

Reliability Testing

```
In [1]: # Install and Load the required Libraries
install.packages("psych")
library(psych)

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

# Extract relevant columns for reliability analysis
# Replace "Scale1", "Scale2", etc., with the actual names of your scales
scales <- modified_data[, c("Panas..", "Panas...1", "BFI..E.", "BFI..A.", "BFI..
                           "EI..Self.A.", "EI..Self.M.", "EI..Social.A.", "EI..

# Perform Cronbach's alpha analysis
cronbach_result <- psych::alpha(scales, check.keys = TRUE)

# Display the Cronbach's alpha results
print(cronbach_result)

# Extract reliability coefficients
reliabilities <- cronbach_result$total$raw_alpha

# Display reliability coefficients for each scale
cat("\nReliability coefficients for each scale:\n")
print(reliabilities)
```

Updating HTML index of packages in '.Library'

Making 'packages.html' ...
done

Warning message in psych::alpha(scales, check.keys = TRUE):
"Some items were negatively correlated with the first principal component and were automatically reversed.
This is indicated by a negative sign for the variable name."

Reliability analysis

Call: psych::alpha(x = scales, check.keys = TRUE)

raw_alpha	std.alpha	G6(smc)	average_r	S/N	ase	mean	sd	median_r
0.66	0.76	0.81	0.18	3.1	0.019	64	2.5	0.14

95% confidence boundaries

	lower	alpha	upper
Feldt	0.59	0.66	0.73
Duhachek	0.62	0.66	0.70

Reliability if an item is dropped:

	raw_alpha	std.alpha	G6(smc)	average_r	S/N	alpha	se	var.r	med.r
Panas...-	0.66	0.76	0.81	0.20	3.2	0.019	0.033	0.16	
Panas...1	0.66	0.77	0.81	0.20	3.3	0.019	0.033	0.16	
BFI..E.-	0.66	0.76	0.81	0.19	3.1	0.019	0.035	0.16	
BFI..A.-	0.66	0.73	0.78	0.17	2.7	0.019	0.034	0.13	
BFI..C.-	0.66	0.74	0.79	0.18	2.9	0.019	0.033	0.14	
BFI..N.	0.66	0.75	0.80	0.19	3.1	0.019	0.034	0.14	
BFI..O.-	0.66	0.74	0.80	0.18	2.9	0.019	0.035	0.14	
EI..Self.A.	0.60	0.74	0.79	0.18	2.8	0.019	0.032	0.14	
EI..Self.M.	0.59	0.71	0.76	0.16	2.5	0.020	0.027	0.14	
EI..Social.A.	0.56	0.72	0.77	0.17	2.6	0.023	0.027	0.14	
EI..RM.	0.55	0.72	0.77	0.17	2.6	0.024	0.027	0.14	
Total	0.64	0.70	0.74	0.15	2.4	0.020	0.020	0.14	
PAQ-	0.66	0.76	0.81	0.20	3.2	0.019	0.033	0.16	
CBCL	0.66	0.75	0.81	0.19	3.1	0.019	0.035	0.14	

Item statistics

	n	raw.r	std.r	r.cor	r.drop	mean	sd
Panas...-	206	0.13	0.29	0.18	0.111	99.4	0.59
Panas...1	206	0.11	0.24	0.12	0.096	1.2	0.42
BFI..E.-	206	0.18	0.34	0.23	0.164	99.1	0.45
BFI..A.-	206	0.37	0.59	0.55	0.356	99.3	0.54
BFI..C.-	206	0.32	0.50	0.45	0.310	99.3	0.50
BFI..N.	206	0.19	0.38	0.30	0.180	2.2	0.53
BFI..O.-	206	0.34	0.49	0.42	0.327	99.0	0.38
EI..Self.A.	206	0.65	0.52	0.47	0.489	78.0	7.59
EI..Self.M.	206	0.81	0.75	0.78	0.588	69.9	13.30
EI..Social.A.	206	0.79	0.64	0.65	0.637	76.4	9.42
EI..RM.	206	0.82	0.66	0.67	0.651	70.9	11.44
Total	206	0.93	0.81	0.88	0.928	3.0	0.95
PAQ-	206	0.17	0.28	0.17	0.151	99.5	0.76
CBCL	206	0.16	0.38	0.29	0.143	2.5	0.72

Non missing response frequency for each item

	1	2	3	4	5	miss
Panas..	0.44	0.50	0.05	0.00	0.00	0
Panas...1	0.77	0.23	0.00	0.00	0.00	0
BFI..E.	0.16	0.79	0.06	0.00	0.00	0
BFI..A.	0.37	0.60	0.03	0.00	0.00	0
BFI..C.	0.35	0.64	0.01	0.00	0.00	0
BFI..N.	0.05	0.67	0.27	0.00	0.00	0
BFI..O.	0.08	0.85	0.06	0.00	0.00	0
Total	0.05	0.26	0.32	0.35	0.02	0
PAQ	0.62	0.22	0.16	0.00	0.00	0
CBCL	0.14	0.27	0.59	0.00	0.00	0

Reliability coefficients for each scale:

[1] 0.6610361

```
In [2]: # Cronbach Alpha Tests

# Calculate Cronbach's alpha
alpha_result <- alpha(modified_data, check.keys = TRUE)
cronbach_alpha <- alpha_result$total$raw_alpha

# Print the Cronbach's alpha value
cat("The Results of Cronbach Analysis is as Follows\n\n")
print(cronbach_alpha)
print(alpha_result)

cat("\n\n\n\n")
```

Warning message in alpha(modified_data, check.keys = TRUE):
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The Results of Cronbach Analysis is as Follows

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Reliability analysis

Call: alpha(x = modified_data, check.keys = TRUE)

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95% confidence boundaries

lower alpha upper

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Duhachek 0.62 0.66 0.70

Reliability if an item is dropped:

	raw_alpha	std.alpha	G6(smc)	average_r	S/N	alpha	se	var.r	med.r
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Total	0.05	0.26	0.32	0.35	0.02	0
PAQ	0.62	0.22	0.16	0.00	0.00	0

CBCL 0.14 0.27 0.59 0.00 0.00 0

```
In [4]: # Install and Load the required Libraries
install.packages("psych")
library(psych)

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

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

# Function to calculate Cronbach's alpha for a group of variables or a single variable
calculate_alpha <- function(variables) {
  if (length(variables) > 1) {
    scale_subset <- modified_data[, variables]
    cronbach_result <- psych::alpha(scale_subset, check.keys = TRUE)
    return(cronbach_result$total$raw_alpha)
  } else {
    # If it's a single variable, just return the variable name
    return(variables)
  }
}

# Calculate Cronbach's alpha for each group of variables
alpha_independent <- calculate_alpha(independent_vars)
alpha_dependent <- calculate_alpha(dependent_vars)
alpha_mediator <- calculate_alpha(mediator_var)

# Display the results
cat("Cronbach's alpha for Independent Variables:\n")
print(alpha_independent)

cat("\nCronbach's alpha for Dependent Variables:\n")
print(alpha_dependent)

cat("\nCronbach's alpha for Mediator Variable:\n")
print(alpha_mediator)
```

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Cronbach's alpha for Independent Variables:

[1] 0.6748856

Cronbach's alpha for Dependent Variables:

[1] 0.2910346

Cronbach's alpha for Mediator Variable:

[1] "PAQ"

In []: