Correlation Matrix

In [1]:
```r
# Read the modified CSV file
data <- read.csv("Complete_Data_Modified.csv")

# Define your variables
independent_vars <- c('BFI..E.', 'BFI..A.', 'BFI..C.', 'BFI..N.', 'BFI..O.', 'EI
dependent_vars <- c('Panas..', 'Panas...1', 'CBCL')
mediator_var <- 'PAQ'

# Select relevant columns
selected_vars <- c(independent_vars, dependent_vars, mediator_var)

# Create a subset of the data with selected variables
selected_data <- data[selected_vars]

# Calculate the correlation matrix
cor_matrix <- cor(selected_data)

# Display the correlation matrix
print(cor_matrix)

# Save the correlation matrix to a CSV file
write.csv(cor_matrix, "correlation_matrix.csv")
```

```
                   BFI..E.     BFI..A.      BFI..C.     BFI..N.     BFI..O.
BFI..E.         1.00000000  0.12554826  0.175854200 -0.15562379  0.12999692
BFI..A.         0.12554826  1.00000000  0.458433415 -0.25510737  0.32269185
BFI..C.         0.17585420  0.45843341  1.000000000 -0.34402431  0.14456819
BFI..N.        -0.15562379 -0.25510737 -0.344024309  1.00000000 -0.07558528
BFI..O.         0.12999692  0.32269185  0.144568189 -0.07558528  1.00000000
EI..Self.A.    -0.01528600 -0.18742956 -0.108389046  0.08363872 -0.16001812
EI..Self.M.    -0.19433882 -0.36660106 -0.357940924  0.27343369 -0.38758480
EI..Social.A.  -0.08398124 -0.18924660 -0.170716978  0.01056771 -0.15898155
EI..RM.        -0.14117802 -0.25067721 -0.215520281  0.10043806 -0.21364264
Total          -0.12626935 -0.31370918 -0.278500637  0.19501126 -0.32056477
Panas..         0.02257458  0.15655722  0.007135482 -0.03963977  0.18334248
Panas...1      -0.11358984  0.01593453  0.074719407  0.01609578 -0.03300420
CBCL           -0.02791811 -0.21868532 -0.198486605  0.15930726 -0.14440048
PAQ             0.03955116  0.20506812  0.042329232  0.10693029  0.05328493
                EI..Self.A. EI..Self.M. EI..Social.A.     EI..RM.       Total
BFI..E.        -0.01528600 -0.19433882   -0.08398124 -0.14117802 -0.12626935
BFI..A.        -0.18742956 -0.36660106   -0.18924660 -0.25067721 -0.31370918
BFI..C.        -0.10838905 -0.35794092   -0.17071698 -0.21552028 -0.27850064
BFI..N.         0.08363872  0.27343369    0.01056771  0.10043806  0.19501126
BFI..O.        -0.16001812 -0.38758480   -0.15898155 -0.21364264 -0.32056477
EI..Self.A.     1.00000000  0.39977917    0.38463318  0.42235422  0.55337264
EI..Self.M.     0.39977917  1.00000000    0.46361830  0.47879346  0.77688249
EI..Social.A.   0.38463318  0.46361830    1.00000000  0.62833727  0.74824117
EI..RM.         0.42235422  0.47879346    0.62833727  1.00000000  0.75675593
Total           0.55337264  0.77688249    0.74824117  0.75675593  1.00000000
Panas..        -0.04926681 -0.02785076   -0.11253152 -0.14120962 -0.10053935
Panas...1       0.04860619  0.09755139    0.17840220 -0.02578816  0.08488573
CBCL            0.06279721  0.15516860    0.08156107  0.07677617  0.14147261
PAQ            -0.06686602 -0.12754727   -0.17630831 -0.09206791 -0.14175164
                    Panas..    Panas...1        CBCL         PAQ
BFI..E.         0.022574579 -0.113589839 -0.02791811  0.03955116
BFI..A.         0.156557219  0.015934526 -0.21868532  0.20506812
BFI..C.         0.007135482  0.074719407 -0.19848660  0.04232923
BFI..N.        -0.039639774  0.016095783  0.15930726  0.10693029
BFI..O.         0.183342480 -0.033004200 -0.14440048  0.05328493
EI..Self.A.    -0.049266814  0.048606188  0.06279721 -0.06686602
EI..Self.M.    -0.027850760  0.097551389  0.15516860 -0.12754727
EI..Social.A.  -0.112531521  0.178402202  0.08156107 -0.17630831
EI..RM.        -0.141209616 -0.025788158  0.07677617 -0.09206791
Total          -0.100539347  0.084885730  0.14147261 -0.14175164
Panas..         1.000000000  0.004976237 -0.24660998 -0.10851049
Panas...1       0.004976237  1.000000000  0.07304882 -0.12768474
CBCL           -0.246609985  0.073048823  1.00000000 -0.04150933
PAQ            -0.108510489 -0.127684743 -0.04150933  1.00000000
```

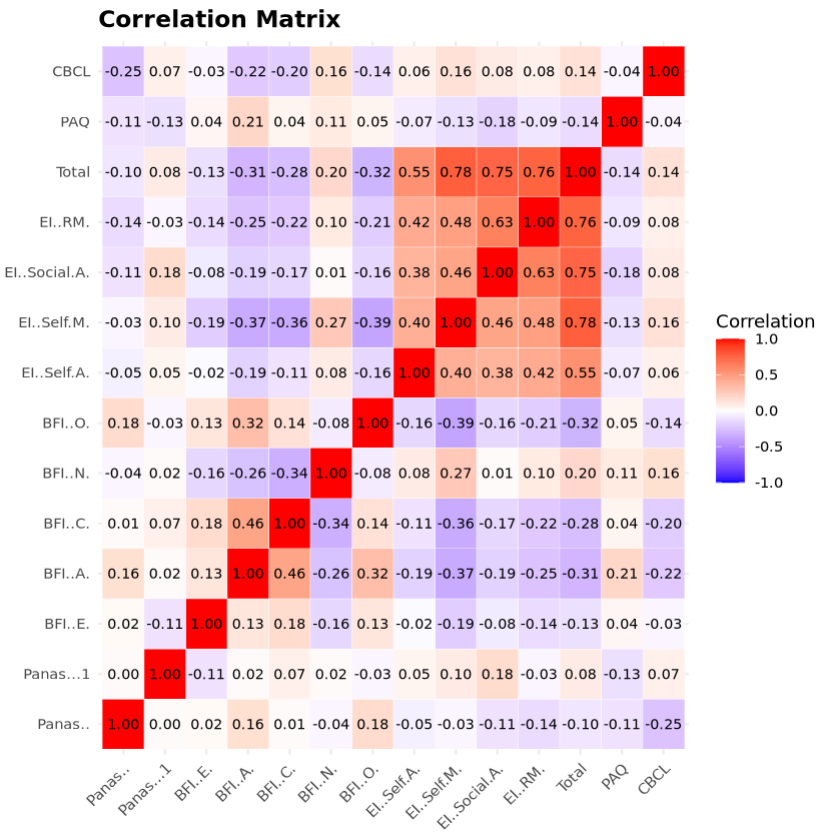
In [3]:

```r
# Load the required packages
install.packages("ggplot2")
library(ggplot2)
install.packages("tidyr")
library(tidyr)


# Read the CSV file
data <- read.csv("Complete_Data_Modified.csv")

# Select the specific columns for correlation
columns_of_interest <- c('Panas..', 'Panas...1', 'BFI..E.', 'BFI..A.', 'BFI..C.'
data_subset <- data[, columns_of_interest]
```

```r
# Calculate the correlation matrix
cor_matrix <- cor(data_subset)

# Convert the correlation matrix to a data frame
cor_df <- as.data.frame(cor_matrix)
cat("The Correlation Matrix is as follows\n\n")
#print(cor_df)


# Assuming you have already created the correlation matrix in the 'cor_df' data

# Set row names to column names
cor_df$Var1 <- rownames(cor_df)

# Reshape data using gather
cor_df <- gather(cor_df, Var2, cor , -Var1)

# Convert 'Var1' and 'Var2' to factors to ensure correct ordering in the plot
cor_df$Var1 <- factor(cor_df$Var1, levels = c('Panas..', 'Panas...1', 'BFI..E.',
cor_df$Var2 <- factor(cor_df$Var2, levels = c('Panas..', 'Panas...1', 'BFI..E.',

# Create a correlation plot using ggplot2 without text values
# cor_plot <- ggplot(data = cor_df, aes(x = Var1, y = Var2, fill = cor)) +
#   geom_tile(color = "white") +
#   scale_fill_gradient2(low = "blue", mid = "white", high = "red", midpoint = 0
#   labs(x = NULL, y = NULL, title = "Correlation Matrix", fill = "Correlation")
#   theme_minimal() +
#   theme(axis.text.x = element_text(angle = 45, hjust = 1),
#         plot.title = element_text(size = 14, face = "bold"))

# Display the correlation plot
# print(cor_plot)

# Create a correlation plot using ggplot2 with text labels
cor_plot <- ggplot(data = cor_df, aes(x = Var1, y = Var2, fill = cor, label = sp
  geom_tile(color = "white") +
  geom_text(size = 3) +  # Add text labels for correlation values
  scale_fill_gradient2(low = "blue", mid = "white", high = "red", midpoint = 0,
  labs(x = NULL, y = NULL, title = "Correlation Matrix", fill = "Correlation") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1),
        plot.title = element_text(size = 14, face = "bold"))

# Display the correlation plot
print(cor_plot)

# Save the correlation plot as PNG and JPEG files
ggsave(filename = "correlation_plot.png", plot = cor_plot, width = 20, height =
ggsave(filename = "correlation_plot.jpg", plot = cor_plot, width = 50, height =
```

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

Making 'packages.html' ...
 done

Updating HTML index of packages in '.Library'

Making 'packages.html' ...
 done
```

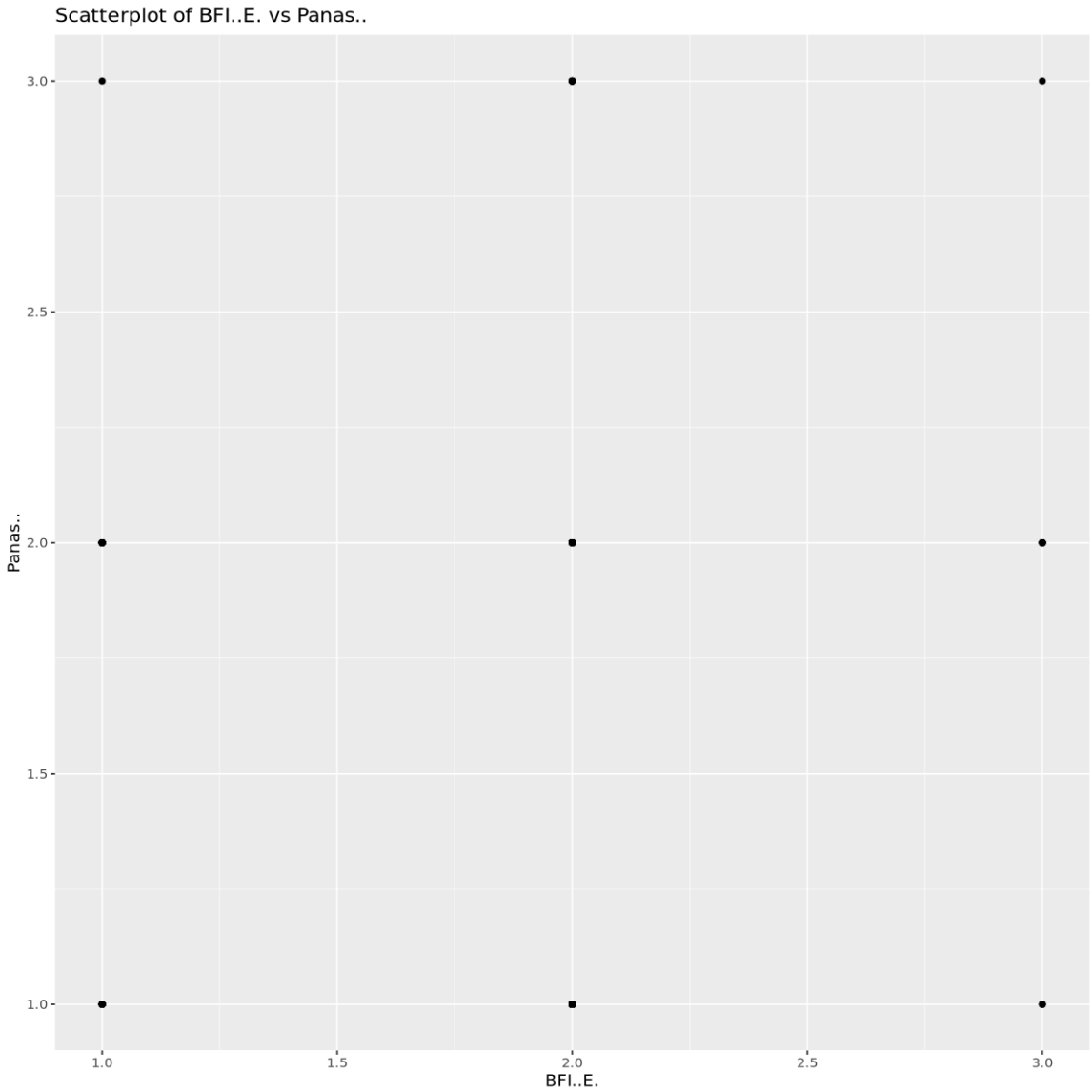
The Correlation Matrix is as follows



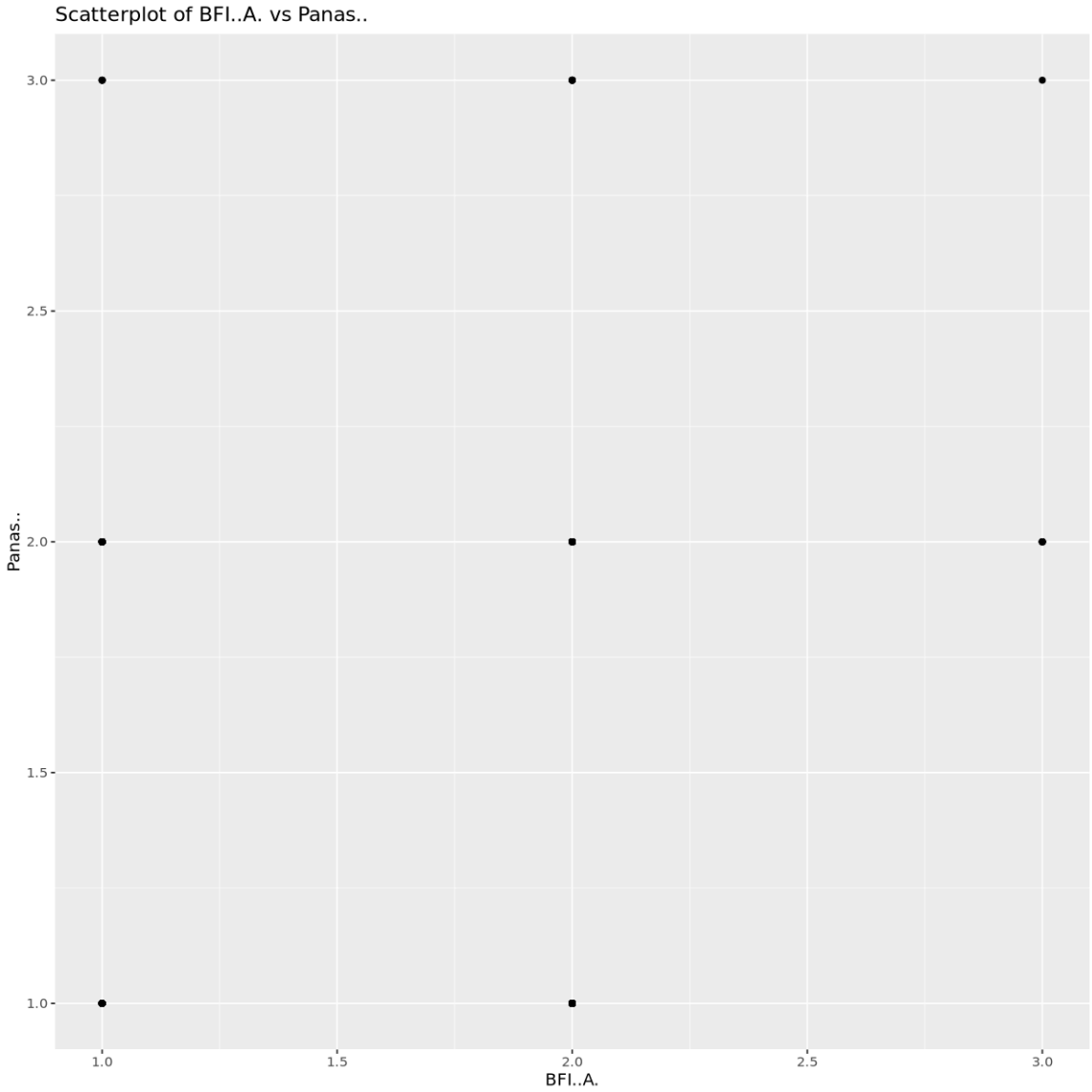
In [7]:
```r
# Load necessary libraries
library(ggplot2)

# Read the modified CSV file
data <- read.csv("Complete_Data_Modified.csv")

# Define your variables
independent_vars <- c('BFI..E.', 'BFI..A.', 'BFI..C.', 'BFI..N.', 'BFI..O.', 'EI
dependent_vars <- c('Panas..', 'Panas...1', 'CBCL')
mediator_var <- 'PAQ'

# Set the size for the plots
options(repr.plot.width = 10, repr.plot.height = 10)

# Function to classify correlation strength
classify_correlation <- function(cor_value) {
  if (cor_value > 0.7) {
    return("Strong positive")
  } else if (cor_value > 0.3) {
    return("Weak positive")
  } else if (cor_value < -0.7) {
    return("Strong negative")
  } else if (cor_value < -0.3) {
    return("Weak negative")
  } else {
    return("No correlation")
  }
}

# Loop through all combinations of variables
for (dependent_var in dependent_vars) {
  for (independent_var in c(independent_vars, mediator_var)) {
```

```
    # Create scatterplot
    scatterplot <- ggplot(data, aes(x = .data[[independent_var]], y = .data[[dep
      geom_point() +
      labs(title = paste("Scatterplot of", independent_var, "vs", dependent_var)

    # Display scatterplot
    print(scatterplot)

    # Calculate correlation
    cor_value <- cor(data[[dependent_var]], data[[independent_var]])

    # Classify correlation
    classification <- classify_correlation(cor_value)

    # Print the result
    cat(paste("Correlation between", dependent_var, "and", independent_var, ":",
  }
}
```

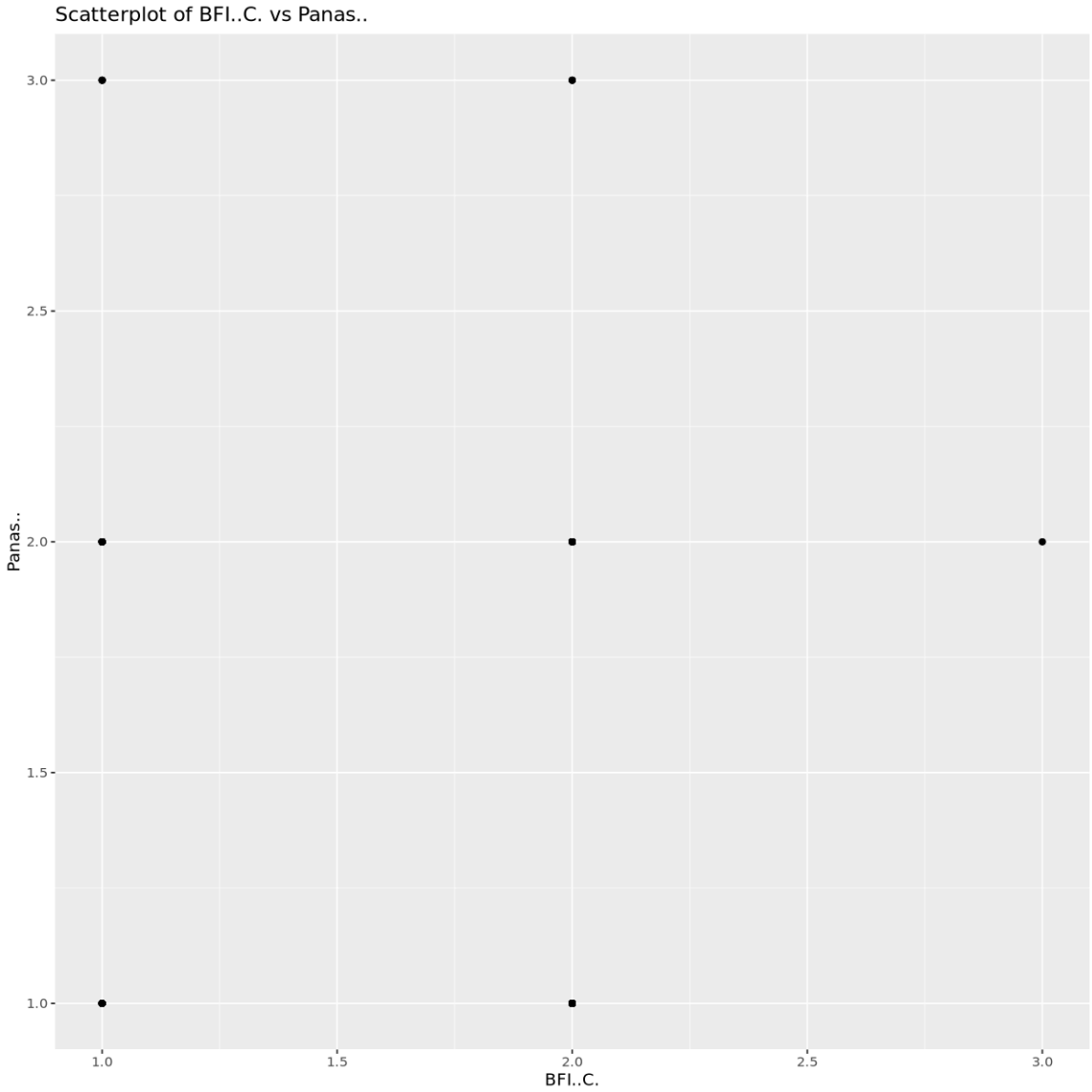
```
Correlation between Panas.. and BFI..E. : No correlation
```



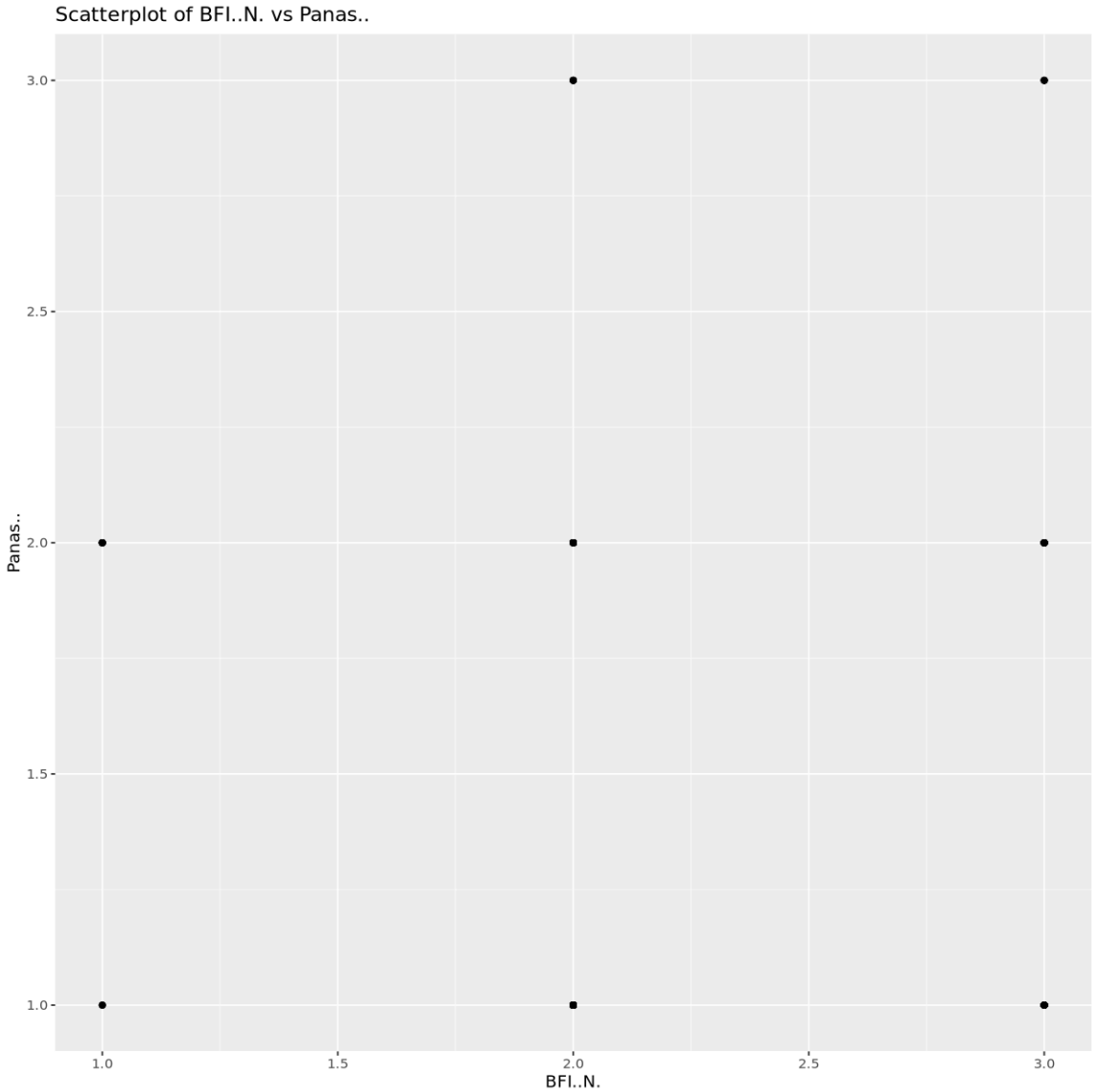

```
Correlation between Panas.. and BFI..A. : No correlation
```



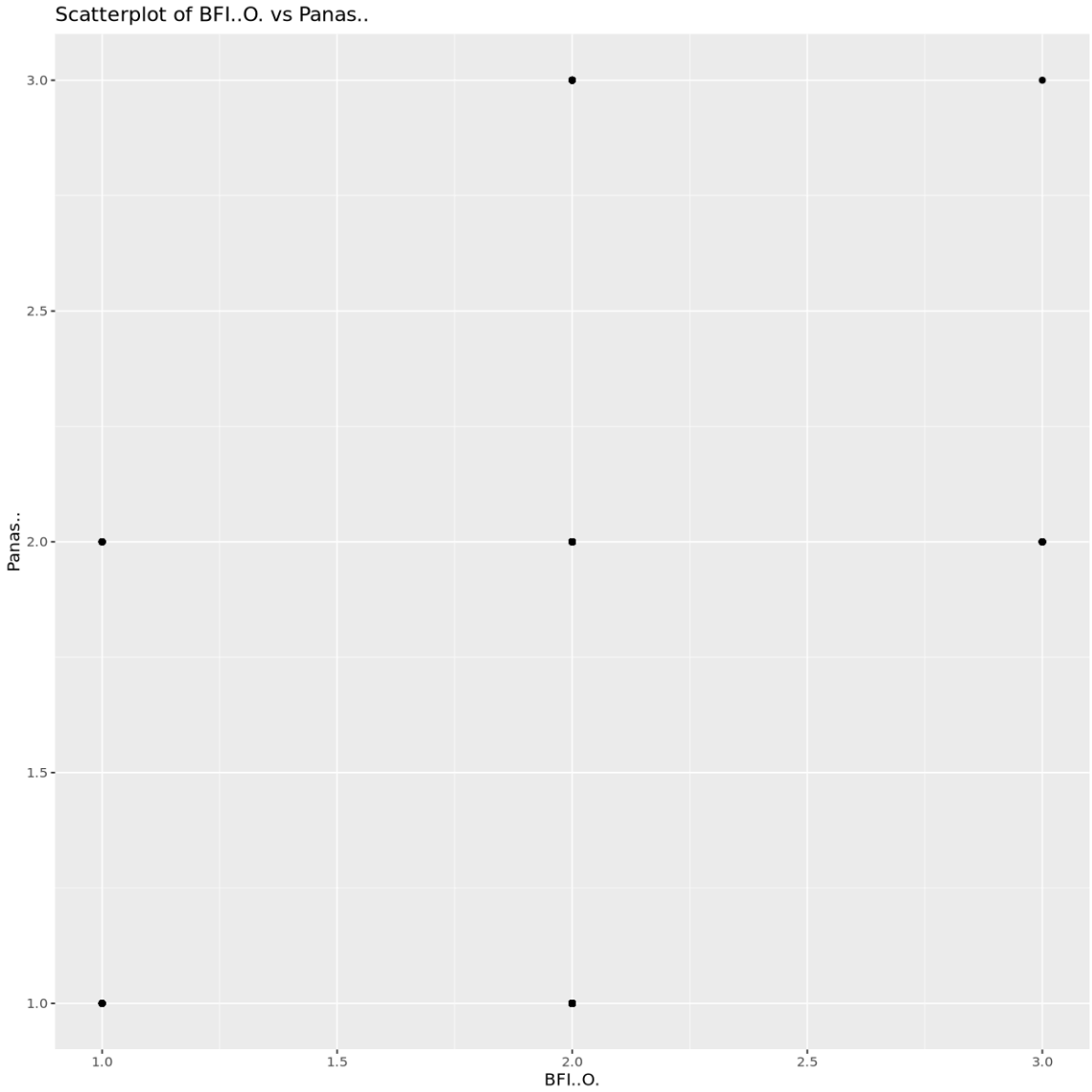

```
Correlation between Panas.. and BFI..C. : No correlation
```



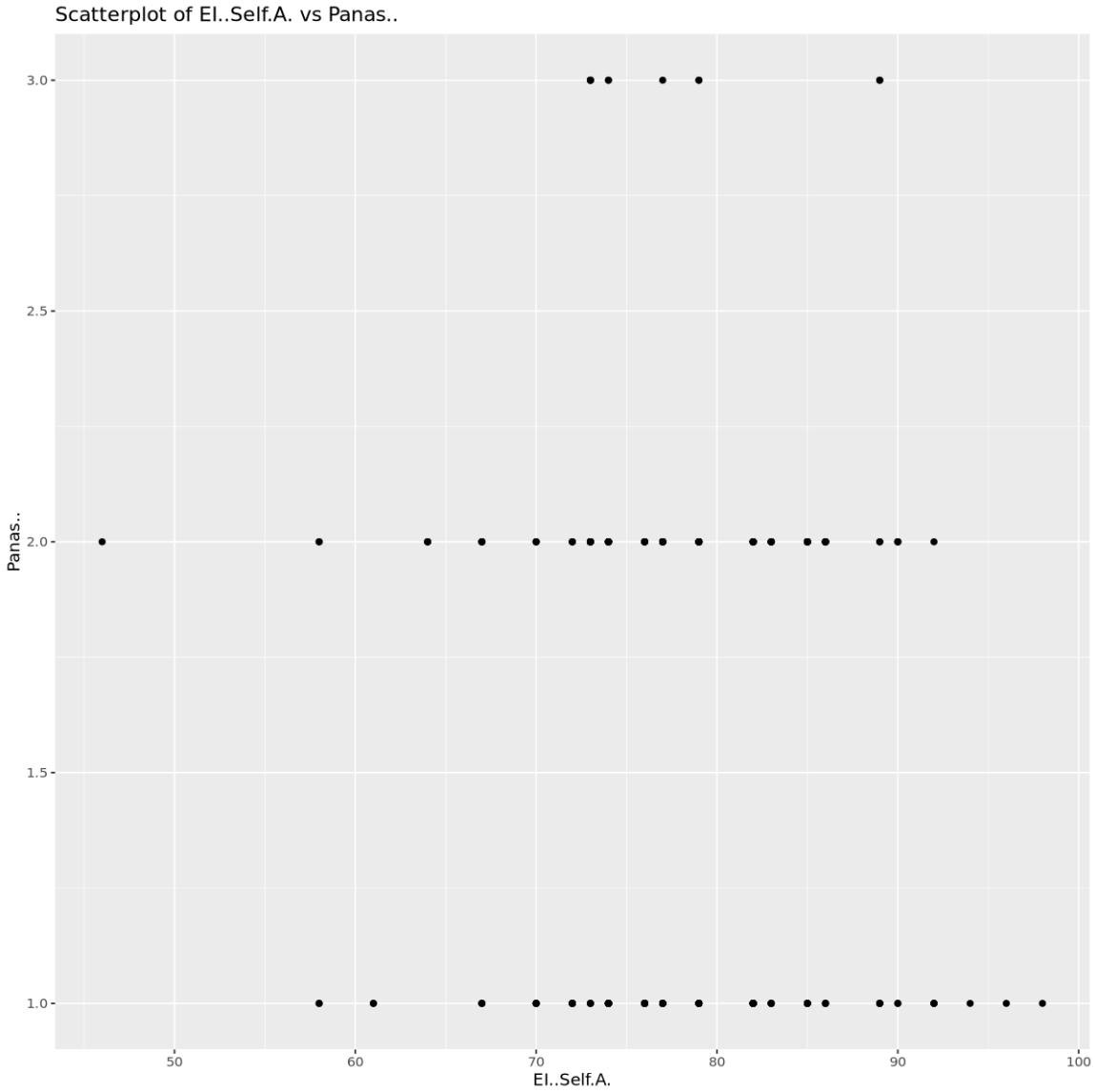

```
Correlation between Panas.. and BFI..N. : No correlation
```



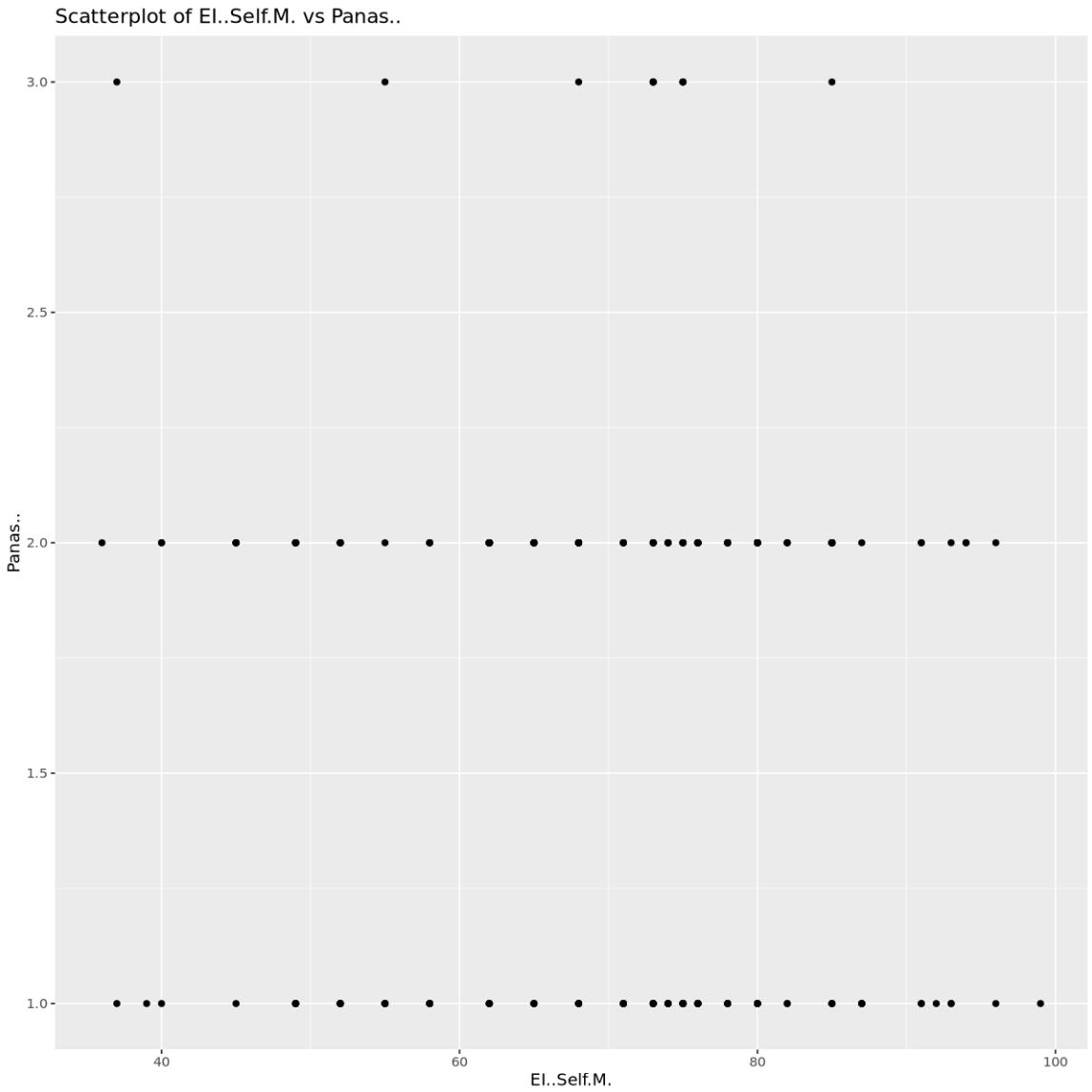

```
Correlation between Panas.. and BFI..O. : No correlation
```



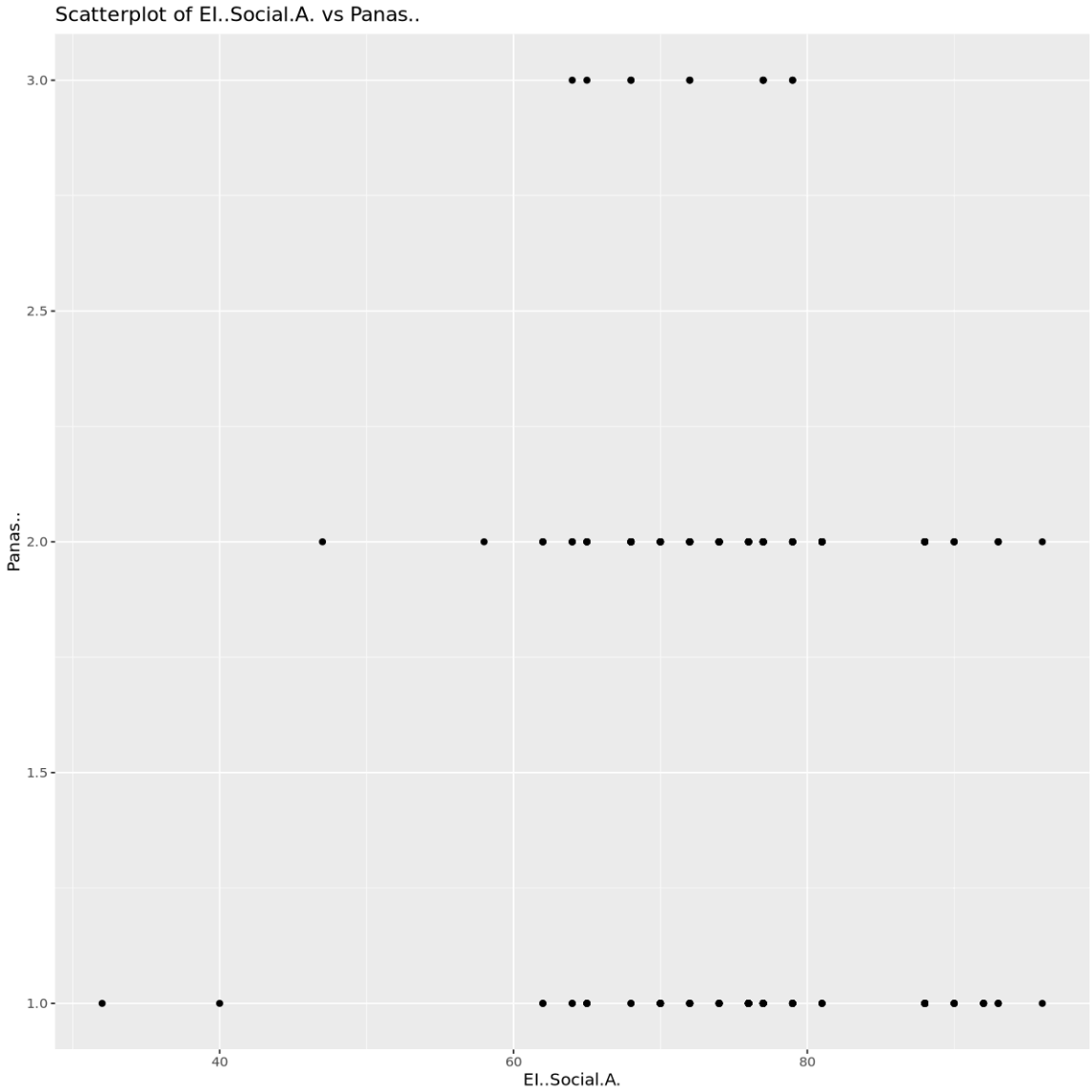
Correlation between Panas.. and EI..Self.A. : No correlation



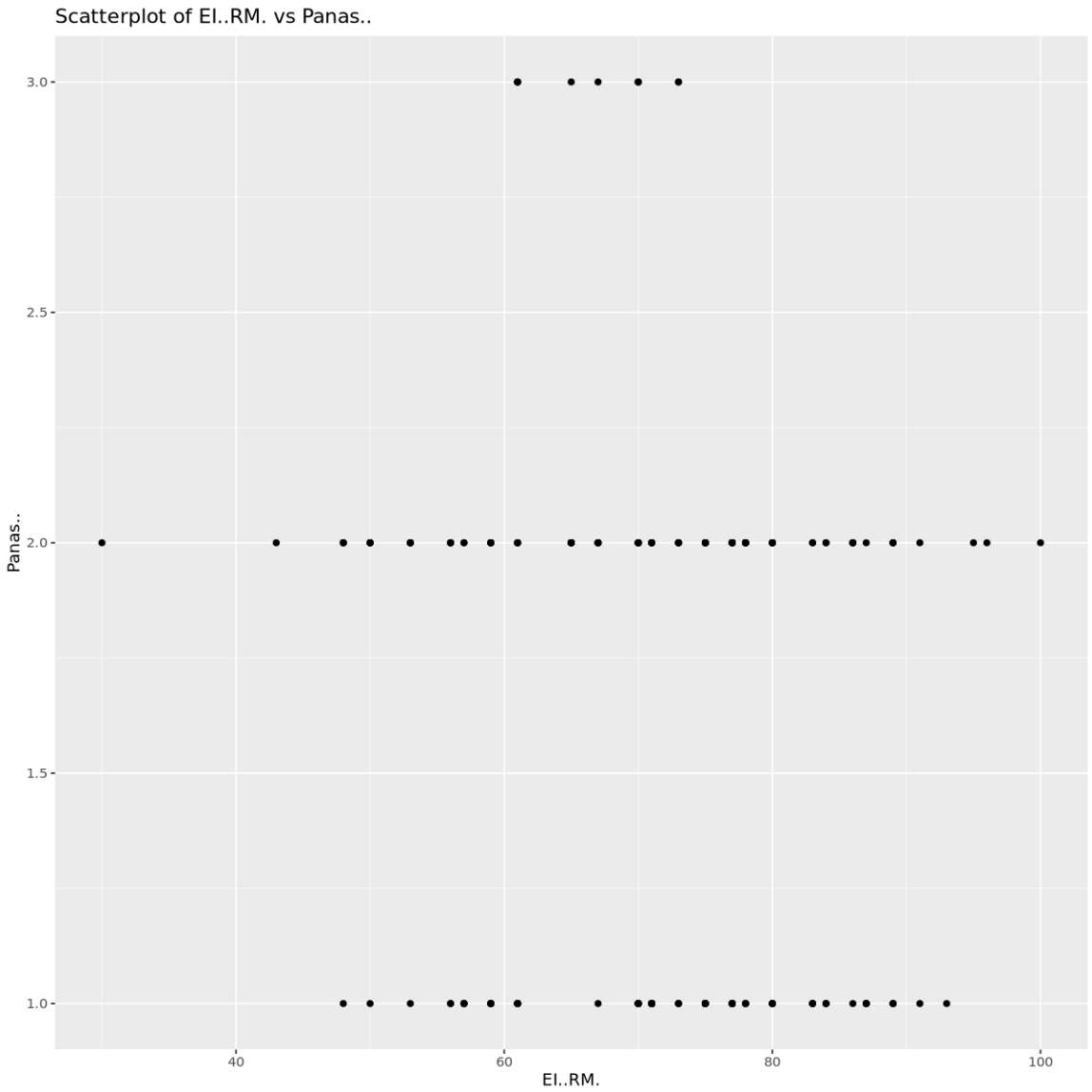
Correlation between Panas.. and EI..Self.M. : No correlation



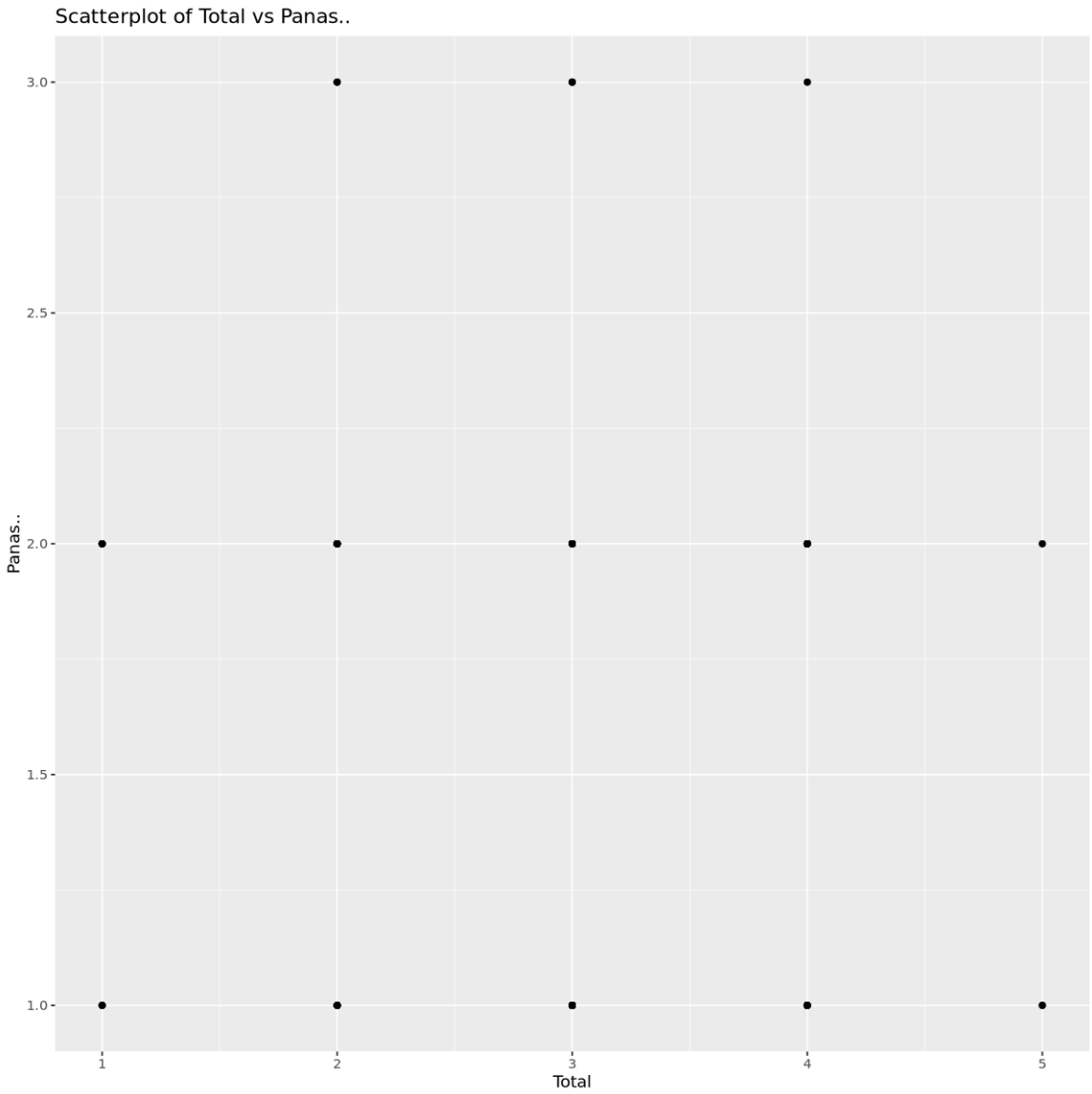
Correlation between Panas.. and EI..Social.A. : No correlation



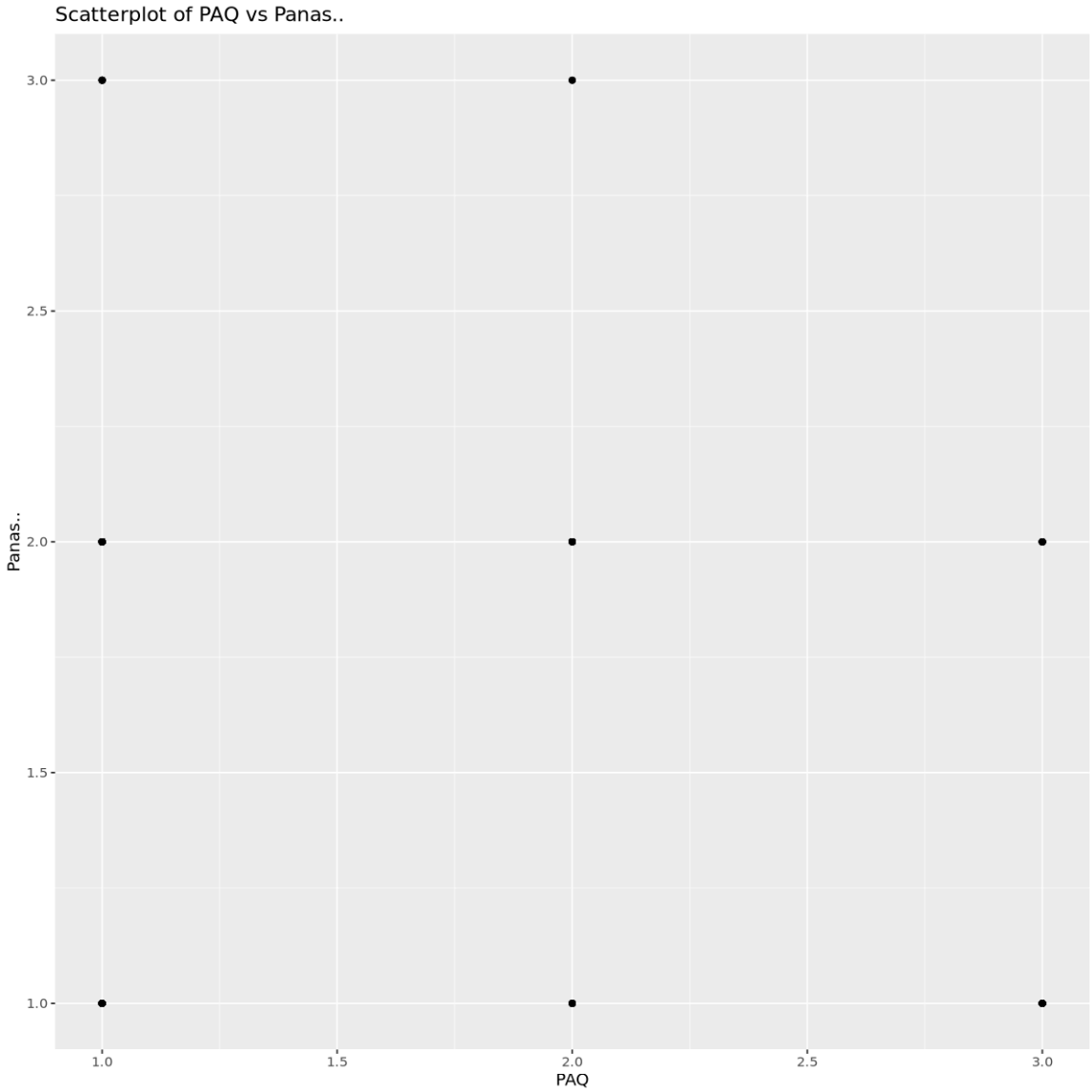
Correlation between Panas.. and EI..RM. : No correlation



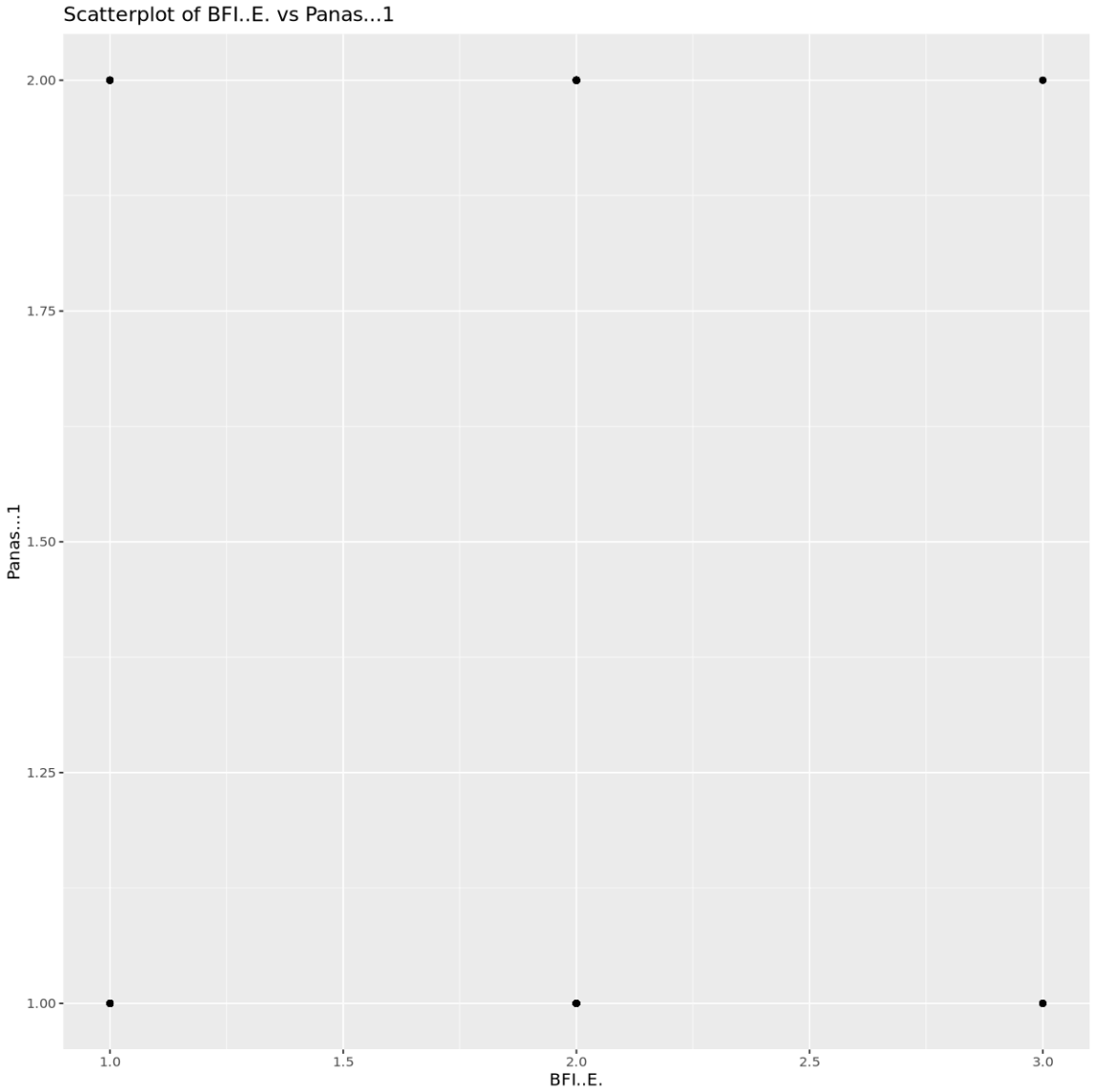
Correlation between Panas.. and Total : No correlation



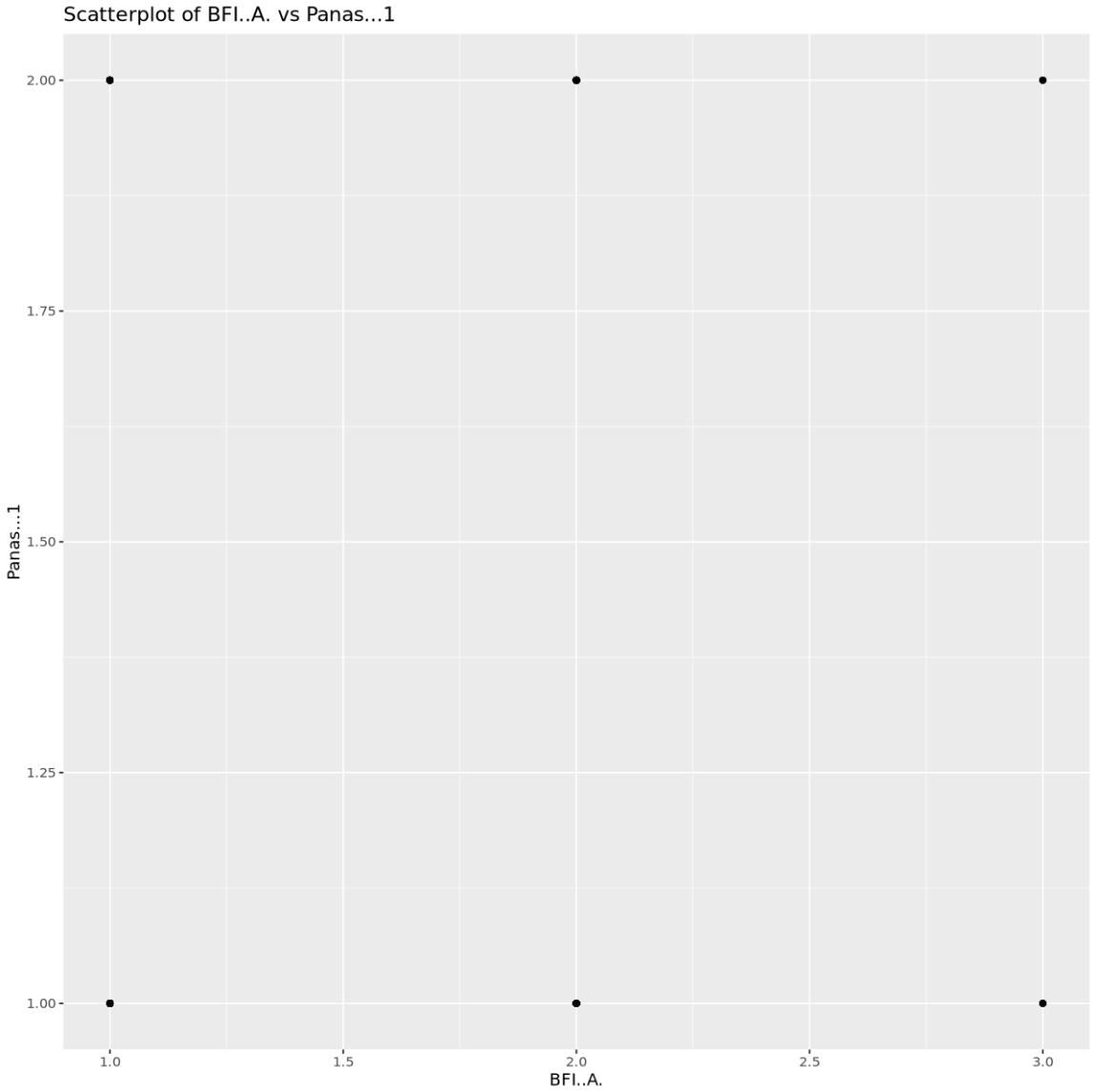

