

# Thinking Critically With Psychological Science

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## Need for Psychological Science:

- The “grandmother test”- facts that are based on intuition rather than logic, such as common things people say.
  - Ex) Eating soup when you are sick, or holding your nose when you have the hiccups.
  - They are all opinions and things that people have said to work, but there is not logic behind it.
- Potential problems relying on the intuition and common sense
  - Hindsight Bias
  - Overconfidence
  - Perception of patterns in random events
- Hindsight Bias: the tendency to believe, after learning an outcome, that one would have foreseen it.
  - We should be predicting rather than explaining
  - Sometimes intuition is wrong
- Overconfidence: We think we know more than we do.
  - Danger when studying for an exam under this assumption
- When shown that they aren't accurate, participants explain away the results
- Perceiving order in random events
- The Scientific Attitude:
  - 3 main components
    - 1. Curiosity- Willingness to go against the norm
    - 2. Skepticism
    - 3. Humility: awareness of vulnerability to error and openness to new perspectives.

- Let the data/information guide you
  - “The rat is always right”
- **Critical Thinking:** thinking that does not blindly accept arguments and conclusions
  - Examine assumptions
  - Discern hidden values
  - Evaluate evidence
  - Assess conclusions

#### Asking and Answering Psychological Questions:

- **The Scientific Method**
  - **Theory:** an explanation using an integrated set of principles that organizes observations and predicts behaviors or events
  - **Hypothesis:** testable predictions
    - Allow us to show support for, revise, or reject a theory
    - Be careful of confirmation bias
  - **Operational definitions:** a statement of the procedures used to define research variables
  - Replicate...and expand
- **The scientific Method**
  - Use your theory and observations to define the question
  - For a hypothesis
  - Test the hypothesis (use appropriate experimental controls)
  - Draw a conclusion about the hypothesis
- **Observing and Describing Behavior**

- o Case Study: an in depth study of one individual conducted in hopes of revealing universal principles
- o Survey: method of obtaining self-report data from a particular group
  - Population all the cases in a group being studied, from which samples may be drawn
  - Random Sample: a sample that fairly represents a population because each member has an equal chance of inclusion
- o Naturalistic Observation: observing and recording behavior in naturally occurring situations without trying to manipulate and control the situation
  - Overt observation
  - Covert observation
  - Participant observer
  - Non-participant observer
- o Correlation: measure of the extent to which two factors vary together
  - Direction
    - Positive- when one variable increases so does the other
    - Negative- when one variable increases, the other decreases
  - Strength: the closer the absolute value of the correlation is to 1, the stronger the relationship
  - Illusory correlation: the perception of a relationship where none exists.
- o Experimentation: investigator manipulates one or more factors (Independent variable) to observe the effects on some behavior or mental process (dependent variable)
  - Must hold constant (control) other factors that you aren't interested in
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