

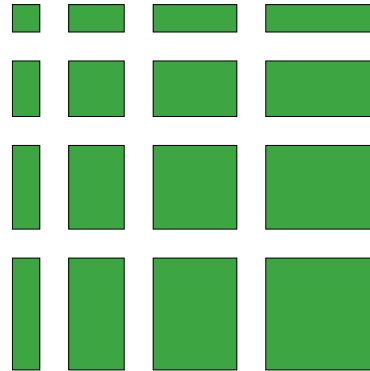
## “We study children in order to understand adults”

Is This true?

Why not bypass children and study adults directly by studying their past lives? Historical perspective?

Retrospective reporting. Can we trust our memories?

Can adult behavior be easily analyzed into its constituent parts?



Reproduce matrix with the top leftmost rectangle here



## Abilities used to reproduce matrix

1. Systematic visual search
2. Ability to comprehend verbal instructions and maintain a set over time.
3. Attention to 2 attributes or dimensions at once (height and width).
4. "Subitizing" no. of elements or row and column, tacit multiplication of 4x4 table.
5. Understanding of graded series. Any x is higher than x-1 and lower than x+1. You wouldn't see this series as haphazard.
6. Grasp of Euclidean coordinates- horizontal and vertical.
7. Ability to draw squares and rectangles, notion of angles.
8. Grasp of geometric transformations in space.
9. The use of simple rules to generate figure. Not rote memory.

## Encouragement of Child Study

Early philosophical perspectives on childhood

- Original sin (Hobbes): Children are selfish and must be restrained by society
- Innate purity (Rousseau): Children know right and wrong, but society corrupts them
- Tabula rasa (Locke): Children are a "blank slate" – experiences determine outcomes

Industrial revolution brought changes in the family affected perspectives on children

- Father leaves for work
- Agrarian culture, children asset, but liability in IR
- Abuses in child labor
- Need for a well educated work force
- Improvement in standard of living created increased focus on family

## The Two Faces of Developmental

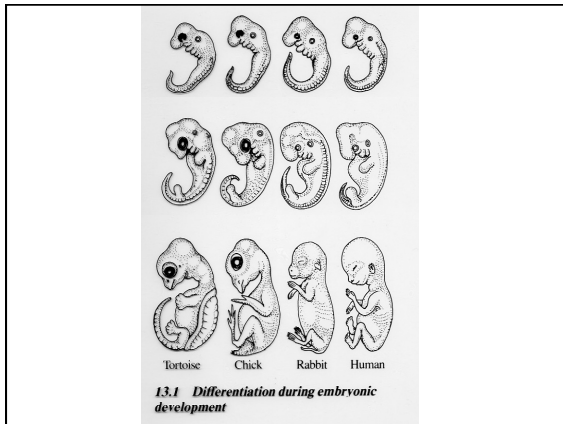
Historical influences have tended to encourage two approaches:

### Applied.

- Child Study Movement - social forces in society created a need for those who understood the development of children.
- Developmental psychology seen as the **application of knowledge to solve practical problems**. To optimize development.

### Scientific.

- Developmental psychology seen as a **source of scientific exploration into the study of human behavior**.
  - Evolutionism - the theory of evolution seemed to suggest that the study of children could answer theoretical questions. "Ontogeny recapitulates phylogeny": G. Stanley Hall (1844-1924), Sigmund Freud (1865-1939), and Jean Piaget (1896-1980).



## Developmental Psychology

### Definition:

Developmental psychology is the scientific discipline concerned with describing and explaining age-related changes in behavior and mental processes. "Womb to tomb."

We would like to explain the changes that occur that appear to be systematic, that show a direction toward greater complexity, and separate them from changes that are temporary or random. Basically two types:

- Change that is the result of a general maturational process based on biology.
- Change that is the result of experience, leading to permanent changes or learning.

Given the applied approach, often the goal is to optimize development to make changes easier, more enjoyable, or in some cases earlier.

## Important Questions in Developmental Psychology

1. Your aunt is visiting with her two year old son, and is constantly following him around trying to avert disaster. In exasperation, she complains: "I sure will be glad when the terrible twos come to an end." What does her statement imply about the course of development?
  - Issue: Continuous vs. discontinuous development, are there stages?
  - Your aunt suggests that development involves discontinuous stages in which child respond differently than the stage that precedes and the stage that follows. Each stage has distinct characteristics that describe the child's behavior.
2. You are talking with your friends about Chris who dropped out of high school, became a heavy drug user and was recently incarcerated in prison. Janet says: "I am not surprised. His father spent half his life in jail." What issue is Janet bringing up?
  - Issue: Nature vs. Nurture.
  - Are we determined by our genes or our experience?

## Important Questions in Developmental Psychology

3. You are looking for a new puppy for your family and you talk with a respected breeder for advice. One of her statements surprises you: "Be sure the puppy is well socialized to people between 6 and 10 weeks or you will have a dog that is shy and fearful around people." What is the issue she is bringing up?
  - Issue: Are there critical periods in development.
  - What experiences in childhood irreversibly determine later development?
  - Freud's Assertion that experiences in early childhood determine later adult development.
4. John Watson declared: "Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select – doctor, lawyer, artist, merchant-chief and, yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors." What issue is being contested in Watson's statement?
  - Issue: Does the child actively contribute to its development or is it passively shaped by experiences?
  - Can an infant actively contribute to its development?

## Theories

### Theories:

1. Provide us with a framework in which we can describe and remember phenomena.
2. They also provide us with predictions about behavior. Behavior we may not have observed.
3. They guide research, by focusing efforts on what are "important problems".
4. They compete with one another, which helps to bring a broader perspective on behavior, and a more accurate description and explanation.

### Can theories be proven?

- No. Theories can be tested but they are never proven?

## Theories

Theories can simply describe changes in development, or attempt to explain them. The "Terrible Twos."

Development is a holistic process and theories need to take into account how different factors come together to explain phenomena:

- Physical growth
- Cognitive aspects of development
- Psychosocial aspects of development

The "Terrible Twos" is the result of increasing physical capabilities, the child's understanding that he or she is capable of independent action, and the parent's attempt to control the child which may frustrate their goal activity.

## Making Scientific Sense of Children's Behavior

Science begins by hypothesizing why people VARY in important ways that can be measured (variables).

Variables are theoretical constructs. We believe they exist and that there is evidence for them.

Some important variables:

- Intelligence, self esteem, depression, attachment, aggressiveness, being in love, kind, persistent, punitiveness, etc..
- Variables are measured through Operational Definitions which specifies an objective, empirical procedure to do that.

## Scientific Method

In the Scientific Method:

- We use **objective**, empirical means to gather data that is available to anyone following our procedure
- We determine the phenomena we want to explain is a **reliable** phenomena in the real world
- We provide an interpretation which is **valid** for why they phenomenon exists

## A test case -- Brennan, Ames & Moore



4 squares

3 weeks



64 squares

8 weeks



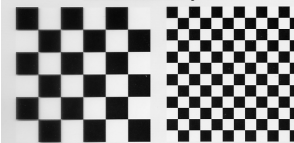
576 squares

14 weeks

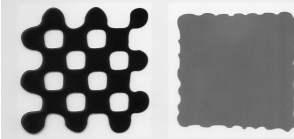
"As children grow older they increase in psychological complexity as evidenced by their preferences for checkerboards."

## The Way Two Checkerboards Differing in Contrast Look to Infants in the First Few Weeks of Life

Two checkerboards differing in contrast



Appearance of checkerboards to very young infants



## The Scientific Study of Human Behavior

Important advances in the scientific study of human behavior occurs with the observation that two variables are correlated.

Remember back when you were 6, and you got a spanking from one of your parents for picking on your younger brother.

Parental punitiveness and aggressiveness

## Operational Definitions of Variables

Children differ in aggressiveness. We want a valid measure of aggressiveness. Ways to measure:

1. I ask the child's parents to rate their child from 1 to 10 in aggressiveness.
2. I ask the child's teachers to rate the child from 1 to 10 in aggressiveness.
3. I count the number of times a child intentionally uses physical force to cause pain, anguish, discomfort.
4. I count the number of times a child verbally belittles, says things to create hurt feelings, or calls another child names.

Are 3 and 4 both measures of aggression? What if they correlate only weakly.

How would you measure parental punitiveness?

### Correlational Study (Natural or Quasi Experiment) of Punitiveness and Aggression

Parental Punitiveness	Child's Aggressiveness
Severe	99
Moderate	72
Mild	33
Non-punitive	7

Is there an independent and dependent variable?

Can we conclude?

- Parents who are punitive tend to raise aggressive children
- Punitive parenting causes children to become aggressive

### Extraneous and Confounding Variables

Extraneous Variables

- Any variables other than the independent variable that seem likely to influence the dependent variable in a specific study.

Confounding of Variables

- Occurs when extraneous variables are linked to the independent variable (variable presumed to be causal) in a way that makes it difficult to determine the specific effects of each.

How can you control confounding of variables?

Experimental studies control confounding of variables through random assignment, correlational studies do not.

### Experimental Study of Relationships

Parental Punitiveness	Child's Aggressiveness
Severe	99
Moderate	72
Mild	33
Non-punitive	7

Do we have an independent variable? Is it free from extraneous variables?

Can we conclude?

- Parents who are punitive tend to raise aggressive children
- Punitive parenting causes children to become aggressive

### Correlational and Experimental Studies

Scientists use both types of studies but they are careful in the conclusions they make for each one.

**Correlational**

- The investigator does not intervene or control what is happening, but observes.
- Investigator can describe which variables are related and the strength of the relationship.
- But since subjects self-select themselves into groups, extraneous variables can confound correlational studies making causal statements impossible.

**Experimental**

- Investigator not satisfied to simply observe, but carefully controls the **independent variable** to observe its effects on the **dependent variable**.
- Investigator can conclude the relationship between variables is causal because all extraneous variables are controlled.
- Field Experiments

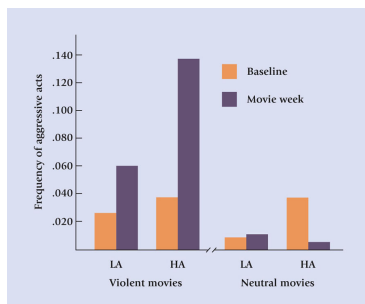


Figure 1.5 Mean physical aggression scores in the evening for highly aggressive (HA) and less aggressive (LA) boys under baseline conditions and after watching violent or neutral movies. ADAPTED FROM LEVENS ET AL., 1975.

### Why it is important for you to know the basics of the Scientific Method?

Do you take Prozac?

Would you vaccinate your child?

Should you spank your child if he/she misbehaves?

Do all children who are labeled autistic or ADHD suffering from a clinical disorder?

### Breast or Bottle

In a study comparing women who breast or bottle feed their infants, it was found that the longer a mother breastfed her infant from birth to about 6 months the more likely it was that children showed evidence of positive development. Mothers who breastfed until 9 months showed no relationship to positive development compared with mothers who bottle fed.

### Benefits of Breastfeeding

- Correct fat-protein balance
- Nutritionally complete
- More digestible
- Better growth
- Disease protection
- Better jaw and tooth development
- Easier transition to solid food

### Watching TV Makes Teens Sexual

Children who watched a lot of TV with sexual content were about twice as likely to start having intercourse during the subsequent year as those with little exposure to televised sex, researchers found. *Pediatrics*, September 2004.

The results are based on nationwide telephone surveys of 1,792 adolescents queried in 2001 and again in 2002.

The researchers devised a list of 23 popular shows that on average featured abundant sexual content ("That '70s Show," "Friends" and "Sex and the City" - all popular with teens.

Participants then were asked how often they watched those 23 shows. They also were asked whether they engaged in various sexual activities; results were compared from the two surveys.

The number of teens who watched shows with heavy sexual content, reported having had intercourse more often, 36% versus 18%, as well as other sexual experiences, 75% versus 62%.

### When a dog just won't do February 21, 2008

Here, kitty kitty ...

A new study suggests cat owners are less likely to die of a heart attack or stroke than people who, well, don't own cats.

And no, dogs don't do the same trick.

The study, by researchers at the University of Minnesota, found that feline-less people were 30 to 40 percent likelier to die of cardiovascular disease than those with cats.

Yet dog owners had the same rate as non-owners. "No protective effect of dogs as domestic pets was observed," said the study, which was presented Thursday at the International Stroke Conference in New Orleans.

Dr. Adnan Qureshi, a stroke expert at the university, said he decided to raise the question because other studies have suggested pets can help reduce stress. He and his team analyzed a group of 4,435 people who had answered questionnaires about pet ownership and other risk factors.

But the cat-dog differential came as a surprise. "We don't understand this completely," he said, but "it's probably not a coincidence."

Asked if he owns a cat, Qureshi replied: "No. Maybe I should get one, though. With this new research, I think the time has come to change."

### If Experimental studies are so great why don't we use them all the time?

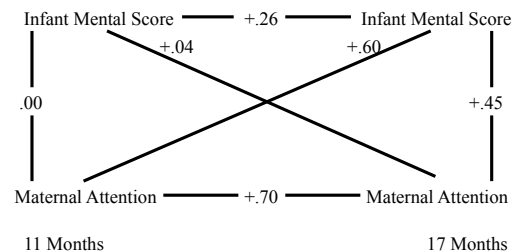
Ecological validity and external validity problems?

- Possible bias of subjects that volunteer.
- Do experiments mirror real-life conditions?
- Natural (quasi-) Experiment** shows high ecological validity but nothing more than a correlational study.
- Field experiment:** Experimental procedure used in a natural environment. Can show cause and effect under more representative situations.

Some things can only be studied by correlational methods. Which method would you use to study the following? Correlational or Experimental?

- The effects of single parenting on academic development.
- The effects of praise in encouraging persistence.
- The effects of rejection on self esteem.
- Do females have lower mathematical abilities.

### Can correlational studies determine causes?



Does maternal attention foster cognitive growth or do mothers pay more attention to infants that act intelligently?

## The Study of Age Effects

### Cross-Sectional Study (Age differences)

- Measures individuals of different ages

**Time of test, 2010**  
 30 year olds (1980)  
 25 year olds (1985)  
 20 year olds (1990)

#### Benefits:

- Convenient, efficient, cheap, fast.
- Does not permit study of individual developmental trends
- Subject to cohort effects

### Longitudinal Study (Age changes)

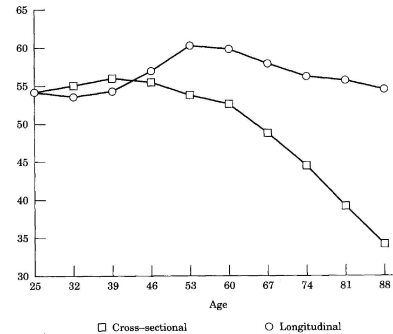
- Measures changes in the individual as they age.

**Times of Testing**  
 2000 2005 2010  
 20(1980) 25(1980) 30(1980)

#### Benefits:

- Expensive, time consuming
- Selective dropout of subjects
- Subjects may become "test wise"
- However, it allows us to look at developmental trends in individuals
- Theoretical and methodological changes in the field can make findings obsolete.

## Cross-Sectional and Longitudinal



## Confounding

	Time of Test			
Cohort	2000	2005	2010	
1980	20	25	30	Longitudinal
1985		20	25	
1990			20	Cross Sectional

In a cross-sectional study, cohort and age are confounded (age changes with cohort).

In a longitudinal study, age is confounded with time of test (age of subject changes with time of test).

What if you asked a survey question: "The world is a scary place to live in."

## Sequential Designs

### Combining longitudinal and cross sectional

	Time of Test			
Cohort	2000	2005	2010	
1980	20	25	30	Longitudinal
1985		15	20	
1990		10	15	Time Lag

In sequential designs Time of Test, Cohort and Age can all be examined to estimate the influences of each.

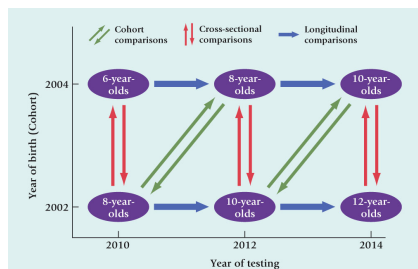


Figure 10.10 Longitudinal and cross-sectional comparisons. The design permits the investigator to assess cohort effects by comparing children of the same age who were born in different years. In the absence of cohort effects, the longitudinal and cross-sectional comparisons in this design also permit the researcher to make strong statements about the strength and the direction of any developmental changes.

## Extra-credit possibility until First Exam

Find an example in the newspaper or a popular magazine of psychological research and send me a copy (must be within the last month).

To receive credit type in the following information on a sheet of paper.

- What is the dependent and independent variable
- Is it a correlational or experimental study?
- Is there a possibility of confounded variables?
- Was the conclusion made in the article justified by the findings (2 pts)?