Correlations – Practice

Answer the following questions for each of the correlation matrices provided.

1. What are your research and null hypotheses? Choose your own research hypothesis.

2. Is your research hypothesis one-tailed or two-tailed?

3. What is your correlation coefficient (r-value)?

4. What is the direction of the relationship between two variables?

5. Is the relationship strong, moderate or weak?

6. How many observations were used in the calculation of the correlation coefficient?

7. Is the r-value statistically significant:
   a. For a two-tailed test? At what level?
   b. For a one-tailed test? At what level?

8. What percentage of the variance in one variable is explained by the other?

1 – You are examining the relationship between previous employment experience and salary.

Correlations

		Current Salary	Previous Experience (months)
Current Salary	Pearson Correlation	1	-.097(*)
	Sig. (2-tailed)		.034
	N	474	474
Previous Experience (months)	Pearson Correlation	-.097(*)	1
	Sig. (2-tailed)	.034	
	N	474	474

* Correlation is significant at the 0.05 level (2-tailed).

2 – You are examining the relationship between years of education and beginning salary.

Correlations

		Educational Level (years)	Beginning Salary
Educational Level (years)	Pearson Correlation	1	.633(**)
	Sig. (2-tailed)		.000
	N	474	474
Beginning Salary	Pearson Correlation	.633(**)	1
	Sig. (2-tailed)	.000	
	N	474	474

** Correlation is significant at the 0.01 level (2-tailed).

3 – You are examining the relationship between math test scores and language test scores.

Correlations

		Math test score	Language test score
Math test score	Pearson Correlation	1	.615(*)
	Sig. (2-tailed)		.015
	N	15	15
Language test score	Pearson Correlation	.615(*)	1
	Sig. (2-tailed)	.015	
	N	15	15

* Correlation is significant at the 0.05 level (2-tailed).

4 – You are examining the relationship between student motivation and grade point average.

Correlations

		MOTIV	GPA
MOTIV	Pearson Correlation	1	.434*
	Sig. (2-tailed)	.	.017
	N	30	30
GPA	Pearson Correlation	.434*	1
	Sig. (2-tailed)	.017	.
	N	30	30

*. Correlation is significant at the 0.05 level (2-tailed).

5 – You are examining the relationship between marriage quality (time spent together) and quality of the parent-child relationship (strength of affection)

Correlations

		QUAL_MAR	QUAL_PC
QUAL_MAR	Pearson Correlation	1	.024
	Sig. (2-tailed)	.	.891
	N	36	36
QUAL_PC	Pearson Correlation	.024	1
	Sig. (2-tailed)	.891	.
	N	36	36

Answers

1 – Employment experience and salary

1. H_0: R=0 (Or, the correlation between the variables will be 0 or no relationship)
   HR: R ≠ 0 (Or, the correlation will not equal zero or there is a relationship)
2. In this case, two-tailed
3. r=-0.097
4. Negative
5. Weak
6. 474
7. Two-tailed, .05 = .034, .034<.05 so reject, significant; One-tailed, .05 = .017 (.034/2), .017<.05 so reject, significant
8. $(-.097)^2 = .009409 = .9409\%$

2 – Education and beginning salary

1. H_0: R=0 (Or, the correlation between the variables will be 0 or no relationship)
   HR: R ≠ 0 (Or, the correlation will not equal zero or there is a relationship)
2. In this case, two-tailed
3. r=.633
4. Positive
5. Moderate
6. 474
7. Two-tailed, .05 = .000, .000<.05 so reject, significant; One-tailed, .05 = .000 (.000/2), .000<.05 so reject significant
8. $(.633)^2 = .4007 = 40\%$

3 – Math and language test scores

1. H_0: R=0 (Or, the correlation between the variables will be 0 or no relationship)
   HR: R ≠ 0 (Or, the correlation will not equal zero or there is a relationship)
2. In this case, two-tailed
3. r=.615
4. Positive
5. Moderate
6. 15
7. Two-tailed, .05 = .015, .015<.05 so reject, significant; One-tailed, 05 test = .0075 (.015/2), .0075<.05 so reject, significant
8. $(.615)^2 = .3782 = 37.82\%$

4 – Motivation and GPA

1. H_0: R=0 (Or, the correlation between the variables will be 0 or no relationship)
   HR: R ≠ 0 (Or, the correlation will not equal zero or there is a relationship)
2. In this case, two-tailed
3. r = .434
4. Positive
5. Weak
6. 30

7. Two-tailed, .05 = .017, .017<.05 so reject, significant; One-tailed, .05 = .009 (.017/2), .009<.05 so reject, significant
8. $(.434)^2 = .1884 = 18.84\%$

5 – Quality of marriage and parent child relationship

1. H_0: R=0 (Or, the correlation between the variables will be 0 or no relationship)
   HR: R ≠ 0 (Or, the correlation will not equal zero or there is a relationship)
2. In this case, two-tailed
3. r = .024
4. Positive
5. Weak
6. 36
7. Two-tailed, .05 = .891, .891>.05 so accept, not significant; One-tailed, .05 = .446 (.891/2), .446>.05 so accept, not significant
8. $(.024)^2 = .0006 = 0\%$