

Chapter 1

Foundations of Psychology, Contemporary Psychology, Introduction to Scientific Method

Emma Wei Chen, Ph.D.

wei.chen@ku.ac.ae

Lecturer of Psychology

Department of Social Sciences

Office 2110, 2nd floor, Building 2, SAN

Khalifa University of Science and Technology



Learning Objective Questions

- How is psychology a science?
- What are psychology's current perspectives, and what are some of its subfields?
- How do psychologists ask and answer questions?
- What ethical guidelines safeguard human and animal research participants?

What is Psychology?

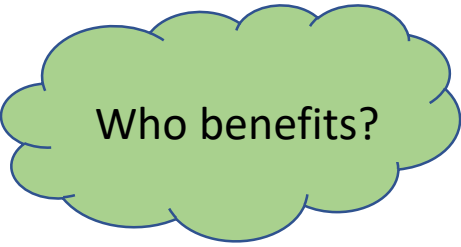
- **Psych** – Soul
 - **Ology** – Scientific study of
 - **Psychology** – Scientific study of the mind and behavior.
-
- Psychologists study everything about the human experience from the basic workings of the human brain to consciousness, memory, language, reasoning, personality and mental health.

Psychology Is a Science

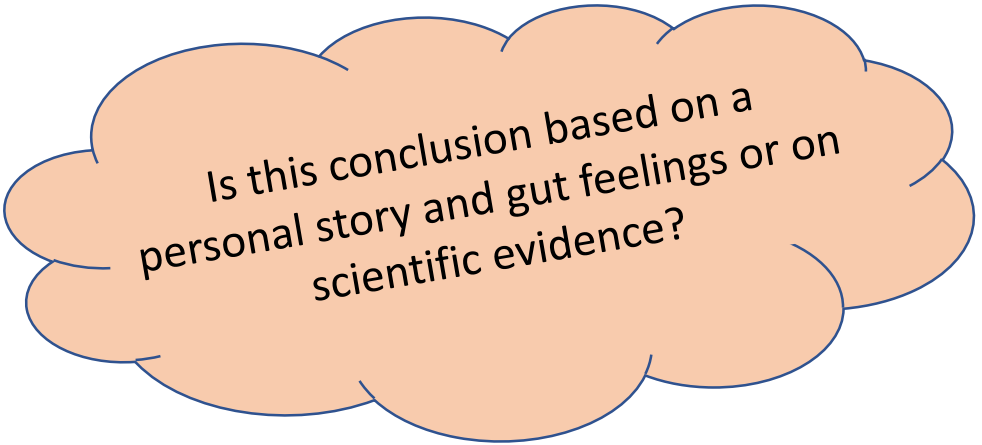
- Psychologists study how we act, think, and feel. They do so with **critical thinking** and the **scientific attitude**.
- **Critical thinking** is thinking that does not blindly accept arguments and conclusions. Rather, it examines assumptions, assesses the source, uncovers hidden values, weighs evidence, and assesses conclusions.



How do they know that?



Who benefits?

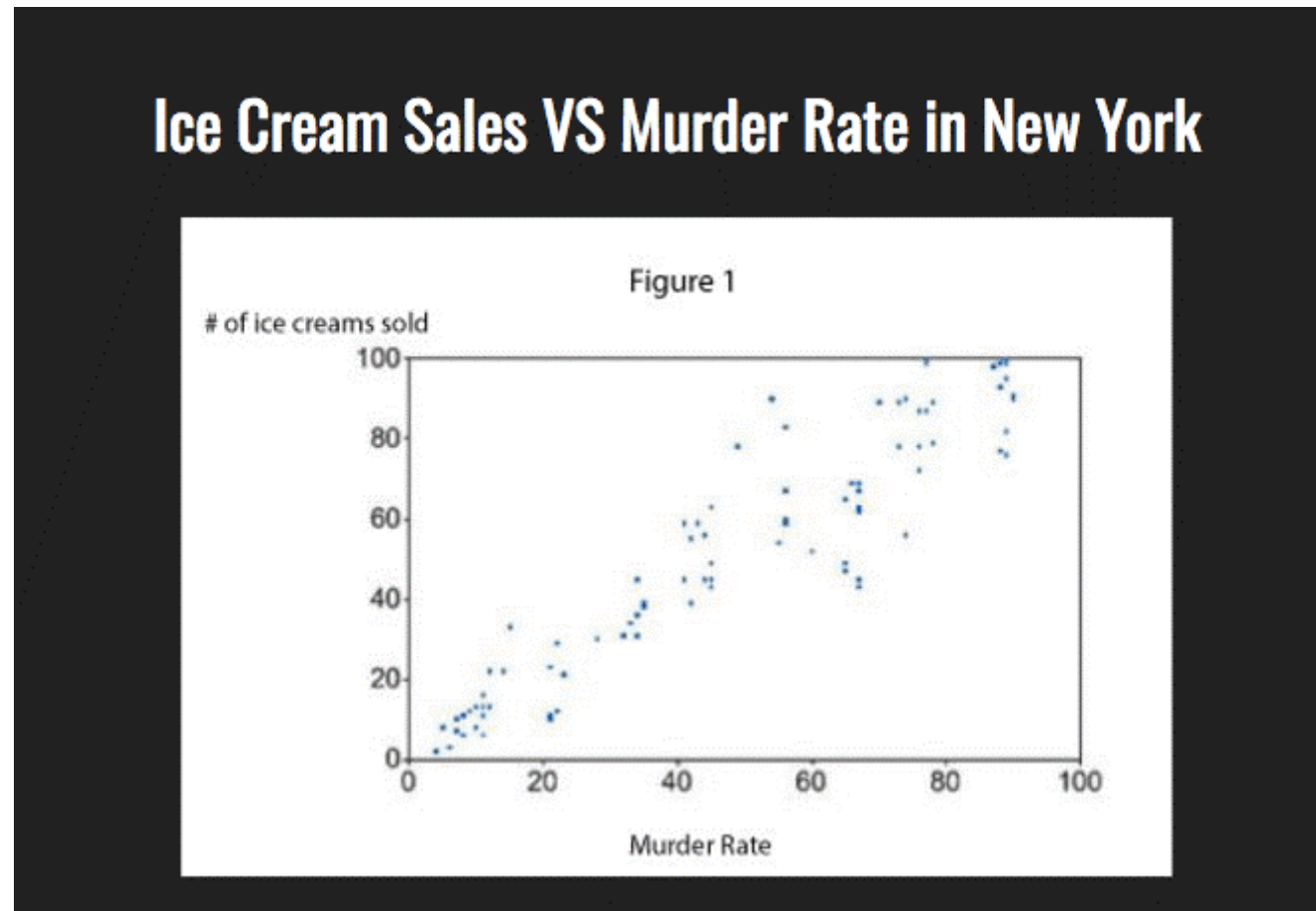


Is this conclusion based on a personal story and gut feelings or on scientific evidence?

