

Research Methods

Correlation

--- JASP Examples ---

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Example question 1

- ❖ Below you find Pearson's r for the relationship between Extraversion and Neuroticism. How do you assess the valence and magnitude of the correlation?

In JASP

The screenshot shows the JASP software interface. The main window is titled "eTourismChallenge_Behavioral*". The "Common" tab is selected, showing a toolbar with icons for Descriptives, T-Tests, ANOVA, Regression, Frequencies, and Factor. Below the toolbar, a list of variables is shown on the left, including "iOS", "Android", "duration", "appchallenge_logs_c...", "Agreeableness", "Conscientiousness", "Imagination", "condition", "tasks_followed_links", "presurvey_yearofbirth", and "IPIP1". A selection box on the right contains "Extraversion" and "Neuroticism". The "Correlation Coefficients" section has "Pearson" selected. The "Hypothesis" section has "Correlated" selected. The "Plots" section has "Statistics" selected. The "Results" panel on the right displays a "Correlation Matrix" with the following Pearson Correlations:

	Extraversion	Neuroticism
Extraversion	—	—
Neuroticism	-0.037	—

Interpretation

- ❖ **Valence** = The correlation is negatively valenced ($r =$ minus 0.037)
- ❖ **Magnitude** = The correlation is weak, almost none. This happens when r is between $\pm.00$ and $\pm.29$. The $r = -0.037$ falls within that range.

Example question 2

- ❖ On the next slide, you'll find the JASP correlation matrix for the variables BIS_Anxiety, FFFFS-Fear, and Neuroticism. How do you assess the relationship between these three variables?



Descriptives



T-Tests



ANOVA



Regression



Frequencies



Factor

Agreeableness
 Conscientiousness
 Imagination
 condition
 tasks_followed_links
 year_of_birth
 IPIP1
 IPIP2
 IPIP3
 IPIP4



BIS_Anxiety
 FFFS_Fear
 Neuroticism

OK

Correlation Coefficients

☒ Pearson

☐ Spearman

☐ Kendall's tau-b

☐ Display pairwise table

☒ Report significance

☒ Flag significant correlations

☐ Confidence intervals

Interval 95 %

☐ Vovk-Sellke maximum p-ratio

Hypothesis

☒ Correlated

☐ Correlated positively

☐ Correlated negatively

Plots

☐ Correlation matrix

☐ Densities for variables

☐ Statistics

Results

Correlation Matrix

Pearson Correlations

		BIS_Anxiety	FFFS_Fear	Neuroticism
BIS_Anxiety	Pearson's r	—		
	p-value	—		
FFFS_Fear	Pearson's r	0.440***	—	
	p-value	< .001	—	
Neuroticism	Pearson's r	0.411***	0.468***	—
	p-value	< .001	< .001	—

* p < .05, ** p < .01, *** p < .001

Interpretation

- ❖ **FFFS & BIS** = The correlation is positive, of moderate magnitude ($r = 0.440$) and significant ($p < .001$) --> the variables relate to each other (H_a accepted)
- ❖ **Neurot. & BIS** = The correlation is positive, of moderate magnitude ($r = 0.411$) and significant ($p < .001$) --> the variables relate to each other (H_a accepted)
- ❖ **Neurot. & FFFS** = The correlation is positive, of moderate magnitude ($r = 0.468$) and significant ($p < .001$) --> the variables relate to each other (H_a accepted)

Example question 3

- ❖ On the next slide, you find a bigger correlation table. It contains bivariate relationships between many variables. Some of those are Big Five sub-dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Imagination
- ❖ **According to personality theory, Extraversion and Agreeableness positively relate to each other (as they both are social components of personality).**
- ❖ Do you find support for this idea in the correlation table? Please explain.

Correlation Matrix

Pearson Correlations

		BIS_Anxiety	FFFS_Fear	Extraversion	Neuroticism	Agreeableness	Conscientiousness	Imagination
BIS_Anxiety	Pearson's r	—						
	p-value	—						
FFFS_Fear	Pearson's r	0.440***	—					
	p-value	< .001	—					
Extraversion	Pearson's r	−0.026	−0.029	—				
	p-value	0.743	0.716	—				
Neuroticism	Pearson's r	0.411***	0.468***	−0.037	—			
	p-value	< .001	< .001	0.644	—			
Agreeableness	Pearson's r	0.160*	0.113	0.267***	−0.018	—		
	p-value	0.046	0.162	< .001	0.820	—		
Conscientiousness	Pearson's r	0.042	−0.007	−0.037	−0.017	0.009	—	
	p-value	0.603	0.928	0.644	0.833	0.915	—	
Imagination	Pearson's r	−0.088	−0.024	0.187*	−0.067	0.160*	0.107	—
	p-value	0.274	0.764	0.019	0.405	0.045	0.184	—

* p < .05, ** p < .01, *** p < .001

Interpretation

- ❖ **Extraversion & Agreeableness** = Their correlation is positive, of weak magnitude ($r = 0.267$) and significant ($p < .001$) --> the variables, indeed, positively relate to each other (H_a accepted)

Example question 4

- ❖ **According to some assessment psychologists, Conscientiousness and Imagination positively relate to each other (as they both are dimensions of intellect).**
- ❖ Do you find support for this idea in the big correlation table (above)? Please explain.

Interpretation

- ❖ **Conscientiousness & Imagination** = Their correlation is positive, of weak magnitude ($r = 0.107$) and nonsignificant ($p = .184$) --> the variables do not relate to each other (H_0 accepted, H_a rejected)