Research Methods in Psychology

Correlational Research

What We Will Cover in This Section

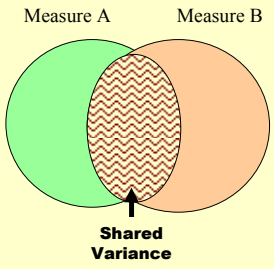
- Overview.
- Model.
- Techniques
  - Partial correlation.
  - Multiple regression.
  - Factor analysis.
  - Path Analysis.

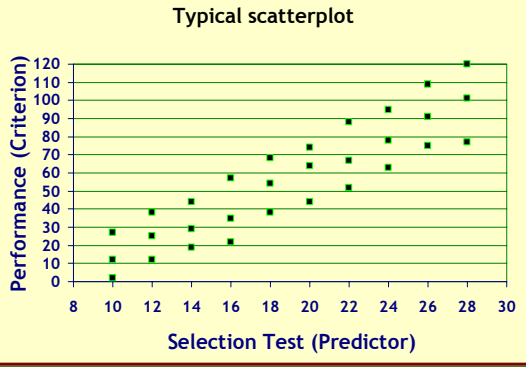
The Essentials of the Correlational Technique

Why the Correlation?

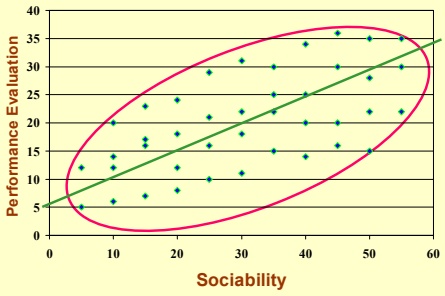
1. Determine the strength of the relationship between two or more variables.
2. Determine the direction of the relationship.
   - Positive.
   - Negative.

Correlational Model

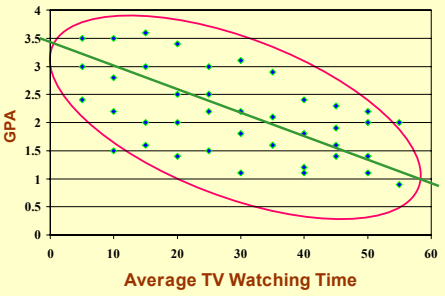




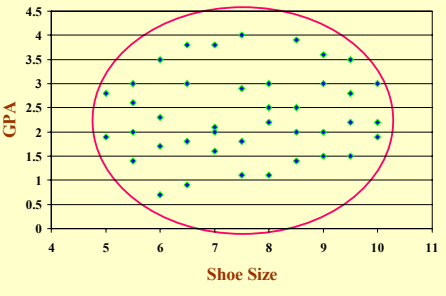
Positive Correlation Example



Negative Correlation Example



Zero Correlation Example

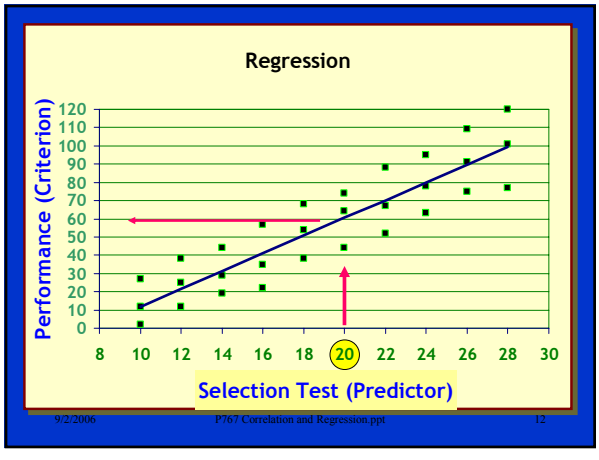


Correlational Conclusions

- Strength of the relationship.
  - From +1.00 to –1.00.
  - Zero means no relationship.
  - Stronger relationships are closer to 1.00 or –1.00
- Direction of the relationship.
  - Positive.
  - Negative.
- Does not imply causality.

Measuring the Correlation

Coefficient	Strength
.60 to 1.00 -.60 to –1.00	Very strong
.40 to .59 -.40 to -.59	Moderate
.20 to .39 -.20 to -.39	Weak
-.19 to +.19	Very weak

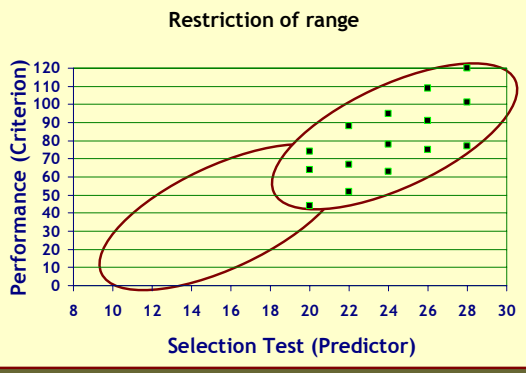


Factors that Affect the Correlation Coefficient

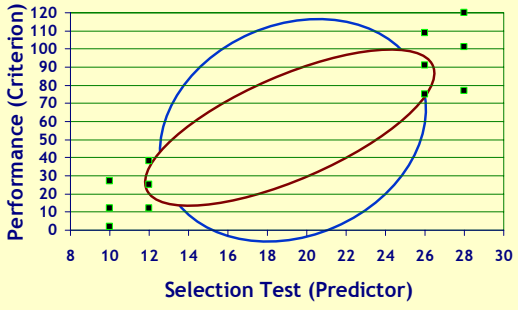
1. Reliability of the measures.
2. Poor sampling.
3. Subgroup differences.
4. Multidimensional constructs.

Sampling Problems

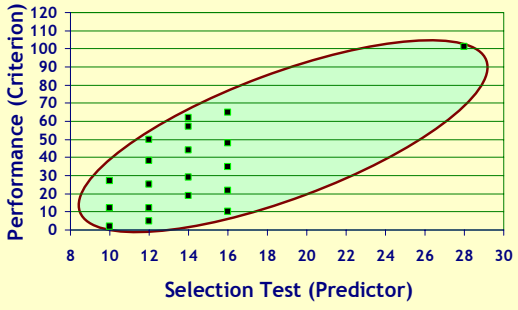
- Restriction of Range.
- Non-continuous groups.
- Outliers



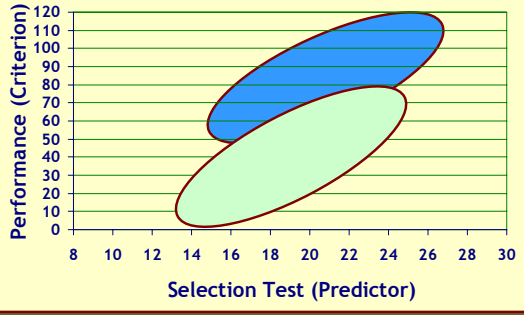
Non-continuous groups



Outlier problem



Subgroup differences

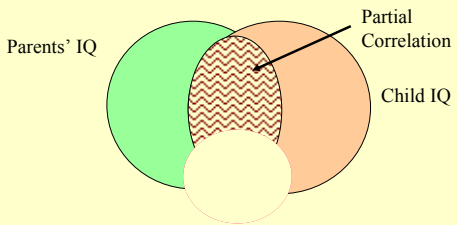


Multidimensional Constructs

- How to interpret a correlation when one or more of the variables is multidimensional?
  - IQ
    - Verbal component?
    - Quantitative component?

Correlational Techniques

Partial Correlation



Multiple Regression

Multiple Predictors → Single Criterion

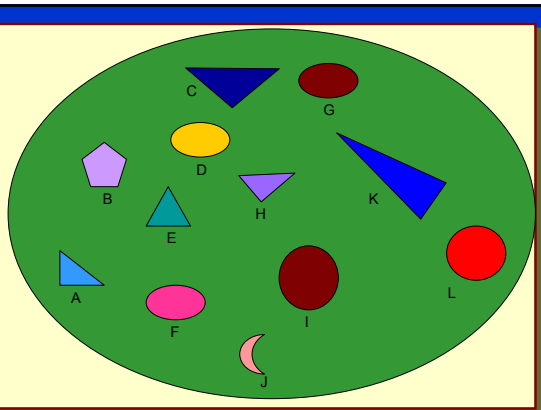
How can we find the best mathematical combination of depression scores, family income, social contacts, and drug use to predict suicidal tendencies.

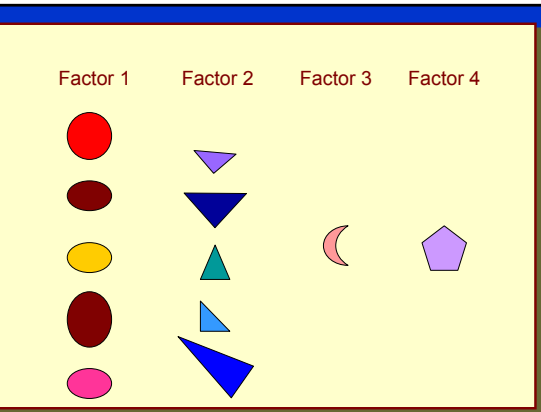
Multiple Regression Coefficient

1. Indicated by R.
2. Is always positive.
3. Interpreted the same as r.
4. Same limitations for the first-order relationships.
5. Still cannot conclude causality.

Factor Analysis

Statistical techniques for identifying interrelationships between items with the goal of identifying items that group or cluster together.





Uses of Factor Analysis

1. Data reduction.
2. Scale development.

Research Considerations

1. Number of participants.
   - Minimum of 100.
   - Try to have about 30 respondents per variable.
2. Same issues as applied to the correlation coefficient.

Identifying Factors

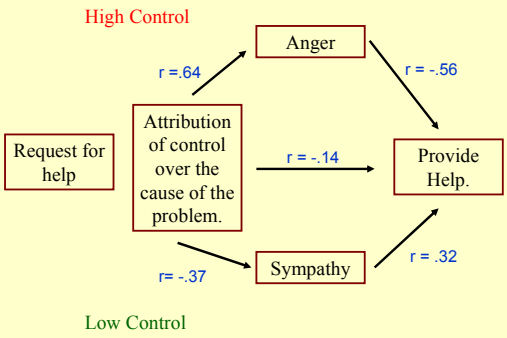
- Orthogonal (uncorrelated factors) vs. Oblique (correlated factors).
- Number of factors.

Typical Factor Analysis Table

	Component		
	Factor 1	Factor 2	Factor 3
Vulnerable	.00	.59	.00
Nervous	.00	.70	.00
Temperamental	.00	.47	.00
Intense	.70	.00	.00
Agreeable	.00	.00	.75
Hesitant	.00	.70	.00
Forceful	.75	.00	.00
Demanding	.77	.00	.00
Trusting	.00	.00	.78

Path Analysis

Technique to develop inferences as to the probable temporal relationships between a set of variables.



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