Critical Thinking Practice

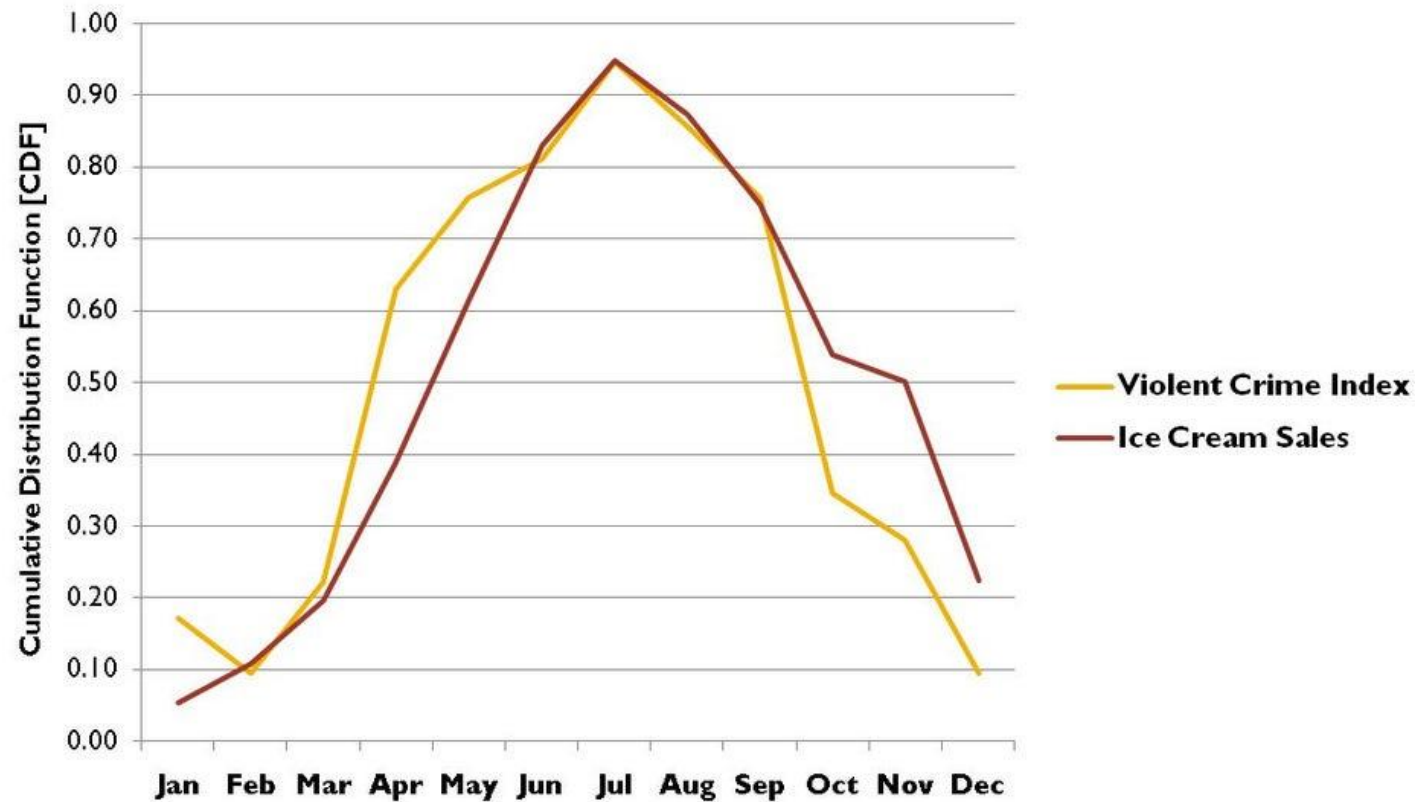


- Ice cream consumption leads to murder? Why yes or why not?



Critical Thinking Practice

- Ice cream consumption leads to murder? Why yes or why not?



Scientific Attitude

- Three main key elements

Curiosity

Does it work?

e.g., Are stress levels related to health and well-being?

Skepticism

What do you mean?
How do you know?

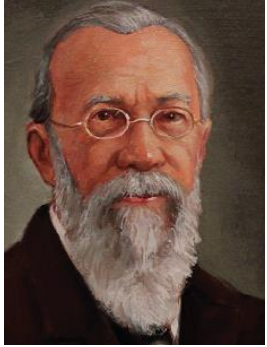
e.g., Does high stress level cause health issues?

Humility

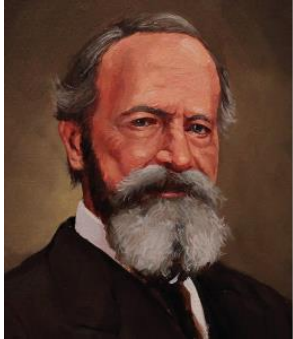
This was unexpected!
Let's explore further.

Researchers must be willing to be surprised and follow new ideas.

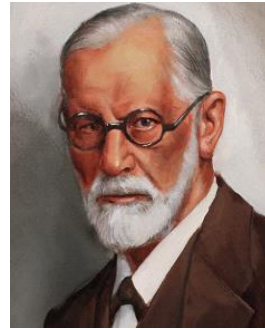
Brief History of Psychology



Wilhelm Wundt

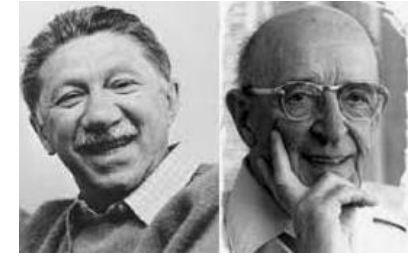


William James and Mary Calkins



Sigmund Freud: **Psychanalytic Psychology**

Today's psychologists do not support Freud's theory of sexuality. It does, however, agree that much of the human mind operates outside of our conscious awareness.



Maslow and Rogers

Humanistic Psychology

Focus on human needs for love and acceptance, and environments that nurture or limit personal growth.

Starts in 1879

1920s

1960s

Structuralism vs Functionalism

Created a machine to measure how long it took people to press a telegraph key after hearing a ball hit a platform. It was psychology's first experiment.

James authored an important 1890 psychology textbook. He mentored Calkins, who became the first woman to be the president of the American Psychological Association.

Behaviorist



Watson, Rayner, and Skinner

Psychology must be "the scientific study of observable behavior."

**Cognitive Psychology
Cognitive Neuroscience**



Ulric Neisser

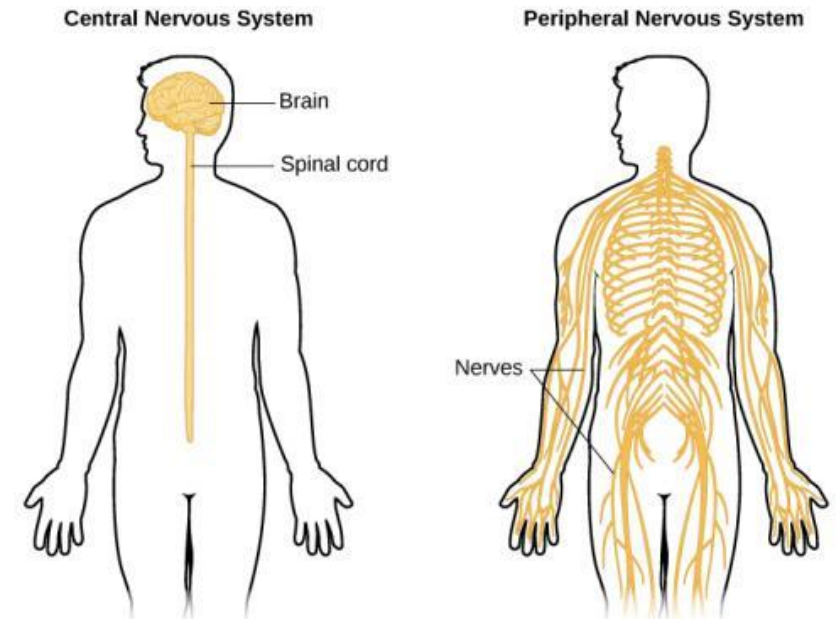
The study of mental processes, such as occur when we perceive, learn, remember, think, communicate, and solve problems.

Today's Psychology: Subfields

- A non-exhaustive list:
 - Biological Psychology
 - Developmental Psychology
 - Cognitive Psychology
 - Personality Psychology
 - Social Psychology
 - Industrial-Organizational Psychology
 - Clinical Psychology
 - Health Psychology

Biological Psychology

- Biological psychologists study how the structure and function of the nervous system generate behavior.
- Research can include:
 - Sensory and motor systems
 - Sleep
 - Drug use and abuse
 - Digestive behavior
 - Reproductive behavior
 - Neurodevelopment
 - Plasticity of the nervous system
 - Biological correlates of psychological disorders



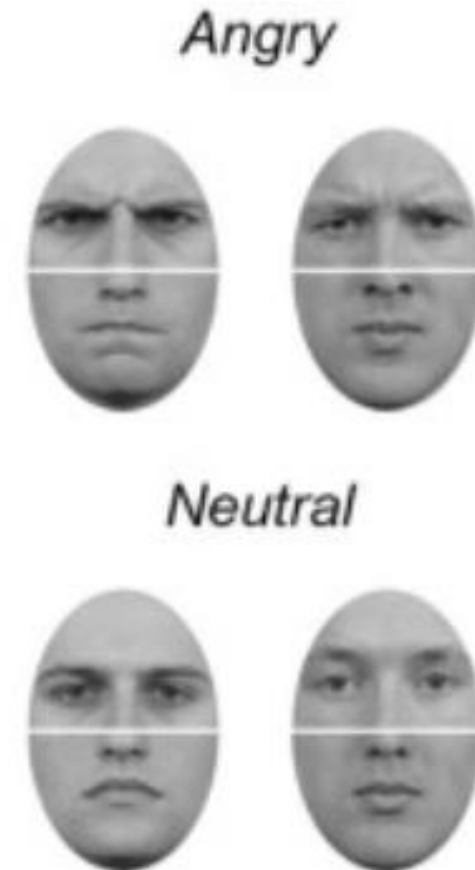
Developmental Psychology

- Developmental psychology studies the physical and mental attributes of aging and maturation.
- This can include various skills that are acquired throughout growth.
 - Moral Reasoning
 - Cognitive Skills
 - Social Skills
- Jean Piaget is famous for his theories regarding changes in cognitive ability that occur as we move from infancy to adulthood.



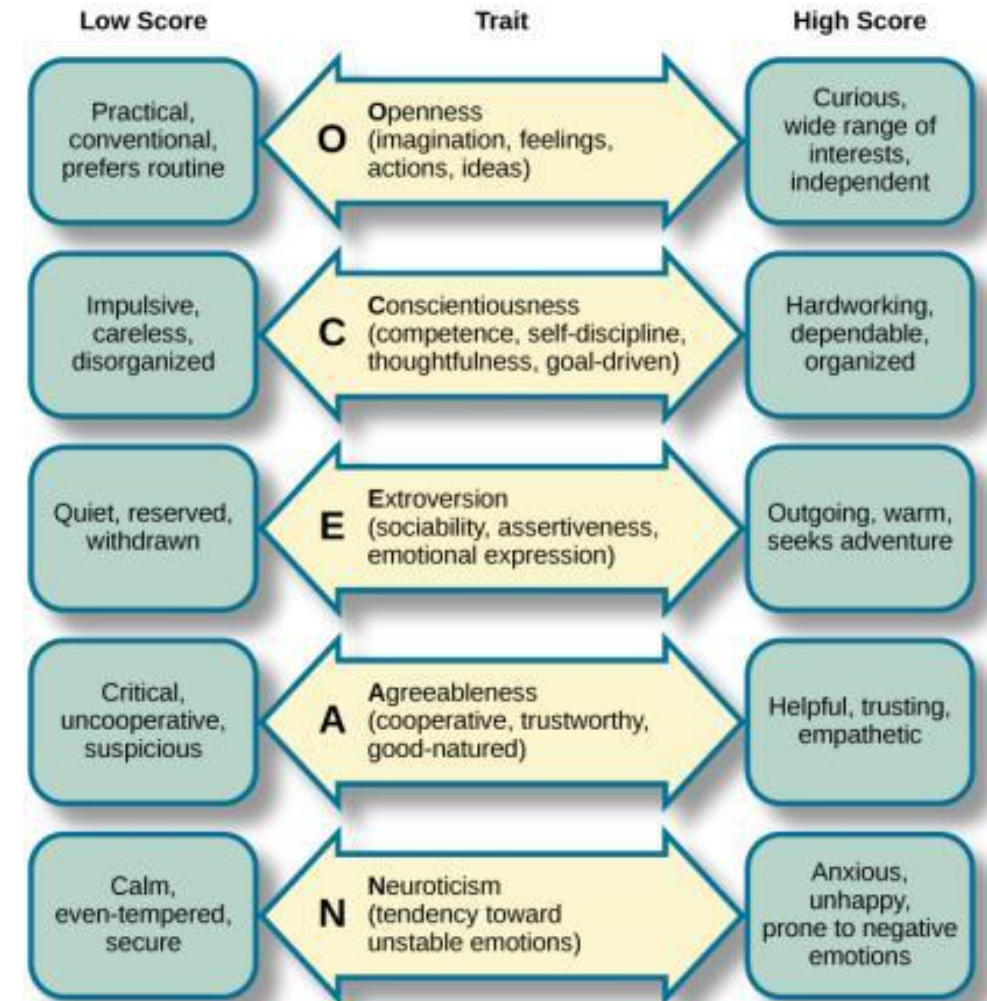
Cognitive Psychology

- Focuses on studying cognitions, or thoughts, and their relationship to our experiences and our actions.
- Research can include:
 - Learning
 - Memory
 - Object recognition
 - Language
 - Problem solving
 - ...



Personality Psychology

- Focuses on behaviors and thought patterns that are unique to each individual.
- Studies in this field include conscious and unconscious thinking and identifying personality traits.
- **FIVE FACTOR MODEL**
- Each of the dimensions of the Five Factor model is shown in this figure.
- The provided description would describe someone who scored highly on that given dimension. Someone with a lower score on a given dimension could be described in opposite terms.



Social Psychology

- How individuals interact and relate with others and how such interactions can affect behavior.
 - Prejudice
 - Attraction
 - Interpersonal conflicts
 - Obedience
 - ...

Public Announcement

**WE WILL PAY YOU \$4.00 FOR
ONE HOUR OF YOUR TIME**

Persons Needed for a Study of Memory

*We will pay five hundred New Haven men to help us complete a scientific study of memory and learning. The study is being done at Yale University.

*Each person who participates will be paid \$4.00 (plus 50c carfare) for approximately 1 hour's time. We need you for only one hour: there are no further obligations. You may choose the time you would like to come (evenings, weekdays, or weekends).

*No special training, education, or experience is needed. We want:

Factory workers	Businessmen	Construction workers
City employees	Clerks	Salespeople
Laborers	Professional people	White-collar workers
Barbers	Telephone workers	Others

All persons must be between the ages of 20 and 50. High school and college students cannot be used.

*If you meet these qualifications, fill out the coupon below and mail it now to Professor Stanley Milgram, Department of Psychology, Yale University, New Haven. You will be notified later of the specific time and place of the study. We reserve the right to decline any application.

*You will be paid \$4.00 (plus 50c carfare) as soon as you arrive at the laboratory.

TO:
PROF. STANLEY MILGRAM, DEPARTMENT OF PSYCHOLOGY,
YALE UNIVERSITY, NEW HAVEN, CONN. I want to take part in
this study of memory and learning. I am between the ages of 20 and
50. I will be paid \$4.00 (plus 50c carfare) if I participate.

NAME (Please Print)

ADDRESS

TELEPHONE NO. Best time to call you

Milgram's electric shock experiment

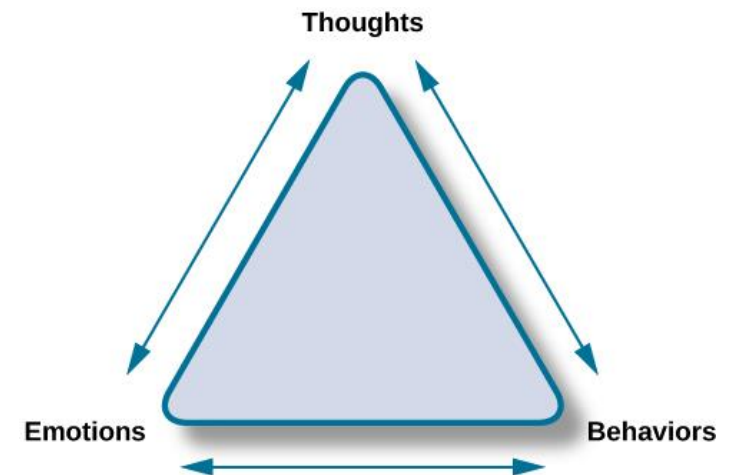
Industrial-Organizational Psychology

- Branch that applies psychological theories, principles and research to industrial and organizational settings.
- Involves issues related to personnel management, organizational structure and workplace environment.

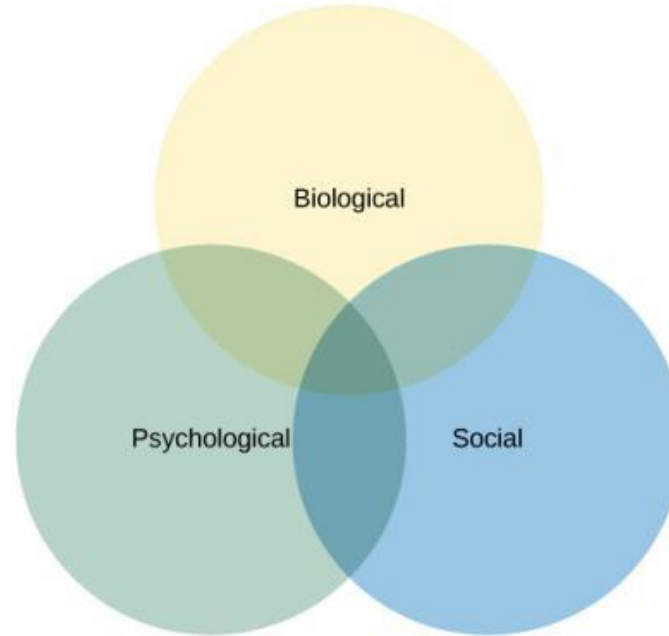
Clinical Psychology

- Branch that studies, assesses, and treats people with psychological disorders.
- Study involves clinical therapy and counseling.

Cognitive-behavioral therapists take cognitive processes and behaviors into account when providing psychotherapy. This is one of several strategies that may be used by practicing clinical psychologists.



Health Psychology



- Branch that focuses on how individual health is directly related or affected by biological, psychological, and sociocultural influences.
- The biopsychosocial model suggests that health/illness is determined by an interaction of these three factors.



Socratic Time!
HUMA140EMMA

The Biopsychosocial Approach

- An approach that integrates different but complementary views from biological, psychological, and social-cultural viewpoints.



A SMILE IS A SMILE THE WORLD AROUND

The Biopsychosocial Approach

- The Nature-Nurture Issue: How do we judge the contributions of *nature* (biology) and *nurture* (experience)?
 - How are intelligence and personality difference influenced by heredity and by environment?
 - Can life experiences affect the expression of the genes we inherit?
 - Should we treat depression as a disorder of brain or a disorder of thought – or both?

#Neural plasticity (Chapter 2)

#Epigenetics (Chapter 3)

Dual Processing With Our Two-Track Mind

- Our perception, thinking, memory, and attitudes all operate on two levels:
 - (1) a conscious, aware track, e.g., solving a chemistry problem;
 - (2) an unconscious, automatic, unaware track, e.g., making quick decisions based on intuitions.
- It has been a surprise to learn how much information processing happens without our awareness.

#Memory (Chapter 7)

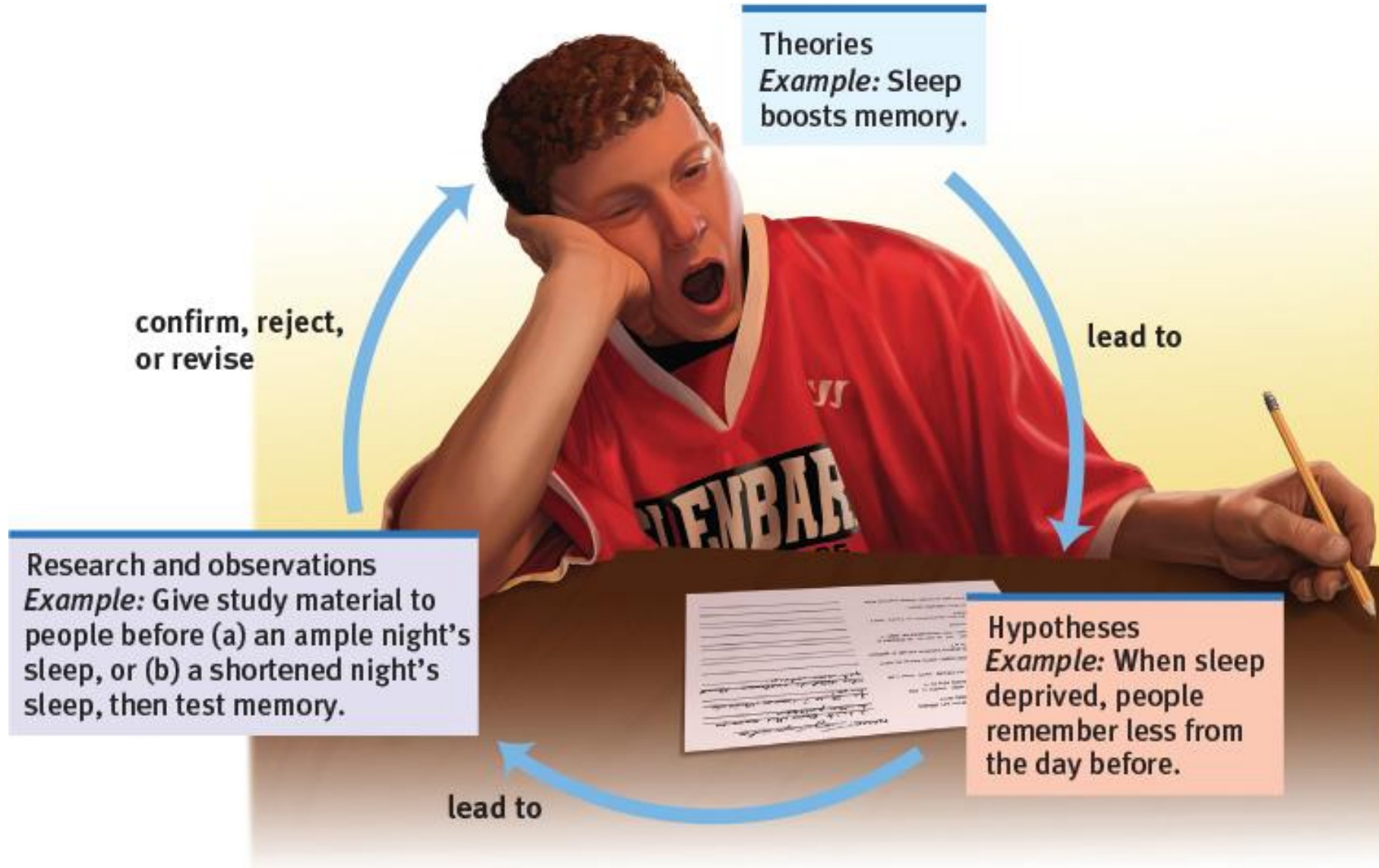
Positive Psychology

- The scientific study of human flourishing, with the goals of discovering and promoting strengths and virtues that help individuals and communities to thrive.
- Positive psychologists explore:
 - Positive emotions
 - Positive character traits
 - positive institutions

How Do Psychologists Ask and Answer Questions

- The Scientific Method
- In science, a **theory** explains behaviors or events by offering ideas that organize what we have observed.
- A good theory produces testable predictions, called **hypotheses**. Such predictions specify what results (what behaviors or events) would support the theory and what results would cast doubt on the theory.

The Scientific Method



Types of Researches

- Descriptive Research
 - describe behaviors, often by using (as we will see) case studies, naturalistic observations, or surveys.
- Correlational Research
 - associate different factors. Describe how these factors covary with each other.
- Experimental Research
 - manipulate, or vary, factors to discover their effects.

Descriptive Research: The Case Study

- A **case study** examines one individual or group in depth, in the hope of revealing things true of us all.
- The studied individual is typically in an extreme or unique psychological circumstance that differentiates them for the general public.
 - Allows for a lot of insight into a case.
 - Difficult to generalize results to the larger population.



e.g., Phineas Gage

Descriptive Research: Naturalistic Observation

- **Naturalistic observations** watching and recording individual or group behavior in a natural setting.

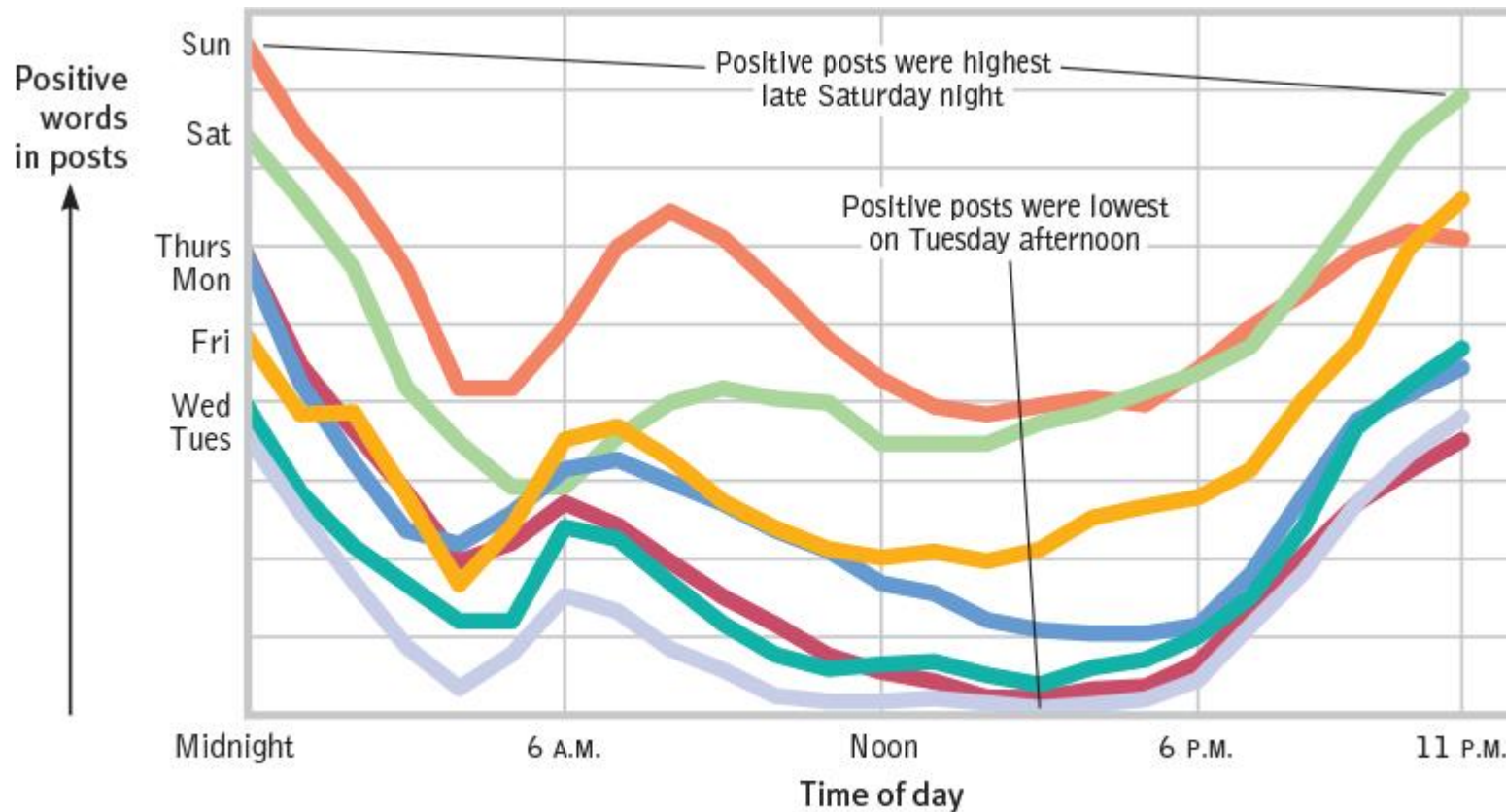


FIGURE 1.2 Twitter message moods by time and by day This graph illustrates how, without knowing anyone's identity, research can use "big data" to study human behavior on a huge scale. Many options are possible, such as an association between mood and weather, or the spread of ideas through social networks. (Data from Golder & Macy, 2011.)

