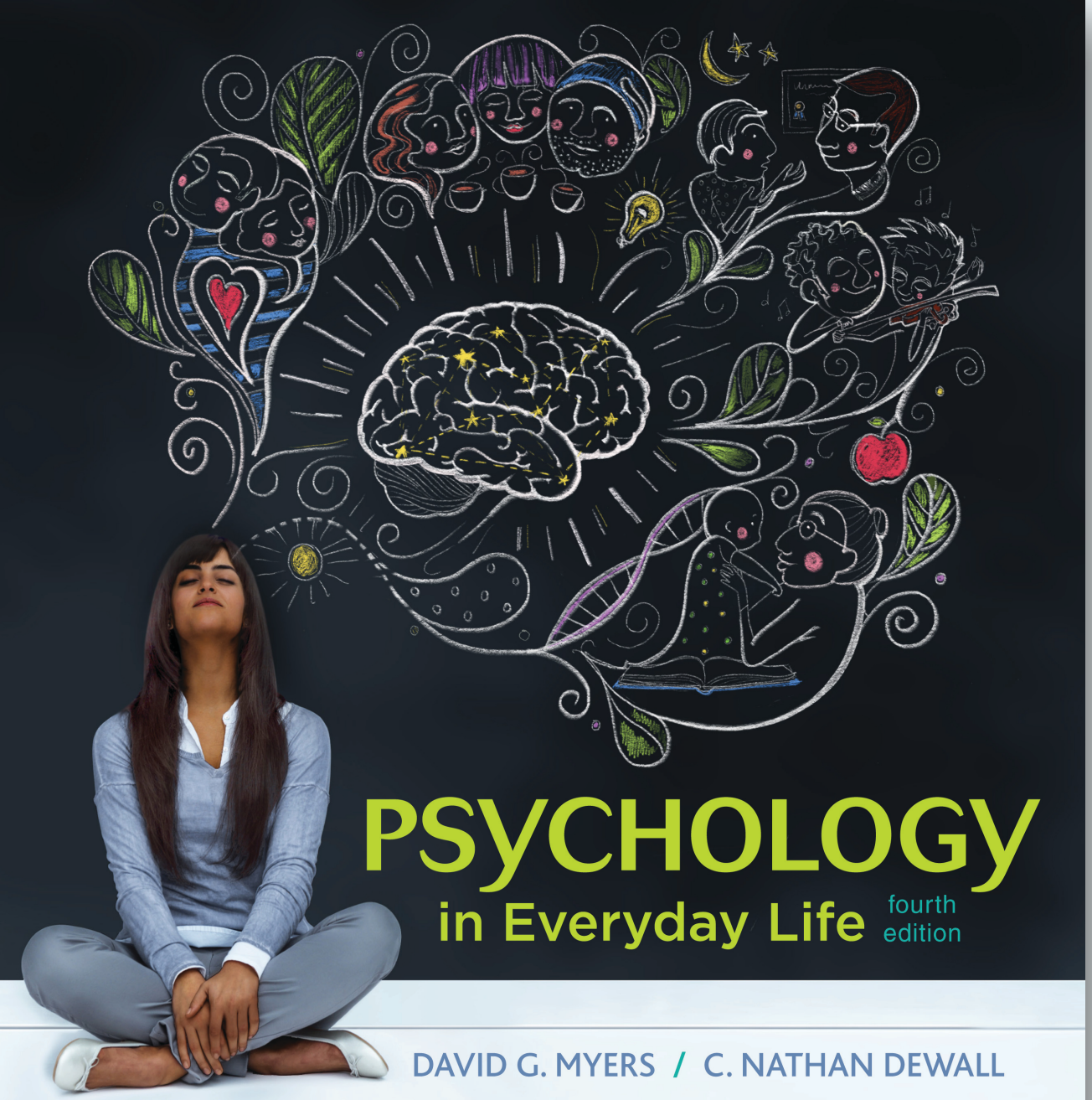

1

Psychology's Roots, Big Ideas, and Critical Thinking Tools

Revised by Pauline Davey Zeece,
University of Nebraska-Lincoln

Chapter Overview

- Psychology's roots
- Four big ideas in psychology
- Why do psychology?
- How do psychologists ask and answer questions?
- Psychology's research ethics
- Use psychology to become a stronger person—and a better student

Psychology's Roots

- Psychological science's birth and development
- Contemporary psychology

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The Scientific Attitude

- Modern science is possible due to three basic attitudes:
  - Curiosity
  - Skepticism
  - Humility

The Scientific Attitude: Curiosity

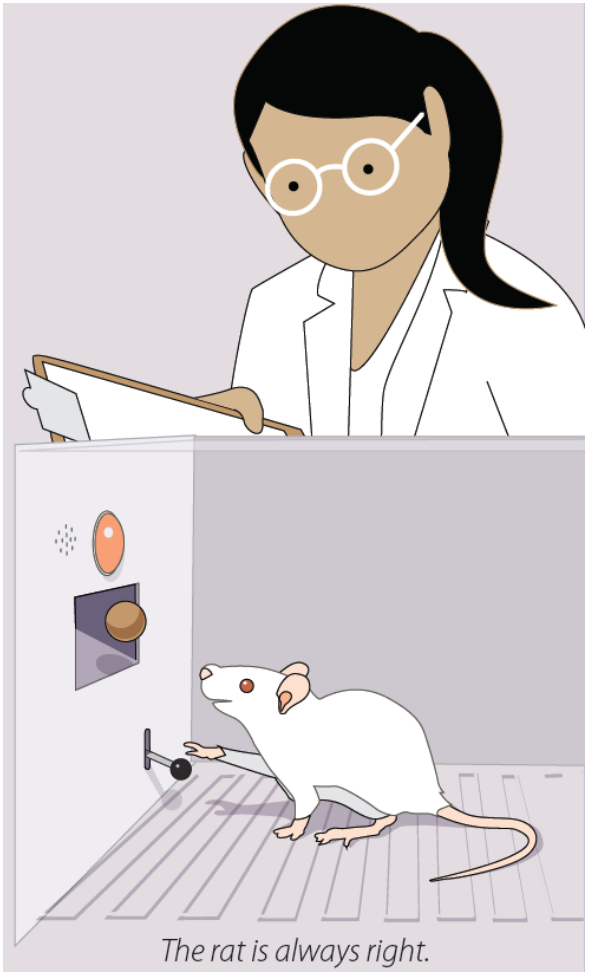
- Research commences with the passion to explore and understand the world without misleading or being misled.
- Questions to consider:
  - Does the idea work?
  - When put to the test, can the idea's predictions be confirmed?

The Scientific Attitude: Skepticism

- Skeptical testing can reveal which claim best matches the facts.
- Sifting reality from fantasy requires a healthy skepticism.
  - Attitude that is not cynical, but not gullible either
- Questions to consider:
  - What does one mean?
  - How does one know?

The Scientific Attitude: Humility

- Researchers can make mistakes and must be willing to be surprised and follow new ideas.
- One's opinions do not matter.
  - Truths revealed in response to one's questioning matter.



Psychology's Earliest Pioneers: Magellans of the Mind

Wilhelm Wundt

Charles Darwin

Ivan Pavlov

Sigmund Freud

Jean Piaget

William James

Mary Whiton Calkins

Margaret Floy Washburn

Early Definitions of Psychology

Groups	Definition
Early pioneers	Science of mental life
Behaviorists	Scientific study of observable behavior
Freudian	Emphasis on unconscious thought processes and emotional responses to childhood experiences
Humanistic psychologists	Stress on people's growth potential
Cognitive psychologists	Scientific exploration of how information is perceived, processed, and remembered
Cognitive neuroscientists	Interdisciplinary study of the brain activity linked with mental activity

Psychology

- Science of behavior and mental processes
  - Behavior - Any action that can be observed and recorded
    - Anything a human or nonhuman animal does
  - Mental processes - Internal states that are inferred from behavior
    - Include thoughts, beliefs, and feelings

Retrieve and Remember 1

- Describe the three parts of the scientific attitude.

- What event defined the start of scientific psychology?

- How did the cognitive revolution affect the field of psychology?

Table 1.1 - Psychology's Current Perspectives

Perspective	Focus	Sample Questions	Examples of Subfields Using This Perspective
Neuroscience	How the body and brain enable emotions, memories, and sensory experiences	How do pain messages travel from the hand to the brain? How is blood chemistry linked with moods and motives?	Biological; cognitive; clinical
Evolutionary	How the natural selection of traits passed down from one generation to the next has promoted the survival of genes	How has our evolutionary past influenced our modern day mating preferences? Why do humans learn some fears so much more easily than others?	Biological; developmental; social
Behavior genetics	How our genes and our environment influence our individual differences	To what extent are psychological traits such as intelligence, personality, sexual orientation, and optimism products of our genes? Of our environment?	Personality; developmental; legal/forensic
Psychodynamic	How behavior springs from unconscious drives and conflicts	How can someone's personality traits and disorders be explained in terms of their childhood relationships?	Clinical; counseling; personality
Behavioral	How we learn observable responses	How do we learn to fear particular objects or situations? What is the most effective way to alter our behavior, say, to lose weight or stop smoking?	Clinical; counseling; industrial organizational
Cognitive	How we encode, process, store, and retrieve information	How do we use information in remembering? Reasoning? Solving problems?	Cognitive neuroscience; clinical; counseling; industrial organizational
Social-cultural	How behavior and thinking vary across situations and cultures	How are we alike as members of one human family? How do we differ as products of our environment?	Developmental; social; clinical; counseling

Life After Studying Psychology

- The study of psychology and its critical thinking strategies have helped prepare people for varied occupations.
- Facebook CEO Mark Zuckerberg majored in psychology and computer science while at Harvard.

Paul Sakuma, File/AP Photo

Psychology in Court

- Forensic psychologists:
  - Apply psychology's principles and methods in the criminal justice system
  - May consult on witnesses, or testify about a defendant's state of mind and future risk

Ted Fitzgerald/AP Photo

Retrieve and Remember 2

- The _____ perspective in psychology focuses on how behavior and thought differ from situation to situation and from culture to culture.

- The _____ perspective emphasizes how we learn observable responses.

Four Big Ideas in Psychology

- Big idea 1 - Critical thinking is smart thinking.
- Big idea 2 - Behavior is a biopsychosocial event.
- Big idea 3 - We operate with a two-track mind.
- Big idea 4 - Psychology explores human strengths as well as challenges.

Big Idea 1: Critical Thinking Is Smart Thinking

- **Critical thinking:** Thinking that does not blindly accept arguments and conclusions
  - Examines assumptions
  - Uncovers hidden values
  - Weighs evidence
  - Assesses conclusions
- Critical thinkers ask critical questions

Big Idea 2: Behavior Is a Biopsychosocial Event

- **Biopsychosocial approach:** Views human behavior from three levels
  - Biological
  - Psychological
  - Social-cultural
- Each level's viewpoint provides valuable insight into a behavior or mental process.

A Smile Is a Smile the World Around

- People in different cultures vary in when and how often they smile, but a naturally happy smile means the same thing anywhere in the world.

Roy Tuft/National Geographic/Getty Images (left); Antonia Brune (right)

Nature–Nurture Issue

- An age-old controversy over the relative influence of genes and experiences in the development of psychological traits and behaviors
- Today's psychological science views traits and behaviors arising from the interaction of nature and nurture.
- In most cases, nurture works on what nature endows.

A Nature-Made Nature–Nurture Experiment

- Identical twins have the same genes.
  - This makes them ideal participants in studies designed to shed light on hereditary and environmental influences on personality, intelligence, and other traits.
- Fraternal twins have different genes but often share the same environment.

Big Idea 3: Dual Processing

- The principle that the mind processes information at the same time on separate conscious and unconscious tracks
- Vision is a two-track system.
  - Visual perception track enables an individual to think about the world.
  - Visual action track guides an individual's moment-to-moment actions.

Big Idea 4: Psychology Explores Human Strengths and Challenges

- Early psychology focused on understanding and treating difficulties.
- Contemporary psychology continued the tradition and extended its research to include human flourishing.
  - **Positive psychology:** Scientific study of human functioning
    - The goal is to discover and promote strengths and virtues that help individuals and communities to thrive.

Positive Psychology

- Suggests that happiness is a by-product of a pleasant, engaged, and meaningful life
- Focuses on building a:
  - Good life that engages one's skills
  - Meaningful life that points beyond the self
- Uses scientific methods to explore positive emotions, character traits, and institutions

Why Do Psychology?

- The limits of intuition and common sense

Limits of Intuition and Common Sense

- Research shows that thinking, memory, and attitudes operate on conscious and unconscious levels.
  - Most of an individual's mental life happens automatically, but intuition can lead him/her astray.
- Flaws in intuitive thinking:
  - Hindsight bias
  - Overconfidence
  - Perceiving patterns in random events

Hindsight Bias

- The tendency to believe, after learning an outcome, that the outcome could have been predicted
- Known as the I-knew-it-all-along phenomenon

UPI/U.S. Coast Guard /Landov

Overconfidence

- People tend to think they know more than they do.
- Manifests in:
  - Field of academics
  - Social behavior

Fun anagram solutions from Wordsmith (www.wordsmith.org):

Snooze alarms = Alas! No more z's

Dormitory = dirty room

Slot machines = cash lost in 'em

Perceiving Order in Random Events

- People perceive patterns to make sense of their world.
- Even in random, unrelated data people find order.
  - Random sequences often do not look random.
- People trust their intuition more than they should.
  - Intuitive thinking is flawed.

Retrieve and Remember 3

- Why, after friends start dating, do we often feel that we knew they were meant to be together?

How Do Psychologists Ask and Answer Questions?

- The scientific method
- Description
- Correlation
- Experimentation
- How would you know which research design to use?
- Predicting everyday behavior

Figure 1.1 - The Scientific Method

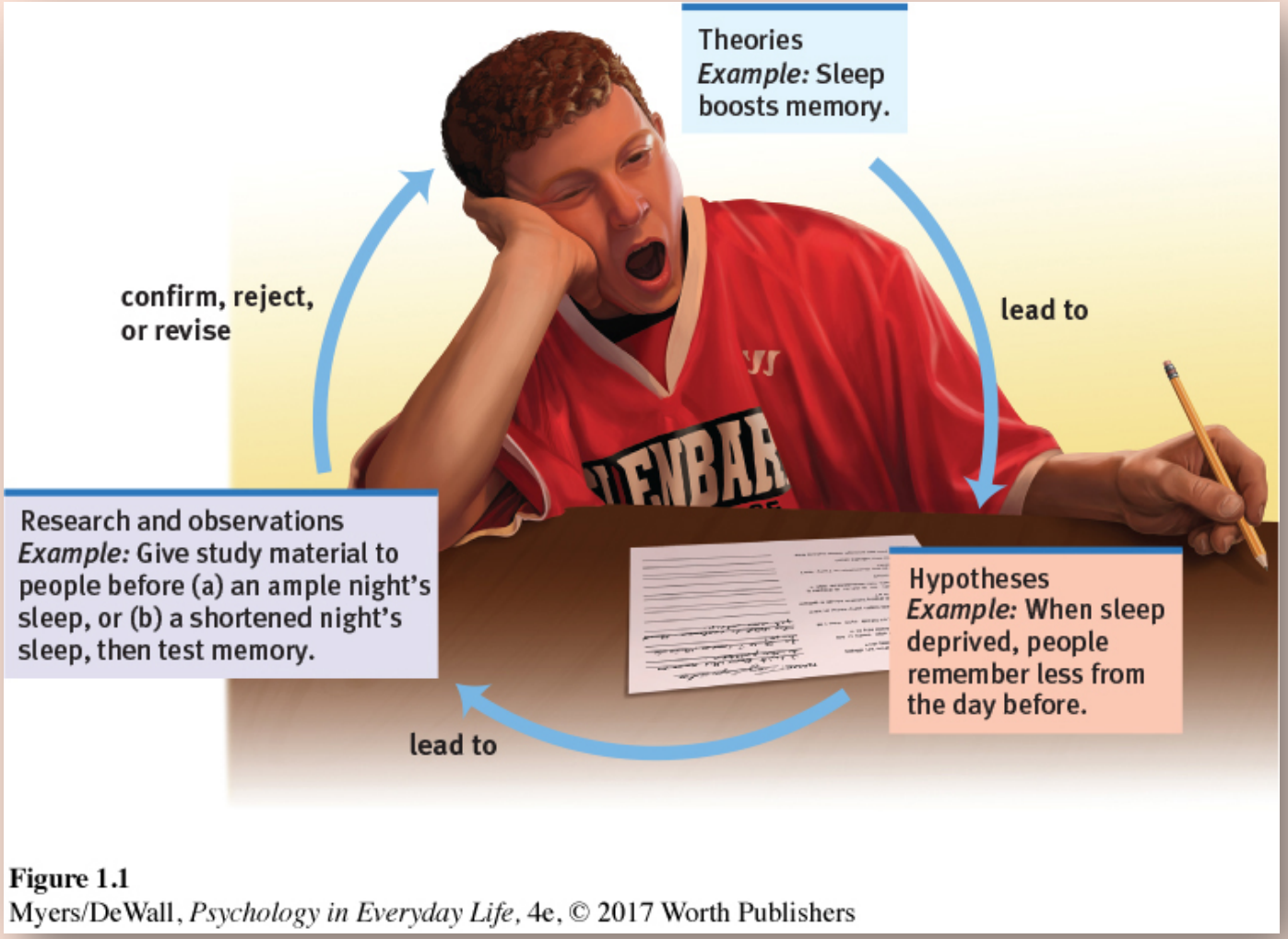


Figure 1.1
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The Scientific Method, Part 1

- Helps avoid pitfalls of intuitive thinking by:
  - Observing events
  - Forming theories
  - Refining the theories in light of new observations
- **Theory:** Explanation using principles that organize observations and predict behaviors or events
  - Can bias one's observations

The Scientific Method, Part 2

- **Hypothesis:** Testable prediction, often implied by a theory
  - Specifies those results that support the theory
  - Highlights those results that would cast doubt on the theory
- **Operational definition:** Carefully worded statement of the exact procedures used in a research study

The Scientific Method, Part 3

- **Replication:** Repeating the essence of a research study to see whether the basic finding can be reproduced
  - Performed with different participants in different situations
  - Enables confirmation of findings
  - Enables one to correct and refine their knowledge

Features of a Good Theory

- Effectively organizes a range of self-reports and observations
- Leads to clear predictions that can be used to check the theory or to create practical applications of it
- Stimulates replications and more research that supports the theory
- Leads to a revised theory that better organizes and predicts what is observed

Ways to Test Hypotheses and Refine Theories

Descriptive methods

- Describe behaviors by using case studies, naturalistic observations, or surveys

Correlational methods

- Associate different factors

Experimental methods

- Manipulate, or vary, factors to discover their effects

Retrieve and Remember 4

- What does a good theory do?

- Why is replication important?

Descriptive Techniques

- **Case studies:** Examine one individual or group in depth
  - Provide fruitful ideas
  - Do not uncover general truths
- **Naturalistic observations:** Technique of observing and recording behavior in a natural environment
  - Describe but do not explain behavior
  - Can be revealing

Freud and Little Hans

- Sigmund Freud's case study of 5-year-old Hans' extreme fear of horses led Freud to his theory of childhood sexuality.
  - Freud believed Hans' intense fear had its roots in the boy's unconscious desire for his mother and his fear of being castrated by his rival father.

Skye Hohmann/Alamy

Descriptive Technique - Surveys

- Techniques for obtaining self-reported attitudes or behaviors of a group
- Examine many cases in less depth
  - Wording effect - Subtle changes in the wording of a question can have major effects on the survey crowd.
  - **Random sample:** Sample that fairly represents a population because each member has an equal chance of inclusion

Figure 1.2 - Twitter Message Moods by Time and by Day

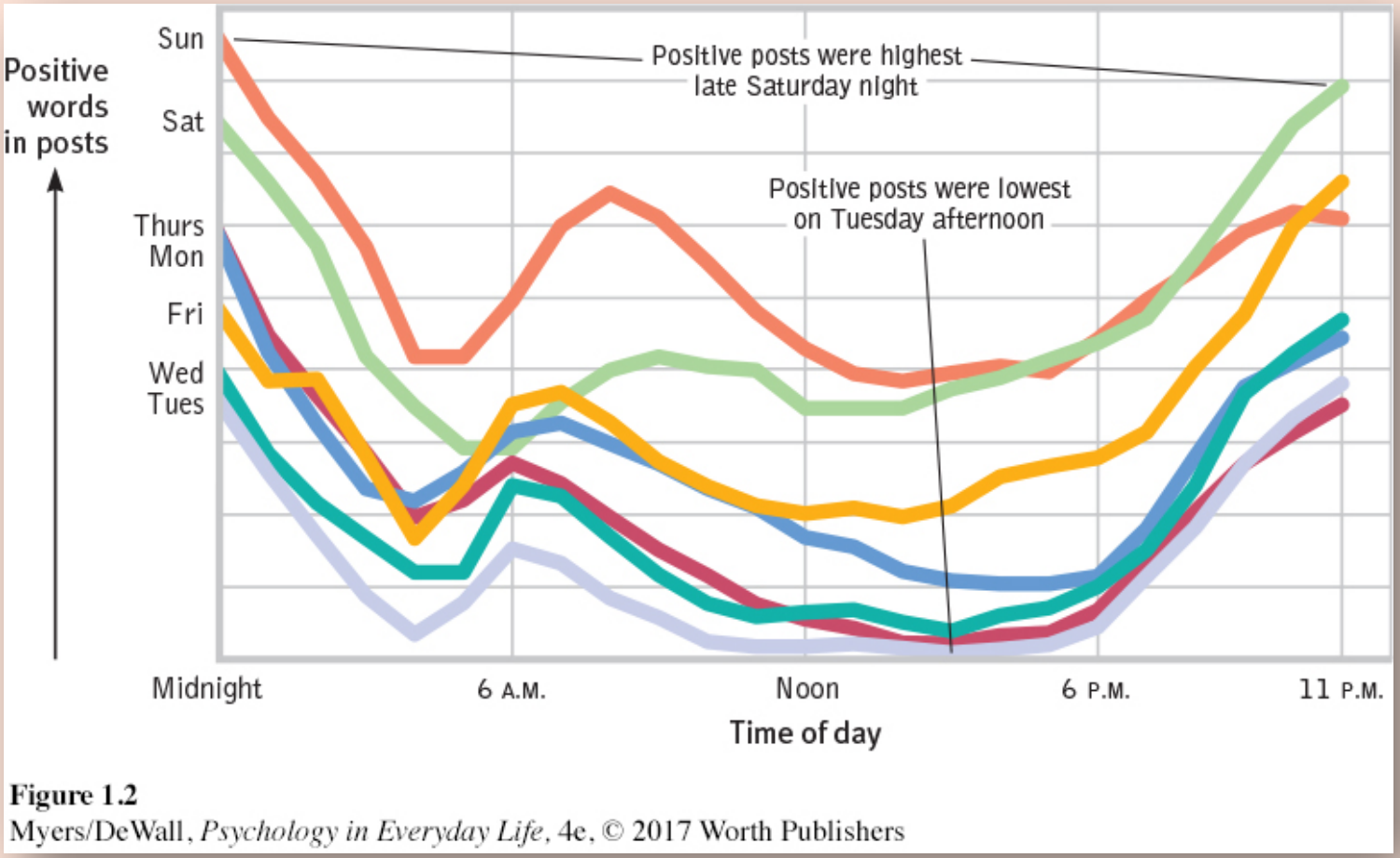

Figure 1.2
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Retrieve and Remember 5

- We cannot assume that case studies always reveal general principles that apply to all of us. Why not?

- What are the advantages and disadvantages of naturalistic observation, such as the EARs study?

- What is an unrepresentative sample, and how do researchers avoid it?

Correlation

- Measure of the extent to which two events vary together
  - Measure of how well either one predicts the other
- Correlation coefficient
  - Mathematical expression of the relationship
  - Ranges from −1.00 to +1.00
    - 0 indicates no relationship

Correlation - Measures

Positive correlation (above 0 to +1.00)

- Indicates a direct relationship
- Two things increase together or decrease together

Negative correlation (below 0 to −1.00)

- Indicates an inverse relationship
- As one thing increases, the other decreases

Weak correlation

- Coefficient near zero
- Indicates little or no relationship

Retrieve and Remember 6

- Indicate whether each of the following statements describes a positive correlation or a negative correlation:
  1. The more husbands viewed Internet pornography, the worse their marital relationships (Muusses et al., 2015).
  2. The less sexual content teens saw on TV, the less likely they were to have sex (Collins et al., 2004).
  3. The longer children were breast-fed, the greater their later academic achievement (Horwood & Fergusson,1998).
  4. The more income rose among a sample of poor families, the fewer symptoms of mental illness their children experienced (Costello et al., 2003).

Figure 1.3 - Three Possible Cause-Effect Relationships

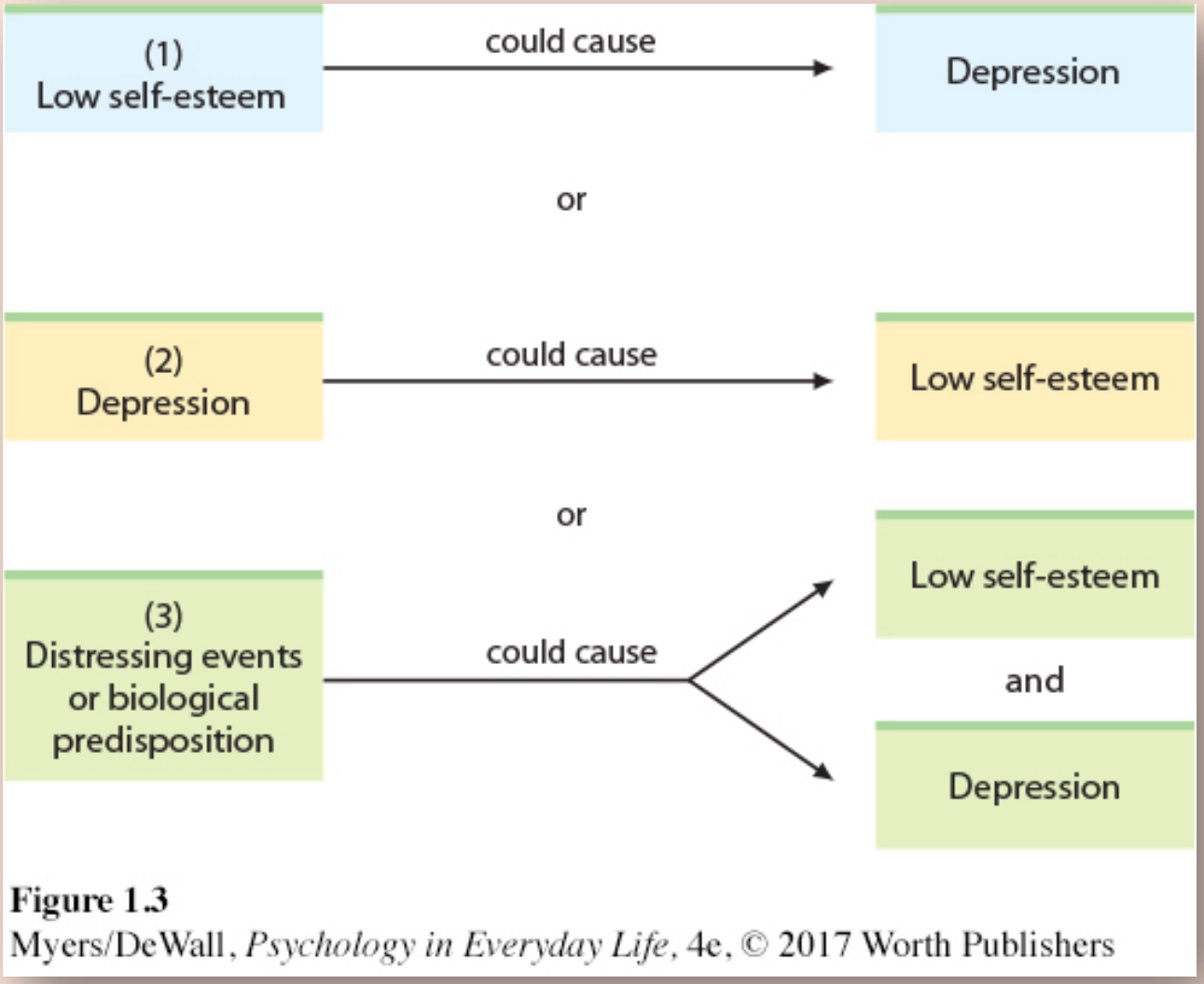

Figure 1.3
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Correlation and Causation

- Correlation indicates the possibility of a cause-effect relationship, but it does not prove causation.
  - Knowing that two events are associated does not reveal which event causes the other.

"When scientists communicate with each other, they . . . are cautious about oversimplifying results and speaking beyond the data. But when science is . . . fed to the public, the nuance and uncertainty is often lost."

Clay Routledge, "What Scientists Know and Need to Share with the Public," 2015

Retrieve and Remember 7

- Length of marriage correlates with hair loss in men. Does this mean that marriage causes men to lose their hair (or that balding men make better husbands)?

Experiment

- A method in which researchers vary one or more factors to observe the effect on some behavior or mental process
  - Researchers aim to control other factors by random assignment of participants
- Helps researchers focus on the possible effects of one or more factors by:
  - Manipulating factors of interest
  - Holding other factors constant

Random Assignment

- Assigning participants to experimental and control groups by chance, thus minimizing any preexisting differences between the groups
  - **Experimental group:** Group exposed to the treatment, that is, to one version of the independent variable
  - **Control group:** Group not exposed to the treatment
    - Serves as a comparison with the experimental group for judging the effect of the treatment

Double-Blind Procedure

- A procedure in which both the participants and the research staff are ignorant about who has received the treatment or a placebo
  - **Placebo:** Inactive substance or condition that is given to those in a control group in place of the treatment given to the experimental group
  - **Placebo effect:** Results caused by expectations alone

Retrieve and Remember 8

- What measures do researchers use to prevent the placebo effect from confusing their results?

Variables in an Experiment

Independent variable

- Factor that is manipulated
- Variable whose effect is being studied

Confounding variable

- Factor other than the factor being studied that might influence a study's results

Dependent variable

- Factor that is measured
- Variable that may change when the independent variable is manipulated

Figure 1.4 - Experimentation

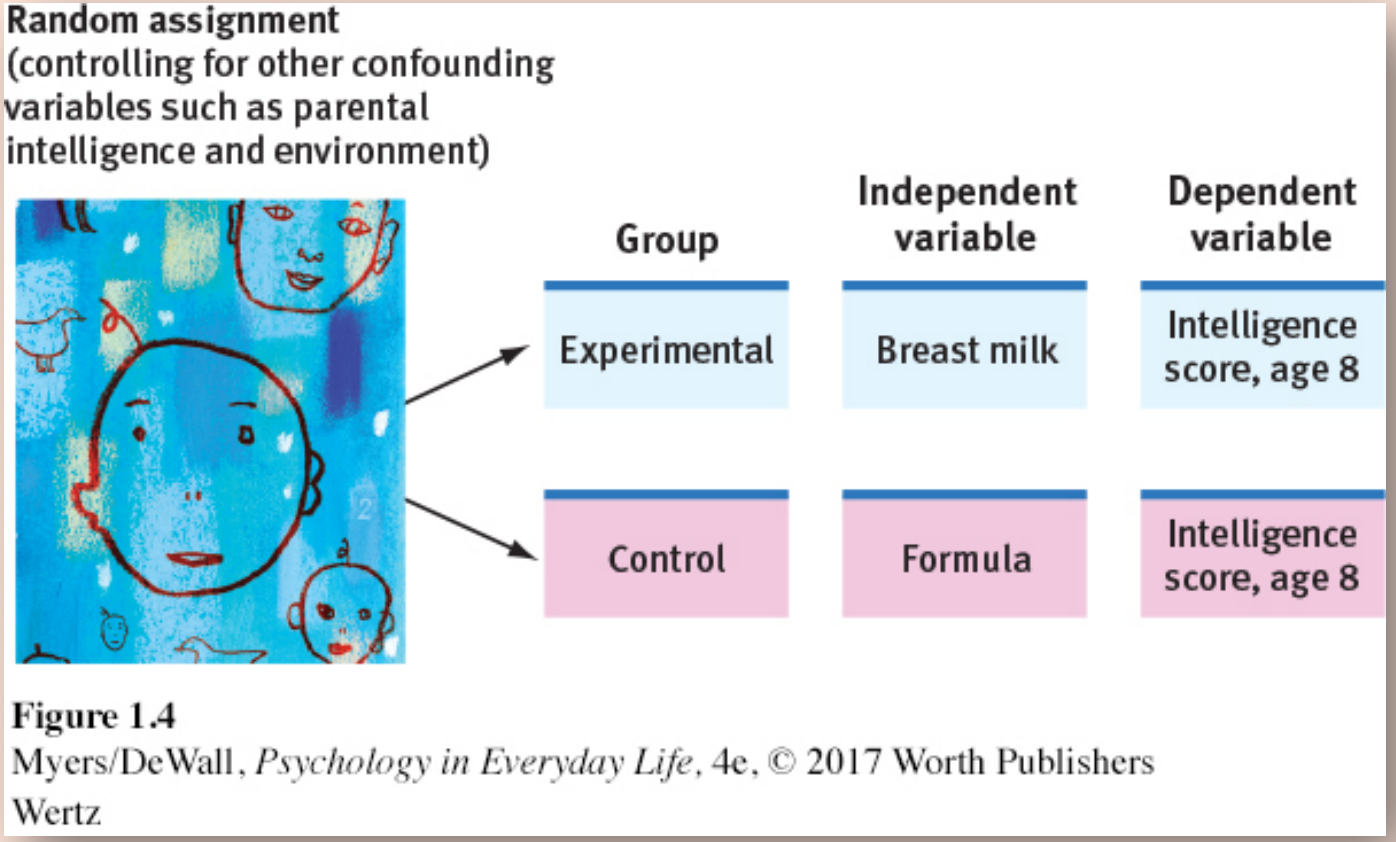

Figure 1.4
Myers/DeWall, *Psychology in Everyday Life*, 4e, © 2017 Worth Publishers
Wertz

Table 1.2 - Comparing Research Methods

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.

Retrieve and Remember 9

- In the rental housing experiment discussed in this section, what was the independent variable? The dependent variable?

- Why, when testing a new drug to control blood pressure, would we learn more about its effectiveness from giving it to half the participants in a group of 1000 than to all 1000 participants?

Retrieve and Remember 10

- Match the term below with the correct description on the right.

1. Double-blind procedure
2. Random sampling
3. Random Assignment

a. Helps researchers generalize from a small set of survey responses to a larger population

b. Helps minimize preexisting differences between experimental and control groups

c. Controls for the placebo effect; neither researchers nor participants know who receives the real treatment

Predicting Everyday Behavior

- The purpose of an experiment is to test theoretical principles.
- Resulting principles, not specific findings, help explain everyday behaviors.
- Psychological sciences:
  - Focus less on specific behaviors
  - Focus more on revealing general principles that help explain many behaviors

Psychology's Research Ethics

- Studying and protecting animals
- Studying and protecting humans
- Values in psychology

Animal Research

- Conducted by psychologists to:
  - Understand how different species learn, think, and behave
  - Learn about people
- Helped develop treatments for human diseases
  - Examples: insulin for diabetes, vaccines for polio and rabies, and transplants to replace defective organs

Studying and Protecting Animals

- Animal protection movements protest the use of animals in psychological, biological, and medical research.
- Use of animals for research is debated among psychologists.
  - Is it right to place the well-being of humans above that of other animals?
  - What safeguards should protect the well-being of animals in research?

Protecting Animals

- British Psychological Society (BPS)
  - Requires animals to be housed under reasonably natural living conditions
  - Social animals provided with companions
- American Psychological Association (APA)
  - Requires researchers to:
    - Ensure comfort, health, and humane treatment of animals
    - Minimize infection, illness, and pain

Benefits of Animal Research for Animals

- Invention of handling and stroking methods to reduce stress and ease dogs' move to adoptive homes
- Improvement of care and management in animals' natural habitats
- Increased empathy and protection for other species

Animal Research Benefiting Animals

- Psychologists have helped enrich zoo animal environment.
- Thanks partly to research on the benefits of novelty, control, and stimulation, these gorillas have enjoyed an improved quality of life in New York's Bronx Zoo.

Mary Altaffer/AP Photo

Studying and Protecting Humans

- APA and 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

Values in Psychology

- Values impact:
  - The material that is being studied
  - How the material is being studied
  - How results are interpreted
- Applied psychology contains hidden values.
- Psychology has the power to deceive, though its purpose is to enlighten.

Psychology Speaks

- In making its historic 1954 school desegregation decision, the U.S. Supreme Court cited the expert testimony and research of psychologists Kenneth Clark and Mamie Phipps Clark (1947).

Office of Public Affairs at Columbia University, publication permission granted by Columbia University Archives, Columbia Library

Retrieve and Remember 11

- How are animal subjects and human research participants protected?

Use Psychology to Become a Stronger Person—and a Better Student

Tips to Live a Happy, Thriving Life

- Manage time to get a full night's sleep
- Make space for exercise
- Set long-term goals, with daily aims
- Maintain a growth mind-set
- Prioritize relationships

Psychological Principles

- **Testing effect:** Enhanced memory after retrieving, rather than simply rereading, information
  - Known as retrieval practice effect or test-enhanced learning
- **SQ3R:** Study method that incorporates five steps
  - Survey, question, read, retrieve, and review

Strategies That Help to Learn and Remember

- Use self-testing and rehearsal
- Implement the SQ3R study method
- Distribute study time
- Learn to think critically
- Actively process class information
- Overlearn

Retrieve and Remember 12

- The _____ describes the improved memory that results from repeated retrieval (as in self-testing), rather than from simple rereading of new information.

- What does SQ3R mean?