```
Correlation between Panas.. and PAQ : No correlation
```



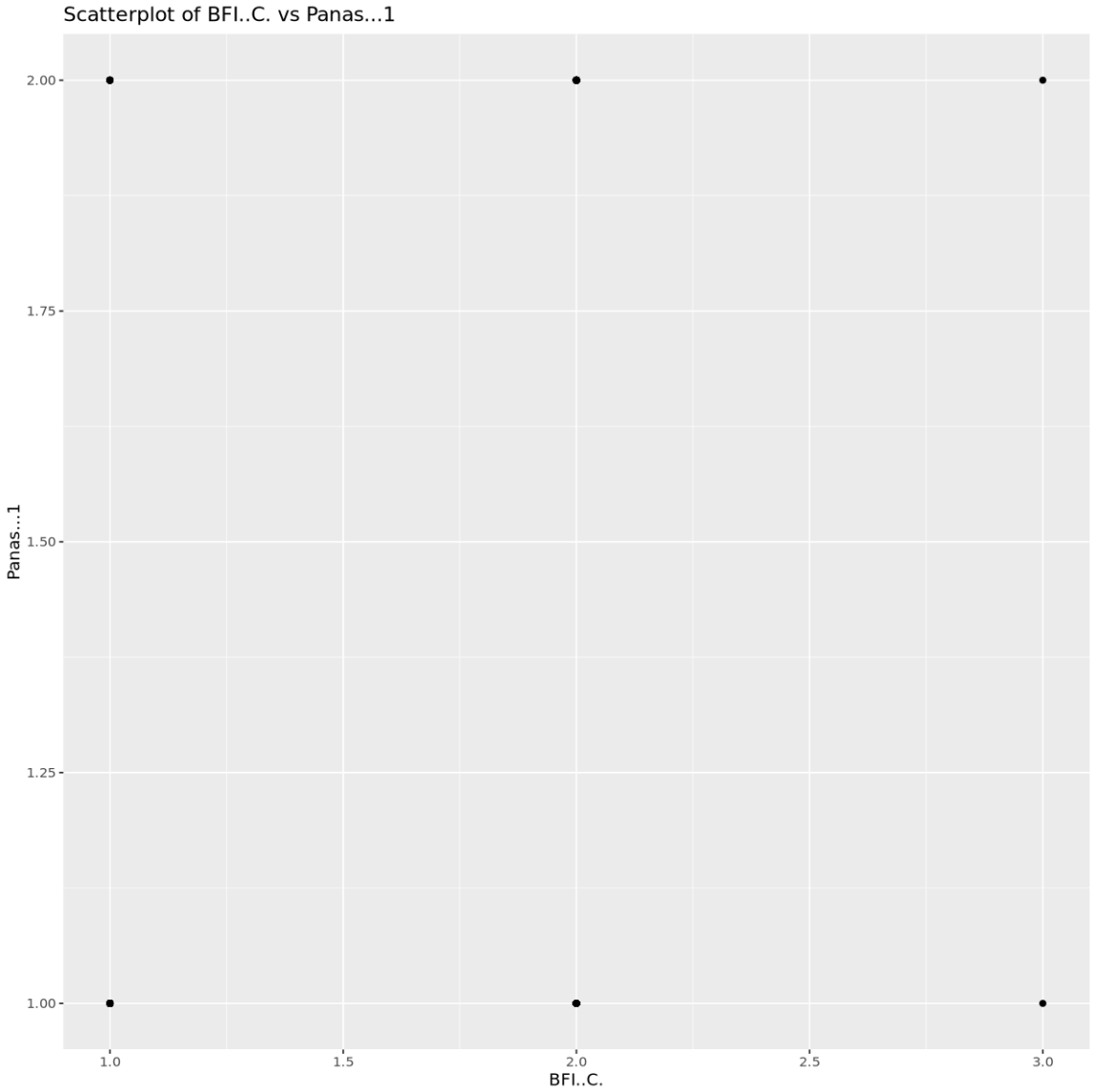

```
Correlation between Panas...1 and BFI..E. : No correlation
```



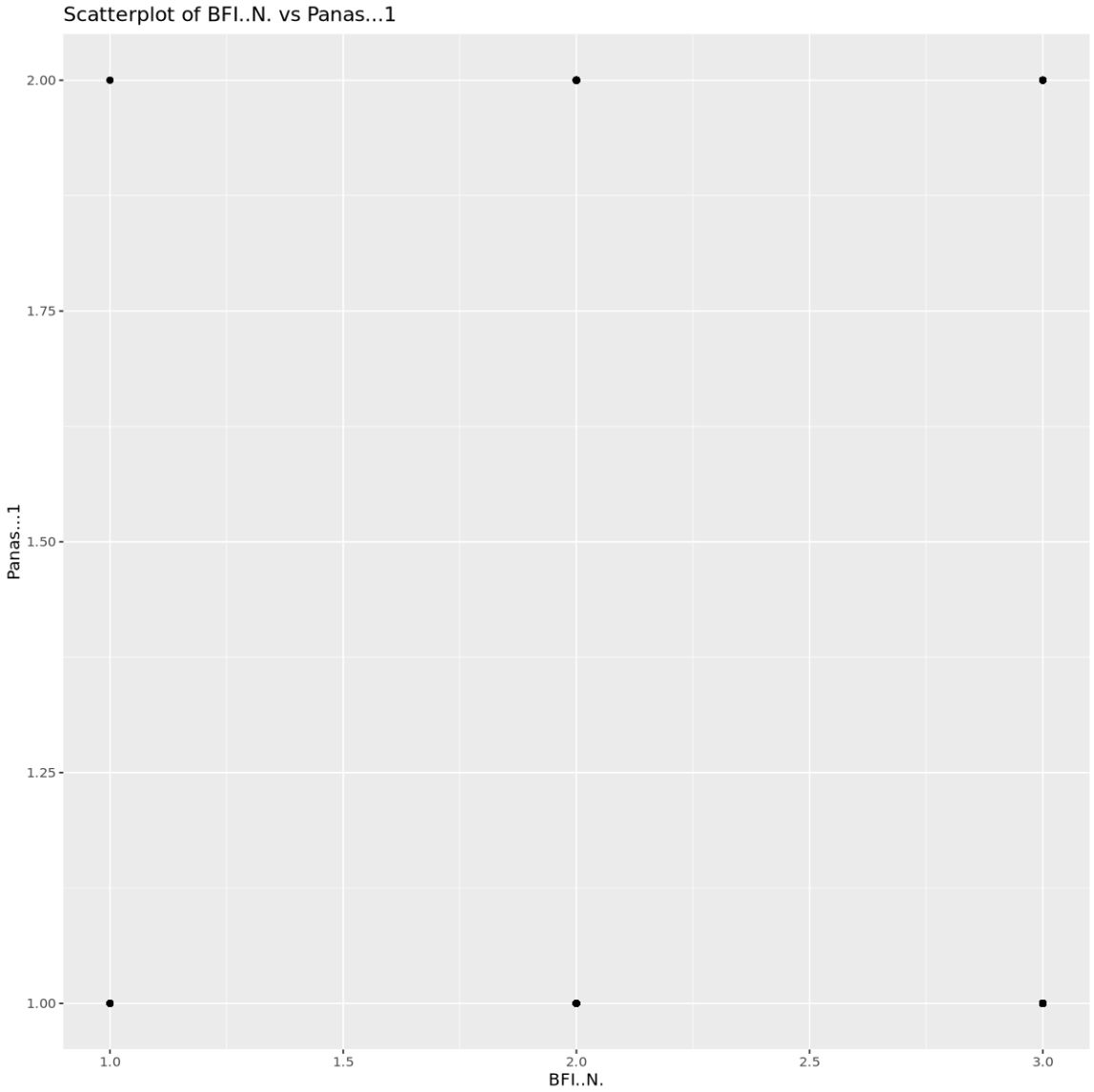

