



# THINKING LIKE A RESEARCHER

## LEARNING OBJECTIVES

- Explain the connection between thinking critically and thinking like a researcher.
- Describe the scientific approach, including the challenges and benefits of taking a scientific approach.
- Outline and synthesize the steps of the research process.
- Identify and apply ethical principles and standards.
- Formulate a big picture of the nature of science and how science progresses.

## CHAPTER SUMMARY

Students in the social and behavioral sciences are often curious about personal and social phenomena, and learning about research methods and statistics will give you the tools necessary to engage your curiosity on a deeper level. Critical thinking is key to research, and researchers put critical thinking to action throughout the entire process of carrying out a research study. Additionally, researchers think by taking a scientific approach. You are encouraged to consider why the scientific approach is important and to consider the scientific method as a process rather than a list of steps that must be followed in order. A complete overview of the research process from start to finish is included in this chapter. The goal is to introduce you to key concepts in the context of the overall scientific process, and later chapters detail the steps and concepts in more depth.

The next part of the chapter focuses on ethics. The chapter provides a brief history of ethical violations that led to the development of current ethics codes. Key ethical principles and standards are discussed, and you are encouraged to consider how ethical standards help to uphold broader ethical principles. The chapter ends with a discussion of proof and progress in science, debunking the notion that any single study leads to proof and, instead, encouraging you to consider how multiple studies move the field forward.

## CHAPTER 1 QUIZ

**Test your knowledge of the key terms from the chapter.**

1. Which of the following might be a variable in a study?
  - a. male
  - b. participants
  - c. gender
  - d. method

2. Circle the two key characteristics of a testable hypothesis:
  - a. It is based on past research or theory
  - b. It is unique and completely original
  - c. It can be proven
  - d. It can be disproven
3. If you were to test if the flavor of ice cream impacts motivation, flavor of ice cream is the
  - a. independent variable
  - b. dependent variable
  - c. quasi-experiment
  - d. hypothesis
4. What is the dependent variable from question 3?
  - a. ice cream
  - b. motivation
  - c. participants
  - d. flavor
5. Which of the following research designs is best able to demonstrate causation?
  - a. descriptive research
  - b. correlational research
  - c. quasi-experimental research
  - d. experimental research
6. The Institutional Review Board helps ensure that a study
  - a. meets the requirement for a class
  - b. is well written
  - c. shows causation
  - d. adheres to ethical principles and standards
7. \_\_\_\_\_ represents the ideals, whereas \_\_\_\_\_ are the specific rules designed to uphold those ideals.
  - a. Ethical principles; ethical standards
  - b. Ethical standards; ethical principles
  - c. Ethics codes; ethic review boards
  - d. Ethic review boards; ethic codes
8. In the 1960s, Stanley Milgram conducted several studies on obedience in which an experimenter ordered participants to administer increasingly powerful shocks to a “learner.”

The participants learned afterward that the “learner” was a confederate who was working with the experimenter and was never actually shocked. In other words, Milgram included \_\_\_\_\_ but not \_\_\_\_\_ in his study.

  - a. informed consent; debriefing
  - b. debriefing; informed consent
  - c. confidentiality; informed consent
  - d. confidentiality; debriefing

9. When the participants in Milgram's obedience studies asked to stop, the experimenter ordered them to continue. This violates the ethical standard of
  - a. confidentiality
  - b. the right to withdraw
  - c. informed consent
  - d. noncoercive incentives
10. Which of the following must be a part of all research studies?
  - a. informed consent
  - b. debriefing
  - c. confidentiality
  - d. anonymity

### Quiz 1 Answer Key

1. c. 2. a, d. 3. a. 4. b. 5. d. 6. d. 7. a. 8. b. 9. b. 10. c.

## CHAPTER 1 EXERCISES

Achieve the learning objectives of the chapter by reviewing and applying key concepts.

### Exercise 1.1: Critical Thinking

*Learning Objective: Explain the connection between thinking critically and thinking like a researcher.*

#### Review

1. List the similarities between thinking critically and thinking like a researcher

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2. How is thinking like a researcher a unique type of critical thinking?

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**Application:** Think critically about the information you have received about this research methods course and consider how you might gather new evidence to evaluate such information.

1. Identify one thing you heard about this class: \_\_\_\_\_

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2. Who or what was the source of this information? \_\_\_\_\_

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3. What biases might this source have? \_\_\_\_\_

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4. What additional evidence would help you evaluate the information, and how might you go about gathering this evidence?

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### Exercise 1.2: The Scientific Approach

*Learning Objective: Describe the scientific approach, including the challenges and benefits of taking a scientific approach.*

#### Review

Which of the following are associated with the scientific approach?

- |               |                   |                             |
|---------------|-------------------|-----------------------------|
| a. complexity | b. advice         | c. improved decision making |
| d. comfort    | e. knowledge base | f. gut reaction             |
| g. method     | h. belief         | i. minimizing bias          |

#### Application

1. Recall a time that you made a decision or responded to a friend or family member based on personal beliefs or personal experiences rather than taking a scientific approach. Briefly outline that situation.

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2. How might you have instead taken a scientific approach? What would be the benefits and challenges to taking a scientific approach in this situation?

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### Exercise 1.3: The Research Process (Aka the Scientific Method)

*Learning Objective: Outline and integrate the steps of the research process.*

#### Review

1. The steps in the scientific method are

Step 1: \_\_\_\_\_

Step 2: \_\_\_\_\_

Step 3: \_\_\_\_\_

- Step 4: \_\_\_\_\_
- Step 5: \_\_\_\_\_
- Step 6: \_\_\_\_\_
- Step 7: \_\_\_\_\_

2. Replace the crossed out words to summarize how the steps are synthesized within the scientific method:

| The steps are NOT...   | The steps ARE... |
|------------------------|------------------|
| about <del>proof</del> | about _____      |
| <del>linear</del>      | _____            |
| <del>isolated</del>    | _____            |

**Application A: Choose a research design**

1. Circle the questions that can be examined with an experiment:
  - a. Do students who participate in college sports study more or less than students who do not participate in college sports?
  - b. Can political campaigns raise more money using negative campaign ads?
  - c. Are attractive people perceived as more or less intelligent than not-so-attractive people?
  - d. How do individuals perceive their local police department?
  - e. Does exposure to violence increase risk of heart disease?
  - f. Do people high in the personality trait narcissism take more “selfies” than those low in this trait?
  - g. Is humanity becoming more or less violent?
  - h. Can daily statements of gratitude improve one’s well-being?
2. For those questions you identified in question 1 that *could* be examined with an experiment, identify the independent and dependent variable.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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3. For those questions you identified in question 1 that could *not* be examined with an experiment, identify the most appropriate type of research to help answer the question.

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\_\_\_\_\_

**Application B: Communicate Without plagiarizing**

The following excerpt was taken directly from Cash and Whittingham (2010, p. 180):

We found that Nonjudge, the ability to refrain from judging one’s own cognitions, emotions, and bodily sensations, predicted lower levels of depression, anxiety, and stress. Furthermore, Act-aware, the ability to maintain awareness of daily activities, predicted lower levels of depression.

Imagine that three students summarized this excerpt. Consider whether each student plagiarized Cash and Whittingham (2010) and explain your answer.

**Student 1**

Cash and Whittingham (2010) found that Nonjudge, the ability to refrain from judging one’s own cognitions, emotions, and bodily sensations, predicted lower levels of depression, anxiety, and stress. Furthermore, Act-aware, the ability to maintain awareness of daily activities, predicted lower levels of depression.

\_\_\_\_\_ plagiarism or \_\_\_\_\_ not plagiarism  
because \_\_\_\_\_.

**Student 2**

Cash and Whittingham (2010) found that participants who were most aware during their daily activities reported few symptoms of depression and those who were most accepting of their own thoughts, feelings, and sensations reported fewer symptoms of both depression and anxiety.

\_\_\_\_\_ plagiarism or \_\_\_\_\_ not plagiarism  
because \_\_\_\_\_.

**Student 3**

“Nonjudge, the ability to refrain from judging one’s own cognitions, emotions, and bodily sensations,” and “Act-aware, the ability to maintain awareness of daily activities,” are linked to improved mood.

\_\_\_\_\_ plagiarism or \_\_\_\_\_ not plagiarism  
because \_\_\_\_\_.

**Exercise 1.4: Thinking Critically About Ethics**

*Learning Objective: Identify and apply the ethical principles and standards of your discipline.*

1. In the Stanford prison experiment (Zimbardo, 1972), some participants assigned to be guards acted cruelly toward the participants assigned to be prisoners. Some of those assigned to be prisoners became depressed and withdrawn. Identify and explain one ethical principle this experiment violated (there are multiple answers).

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2. A researcher wants to observe interactions in a social media group. The group members are anonymous, and the group is open, in that anyone can log on and view conversations. Imagine you are a member of the Institutional Review Board. List three questions that you think are most important to ask and identify why each is important, based on ethical principles and standards.

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3. A researcher wants to investigate the relationship between depression and exposure to neighborhood violence, which includes hearing gunshots, witnessing verbal abuse, witnessing a physical assault, or witnessing a murder. The researcher plans on recruiting adult participants at various community meetings and then asking them to complete a questionnaire. Imagine you are a member of the Institutional Review Board. List three questions that you think are most important to ask and identify why each is important, based on ethical principles and standards.

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### Exercise 1.5: The Big Picture: Proof and Progress in Science

*Learning Objective: Formulate a big picture of the nature of science and how science progresses.*

1. A study found that mindfulness training was effective in reducing stress. Does this prove that mindfulness is an effective stress-reduction strategy? Explain.

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2. Research consistently demonstrates the effectiveness of mindfulness in reducing stress. What might we conclude?

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3. What might be some of the next steps we take to examine the relationship between mindfulness training and stress?

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4. If someone asked you how science helps us understand something, how might you answer?

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*Check with your professor for answers to the chapter exercises.*

## Your Research

### Take a Scientific Approach to Identify a Research Topic

1. Identify a topic that interests you: \_\_\_\_\_
2. Come up with a list of 7–10 questions on this topic. Try to build these questions from textbooks, research articles, or previous coursework, but you can also include a few questions based on observations or experiences.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
  - g. \_\_\_\_\_
  - h. \_\_\_\_\_
  - i. \_\_\_\_\_
  - j. \_\_\_\_\_

3. Now evaluate your list and cross out or modify any that

- are biased, in that you think you already know the answer.
- are not testable (you cannot disprove them).
- necessitate equipment or a population to which you do not have easy access.
- do not fit the criteria, if any, laid out by your professor (e.g., your professor may require you to do an experiment, and not all questions can be experimental).

4. What questions remain? These might serve as a good starting point. Keep in mind that your research question will change as you read more research in this area.

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