

# THE CRITICAL THINKER

*Second Edition*



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## Preface

“It is strange that we expect students to learn yet seldom teach them anything about learning.” This observation by Donald Norman (1980, p. 97) helps to pinpoint the goal of *The Critical Thinker*. Our goal is to explicitly teach you strategies for understanding and evaluating material in your introductory psychology textbook.

### Parts of This Book

This book is intended for students who are taking their first psychology course. If you can give us six hours of your time, we think we can help you to improve how you learn and think about psychology. Here’s what you will learn in this book:

#### Chapter 1. Critical Thinking in Psychology

Approximate Time Required: 15 minutes

Purpose: To convince you to commit yourself to becoming a more critical thinker.

Topics: Reasons for improving your critical thinking skills, six aspects of the definition of critical thinking in psychology, three changes that occur as you become a critical thinker.

#### Chapter 2. Arguments: The Basic Units of Critical Thinking in Psychology

Approximate Time Required: 60 minutes

Purpose: To help you learn how to identify and analyze psychological arguments in your psychology textbook.

Topics: Definition of an argument in psychology, three parts of an argument in psychology, four types of assertions, four types of empirical evidence, characteristics of a theoretical explanation.

#### Chapter 3. Strategies for Understanding and Evaluating Arguments

Approximate Time Required: 60 minutes

Purpose: To introduce you to some specific strategies for how to understand and evaluate the arguments presented in your psychology textbook.

**Topics:** How to summarize assertions, evidence, and explanations in your own words; how to criticize assertions, evidence, and explanations in your own words.

#### **Chapters 4-8. Critical Thinking Exercises**

**Approximate Time Required:** 45 minutes each

**Purpose:** To give you practice in applying strategies for understanding and evaluating arguments in psychology textbooks.

**Topics:** Hands-on practice in summarizing and criticizing textbook sections in social psychology, developmental psychology, cognitive psychology, motivation, and biopsychology.

#### **Features of This Book**

Previous research has highlighted three characteristics of successful programs for teaching learning and thinking skills (Mayer, 1987, 1990). This book is designed with each of these three characteristics in mind.

*What to teach: Specific skills or general ability.* In learning critical thinking you acquire many specific skills rather than improve one general ability. In particular, you will learn skills for understanding and evaluating arguments. It is important that you clearly comprehend these two crucial skills.

*How to teach: Process or product.* In learning critical thinking you should actively engage in thinking and learning processes rather than focus only on producing the correct answer. In particular, you will engage in many “hands-on” activities and practice exercises that focus on your thinking and learning processes. It is important that you take the time to participate in each of the activities presented, including filling in the blanks for each exercise.

*Where to teach: Domain-specific versus domain-free.* In learning critical thinking for psychology, you should learn skills specifically adapted to reading psychology textbooks rather than broad study skills that are not focused within the context of psychology textbooks. In particular, this book provides activities and exercises that come only from psychology textbooks. It is important that you try to apply what you have learned to material in your own psychology textbook.

In summary, you will actively learn and practice specific strategies for understanding and evaluating material in psychology textbooks. The goal of this book is quite straightforward: we want you to become a more effective and critical processor of information in your psychology textbook.

### About the Authors

You may be curious about the authors. Richard E. Mayer is Professor and former Chair of Psychology at the University of California, Santa Barbara, and has previously taught psychology at the University of Michigan and Indiana University. Having received his Ph.D. in Psychology from the University of Michigan, Dr. Mayer has conducted research for twenty years on how to help college students learn from science and mathematics textbooks. He has authored or coauthored twelve books, including *Educational Psychology: A Cognitive Approach*, and has produced over 100 research publications, mainly in the areas of cognitive and educational psychology.

Fiona Goodchild is an Educational Outreach Director at the University of California, Santa Barbara. Previously she served for twelve years as a Counselor in the Learning Skills Unit at the University of Western Ontario. As well as developing instructional materials for college students, she has pursued research and coordinated workshops on how to improve learning strategies for college students. Dr. Goodchild holds an Ed.D. in Applied Psychology from the University of Toronto, where she studied at the Ontario Institute for Studies in Education. She is the coauthor of *Learning for Success: Strategies for Canadian Students*.