```
Correlation between Panas...1 and BFI..A. : No correlation
```



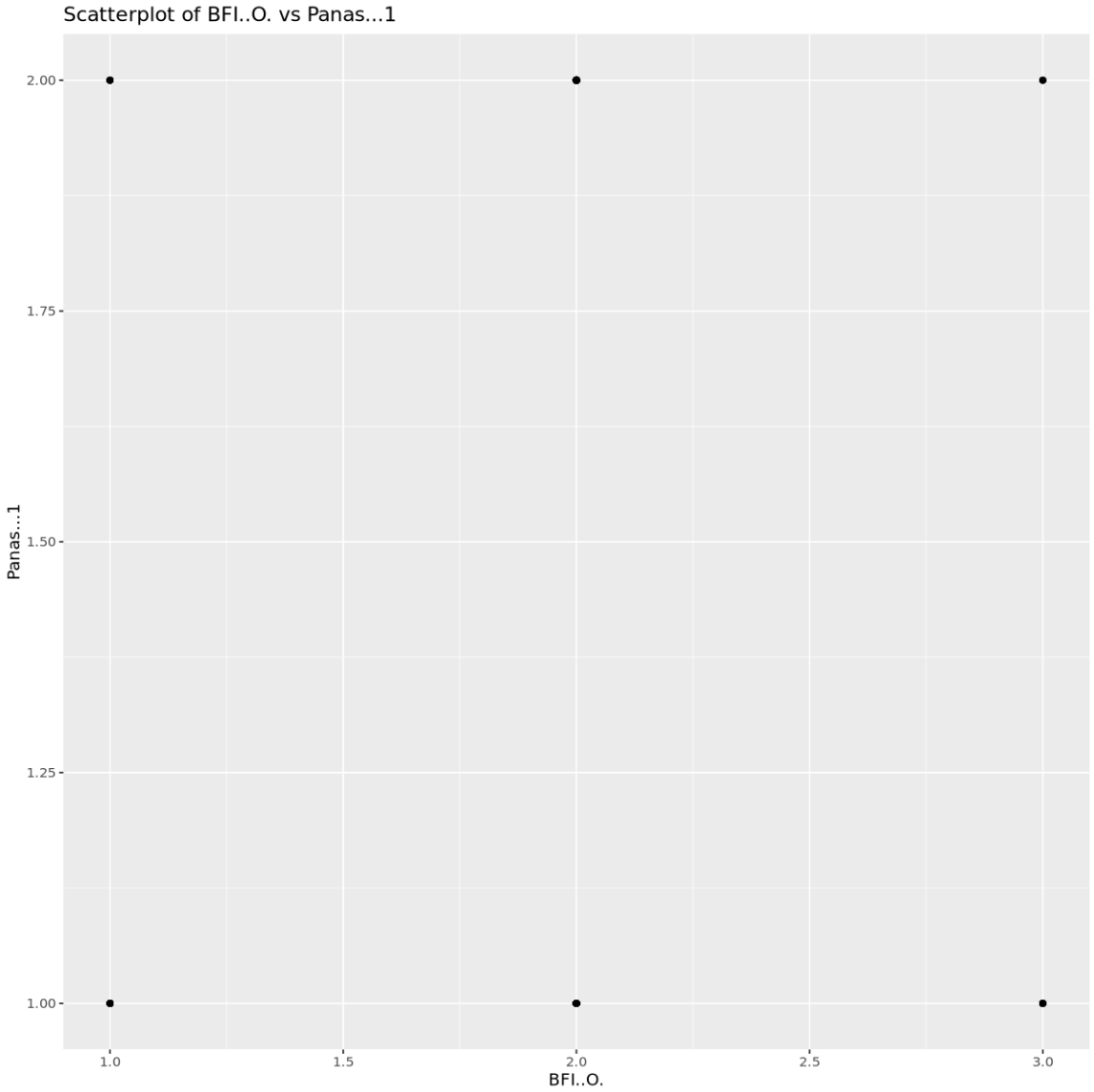

```
Correlation between Panas...1 and BFI..C. : No correlation
```



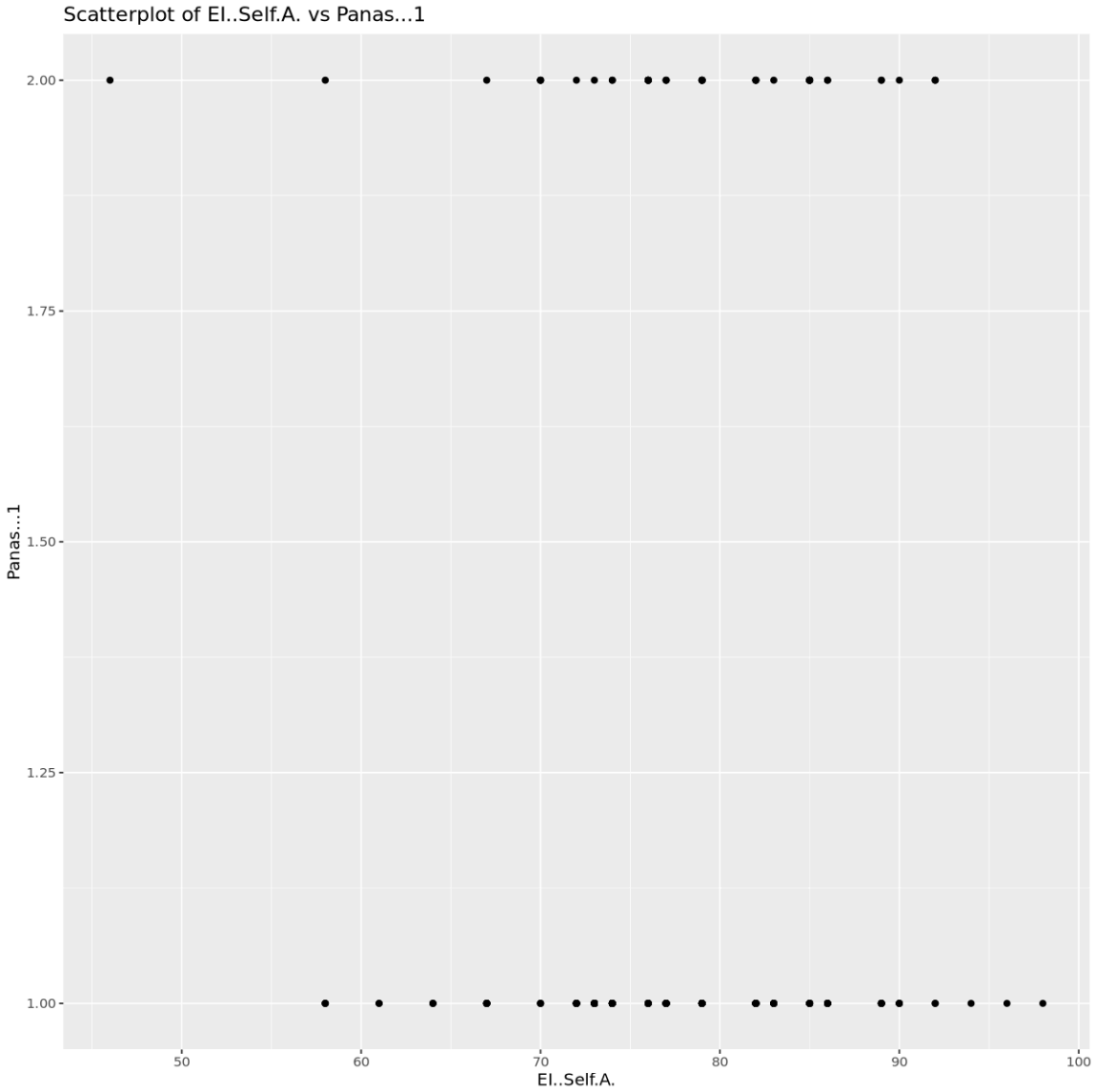

```
Correlation between Panas...1 and BFI..N. : No correlation
```



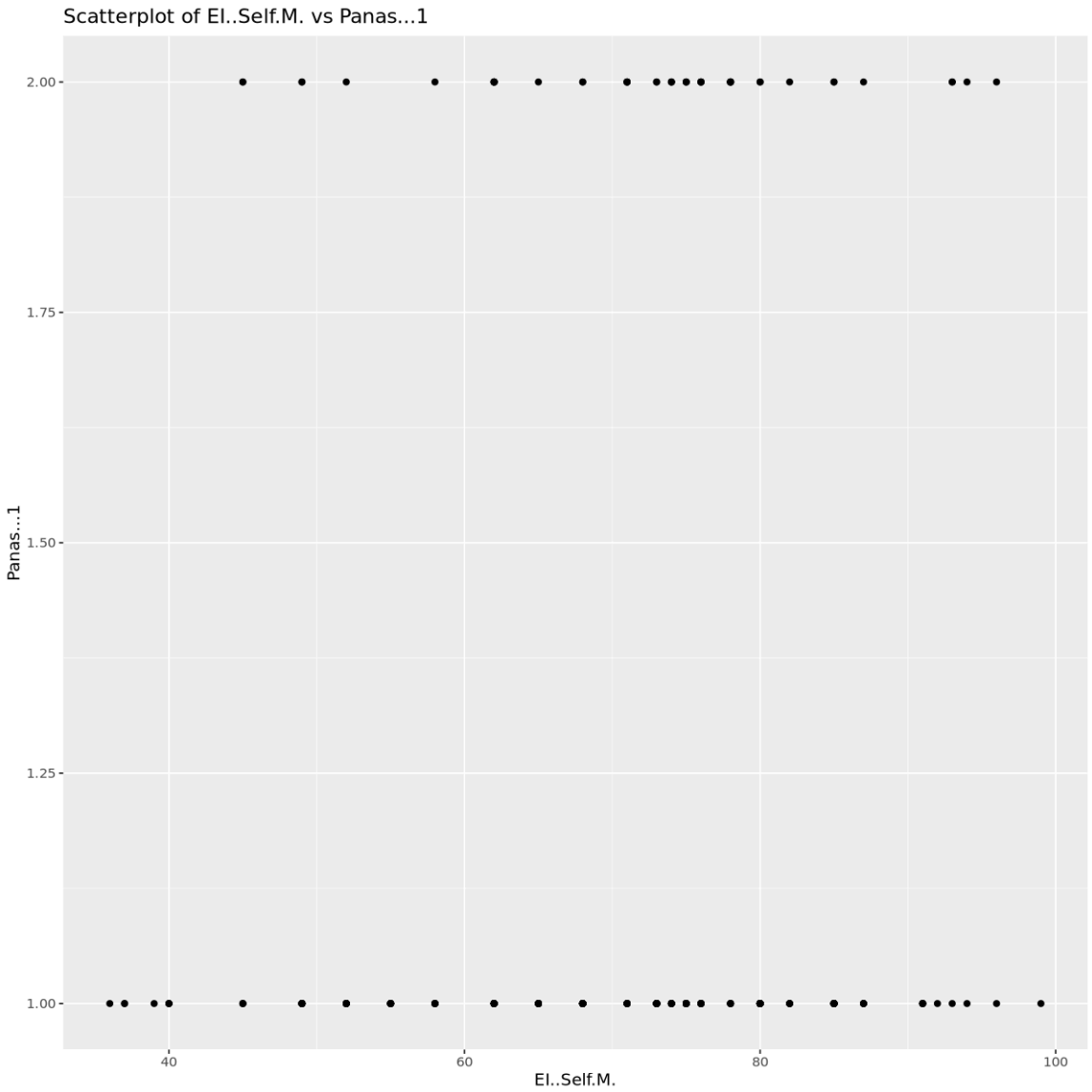

```
Correlation between Panas...1 and BFI..O. : No correlation
```



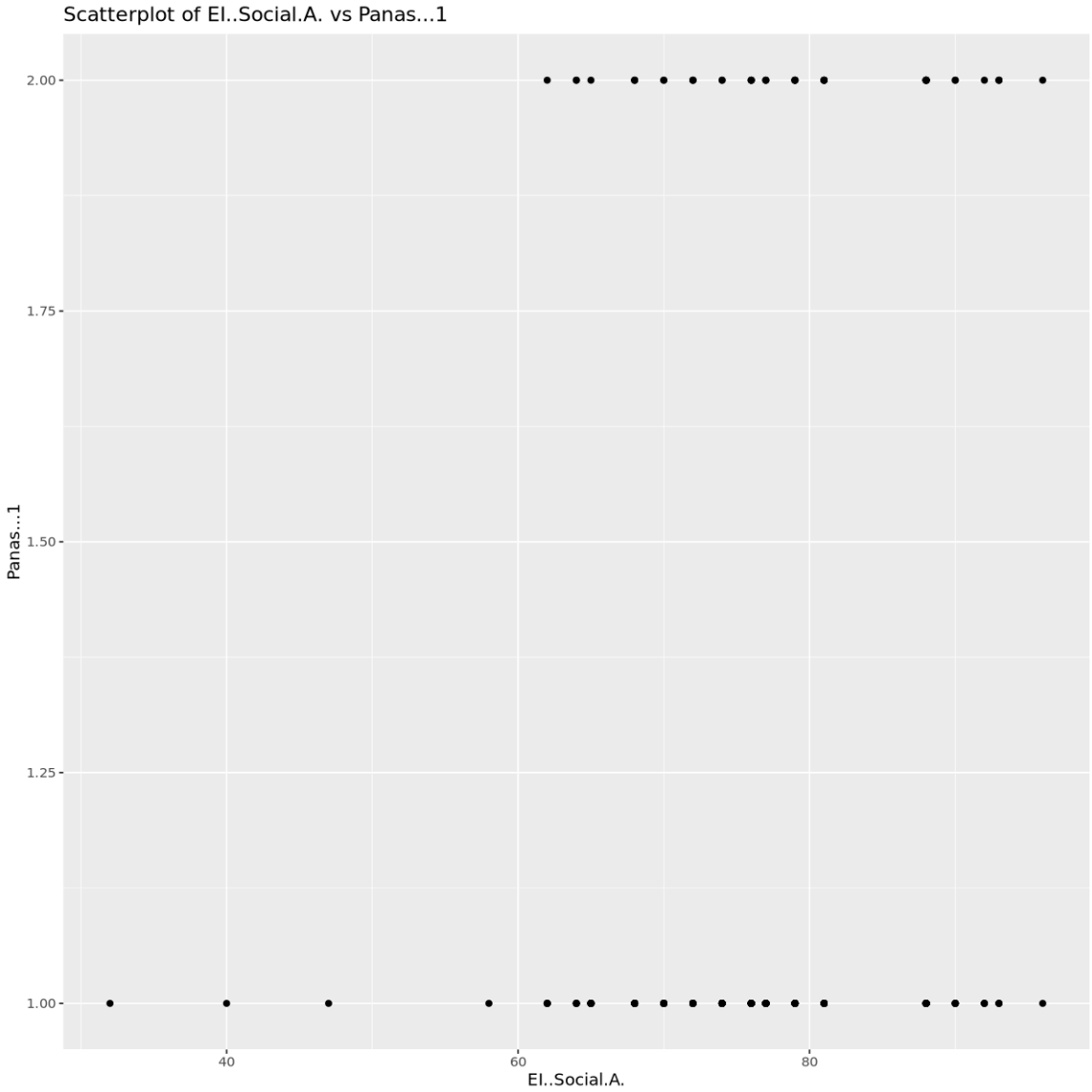