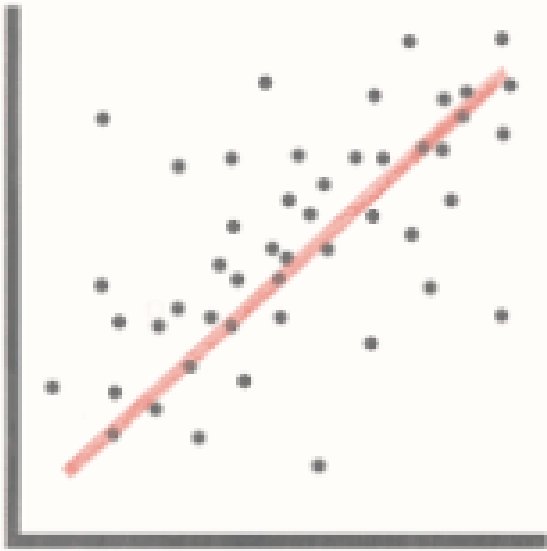
Descriptive Research: Surveys and Interviews

- **Surveys and Interviews** are self-reports in which people answer questions about their behavior or attitudes.
 - Paper-and-pencil
 - Electronically
 - Verbally
- Surveys can be used to gather a large amount of data from a sample (subset of individuals) from a larger population.
- Mindful about two issues:
 - Wording effects
 - Random sampling

Correlational Research

- Naturalistic observations and surveys often show us that one trait or behavior relates to another. In such cases, we say the two **correlate**.
- A statistical measure (the correlation coefficient) helps us figure how closely two things vary together, and thus how well either one predicts the other.

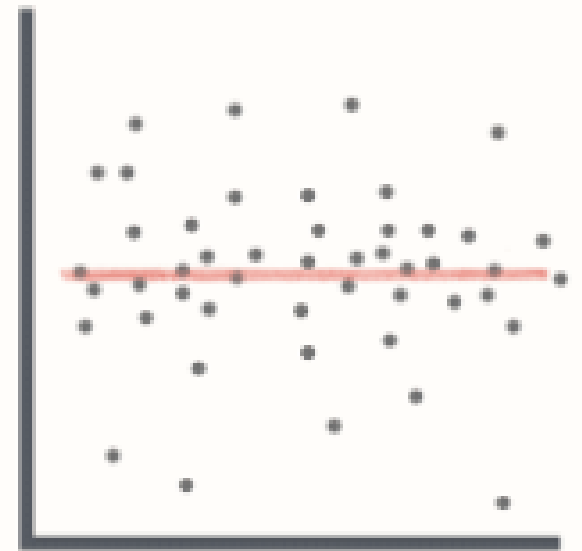
Positive vs Negative Correlation



(A)



(B)



(C)



Correlation \neq Causation

- e.g., Self-esteem correlates negatively with (and therefore predicts) depression.
- Does that mean low self-esteem causes depression?

Correlation vs Causation

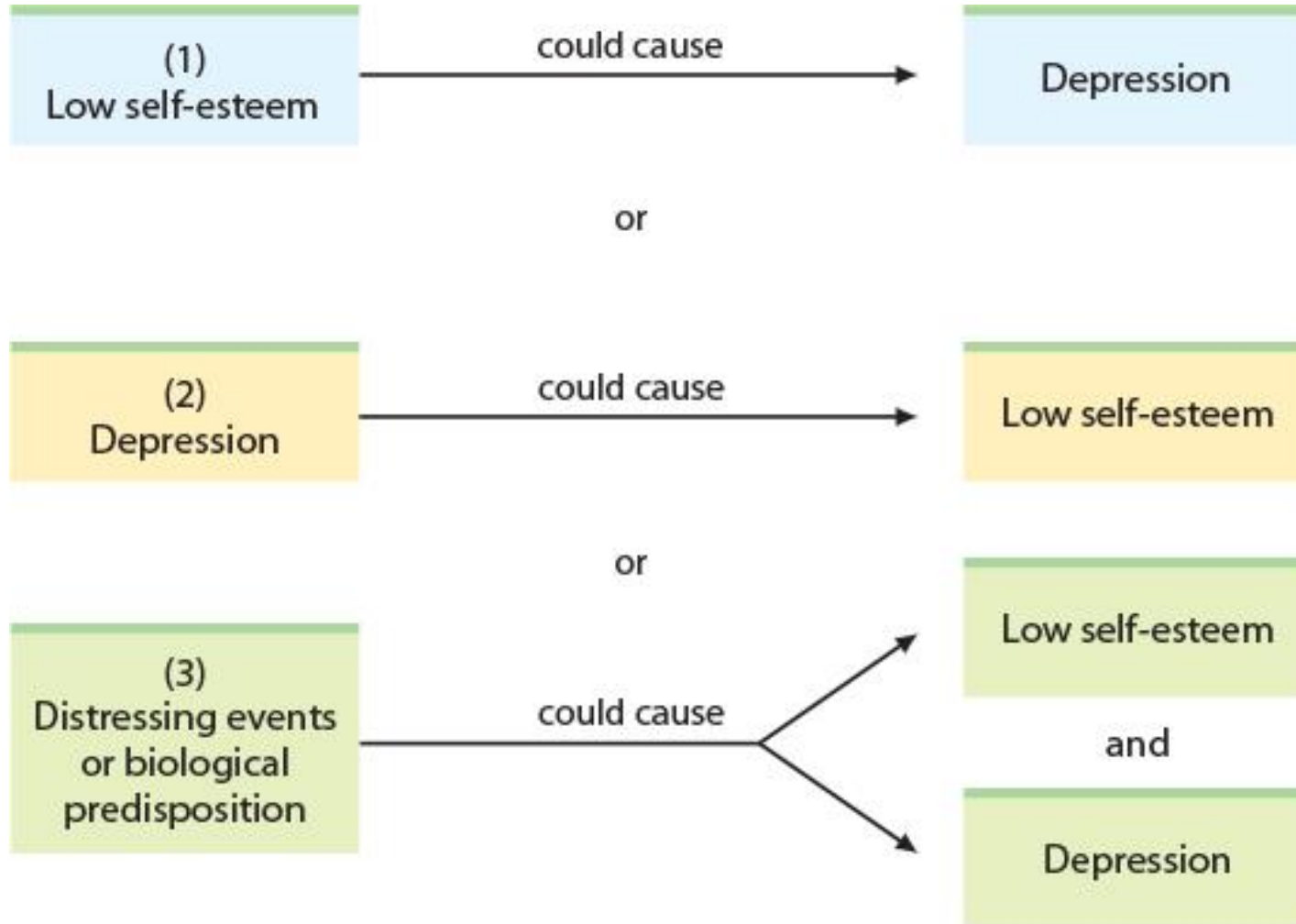


Figure 1.3

Myers/DeWall, *Psychology in Everyday Life*, 4e, © 2017 Worth Publishers

FIGURE 1.3 Three possible cause-effect relationships People low in self-esteem are more likely to report depression than are those high in self-esteem. One possible explanation of this negative correlation is that a bad self-image causes depressed feelings. But, as this diagram shows, other cause-effect relationships are possible.

Experimental Research

- The only way to establish that there is a cause-and-effect relationship between two variables is to conduct a scientific **experiment**.
- With experiments, researchers can focus on the possible effects of one or more factors by
 - *manipulating* the factors of interest.
 - *holding constant* (“controlling”) other factors.

Experimental Research

Random assignment
(controlling for other confounding variables such as parental intelligence and environment)

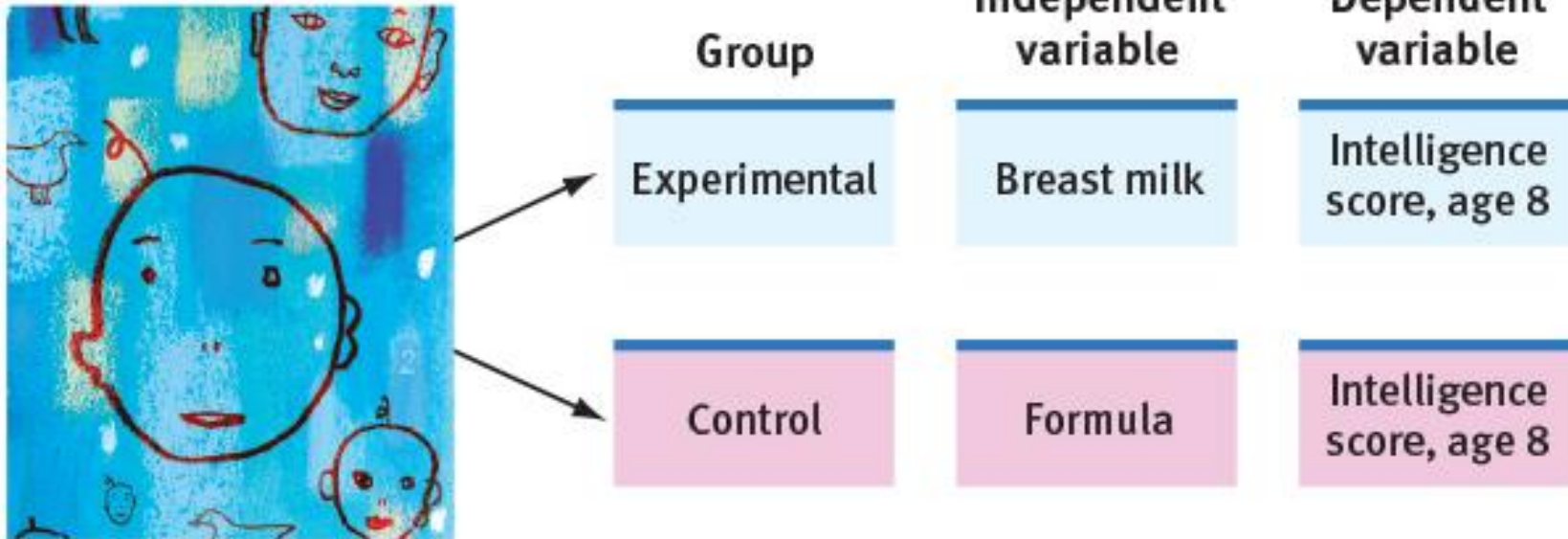


Figure 1.4
Myers/DeWall, *Psychology in Everyday Life*, 4e, © 2017 Worth Publishers
Wertz

FIGURE 1.4 Experimentation To study cause and effect, psychologists control for confounding variables by randomly assigning some participants to an experimental group, others to a control group. Measuring the dependent variable (intelligence score in later childhood) will determine the effect of the independent variable (type of milk).

How Would You Know Which Research Design to Use

Research Method	Basic Purpose	How Conducted	What Is Manipulated	Weaknesses
Descriptive	To observe and record behavior	Do case studies, naturalistic observations, or surveys	Nothing	No control of variables; single cases may be misleading.
Correlational	To detect naturally occurring relationships; to assess how well one variable predicts another	Collect data on two or more variables; no manipulation	Nothing	Does not specify cause and effect.
Experimental	To explore cause and effect	Manipulate one or more factors; use random assignment	The independent variable(s)	Sometimes not possible for practical or ethical reasons.

Psychology's Research Ethics

- **Animal Studies**
- Psychologists also study animals to learn about people. Animal experiments have therefore led to treatments for human diseases—insulin for diabetes, vaccines to prevent polio and rabies, transplants to replace defective organs.
- American Psychological Association (APA) guidelines state that researchers must ensure the “comfort, health, and humane treatment” of animals and minimize “infection, illness, and pain” (APA, 2002). Most universities screen research proposals, often through an animal care ethics committee, and laboratories are regulated and inspected.

Psychology's Research Ethics

- **Human Studies**
- Research involving human participants must adhere to strict guidelines.
- **Institutional Review Board (IRB)** – Committee of administrators, scientists, and community members that reviews proposals for research involving human participants.
- The APA and Britain's BPS ethics codes urge researchers to
 - obtain the participants' **informed consent** to participate.
 - protect participants from out-of-the-ordinary harm and discomfort.
 - keep information about individual participants confidential.
 - fully **debrief** participants (explain the research afterward).

Use Psychology to Improve Your Life

Psychology studies show that people who live happy, thriving lives

- manage their time to get a full night's sleep.
- make space for exercise.
- set long-term goals, with daily aims.
- have a “growth mind-set.”
- prioritize relationships.

Use Psychology to Become a Better Student

- Psychology's research also show that repeated self-testing and rehearsal of previously studied material helps even more than re-reading, also called the **testing effect**.
- Reading your textbooks, not only the psychology textbook, using the SQ3R Method:
 - **Survey**: quickly scan the headings, and notice the organization
 - **Question**: use Learning Object Question to test yourself before you read, and help you to discover what you don't yet know.
 - **Read**: actively searching for the answer to the question
 - **Retrieve**: quiz yourself using the questions at the end of each section or chapter
 - **Review**: read over your notes, quickly review the whole chapter

The end.