


[1] "Independent Variable: Total"
[1] "Dependent Variable: CBCL"
[1] "Mediator Variable: PAQ"
             Sobel    Aroian    Goodman
z.value 0.3084536 0.2777151 0.3523442
p.value 0.7577372 0.7812311 0.7245801


[1] "========================================================================
======="
```

In [8]: `str(data)`

```
'data.frame':    206 obs. of  14 variables:
$ Panas..      : int  1 1 2 2 3 1 1 2 1 2 ...
$ Panas...1    : int  1 2 2 1 1 2 2 1 1 1 ...
$ BFI..E.      : int  2 2 2 2 2 1 3 3 2 2 ...
$ BFI..A.      : int  1 2 2 2 2 1 1 1 2 2 ...
$ BFI..C.      : int  1 2 2 2 2 2 2 2 2 2 ...
$ BFI..N.      : int  2 2 2 2 2 3 3 2 1 2 ...
$ BFI..O.      : int  2 1 2 2 2 1 2 2 2 2 ...
$ EI..Self.A.  : int  82 76 82 85 73 89 76 90 77 86 ...
$ EI..Self.M.  : int  85 71 73 78 73 87 82 52 74 65 ...
$ EI..Social.A.: int  90 76 74 70 77 93 88 68 79 81 ...
$ EI..RM.      : int  84 71 61 57 73 80 71 50 71 75 ...
$ Total        : int  4 3 3 3 3 4 4 2 3 3 ...
$ PAQ          : int  1 1 1 2 1 1 1 2 1 1 ...
$ CBCL         : int  2 3 3 3 1 3 3 2 3 1 ...
```

In [ ]: