

## Science and psychology

- Theory: general principles to explain results
  - e.g. *semantic network theory* of memory explains priming, elaborative encoding, retrieval cue use
- Hypothesis: specific prediction generated by theory
  - e.g. presenting associates will prime critical lures
- Facts (or *data*): objective observations, capable of being agreed upon
  - e.g. number of falsely recalled lures
  - Why not intuitions? Why not personal experience?

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## Does a Stereotype Exist?

- A psychologist sought to discover whether research would support the stereotype that females are more emotional than males.
- The psychologist found 16 studies in which either males or females were observed to be either *quite emotional* or *nonemotional*.
- Review the handout. You will be asked to indicate what this data suggests about the relationship between gender and emotionality.

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## Which conclusion do you agree with MOST?

- A. Women were *somewhat more* likely to be emotional.
- B. Women were *slightly more* likely to be emotional.
- C. Women and men were *equally* likely to be emotional.
- D. Women were *slightly less* likely to be emotional.
- E. Women were *somewhat less* likely to be emotional.

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## Interpretation

- Most people conclude that the overall results of these studies show that, in comparison to men, women are slightly or moderately more likely to be emotional.
- That is an *illusory correlation*--that is, seeing a relationship where none exists.
- In comparison to men, women were neither more nor less likely to be emotional.
  - Compare percentage of studies with "emotional" women to percentage of studies with "emotional" men

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## Consider This...

- Why do you think many people believe that the data shows women to be more emotional than men?
- Can you identify other popular beliefs that may reflect illusory correlations?
- Why are people vulnerable to seeing relationships where none exist? What biases have we covered that might help explain illusory correlation?

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## Types of studies

- Research settings
  - laboratory (controlled condition) vs. field ("natural" conditions)
- Data-collection
  - self-report (questionnaires / interviews) vs. observation (naturalistic observation, tests)

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## Research design

- Experiment
  - manipulation of *independent variables* keeping all others constant
  - measure outcome, or *dependent variable*
  - changes in independent variable causes, or influences, changes in dependent variable
- Correlational study
  - observe or measure two or more variables to examine relationships between them
  - help make predictions on one variable, based on others, but no knowledge about cause and effect

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## Describing data

- Descriptive statistics summarize data
- Describing single variables
  - mean or percentages
  - variability: difference in value between individual scores (and the mean)
- Relationships between two variables
  - *correlation coefficient* (strength of relationship, direction)

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## Error and bias

- Error: increased variability in scores
  - because of imprecise or unreliable measures
  - can mask true relationships
- Bias: find effect of some other factor, not the one we are studying

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## Expectancy effects

- Possible sources of bias
  - observer expectancy: affects either measurement or subject behavior
  - subject expectancy: e.g. placebo
- Blind and double-blind studies

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## Dowsing

- Finding hidden water or metal using rods or sticks ("antennas"), which move to the hidden object
  - supposed to be result of ESP; dowser unconsciously senses object and causes antenna to move
  - alternative theory: dowser sensitive to physical cues, if to anything
- Devise test of dowser's ability to find an object in the absence of physical cues
  - identify expectancy effects (observer and subject)
  - How can you rule out expectancy effects?

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## *Consider This...*

- If the dowser found the object on one try out of ten, is this good evidence that he has the ability to find the object?
- Why did the testers have someone else place the object?
  - Why did he use a random number generator?

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