If you have any comments about this book, including suggestions for improvements, please write to us at:

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## A Note to the Instructor

### What Is This Book?

Students in an introductory psychology class are often novices to the discipline. Not only do they lack knowledge of psychology, but they also have limited experience in effectively reading psychology textbooks. In short, a substantial number of your students may lack the academic study skills that they need to succeed in your course. Although students may be quite proficient at “reading every word” in the textbook, they often need training in skills that would help them become more critical thinkers in psychology. For example, when faced with reading an introductory psychology textbook, some students may have difficulty in determining what is important, in organizing the material, and in making critical judgments about the material.

This book is intended to help your students become more effective psychology students by improving their ability to understand and evaluate passages from psychology textbooks. It differs from other books on critical thinking or study skills because it is designed specifically to be used with your introductory psychology textbook.

### How Can I Use This Book?

*The Critical Thinker* can be used in several ways.

*As a stand-alone tutorial.* First, this book can be used as a stand-alone adjunct to your course. You need to introduce your students to *The Critical Thinker*: instruct them to carefully read each chapter and to participate fully in each activity and exercise. Point out to your students that if they are willing to make a six-hour commitment, *The Critical Thinker* can help them become more effective psychology students. Because this book is a self-contained six-hour tutorial, no further guidance from you is required.

*In discussion sections.* Second, this book can be incorporated into the discussion sections of your class. We recommend covering chapters 1 through 3 in a whole-class format, with particular emphasis on the material in table 3.1 and table 3.5. You should describe your thinking process as you respond to the questions in table 3.2 and table 3.6 for a passage from your textbook.

For each of the exercises in chapters 4 through 8, we recommend that you break the class into small groups of two students each. Within the group, one student should be assigned the job of understanding and evaluating a textbook passage by writing summaries using the six-part format in table 3.1 and table 3.5. The other student should be charged with identifying problems or deficiencies in what the other student has written for each of the six parts. Together, the two students should produce a final version that satisfies both of them.

Following this small group exercise, we recommend returning to the whole-class format where each group reports its results to the class; you should keep a running summary on the blackboard or overhead transparency of what each group produced for each of the six major parts of the assignment. In class discussion, you should help the class to identify the processes that were used in understanding and evaluating arguments in psychology textbooks.

Then, for the next exercise, we recommend that you reverse the roles of the students in each group so that students get practice both in writing and critiquing summaries. If time permits, the most efficient procedure would be to assign two passages to each group, with one student assigned the job of writing the summary for the first passage and critiquing the summary of the second passage, and the other student in charge of critiquing the summary of the first passage and writing the summary of the second passage.

*In a workshop.* Third, you can use this book as part of a minicourse or workshop on study skills for students who have been having academic difficulties in psychology. Research on expertise has encouraged the idea that students need to work on examples from a specific context or domain when they are acquiring learning and thinking skills. The materials in this book can be used in a series of sessions ranging from one to several hours in length, and are appropriate both for individual counseling and group instruction.

We welcome your comments and suggestions, and we hope your students enjoy using *The Critical Thinker* as much as we have enjoyed writing it.



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# Discovering Strategies for Critical Thinking

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## Chapter 1 Critical Thinking in Psychology

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### Why Should You Read This Book?

“We should be teaching students how to think. Instead, we are teaching them what to think.” This quote, taken from Clement & Lochhead’s (1980) *Cognitive Process Instruction*, summarizes the rationale for this book that you are holding in your hands. We want to help you to become a critical thinker; particularly, we want to help you to learn how to think critically about psychological ideas.

Most courses in psychology serve two broad goals: (1) to help you acquire some basic knowledge about psychology, and (2) to help you learn to think like a psychologist. The first goal—focusing on “what to think”—is often so overwhelmingly obvious that students may devote all their efforts only to acquiring basic knowledge. In other words, some students see their only task in a psychology course as to memorize as many facts as possible. For example, in reading a section on *positive reinforcement*, you may memorize the definition of each key term that is presented.

The second goal—focusing on “how to think”—is sometimes so subtle that the students may fail to recognize it. Yet, instructors expect you to be able to think critically about psychological ideas and concepts. For example, in reading a section on *positive reinforcement*, you may ask yourself, “What claims are being made about the power of positive reinforcement?” and “Are these claims justified?”

The theme of this book is that for you to become a successful psychology student, you need both basic knowledge and critical thinking strategies for using that knowledge. This book is intended to help you in your attempts to become a critical thinker about psychology.

## **What Is Critical Thinking in Psychology?**

Although teachers may agree that critical thinking is a fundamental component in college-level psychology courses, they do not agree on exactly how to define critical thinking (McPeck, 1981). We define critical thinking as an active and systematic attempt to understand and evaluate arguments. This definition has six parts:

*Critical thinking is an active process.* When critical thinkers read their psychology textbooks, they do more than simply read every word and look at every illustration. As a critical thinker, you need to search for meaning in what you read, that is, to ask yourself, “Does this make sense?”

*Critical thinking is a systematic process.* In searching for meaning, critical thinkers use logical techniques. As a critical thinker, you need to go about the process of making sense in a step-by-step manner. In short, you need to ask the question, “How should I go about understanding what the author is saying?”

*Critical thinking is based on arguments.* The basic unit of analysis in critical thinking is the argument. An argument begins with an assertion about the properties of some object (e.g., short-term memory has a limited capacity) or the relationship between two or more objects (e.g., the more motivated a person is, the better he or she will perform on any task); and provides evidence (usually from research studies) to support and/or refute the assertion. You need to be able to recognize and analyze arguments into their parts.

*Critical thinking involves understanding arguments.* A critical thinker is able to recognize arguments that the author makes in a psychology textbook. As a critical thinker you need to be able to identify the parts of the argument (such as the assertion and supporting evidence) and to state the argument in your own words. In short, you need to be able to answer the question, “What argument is the author making?”

*Critical thinking involves evaluating arguments.* A critical thinker not only understands the author’s arguments, but can also criticize them. In becoming a critical thinker, you need to learn how to determine whether the author’s argument is valid; that is, you need to ask, “Should I accept the author’s argument?”

*Critical thinking is an attempt.* Critical thinkers recognize that there is no single right way to understand and evaluate what they read; and there is no guarantee that they will always be successful in trying to actively and systematically understand and evaluate what they read. Critical thinking is an approach to problems, not a specific procedure that always produces a correct answer.

### **Are You a Critical Thinker?**

When you are faced with studying your psychology textbook, do you behave like a critical thinker? Please rate each of the following statements on a scale from -3 (strongly disagree) to +3 (strongly agree):

- \_\_\_ I should carefully read every word.
- \_\_\_ I should expect that hard work will improve my performance.
- \_\_\_ I should focus on the terms and facts that the author presents.
- \_\_\_ I should be able to recite the author's major conclusions.
- \_\_\_ I should assume the author is an expert.
- \_\_\_ I should use a foolproof system for studying.

If you are like most introductory psychology students, you agree with these statements. However, we would like to suggest that each of these statements reflects a potential misconception that could block your efforts to become a critical thinker.

First, many students believe that their primary job is to carefully read every word. However, as we indicated in the first part of our definition of critical thinking, carefully reading each word is just the beginning. A critical thinker must be actively involved in making sense out of the material. You need to see yourself as a "sense maker," not just a "word processor."

Second, many students believe that there is some magic guarantee of success. A common refrain following poor performance on an exam is ". . . but I worked very hard." As suggested by the second part of the definition, hard work without a systematic approach may be wasted work. You need to become a "smart worker," not just a "hard worker."

Third, many students believe that the main point of psychology is to learn to give the definitions of certain key terms and to recite facts about certain key topics. However, as we indicated in the third part of our definition, critical thinkers focus on an entirely different aspect of what the author is saying, namely the author's arguments. You need to see yourself as an "argument detector," not just a "fact collector."

Fourth, many students focus on the *product*—that is, the final conclusion—of the author’s argument rather than on the *process* the author used for arriving at the conclusion. However, the fourth part of our definition makes clear that a critical attitude is at the heart of critical thinking. When it comes to psychological arguments, you need to focus on process rather than product.

Fifth, many students assume that the author is an infallible expert whose wisdom is to be memorized. However, according to the fifth part of our definition of critical thinking, you need to be a critical consumer of psychological information. When it comes to the science of psychology, it is better to question authority than to accept everything you read.

Sixth, many students harbor the belief that there is some foolproof system (usually involving almost no effort) that will make learning easy. However, the sixth part of our definition suggests that there is no shortcut to becoming a critical thinker. You need to see critical thinking as a goal that needs to be adjusted to specific situations rather than as a well-specified procedure that always works the same way.

What’s missing in your current approach to studying psychology? If you are like most introductory psychology students, you need to become a more active and critical reader who can identify, analyze, and evaluate arguments. This book is intended to help you achieve this goal.

## **How Can You Learn to Become a Critical Thinker?**

Learning to become a critical thinker involves three levels of change: an affective change, a cognitive change, and a behavioral change.

*Affective change.* The first change involves your feelings about the need for critical thinking. Your initial asset is your awareness of the need to be a critical thinker and your motivation to try out the methods suggested in this book. This will take commitment to becoming a critical thinker as well as the realization that you may need to modify our methods to fit your specific needs. Chapter 1 of this book focuses on changing your feelings about the importance of critical thinking.

*Cognitive change.* The second change involves acquiring specific knowledge about strategies for critical thinking. Chapters 2 and 3 of this book present some specific strategies for how to improve your critical thinking in psychology. Our main focus is on strategies for understanding and evaluating arguments in your psychology textbook.

***Behavioral change.*** The third change involves your behavior when you read a psychology textbook. The exercises in this book, particularly chapters 4 through 8, are intended to help you apply your knowledge of critical thinking strategies to the outlining of your textbook.

In short, becoming a critical thinker involves your heart, your head, and your hand. You need to develop a commitment to critical thinking (affective change), to acquire specific knowledge about how to be a critical thinker (cognitive change), and to actually apply that knowledge when you read your psychology textbook (behavioral change).

### **Summary**

A successful psychology student needs to learn both specific information about psychology and techniques for how to think critically in psychology.

Critical thinking in psychology is an active and systematic attempt to understand and evaluate arguments.

Becoming a critical thinker involves affective, cognitive, and behavioral changes.

**What Is an Argument in Psychology?**

When you look at a page of your psychology textbook, what do you see? If you are like most students in introductory psychology courses, you see lots of words and perhaps some illustrations. Sometimes all the words and pictures on the page get in your way, like not being able to see the forest for the trees. The purpose of this book is to help you look deeper when you read your textbook, so that you are able to find out what the author is talking about. In this chapter you will learn how to identify *arguments*.

The word “argument” may make you think of two people shouting at one another, perhaps even throwing pots and pans against the walls as they continue shouting. Alternatively, you might think of someone trying to persuade you to do something. However, we use the word in a different way in this book. An *argument in psychology* consists of an assertion along with empirical evidence and a theoretical explanation for the assertion. In other words, an argument is a statement describing the world (assertion) along with empirical support (evidence) and theoretical support (explanation) for the statement.

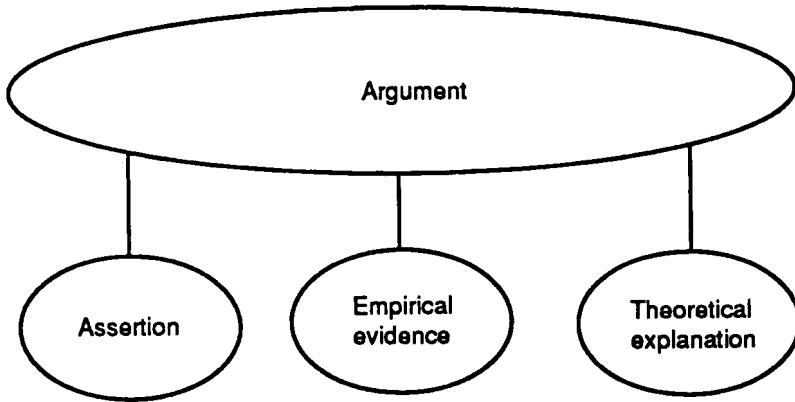
Psychology is full of arguments, including arguments about the role of nature and nurture in human development, the characteristics of the human information processing system, and where prejudice comes from. In becoming a critical thinker, your first step is to identify the arguments that the author presents.

**What Are the Parts of an Argument?**

As you can see in figure 2.1, a psychological argument generally consists of three parts:

- (1) an *assertion*—that is, a general description of the characteristics of one or more things or the relation between two or more things,





**Figure 2.1.** Three Parts of an Argument

- (2) *empirical evidence*—that is, specific observations that support or refute the assertion, and
- (3) *theoretical explanation*—that is, a hypothesized mechanism or model that logically justifies or refutes the assertion.

For example, suppose your friend claims that your university discriminates against unattractive people in its hiring practices. She provides survey results showing that 25% of the people in your state are unattractive but only 2% of the employees at the university are unattractive. She concludes that personnel interviewers tend to trust and believe attractive job candidates more than unattractive ones.

Let us ask you a few questions about your friend's argument. Please take the time to write down an answer to each question, using your own words.

First, what is the assertion?

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Second, what is the evidence?

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