

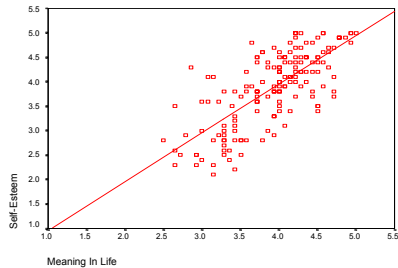
Correlational Analysis

Determining

- Scatterplots
- Pearson's r
 - Range: +1 to -1
 - r^2 (*coefficient of determination*): percent of variance shared between variables
 - influenced by sample size
 - .10 is weak, .30 is moderate, .50 is strong

Correlation

- Scores on one variable increase as scores on the other variable increase



Correlation

- Scores on one variable increase as scores on the other variable decrease

Correlation

- Scores on one variable don't have any relation to scores on the other variable

Reporting

- Describe the association
 - Positive
 - Negative
- Provide the coefficient (r)
- Provide the significance (p)
- Ex. "Results showed a positive association between hours spent studying and course grade ($r = .35, p < .05$)"


Factors that influence _____ of correlations

- Restricted range / variance of scores
- Low reliability of measures
- Outliers
- Sample size influences significance

- Coefficient that specifies the degree AND direction of a linear relationship between two variables
- Formula:
$$\frac{SP}{\sqrt{SS_x * SS_y}}$$
 - Where $SP = \sum(X - M_x)(Y - M_y)$
 - *Sum of products*
 - $SS_x =$ *sum of squares for Variable X*
 - $SS_y =$ *sum of squares for Variable Y*


_____ Analysis

- Basic Equation:
 - $y = \beta_0 + \beta_1 x$
 - $\beta_0 =$ y-intercept; $\beta_1 =$ slope
 - **outcome variable** (y): the variable we want to predict
 - **predictor variable** (x): what we think will predict changes in the outcome variable




Multiple _____

- Several predictor variables
 - Ex. What predicts your grade in a class?
- Simultaneous
 - all predictors at once
- Stepwise
 - one at a time, best predictor first
- Hierarchical
 - theoretical progression
 - Moderation and mediation hypotheses



How well do the predictor variables predict?

- Overall strength:
 - multiple correlation coefficient (R)
 - R^2 = % variance in outcome variable explained by *all predictor variables*
- Individual strength:
 - Standardized beta weights (β)
 - change in R^2 (ΔR^2) in stepwise and hierarchical analyses



Reporting Multiple Predictor Results

- Best represented in a Table
 - Provide the coefficient (β)
 - Provide the significance (p)
 - Provide the R-squared or R-squared change
- Describe important findings in the text
 - “Results showed that both intelligence and study time predicted unique variance in course grade (see Table 1).”
