Pearson Product-Moment Correlation (r)

Table of contents

1	Purpose	1
2	Range	1
3	Interpretation	2
4	Compared to other analyses	2
5	Resources	2

1 Purpose

Determine linear relationship between two continuous random variables¹
Measure: Strength of the linear relationship (Covariance)¹

• Results in Correlation Coefficient

2 Range

 $-1 \text{ to } +1^{1}$

Table 1: Pearson product-moment correlation (ρ) interpretation

Strength	Value
Negligible	$0.00-0.10^{1}$
Weak	$0.10 - 0.39^{1}$
Moderate	$0.40 – 0.69^{1}$

Strength	Value	
Strong Very strong Perfect Correlation	$0.70-0.89^{1}$ $0.90-1.00^{1}$ $-1 \text{ or } +1^{1}$	

3 Interpretation

Perfect correlation

- -1 or +1
- All the data points lie exactly on the straight line

Note

You should always graph your results to ensure you arent missing correlations that **are not** linear

NOTE: these can be used by researchers to misrepresent data that is not linearly correlated ¹ Significance

- T-Test?
- P-value = correlation differs significantly from Zero

4 Compared to other analyses

see the comparison to other correlation statistical analyses

5 Resources

https://youtu.be/k7IctLRiZmo

1. Schober P, Boer C, Schwarte LA. Correlation Coefficients: Appropriate Use and Interpretation. *Anesthesia and Analgesia*. 2018;126(5):1763-1768. doi:10.1213/ANE.0000000000002864

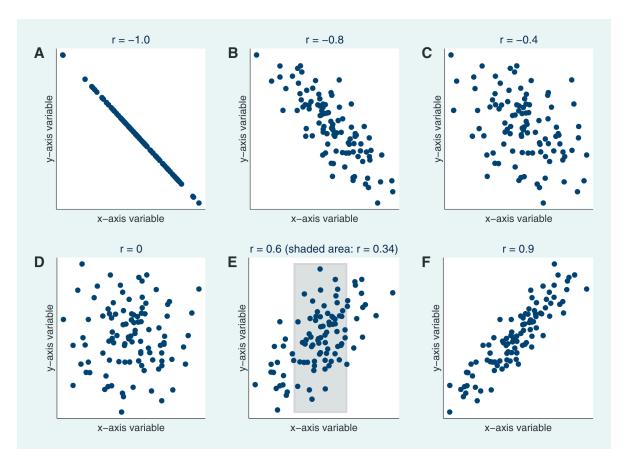


Figure 1: Graphs of varying "r" values (From figure 1 of Schober et al. 2018^1)