```
Correlation between Panas...1 and EI..Self.A. : No correlation
```



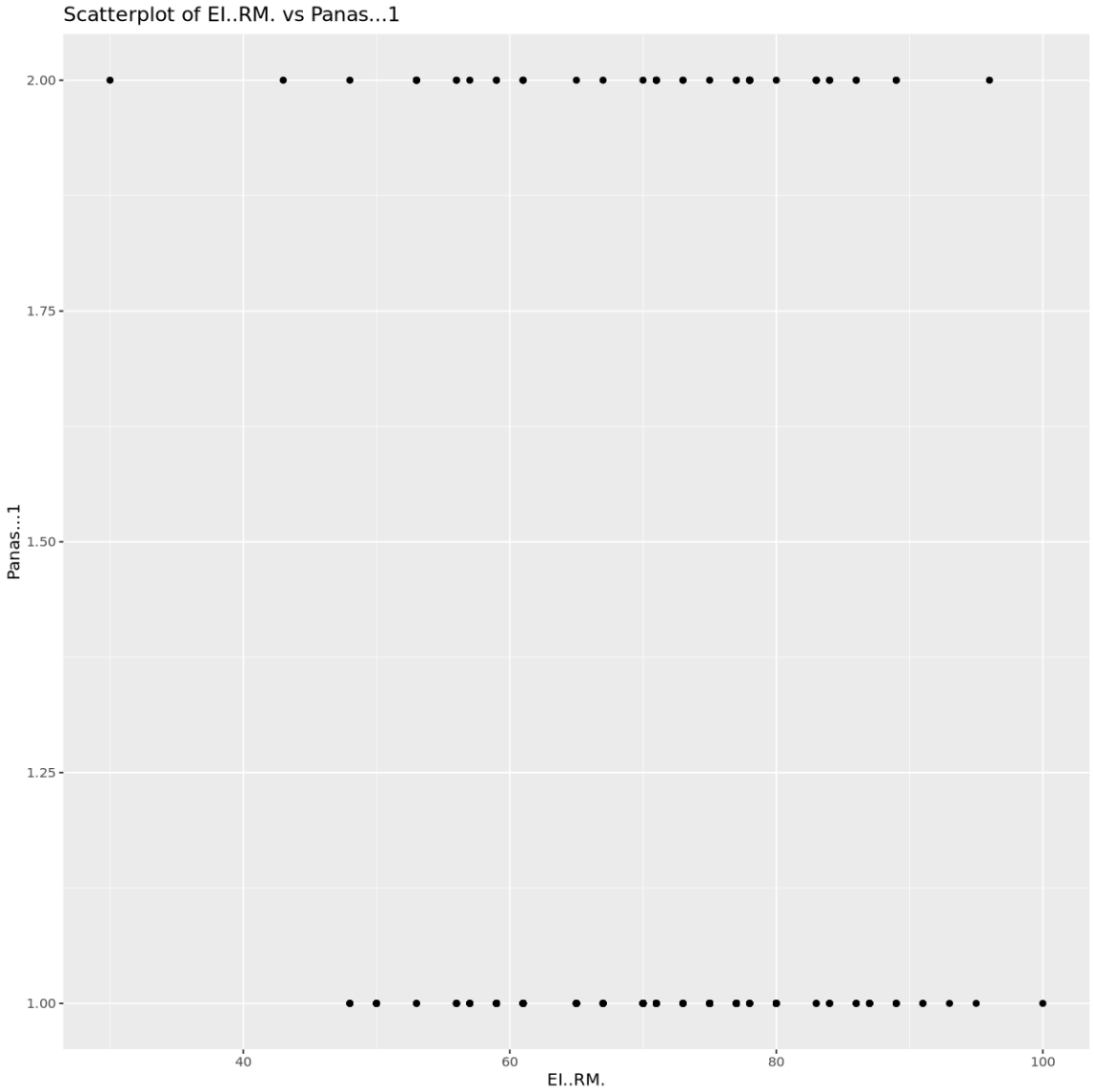
Correlation between Panas...1 and EI..Self.M. : No correlation



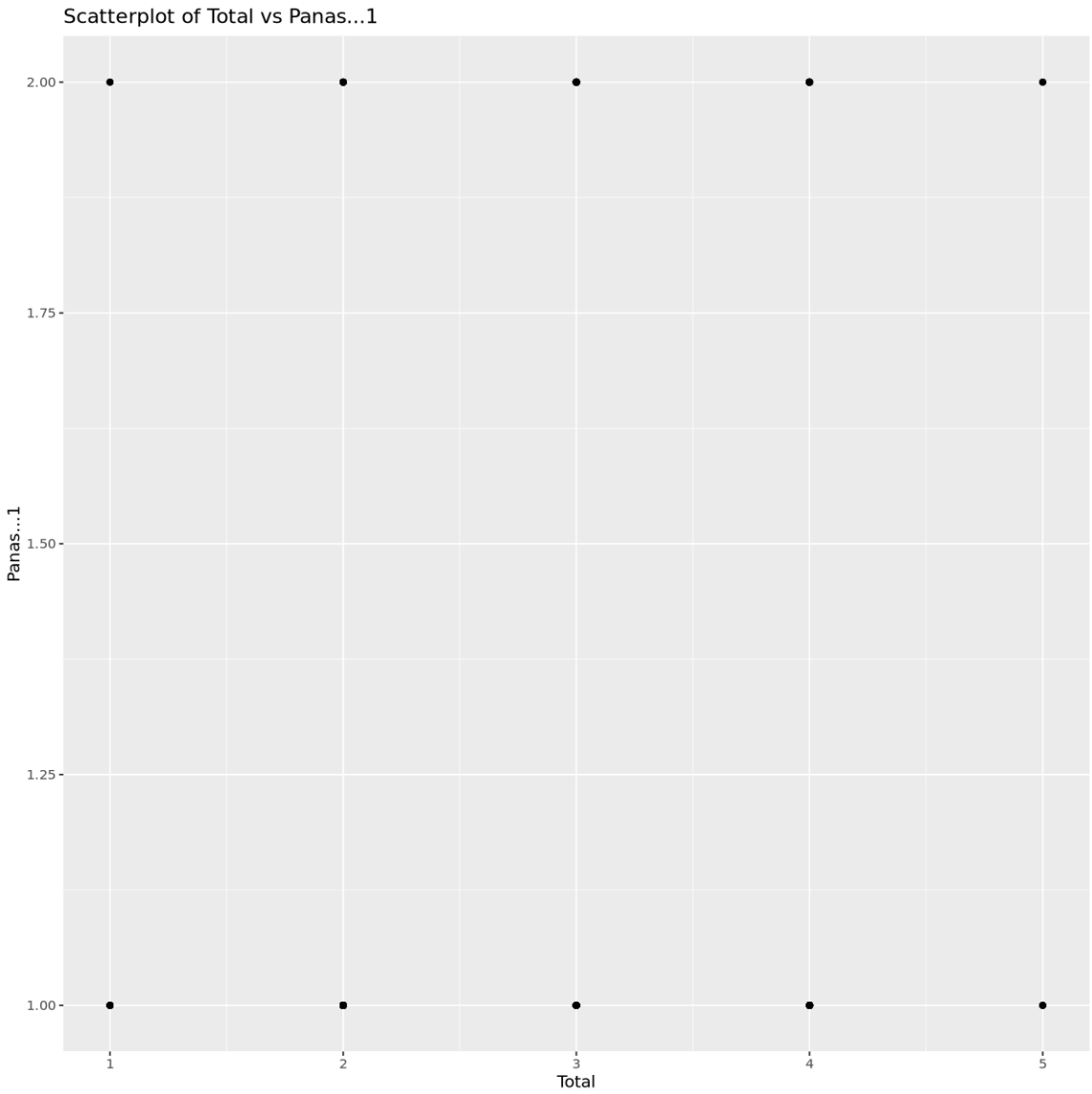
Correlation between Panas...1 and EI..Social.A. : No correlation



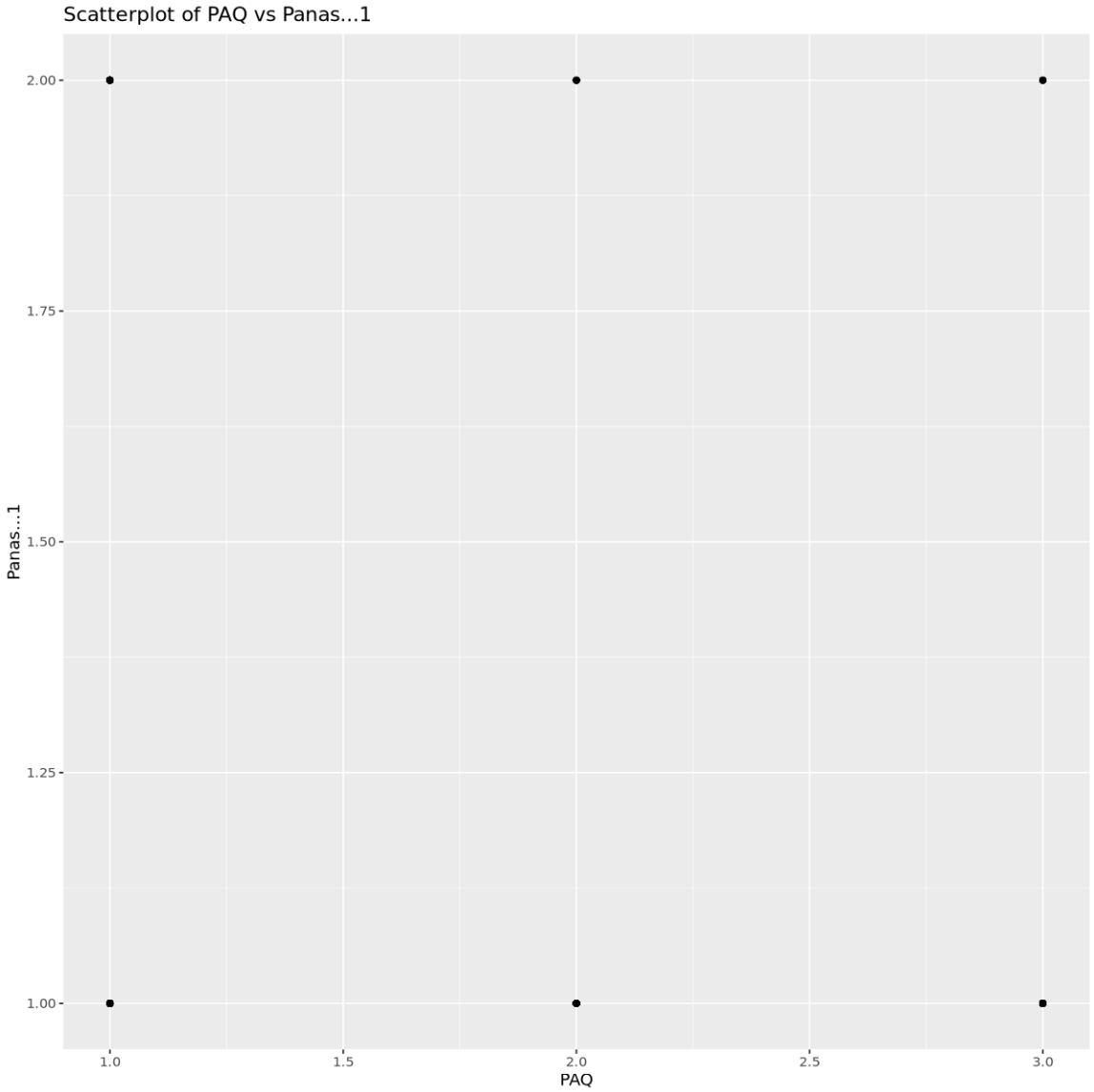

```
Correlation between Panas...1 and EI..RM. : No correlation
```



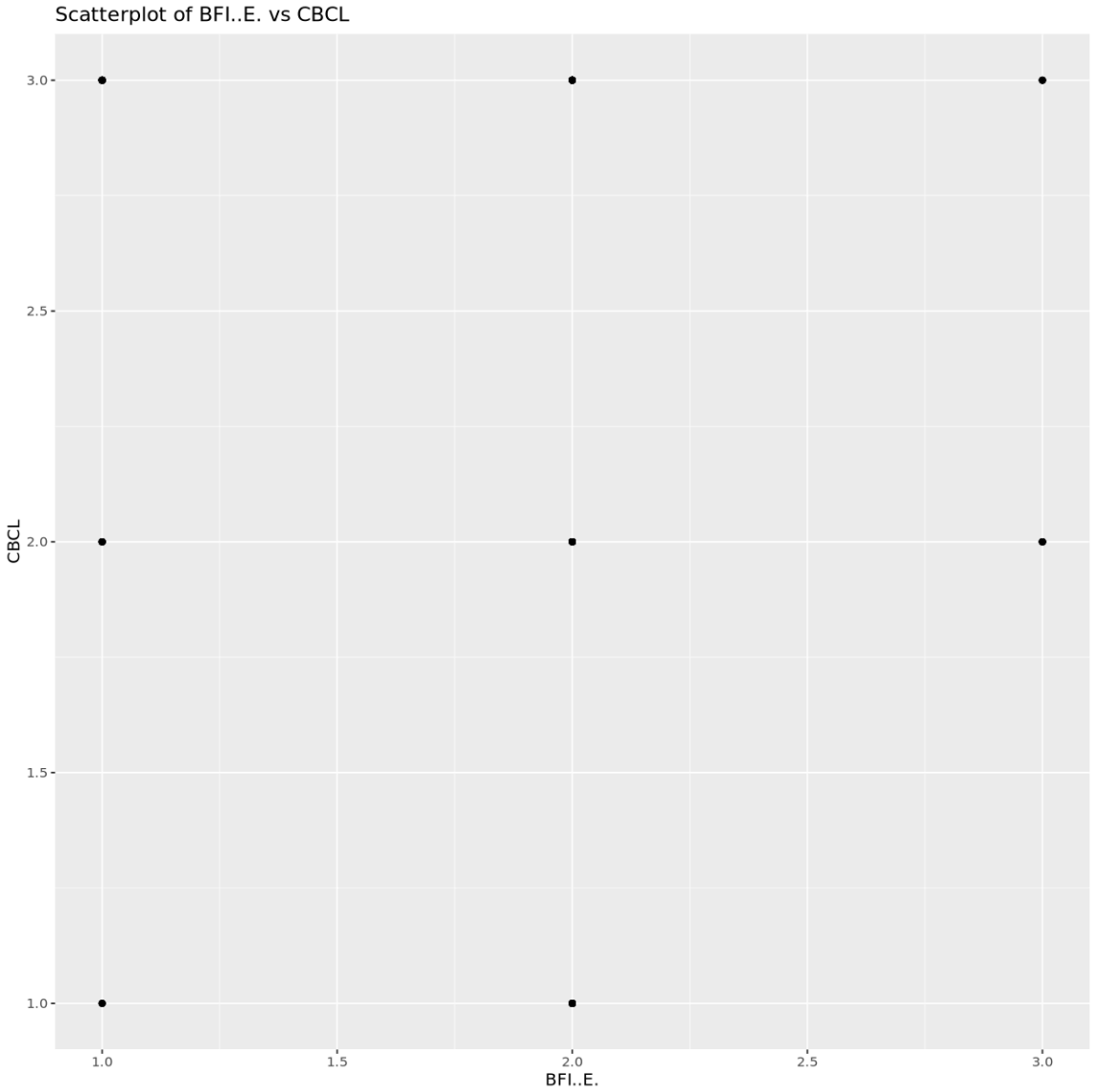
Correlation between Panas...1 and Total : No correlation



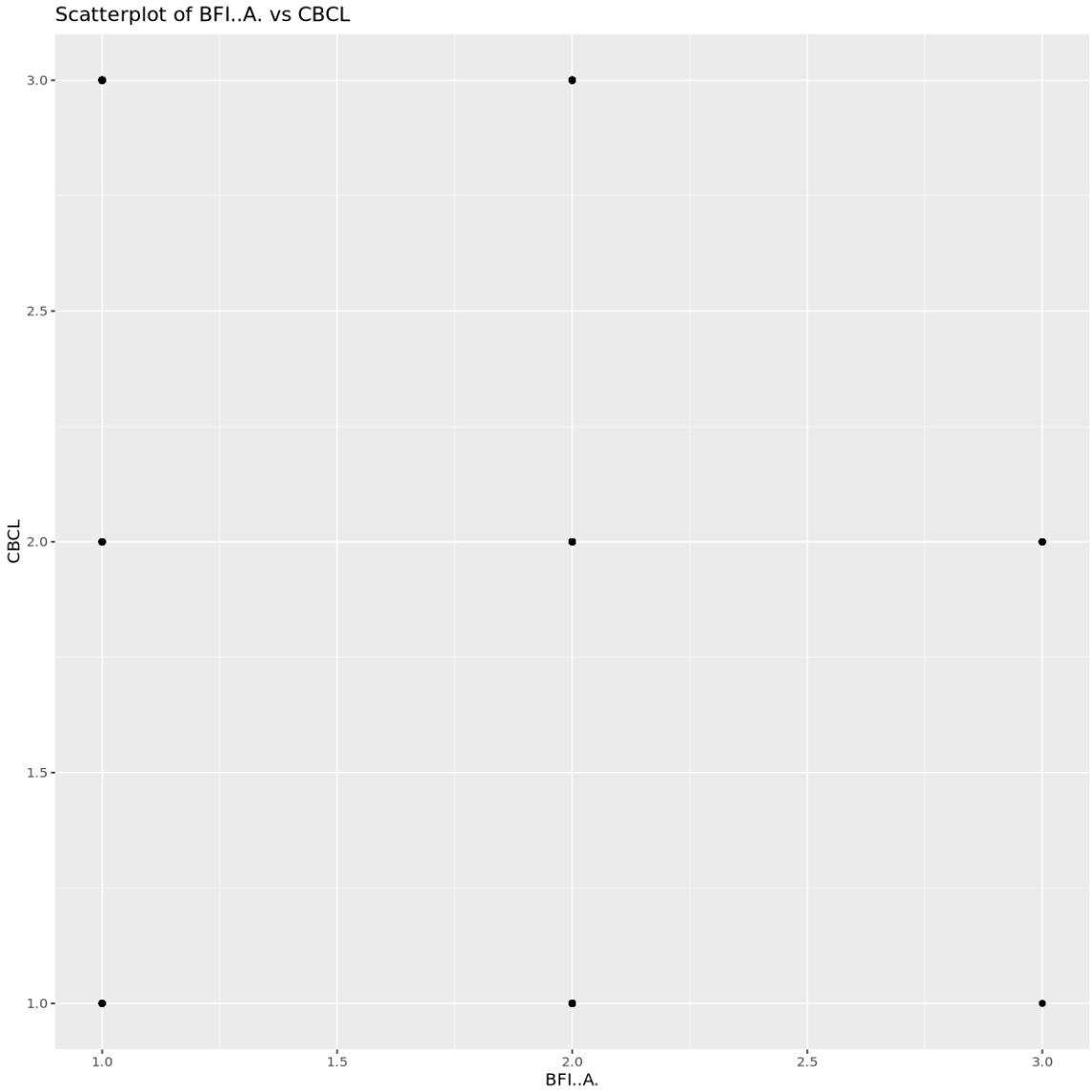
Correlation between Panas...1 and PAQ : No correlation



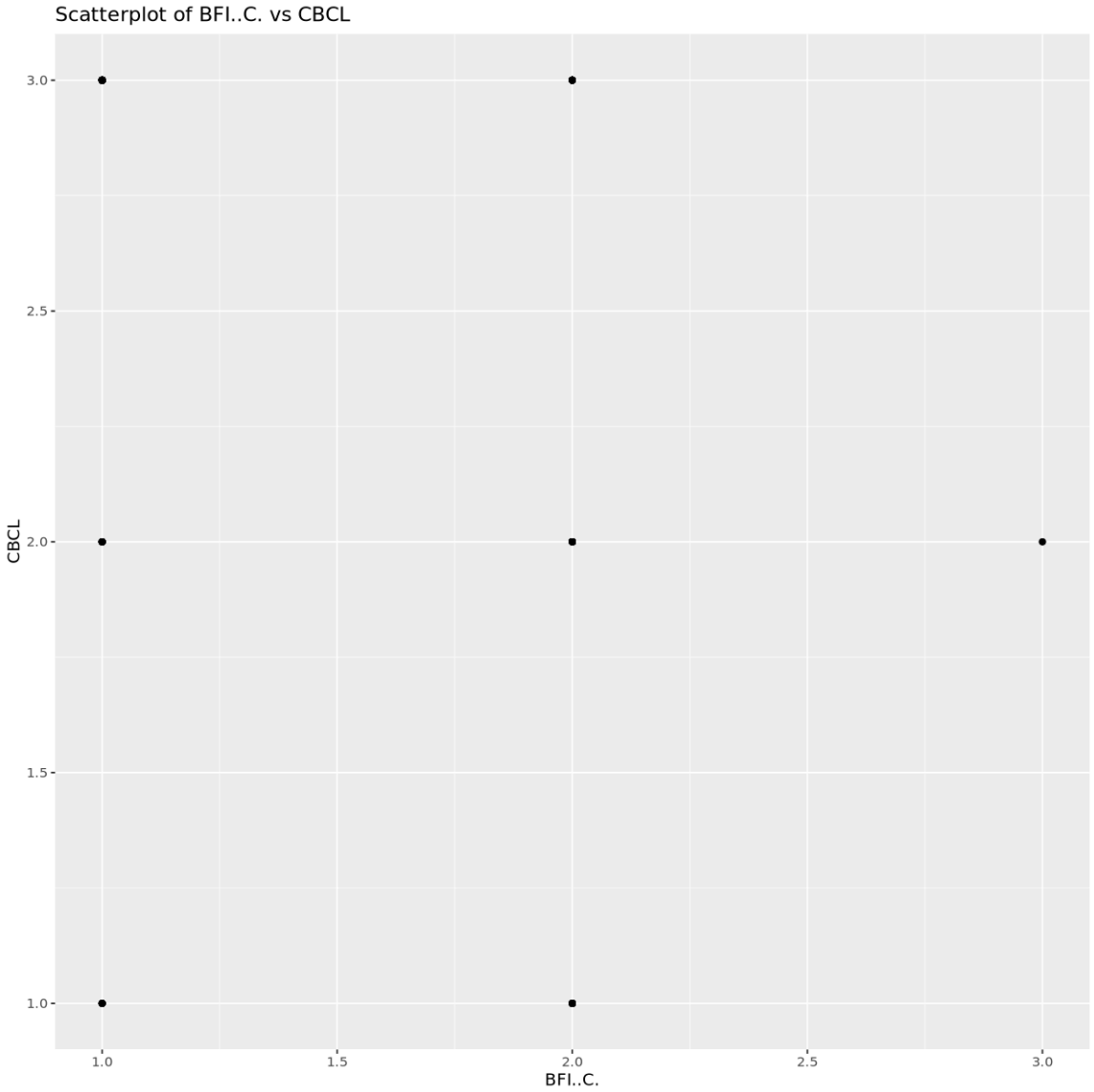

