

Studying Child Development: The Scientific Method

- Treat beliefs about development as hypotheses (educated guesses) that need to be tested.
- Test them using the scientific method:
 - **Choose a question** to be answered.
 - **Formulate a hypothesis** regarding the question.
 - Develop a method for **testing the hypothesis**.
 - Use the data yielded by the method to **draw a conclusion** regarding the hypothesis.

The Importance of Appropriate Measurement

- Measurements must yield reliable and valid results.
 - **Reliability:** Independent measurements of a behavior are consistent with each other.
 - **Validity:** The test or experiment measures what it is intended to measure.

Reliability

- **Reliability:** Consistency of measures
 - **Inter-rater reliability:** The amount of agreement between different observers or testers. Agreement should be high.
 - **Test-retest reliability:** Results should be similar over repeated testing.

Validity

- **Internal validity:** Are the effects observed attributable to conditions the researcher intentionally manipulated?
- **External validity:** Do the conclusions allow generalization beyond the particulars of this experiment?

Studying Child Development: Contexts for Gathering Data

- Interviews
 - Structured interview: Collecting self-reports from all people being studied.
 - Clinical interview: In-depth focus on each subject.

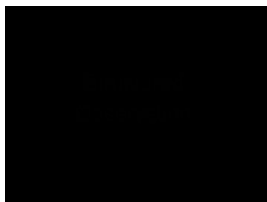
Studying Child Development: Contexts for Gathering Data

- Naturalistic observation: Study children in their usual environments—home, play, school.



Studying Child Development: Contexts for Gathering Data

- Structured observation: Research based on studying children engaging in designed tasks or situations, usually in a laboratory.



Correlation and Causation

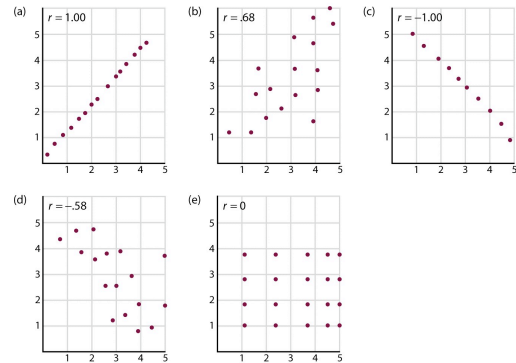
- Variables are attributes that vary across individuals and situations.
- Behavioral research is concerned with determining if and how many of these variables are related.
- **Correlational** and **experimental** designs are the two main ways of doing this.

Correlational Designs

- Correlation is the relationship between two variables.
- Correlations can be either positive or negative in direction.
- The **direction** and **strength** of a correlation are indicated by a statistic known as the correlation coefficient.

+ 0.56

Correlations—Five Variations



Correlation vs. Causation

- **Correlation does not equal causation.**
 - Correlation does not tell you if one variable causes another.
 - There may be a third variable.
- Finding causation requires an experiment.

Experimental Designs

- Experiment can prove causation if the participants are **similar enough** to one another and are tested in same situation.
 - **Random assignment** ensures that comparable research subjects submit to same experimental setting.
 - **Experimental control**: One group is tested in the experiment and one group—the control group—is not.

Experimental Control

- Independent variable: The experience that the experimental group is exposed to.
- Dependent variable: The behavior that is affected by exposure to the experiment.

Designs for studying development

- Cross-sectional - compare children of different ages on a given behavior
- Longitudinal - follow group of children over substantial period of time
- Microgenetic - follow group of children closely as behaviors appear.