Pearson Product-Moment Correlation (r)

Nathaniel Yomogida, SPT Chloë Kerstein, SPT

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1 Purpose

Determine linear relationship between two continuous random variables[1]

Measure: Strength of the linear relationship (Covariance)[1]

- Results in Correlation Coefficient

2 Range

-1 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	0.70–0.89[1]
Very strong	0.90–1.00[1]
Perfect Correlation	-1 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

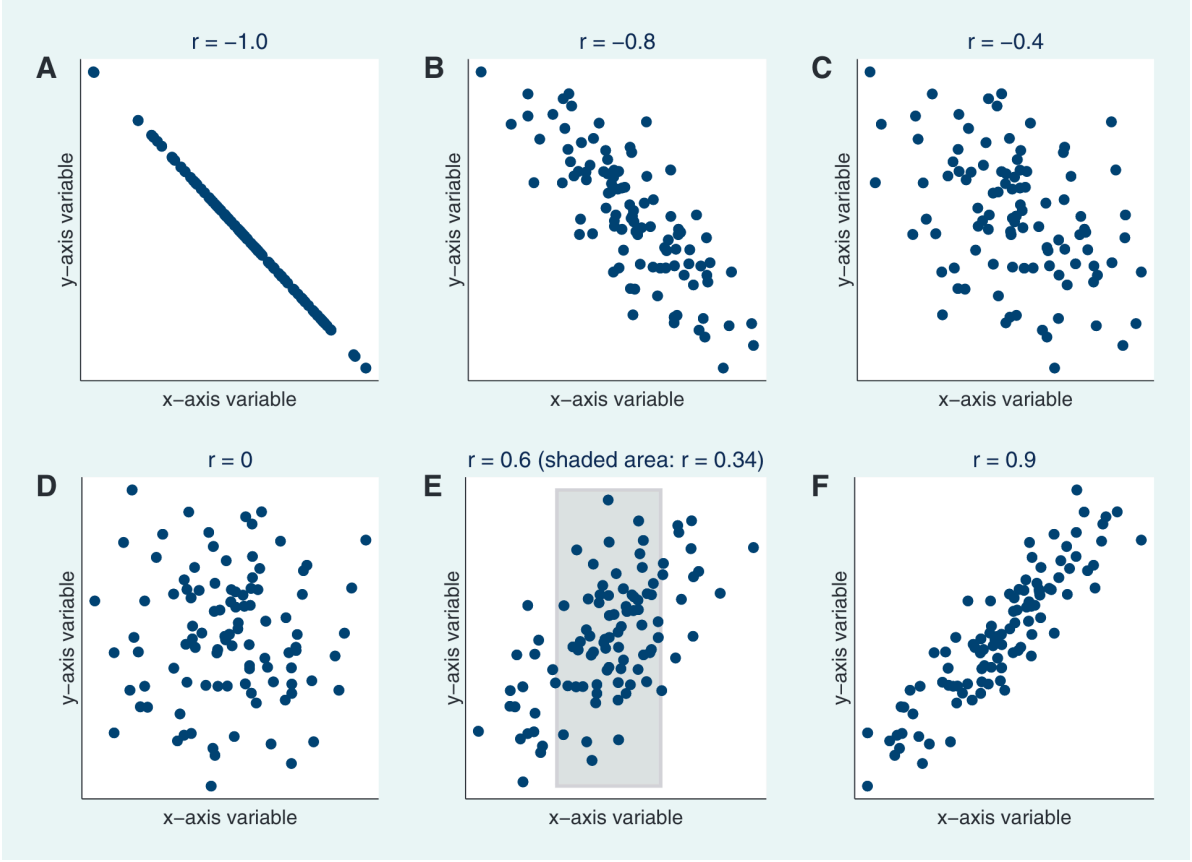

Figure 1: Graphs of varying "r" values (From figure 1 of Schober et al. 2018[1])