```
Correlation between CBCL and BFI..E. : No correlation
```



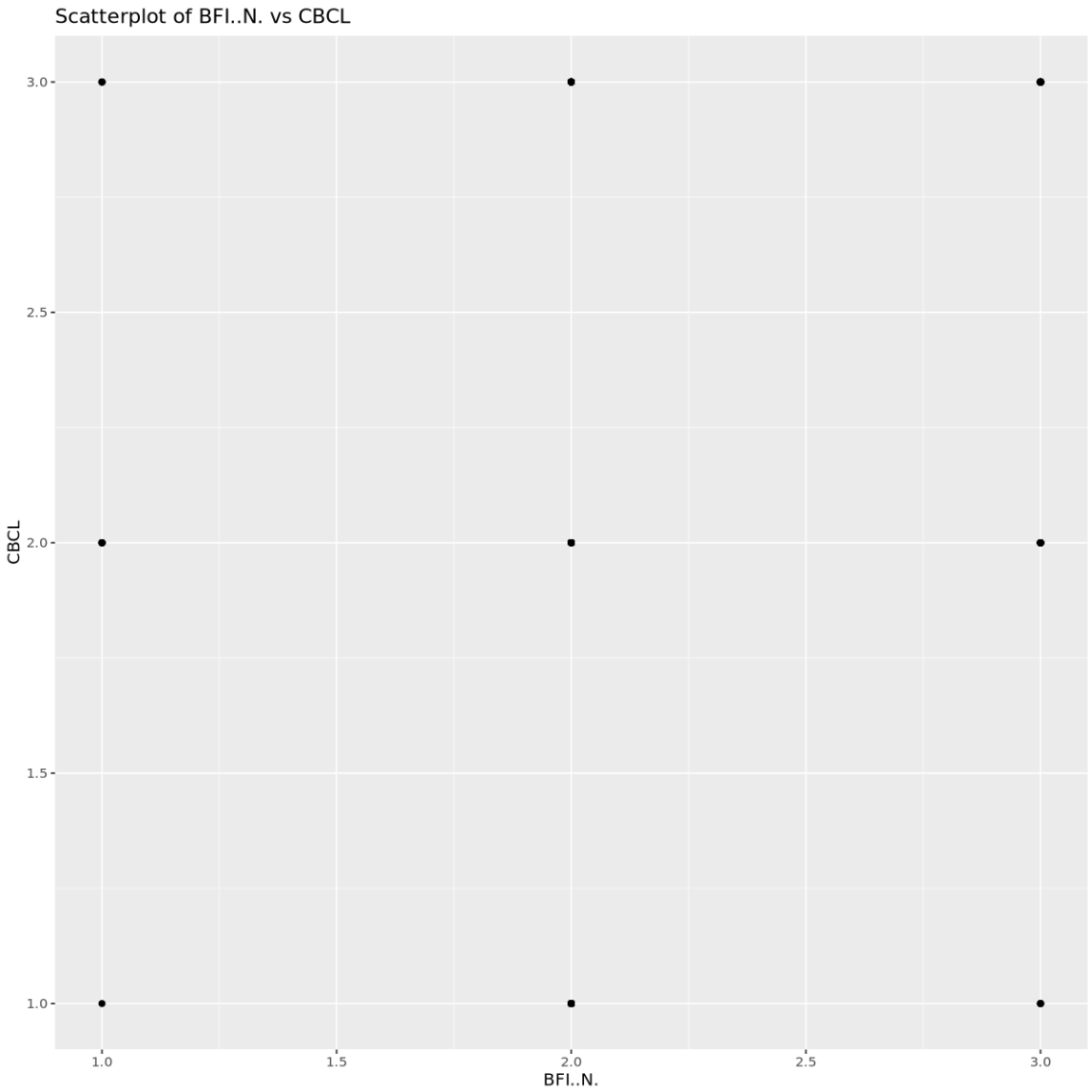
Correlation between CBCL and BFI..A. : No correlation



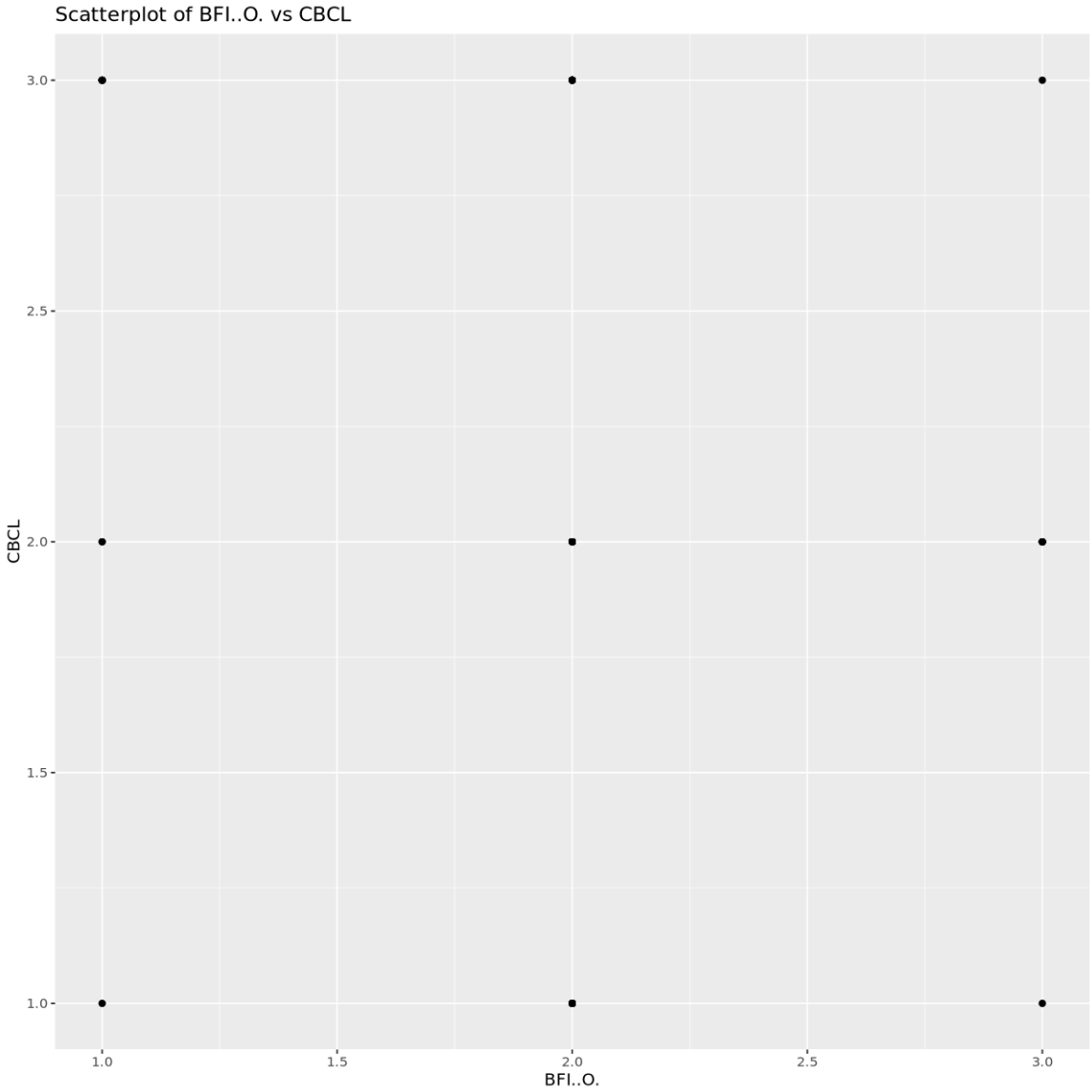
Correlation between CBCL and BFI..C. : No correlation



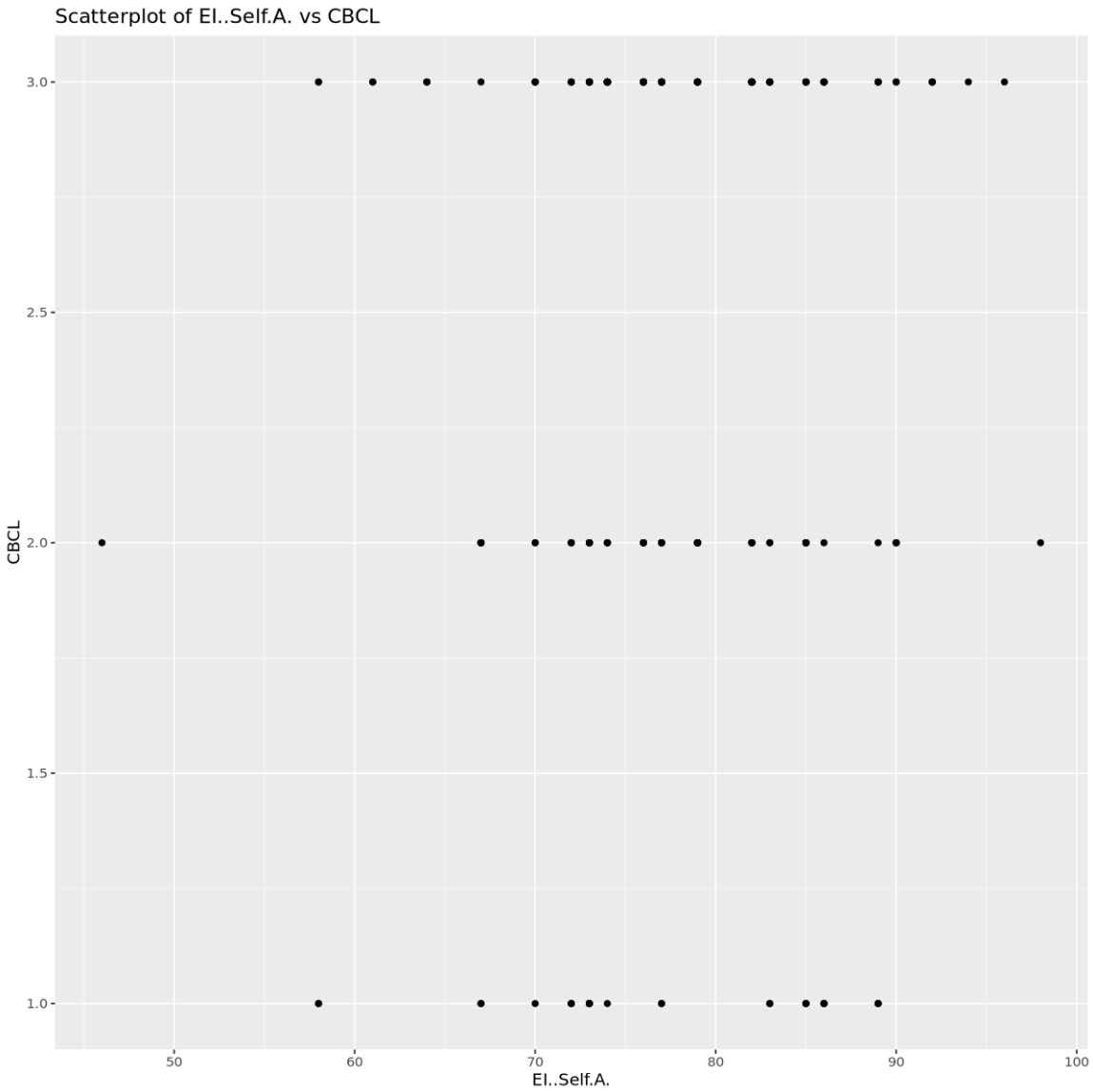
Correlation between CBCL and BFI..N. : No correlation



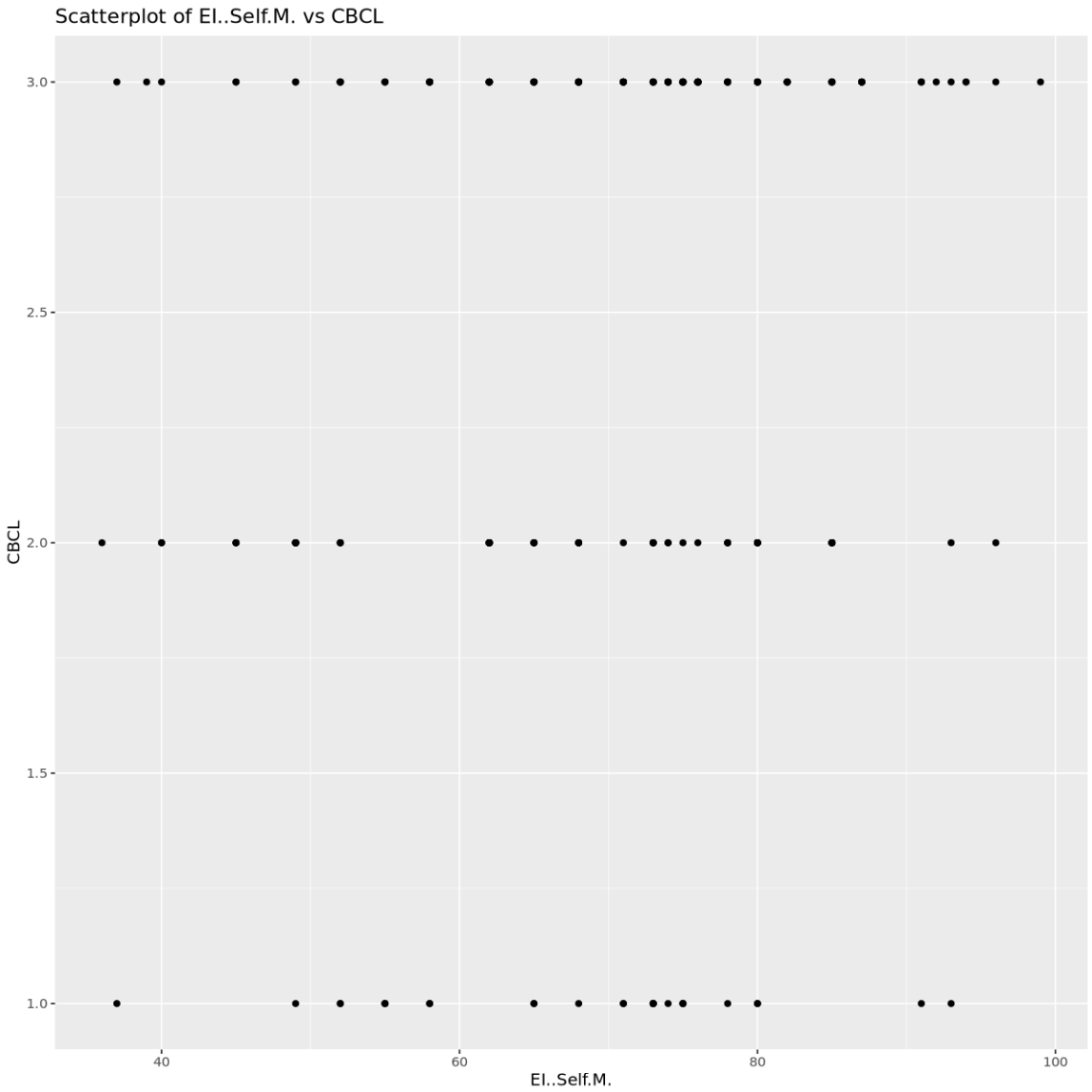

```
Correlation between CBCL and BFI..O. : No correlation
```



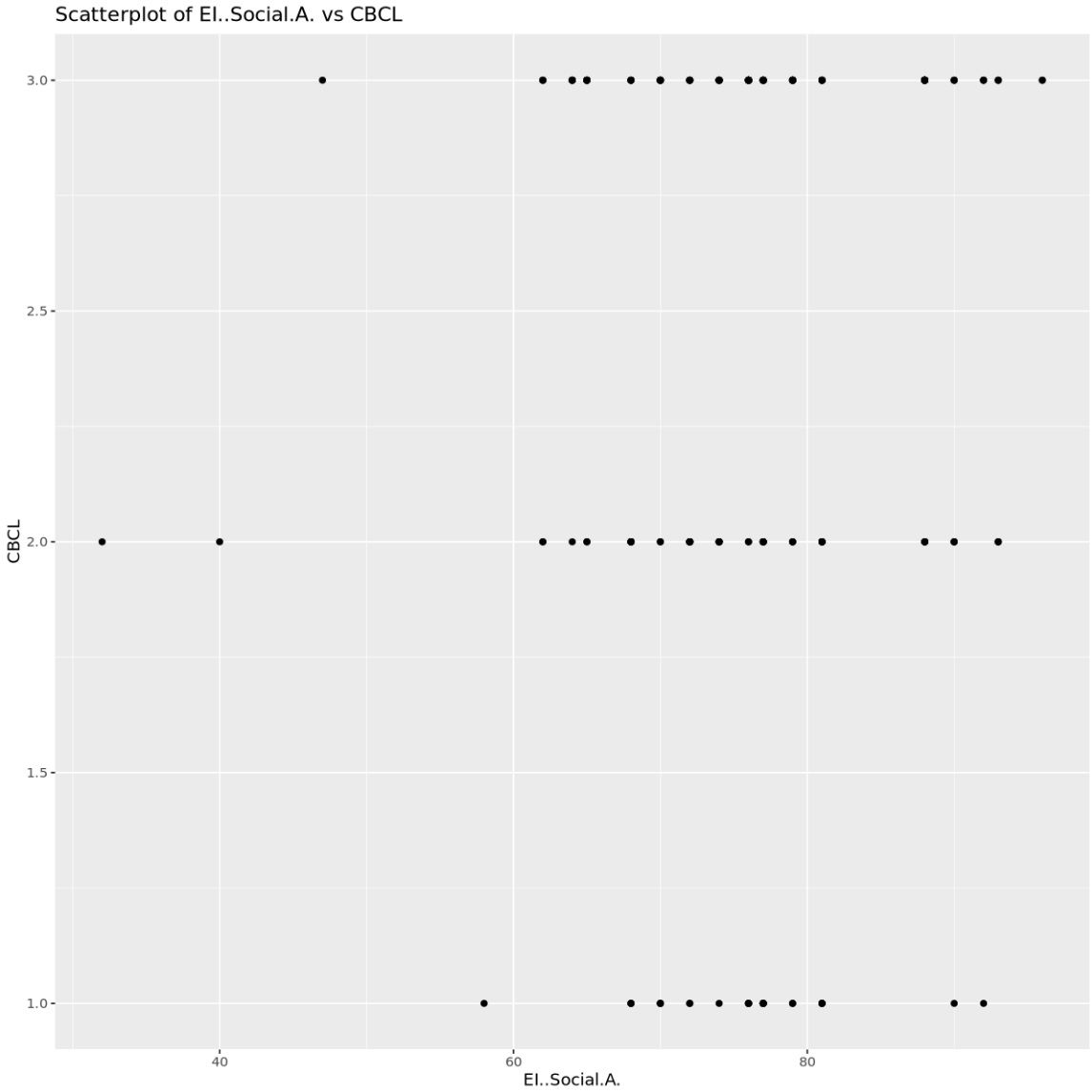
Correlation between CBCL and EI..Self.A. : No correlation



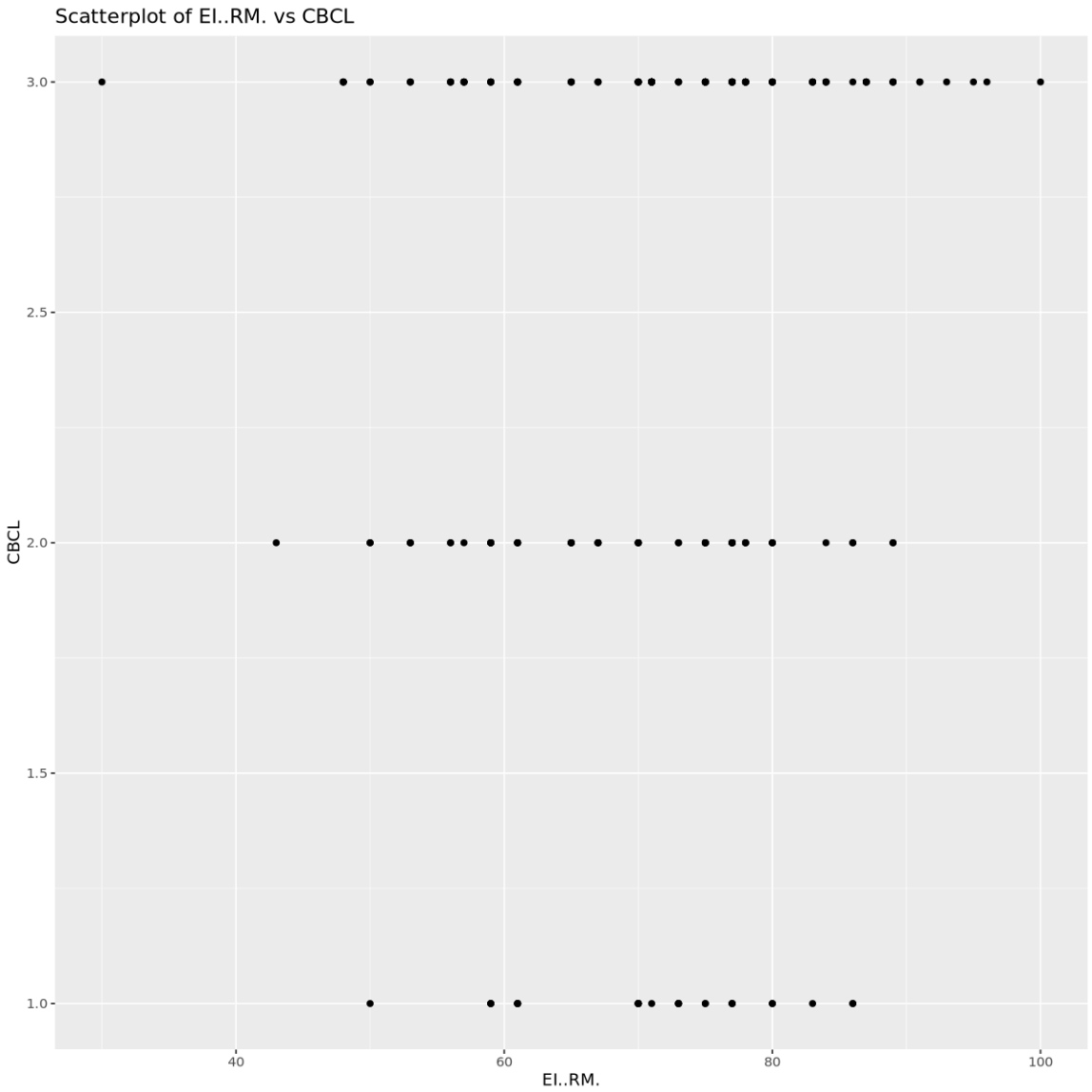
Correlation between CBCL and EI..Self.M. : No correlation



Correlation between CBCL and EI..Social.A. : No correlation



Correlation between CBCL and EI..RM. : No correlation




```
Correlation between CBCL and Total : No correlation
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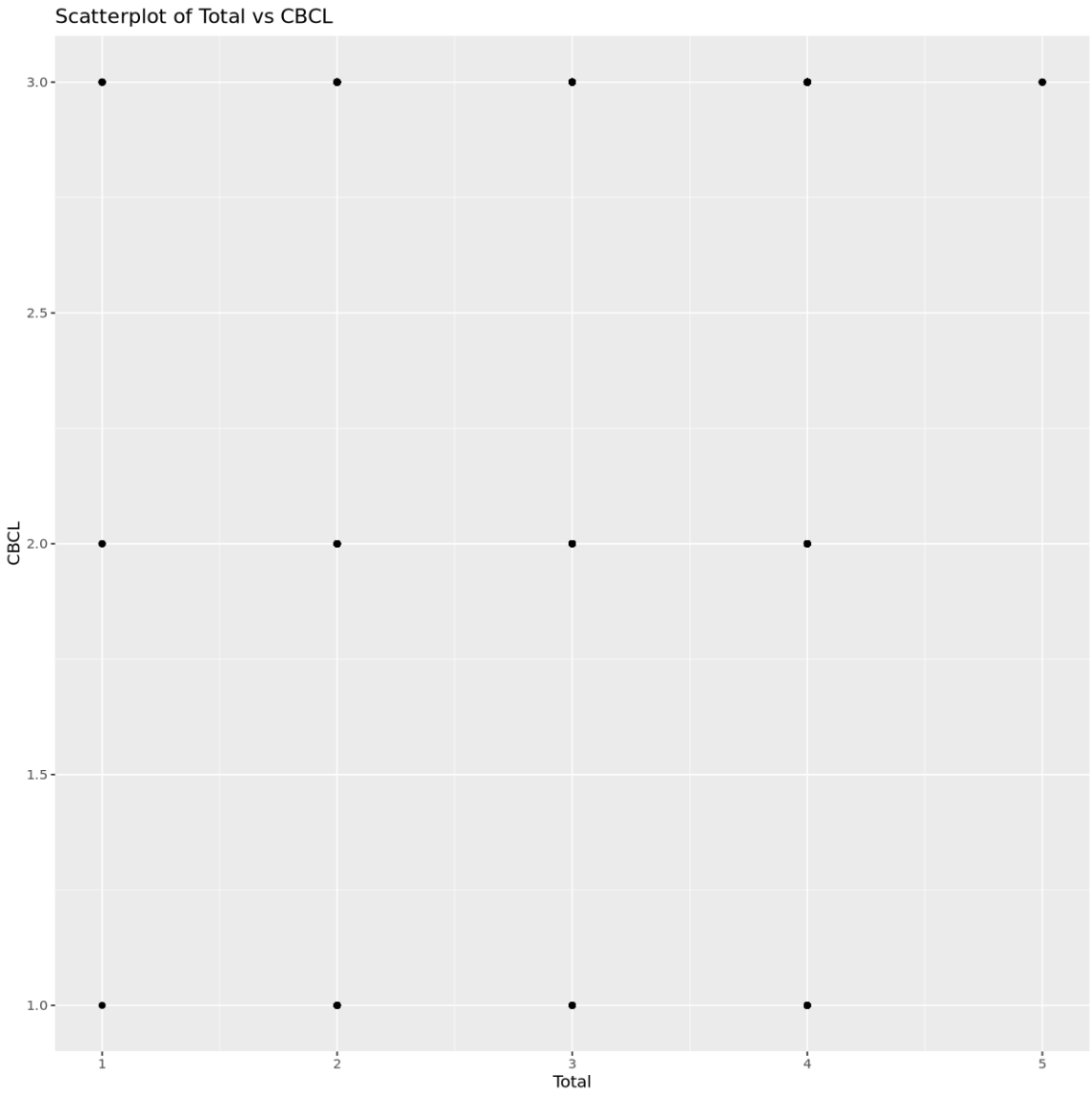


```
Correlation between CBCL and PAQ : No correlation
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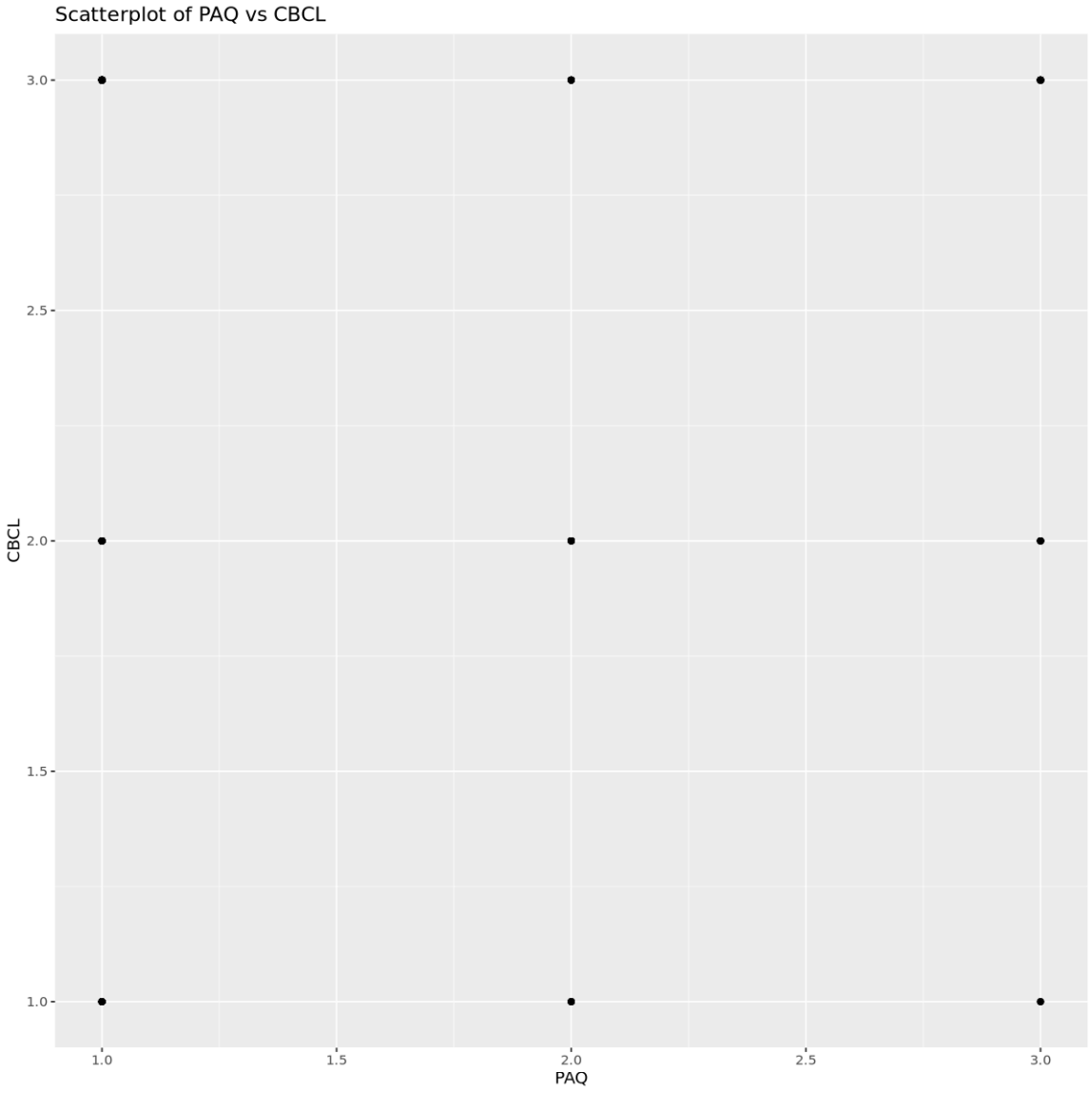

In [ ]: