

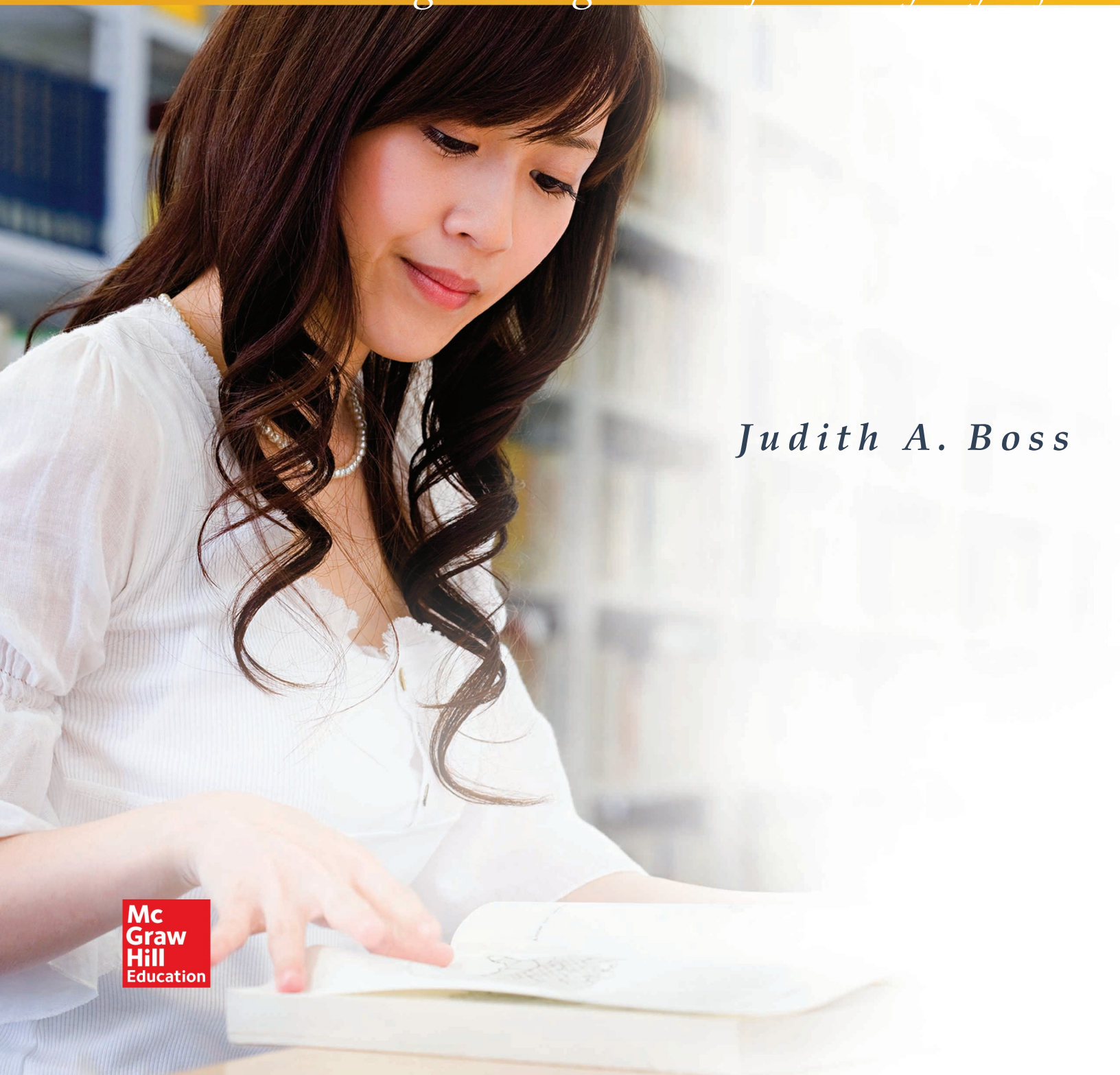
Fourth Edition

THiNK

Critical Thinking and Logic Skills for Everyday Life

Judith A. Boss

Mc
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THiNK

CRITICAL THINKING AND LOGIC SKILLS FOR EVERYDAY LIFE,
FOURTH EDITION

Judith A. Boss





THiNK, FOURTH EDITION

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THiNK

BRIEF CONTENTS

- 1 Critical Thinking: Why It's Important 2
- 2 Reason and Emotion 36
- 3 Language and Communication 64
- 4 Knowledge, Evidence, and Errors in Thinking 100
- 5 Informal Fallacies 134
- 6 Recognizing, Analyzing, and Constructing Arguments 168
- 7 Inductive Arguments 204
- 8 Deductive Arguments 238
- 9 Ethics and Moral Decision Making 268
- 10 Marketing and Advertising 302
- 11 Mass Media 332
- 12 Science 360
- 13 Law and Politics 394



1 CRITICAL THINKING: WHY IT'S IMPORTANT 2

WHAT IS CRITICAL THINKING? 6

- Critical Thinking in Everyday Life 6
- Cognitive Development in College Students 7

CHARACTERISTICS OF A GOOD CRITICAL THINKER 9

- Analytical Skills 9
- Effective Communication 9
- Research and Inquiry Skills 9
- Flexibility and Tolerance for Ambiguity 9
- Open-Minded Skepticism 9
- Creative Problem Solving 10
- Attention, Mindfulness, and Curiosity 11
- Collaborative Learning 11

CRITICAL THINKING AND SELF-DEVELOPMENT 13

- Living the Self-Examined Life 14
- Developing a Rational Life Plan 14
- Facing Challenges 15
- The Importance of Self-Esteem 15
- Critical Thinking in a Democracy 16

BARRIERS TO CRITICAL THINKING 20

- The Three-Tier Model of Thinking 20
- Resistance 21
- Types of Resistance 22
- Narrow-Mindedness 24
- Rationalization and Doublethink 27
- Cognitive and Social Dissonance 27
- Stress as a Barrier 28

CRITICAL-THINKING ISSUE: *Perspectives on Affirmative Action in College Admissions* 32



2 REASON AND EMOTION 36

WHAT IS REASON? 39

- Traditional Views of Reason 39
- Gender, Age, and Reason 40
- Dreams and Problem Solving 41

THE ROLE OF EMOTION IN CRITICAL THINKING 44

- Cultural Attitudes Toward Emotion 44
- Emotional Intelligence and the Positive Effects of Emotion 45
- Negative Effects of Emotion 47
- Integrating Reason and Emotion 48

ARTIFICIAL INTELLIGENCE, REASON, AND EMOTION 49

- The Field of Artificial Intelligence 50
- Can Computers Think? 51
- Can Computers Feel Emotions? 51

FAITH AND REASON 53

- Fideism: Faith Transcends Reason 53
- Rationalism: Religious Beliefs and Reason 54
- Critical Rationalism: Faith and Reason Are Compatible 55
- Religion, Spirituality, and Real-Life Decisions 56

CRITICAL-THINKING ISSUE: *Perspectives on Reason and Proofs for the Existence of God* 60

3 LANGUAGE AND COMMUNICATION 64

WHAT IS LANGUAGE? 67

- Functions of Language 68
- Nonverbal Language 70

DEFINITIONS 74

- Denotative and Connotative Meanings 74
- Stipulative Definitions 74
- Lexical Definitions 75
- Precising Definitions 75
- Persuasive Definitions 77

EVALUATING DEFINITIONS 79

- Five Criteria 79
- Verbal Disputes Based on Ambiguous Definitions 79

COMMUNICATION STYLES 81

- Individual Styles of Communication 81
- Sex and Racial Differences in Communication Style 83
- Cultural Differences in Communication Styles 85

THE USE OF LANGUAGE TO MANIPULATE 87

- Emotive Language 87
- Rhetorical Devices 87
- Deception and Lying 90

CRITICAL-THINKING ISSUE: *Perspectives on Free-Speech Zones on College Campuses* 95





4 KNOWLEDGE, EVIDENCE, AND ERRORS IN THINKING 100

HUMAN KNOWLEDGE AND ITS LIMITATIONS 103

- Rationalism and Empiricism 103
- Structure of the Mind 103

EVALUATING EVIDENCE 104

- Direct Experience and False Memories 104
- The Unreliability of Hearsay and Anecdotal Evidence 106
- Experts and Credibility 107
- Evaluating Evidence for a Claim 108
- Research Resources 110

COGNITIVE AND PERCEPTUAL ERRORS IN THINKING 113

- Perceptual Errors 113
- Misperception of Random Data 116
- Memorable-Events Error 117
- Probability Errors 118
- Self-Serving Biases 119
- Self-Fulfilling Prophecy 122

SOCIAL ERRORS AND BIASES 124

- “One of Us/One of Them” Error 124
- Societal Expectations 125
- Group Pressure and Conformity 126
- Diffusion of Responsibility 127

CRITICAL-THINKING ISSUE: *Perspectives on Evaluating Evidence for the Existence of Unidentified Flying Objects (UFOs)* 130

5 INFORMAL FALLACIES 134

WHAT IS A FALLACY? 137

FALLACIES OF AMBIGUITY 137

- Equivocation 137
- Amphiboly 138
- Fallacy of Accent 139
- Fallacy of Division 139
- Fallacy of Composition 140

FALLACIES OF RELEVANCE 141

- Ad Hominem (Personal Attack) 141
- Appeal to Force (Scare Tactics) 143
- Appeal to Pity 145
- Popular Appeal 146
- Appeal to Ignorance 148
- Hasty Generalization 148
- Straw Man 150
- Red Herring 150

FALLACIES INVOLVING UNWARRANTED ASSUMPTIONS 153

- Begging the Question 153
- Inappropriate Appeal to Authority 154
- Loaded Question 154
- False Dilemma 154
- Questionable Cause 155
- Slippery Slope 157
- Naturalistic Fallacy 158

STRATEGIES FOR AVOIDING FALLACIES 161

CRITICAL-THINKING ISSUE: *Perspectives on Gun Control* 164





6 RECOGNIZING, ANALYZING, AND CONSTRUCTING ARGUMENTS 168

WHAT IS AN ISSUE? 171

- Identifying an Issue 171
- Asking the Right Questions 171

RECOGNIZING AN ARGUMENT 174

- Distinguishing Between Argumentation and Rhetoric 174
- Types of Arguments 174
- Propositions 174
- Premises and Conclusions 176
- Nonarguments: Explanations and Conditional Statements 176

BREAKING DOWN AND DIAGRAMMING ARGUMENTS 179

- Breaking Down an Argument into Propositions 179
- Identifying the Premise(s) and Conclusion in Complex Arguments 180
- Diagramming an Argument 180

EVALUATING ARGUMENTS 186

- Clarity: Is the Argument Clear and Unambiguous? 186
- Credibility: Are the Premises Supported by Evidence? 186
- Relevance: Are the Premises Relevant to the Conclusion? 187
- Completeness: Are There Any Unstated Premises and Conclusions? 187
- Soundness: Are the Premises True, and Do They Support the Conclusion? 189

CONSTRUCTING AN ARGUMENT 190

- Steps for Constructing an Argument 190
- Using Arguments in Making Real-Life Decisions 195

CRITICAL-THINKING ISSUE: *Perspectives on Same-Sex Marriage* 198

7 INDUCTIVE ARGUMENTS 204

WHAT IS AN INDUCTIVE ARGUMENT? 207

The Use of Inductive Reasoning in Everyday Life 207

GENERALIZATION 208

- Using Polls, Surveys, and Sampling to Make Generalizations 208
- Applying Generalizations to Particular Cases 213
- Evaluating Inductive Arguments Using Generalization 214

ANALOGIES 218

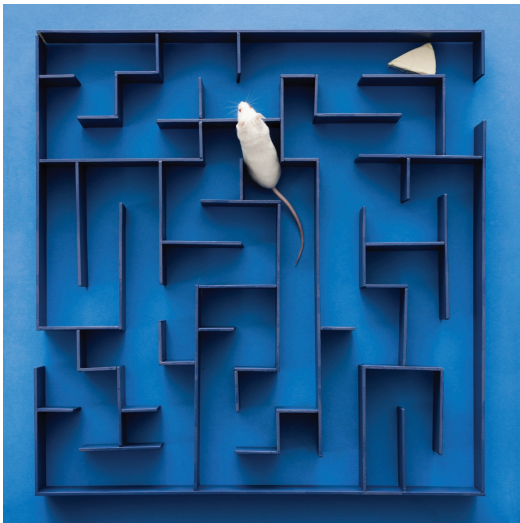
- Uses of Analogies 218
- Arguments Based on Analogies 219
- Analogies as Tools for Refuting Arguments 220
- Evaluating Inductive Arguments Based on Analogies 221

CAUSAL ARGUMENTS 225

- Causal Relationships 225
- Correlations 227
- Establishing Causal Relationships 227
- Causal Arguments in Public Policy and Everyday Decision Making 227
- Evaluating Causal Arguments 229

CRITICAL-THINKING ISSUE: *Perspectives on the Legalization of Marijuana* 233





8 DEDUCTIVE ARGUMENTS 238

WHAT IS A DEDUCTIVE ARGUMENT? 241

- Deductive Reasoning and Syllogisms 241
- Valid and Invalid Arguments 241
- Sound and Unsound Arguments 242

TYPES OF DEDUCTIVE ARGUMENTS 243

- Arguments by Elimination 243
- Arguments Based on Mathematics 245
- Arguments from Definition 246

HYPOTHETICAL SYLLOGISMS 249

- Modus Ponens* 249
- Modus Tollens* 250
- Chain Arguments 250
- Evaluating Hypothetical Syllogisms for Validity 251

CATEGORICAL SYLLOGISMS 253

- Standard-Form Categorical Syllogisms 253
- Quantity and Quality 254
- Diagramming Propositions with Venn Diagrams 254
- Using Venn Diagrams to Evaluate Categorical Syllogisms 255

TRANSLATING ORDINARY ARGUMENTS INTO STANDARD FORM 258

- Rewriting Everyday Propositions in Standard Form 258
- Identifying the Three Terms in the Argument 259
- Putting the Argument into Standard Form 260

CRITICAL-THINKING ISSUE: *Perspectives on the Death Penalty* 262

9 ETHICS AND MORAL DECISION MAKING 268

WHAT IS MORAL REASONING? 271

- Moral Values and Happiness 271
- Conscience and Moral Sentiments 273

THE DEVELOPMENT OF MORAL REASONING 275

- Lawrence Kohlberg's Stage Theory of Moral Development 275
- Carol Gilligan on Moral Reasoning in Women 277
- The Development of Moral Reasoning in College Students 279

MORAL THEORIES: MORALITY IS RELATIVE 281

- Ethical Subjectivism 281
- Cultural Relativism 281

MORAL THEORIES: MORALITY IS UNIVERSAL 284

- Utilitarianism (Consequence-Based Ethics) 285
- Deontology (Duty-Based Ethics) 286
- Rights-Based Ethics 287
- Virtue Ethics 290

MORAL ARGUMENTS 291

- Recognizing Moral Arguments 291
- Constructing Moral Arguments 291
- Evaluating Moral Arguments 292
- Resolving Moral Dilemmas 293

CRITICAL-THINKING ISSUE: *Perspectives on Abortion* 298





10 MARKETING AND ADVERTISING 302

MARKETING IN A CONSUMER CULTURE 304

- Marketing Research 304
- Avoiding Confirmation Bias and Other Errors in Thinking 306

MARKETING STRATEGIES 308

- The SWOT Model 308
- Consumer Awareness of Marketing Strategies 311

ADVERTISING AND THE MEDIA 314

- The Role of Advertising in the Media 314
- Product Placement 315
- Television Advertising and Children 315

EVALUATING ADVERTISEMENTS 318

- Common Fallacies in Advertisements 318
- Rhetorical Devices and Misleading Language 319
- Faulty and Weak Arguments 319
- A Critique of Advertising 321

CRITICAL-THINKING ISSUE: *Perspectives on Advertising and Marketing “Junk Food”* 326

11 MASS MEDIA 332

MASS MEDIA IN THE UNITED STATES 335

- The Rise of Mass Media 335
- The Media Today 335

THE NEWS MEDIA 337

- Sensationalism and the News as Entertainment 338
- Depth of News Analysis 338
- Bias in the News 341

SCIENCE REPORTING 344

- Misrepresentation of Scientific Findings 344
- Government Influence and Bias 345
- Evaluating Scientific Reports 345

THE INTERNET 347

- Impact of the Internet on Daily Life 347
- Social Networking 348
- The Internet as “The Great Equalizer” 349
- Misuse of the Internet: Pornography and Plagiarism 351

MEDIA LITERACY: A CRITICAL-THINKING APPROACH 352

- Experiencing the Media 352
- Interpreting Media Messages 353
- Analyzing Media Messages 353

CRITICAL-THINKING ISSUE: *Internet Plagiarism Among College Students* 355





12 SCIENCE 360

WHAT IS SCIENCE? 363

- The Scientific Revolution 363
- Assumptions Underlying Science 363
- Limitations of Science 364
- Science and Religion 365

THE SCIENTIFIC METHOD 367

1. Identify the Problem 367
2. Develop an Initial Hypothesis 368
3. Gather Additional Information and Refine the Hypothesis 369
4. Test the Hypothesis 371
5. Evaluate the Hypothesis on the Basis of Testing or Experimental Results 371

EVALUATING SCIENTIFIC HYPOTHESES 372

- Relevance to the Problem Under Study 372
- Consistency with Well-Established Theories 373
- Simplicity 373
- Testability and Falsifiability 375
- Predictive Power 375
- Distinguishing between Scientific and Pseudoscientific Hypotheses 375

RESEARCH METHODOLOGY AND SCIENTIFIC EXPERIMENTS 378

- Research Methodology and Design 378
- Field Experiments 379
- Controlled Experiments 379
- Single-Group (Pretest–Posttest) Experiments 380
- Evaluating an Experimental Design 382
- Interpreting Experimental Results 383
- Ethical Concerns in Scientific Experimentation 383



THOMAS KUHN AND SCIENTIFIC PARADIGMS 386

- Normal Science and Paradigms 386
- Scientific Revolutions and Paradigm Shifts 386

CRITICAL-THINKING ISSUE: *Evolution versus Intelligent Design* 388



13 LAW AND POLITICS 394

THE SOCIAL CONTRACT THEORY OF GOVERNMENT 397

The State of Nature 397

Social Contract Theory 397

International Law 398

THE DEVELOPMENT OF DEMOCRACY IN THE UNITED STATES 399

Representative Democracy: A Safeguard Against the Tyranny of the Majority 399

Liberal Democracy: Protection of Individual Rights 400

Political Campaigns and Elections 400

Voting: A Right or a Duty? 402

THE EXECUTIVE BRANCH OF GOVERNMENT 403

The Role of the Executive Branch 403

Executive Orders and National Security 403

Checks on Executive Power 404

THE LEGISLATIVE BRANCH OF GOVERNMENT 407

The Role of the Legislative Branch 407

Citizens and Legislation 408

Unjust Laws and Civil Disobedience 410

THE JUDICIAL BRANCH OF GOVERNMENT 414

The Role of the Judicial Branch 414

Rules of Evidence 414

Legal Reasoning and the Doctrine of Legal Precedent 415

Jury Duty 417

CRITICAL-THINKING ISSUE: *Perspectives on the Use of Drones in Warfare* 420



SOLUTIONS MANUAL 424

GLOSSARY 437

NOTES 442

CREDITS 451

INDEX 454



Features

THINK TANK

- Self-Evaluation Questionnaire 6
- Selected Questions from an Emotional IQ Test 46
- Self-Evaluation Questionnaire: Communication Style 82
- Self-Evaluation Questionnaire: How We View the World 103
- Self-Evaluation Questionnaire:
Moral Reasoning 276

ANALYZING IMAGES

- Student Protestor in Front of Tanks at Tiananmen Square, China 19
- Is Ignorance Bliss? 23
- “Only a Human Can . . .” 49
- Abraham Making Preparations to Sacrifice His Son Isaac at God’s Command 55
- Animal Language 71
- Nonverbal Communication and Withholding Information 72
- International Diplomacy and Nonverbal Communication 84
- The St. Louis Arch 114
- Inkblots 115
- Asch Experiment 126
- Making Poor Choices 139
- Darwin’s Descent from the Apes 144
- “You’ve Come a Long Way, Baby” 147
- Scene From Star Wars Episode II 158
- Rhetorical Standoff 175
- The Debate Over Marijuana 181
- Hispanic Housekeeper 188
- The Blind Men and the Elephant 215
- Violent Video Games and the Sandy Hook School Massacre 226
- The Brain and Moral Reasoning: The Case of Phineas P. Gage 272
- A Ku Klux Klan Lynching, Indiana, 1930 283
- Football Players 290
- Product Placement in the Media 316
- Ad for a Toyota Hybrid 320
- Ad for Sabai Wine Spritzer 322
- Stereotypes and Racism in the News Media 340
- The “Canals” of Mars 365
- Darwin’s Drawings of Galapagos Island Finch Beaks 370
- Science versus Pseudoscience 376
- Japanese American Internment Camps and Executive Order 9066 405
- The Salem Witch Trials 416

HIGHLIGHTS

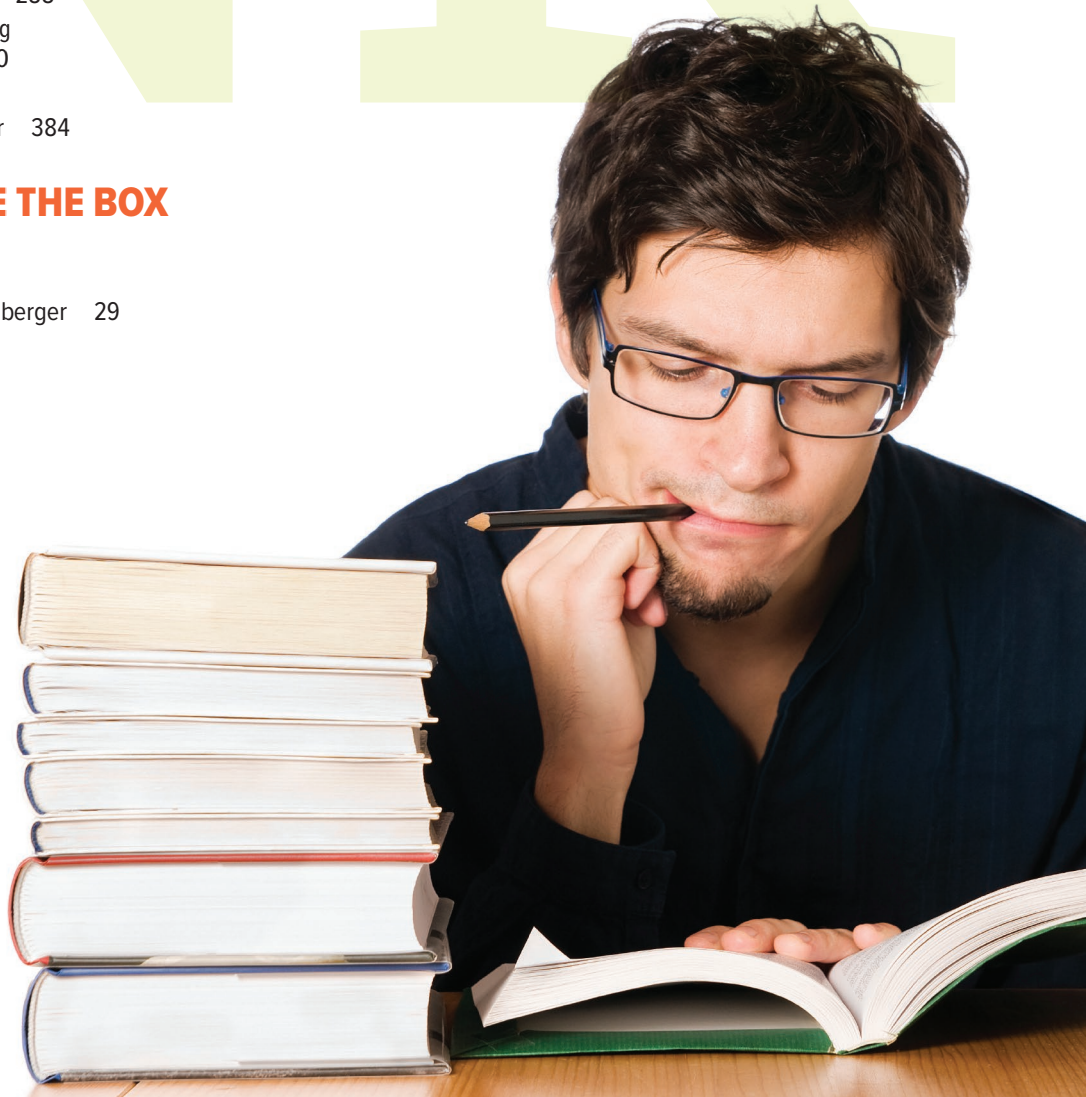
- Cognitive Development in College Students 7
- Characteristics of a Skilled Critical Thinker 12
- My Life Plan 14
- Types of Resistance and Narrow-Mindedness 26
- Types of Definitions 77
- Five Criteria for Evaluating Definitions 79
- Communication Styles 83
- Social Errors and Biases 127
- Fallacies of Ambiguity 140
- Fallacies of Relevance 150
- Fallacies Involving Unwarranted Assumptions 159
- How to Break Down an Argument 179
- Symbols Used in Diagramming Arguments 184
- Guidelines for Evaluating an Argument 189
- Steps for Constructing an Argument 195
- Questions to Ask in Determining If a Poll or Survey Is Reliable 213
- Evaluating Arguments That Are Based on Generalization 216
- Evaluating Arguments Based on an Analogy 222
- Evaluating Causal Arguments 229
- Deductive Arguments 242
- Valid Forms of Hypothetical Syllogisms 252
- Guidelines for Translating Arguments Into Standard Categorical Form 259
- Stages in the Development of Moral Reasoning 277
- Utilitarian Calculus: Seven Factors to Take Into Consideration in Determining the Most Moral Action or Decision 286
- Seven Prima Facie Duties 287
- Universal Moral Theories 289
- Steps for Resolving a Moral Dilemma 294
- Questions to Consider in Evaluating Advertisements 321
- Evaluating Scientific Reports in the Media 346
- Analyzing Media Messages 353
- Assumptions of Science 364
- The Scientific Method 371
- Criteria for Evaluating a Scientific Hypothesis 377
- Criteria for a Well-Designed Experiment 383
- Thoreau’s Four Criteria for Civil Disobedience 412
- Legal Precedents 417

CRITICAL THINKING IN ACTION

- Your Brain on Video Games 42
- The “Mozart Effect” 50
- Say What? 76
- What Those “Code Words” in Personal Ads Really Mean 088
- Memorization Strategies 106
- Food for Thought: Perception and Supersized Food Portions 117
- Irrational Beliefs and Depression 121
- The Perils of Verbal Attacks in Personal Relationships 142
- Writing a Paper Based on Logical Argumentation 193
- The Dangers of Jumping to a Conclusion 194
- It’s Quitting Time: Nicotine 101—College Students and Smoking 228
- Put It on My Tab: Paying College Tuition by Credit Card—A Wise Move? 247
- The Golden Rule—Reciprocity as the Basis of Morality in World Religions 288
- Over Your Shoulder: Monitoring Employees’ Internet Use 350
- Science and Prayer 381
- How to Read a Scientific Paper 384

THINKING OUTSIDE THE BOX

- Elizabeth Cady Stanton 17
- Stephen Hawking 25
- Captain Chesley “Sully” Sullenberger 29
- Temple Grandin 41
- Rosa Parks 47
- Albert Schweitzer 57
- Sally Ride 69
- Rachel Carson 109
- Judith Sheindlin 156
- Abraham Lincoln 172
- George Gallup 212
- Bo Dietl 244
- Gloria Steinem 278
- Mohandas Gandhi 279
- Jørgen Vig Knudstorp 311
- Edward R. Murrow 342
- Albert Einstein 374
- Rosa Parks 411



CRITICAL-THINKING ISSUES

Perspectives on Affirmative Action in College

Admissions 32

Affirmative Action and Higher Education: Before and After the Supreme Court Rulings on the Michigan Cases, *Nancy Cantor* 33

Achieving Diversity on Campus: U.S. Supreme Court, Justice *Sandra Day O'Connor* 33

Perspectives on Reason and Proofs for the Existence of God 60

The Existence of God, *Thomas Aquinas* 61

In Defense of Unbelief: Are Three 'Fundamentalist Atheists'? *Paul Kurtz* 62

Perspectives on Free-Speech Zones on College Campuses 95

Feigning Free Speech on Campus, *Greg Lukianoff, Foundation for Individual Rights in Education* 96

Reasonable Limits Are Good, *Robert J. Scott* 97

Perspectives on Evaluating Evidence for the Existence of Unidentified Flying Objects (UFOs) 130

Project Blue Book: Analysis of Reports of Unidentified Aerial Objects, *United States Air Force* 131

Physical Evidence and Unidentified Flying Objects, *Royston Paynter* 132

Perspectives on Gun Control 164

Stop Worrying About Guns in the Classroom. They're Already Here. *The Chronicle of Higher Education*, By *Erik Gilbert* 165

Testimony by Mark Kelly, Senate Judiciary Committee Hearing on Gun Violence on January 30, 2013 166

Perspectives on Same-Sex Marriage 198

Obergefell v. Hodges (2015), *Justice Anthony Kennedy, Majority Opinion* 199

Obergefell v. Hodges (2015), *Chief Justice John G. Roberts, Dissenting Position* 201

Perspectives on the Legalization of Marijuana 233

Keep Marijuana Illegal, *Karen P. Tandy* 234

Should Marijuana Be Legalized under any Circumstances? *Joe Messerli* 235

Perspectives on the Death Penalty 262

Eye for an Eye: The Case for Revenge, *Thane Rosenbaum* 263

There Is Blood, a Lot of Blood, Very Red Blood, *Justin E. H. Smith* 264

Perspectives on Abortion 298

A Defense of Abortion, *Roe v. Wade (1973)* 299

The Rights of the Unborn, *Father Clifford Stevens* 300

Perspectives on Advertising and Marketing

"Junk Food" 326

Eye-Catching Ads Promote Junk Food to Kids, *CBS News* 327

Poll: Obesity's a crisis but we want our junk food, *Jennifer C. Kerr & Jennifer Agiesta* 328

Internet Plagiarism among College Students 355

Academic Integrity and Student Plagiarism: a Question of Education, Not Ethics, *Susan D. Blum* 356

Four Reasons to Be Happy about Internet Plagiarism, *Russell Hunt* 357

Evolution versus Intelligent Design 388

Irreducible Complexity: Obstacle to Darwinian Evolution, *Michael Behe* 389

The Failure of "Intelligent Design", *By Kenneth Miller* 391

Perspectives on the Use of Drones in

Warfare 420

The Case for Drones, *By Colin Wood* 421

5 Reasons Why U.S. is Not Ready for Domestic Drone Use, *By Lucas Eaves* 422

Readings

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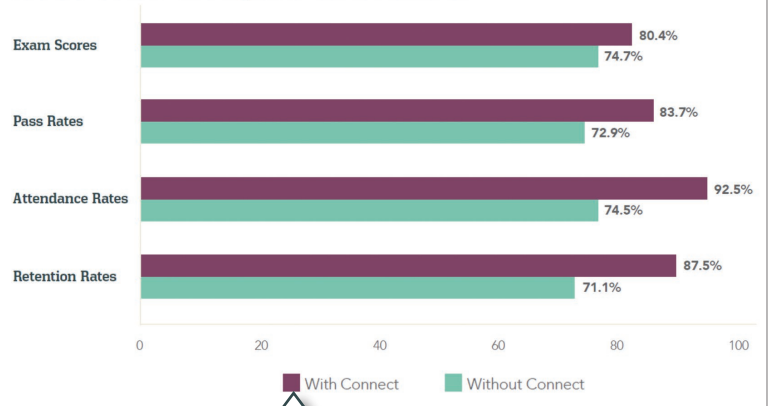
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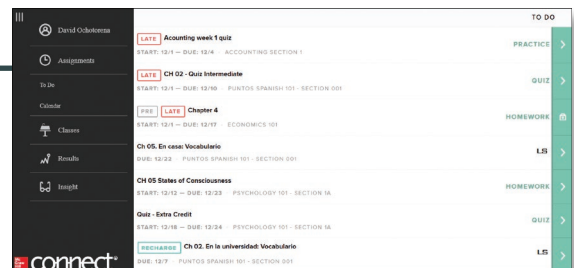
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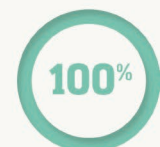
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A woman with curly hair is looking at a man in a meeting. They are sitting at a table with papers and a pen. In the background, other people are working at tables. A large number '1' is in the top left corner.

1

**CRITICAL
THINKING**
WHY IT'S IMPORTANT

WHAT'S TO COME

- 6 What Is Critical Thinking?
- 9 Characteristics of a Good Critical Thinker
- 14 Critical Thinking and Self-Development
- 21 Barriers to Critical Thinking
- 32 Critical Thinking Issue: Perspectives on Affirmative Action in College Admissions

Nazi war criminal Adolf Eichmann was tried in Israel in 1960 for crimes against humanity. Despite his claim that he was just following the orders of his superiors when he ordered the deaths of millions of Jews, the court found him guilty and sentenced him to death. Was Eichmann an inhuman monster? Or was he, as his defense lawyer claimed, just doing what many of us would do—following orders from our superiors?

To address this question, social psychologist Stanley Milgram of Yale University conducted, between 1960 and 1963, what has become a classic experiment. Milgram placed an advertisement in a newspaper asking for men to take part in a scientific study of memory and learning.¹ Those chosen to participate were told that the purpose of the experiment was to study the effects of punishment on learning—and that their job was to give electric shocks as punishment when the learner gave a wrong answer. The participants were instructed that



In what ways do good listening skills and open-mindedness contribute to the development of our critical thinking skills?

THiNK FIRST

- What are the characteristics of a skilled critical thinker?
- What are the three levels of thinking?
- What are some of the barriers to critical thinking?



the shocks would be given at the direction of the experimenter and would range in intensity from 15 volts to 450 volts. In fact, no shocks were actually being given, but the participants didn't know this.

As the intensity of the shocks “increased,” the learner (actually an actor) responded with increased anguish, screaming in pain and pleading with the participant delivering the shocks to stop. Despite the repeated pleas, all the participants gave shocks of up to 300 volts before refusing to go on. In addition, 65 percent continued to deliver shocks of 450 volts simply because an authority figure (a scientist in a white lab coat) told the participants to continue. Most who continued were clearly disturbed by what they were doing. However, unlike the participants who refused to continue, they were unable to provide logical counterarguments to the scientist’s insistence that “the experiment requires that you must continue.”

How could this happen? Were the results of Milgram’s study some sort of aberration? As it turns out, they were not.



Milgram Experiment Scene from the Milgram experiment on obedience. The “learner” is being hooked up to the machine that will deliver bogus electric shocks each time he gives a wrong answer.

Along similar lines, in 1971, the U.S. Navy funded a study of the reaction of humans to situations in which there are huge differences in authority and power—as in a prison. The study was administered under the direction of psychologist Philip Zimbardo, who selected student volunteers judged to be psychologically stable and healthy.² The volunteers were randomly assigned to play the role of either “guard” or “prisoner” in a two-week prison simulation in the basement of the Stanford University building in which the psychology department was located. To make the situation more realistic, guards were given wooden batons and wore khaki, military-style uniforms and mirrored sunglasses that minimized eye contact. The prisoners were given ill-fitting smocks without underwear and rubber thongs for their feet. Each prisoner was also assigned a number to be used instead of a name. The guards were not given any formal instructions; they were simply told that it was their responsibility to run the prison.

The experiment quickly got out of control. Prisoners were subjected to abusive and humiliating treatment, both physical and emotional, by the guards. One-third of the guards became increasingly cruel, especially at night when they thought the cameras had been turned off. Prisoners were forced to clean toilets with their bare hands, to sleep on concrete floors, and to endure solitary confinement and hunger. They were also subjected to forced nudity and sexual abuse—much like what would happen many years later in 2003–2004 at Abu Ghraib

prison in Iraq and more recently at Guantanamo Bay in Cuba (see photo on page 18). After only six days, the Stanford prison experiment had to be called off.

These experiments suggest that many, if not most, Americans will uncritically follow the commands of those in authority. Like the Milgram study, the Stanford prison experiment demonstrated that ordinary people will commit atrocities in situations where there is social and institutional support for behavior that they would not do on their own and if they could put the blame on others. Milgram wrote:

Ordinary people, simply doing their jobs and without any particular hostility on their part, can become agents in a terrible destructive process. Moreover, even when the destructive effects of their work become patently clear, and they are asked to carry out actions incompatible with fundamental standards of the majority, relatively few people have the resources needed to resist authority.³

What are these resources that people need to resist authority? Good critical-thinking skills are certainly one. Those who refused to continue in the Milgram study were able to give good reasons for why they should stop: for example, “it is wrong to cause harm to another person.” In contrast,

These experiments suggest that many, if not most, Americans will uncritically follow the commands of those in authority.

those who continued, even though they knew what they were doing was wrong, simply deferred to the authority figure even though he was making unreasonable demands of them.⁴

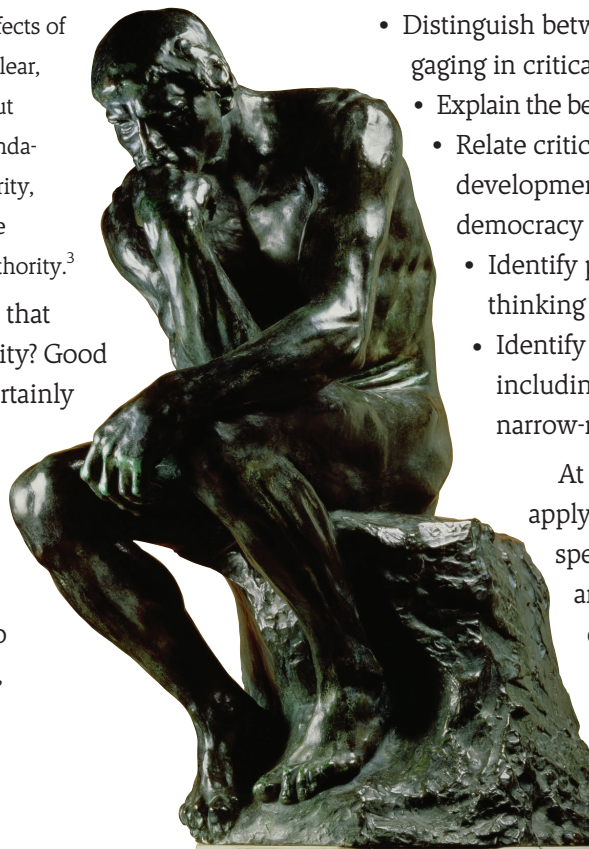
Although most of us may never be in a situation in which our actions have such grim consequences, a lack of critical-thinking skills can still have negative consequences in our everyday decisions. When it

comes making to personal, educational, and career choices, we may defer to our parents or cave in to pressure from friends rather than think

through the reasons for our decisions. When major life decisions are not carefully thought out, there can be long-lasting consequences, such as dropping out of school or choosing a career in which we are ultimately unhappy. In addition, because critical-thinking skills are transferable across disciplines, improving these skills can have a positive impact on our success in college. In this chapter, we’ll be looking at some of the components of critical thinking as well as the benefits of developing good critical-thinking skills. We’ll conclude by examining some of the barriers to critical thinking. Specifically, we will:

- Define *critical thinking* and *logic*
- Learn about the characteristics of a good critical thinker
- Distinguish between giving an opinion and engaging in critical thinking
- Explain the benefits of good critical thinking
- Relate critical thinking to personal development and our role as citizens in a democracy
- Identify people who exemplify critical thinking in action
- Identify barriers to critical thinking, including types of resistance and narrow-mindedness

At the end of the chapter, we will apply our critical-thinking skills to a specific issue by discussing and analyzing different perspectives on affirmative action in college admissions.



WHAT IS CRITICAL THINKING?

Critical thinking is a collection of skills we use every day that are necessary for our full intellectual and personal development.

critical thinking A collection of skills we use every day that are necessary for our full intellectual and personal development.

logic The study of the methods and principles used to distinguish correct or good arguments from poor arguments.

opinion A belief based solely on personal feelings rather than on reason or facts.

The word *critical* is derived from the Greek word *kritikos*, which means “discernment,” “the ability to judge,” or “decision making.” Critical thinking requires learning *how* to think rather than simply *what* to think.

Critical thinking, like logic, requires good analytical skills. **Logic** is part

of critical thinking and is defined as “the study of the methods and principles used in distinguishing correct (good) arguments from incorrect (bad) arguments.”⁵ Critical thinking involves the application of the rules of logic as well as gathering evidence, evaluating it, and coming up with a plan of action. We’ll be studying logical arguments in depth, in Chapters 5 through 8.

Critical Thinking in Everyday Life

Critical thinking provides us with the tools to identify and resolve issues in our lives. Critical thinking is not simply a matter of asserting our opinions on issues. **Opinions** are based on personal feelings or beliefs, rather than on reason and evidence. We are all certainly entitled to our own opinions. Opinions, however, are not necessarily reasonable. While some may happen to turn out to be correct, opinions, no matter how deeply and sincerely held, may also be mistaken. As a critical thinker, you need to be willing to provide logical support for your beliefs.

Uninformed opinions can lead you to make poor decisions in your life and act in ways that you may later come to regret. Sometimes uninformed opinions can negatively impact society. For example, even though antibiotics kill bacteria and have no effect on cold viruses, many people try to persuade their doctors into prescribing them for cold symptoms. Despite doctors telling patients that antibiotics have no effect on viral infections, studies show that about half of doctors give in to patient pressure for antibiotics for viral infections.⁶ Such overuse of antibiotics makes bacteria more drug resistant and has led to a decline in the effectiveness of treatment in diseases where they are really needed.⁷ This phenomenon has been

SELF-EVALUATION QUESTIONNAIRE

Rate yourself on the following scale from 1 (strongly disagree) to 5 (strongly agree).

- 1 2 3 4 5 There are right and wrong answers. Authorities are those who have the right answers.
- 1 2 3 4 5 There are no right or wrong answers. Everyone has a right to his or her own opinion.
- 1 2 3 4 5 Even though the world is uncertain, we need to make decisions on what is right or wrong.
- 1 2 3 4 5 I tend to stick to my position on an issue even when others try to change my mind.
- 1 2 3 4 5 I have good communication skills.
- 1 2 3 4 5 I have high self-esteem.
- 1 2 3 4 5 I would refuse to comply if an authority figure ordered me to do something that might cause me to hurt someone else.
- 1 2 3 4 5 I don't like it when other people challenge my deeply held beliefs.
- 1 2 3 4 5 I get along better with people than do most people.
- 1 2 3 4 5 People don't change.
- 1 2 3 4 5 I have trouble coping with problems of life such as relationship problems, depression, and rage.
- 1 2 3 4 5 I tend to sacrifice my needs for those of others.
- 1 2 3 4 5 Men and women tend to have different communication styles.
- 1 2 3 4 5 The most credible evidence is that based on direct experience, such as eyewitness reports.

Keep track of your results. As you read this book and gain a better understanding of critical thinking, you'll find out what your responses to each of these statements mean. A brief summary of the meaning of each rating can also be found at the back of the book.

THiNK Tank



linked to the emergence of new, more virulent strains of drug-resistant tuberculosis. In addition, the incidence of some sexually transmitted diseases such as syphilis, which was once treatable by penicillin, is once again on the rise.⁸

The ability to think critically and to make effective life decisions is shaped by many factors, including our stage of cognitive development, the possession of good analytical communication, and research skills and such characteristics as open-mindedness, flexibility, and creativity.

Cognitive Development in College Students

Becoming a critical thinker is a lifelong process. Education researcher William Perry, Jr. (1913–1998) was one of the first to study college students' cognitive development.⁹ **Cognitive development** is the process by which each of us “becomes an intelligent person, acquiring intelligence and increasingly advanced thought and problem-solving ability from infancy to adulthood.”¹⁰ Perry's work has gained wide acceptance among educators. Although Perry identified nine developmental positions, later researchers have simplified his schemata into three stages: dualism, relativism, and commitment. These three stages are represented by the first three questions in the Self-Evaluation Questionnaire in the Think Tank feature on page 6.

Stage 1: Dualism. Younger students such as freshmen and many sophomores tend to take in knowledge and life experiences in a simplistic, “dualistic” way, viewing something as either right or wrong. They see knowledge as existing outside themselves and look to authority figures for the answers.

This dualistic stage is most obvious when these students confront a conflict. Although they may be able to apply critical-thinking skills in a structured classroom environment, they often lack the ability to apply these skills in real-life conflicts. When confronted with a situation such as occurred in the Milgram study of obedience,¹¹ they are more likely to follow an authority figure even if they feel uncomfortable doing so. In addition, a controversial issue such as affirmative action, where there is little agreement among authorities and no clear-cut right or wrong answers, can leave students at this stage struggling to make sense of it. We'll be studying some perspectives on affirmative action at the end of this chapter.

When researching an issue, students at the dualistic stage may engage in **confirmation bias**, seeking out only evidence that supports their views and dismissing as unreliable statistics that contradict them.¹² The fact that their “research” confirms their views serves to reinforce their simplistic, black-and-white view of the world.

HIGHLIGHTS

COGNITIVE DEVELOPMENT IN COLLEGE STUDENTS

Stage 1: Dualism There are right and wrong answers. Authorities know the right answers.

Transition to Stage 2 There are some uncertainties and different opinions, but these are temporary.

Stage 2: Relativism When the authorities don't have the right answers, everyone has a right to his or her own opinion; there are no right or wrong answers.

Transition to Stage 3 All thinking is contextual and relative but not equally valid.

Stage 3: Commitment I should not just blindly follow or oppose authority. I need to orient myself in an uncertain world and make a decision or commitment.

► **APPLICATION: Identify an example of thinking at each of three stages in the text.**

Adapted from Ron Sheese and Helen Radovanovic, “W. G. Perry's Model of Intellectual and Ethical Development: Implications of Recent Research for the Education and Counseling of Young Adults,” paper presented at the annual meeting of the Canadian Psychological Association (Ottawa, Ontario, June 1984). Reprinted with permission by Ron Sheese

In one study, 48 undergraduates, who either supported or opposed capital punishment, were given two fictitious studies to read.¹³ One study presented “evidence” contradicting beliefs about the deterrent effect of capital punishment. The other study presented “evidence” confirming the effectiveness of capital punishment as a deterrent. The results showed that students uncritically accepted the evidence that confirmed their pre-existing views, while being skeptical about opposing evidence. In other words, despite the fact that both groups read the same studies, rather than modifying their position, the students used the confirming study to support their existing opinion on capital punishment and dismissed the opposing evidence.*

cognitive development The process of acquiring advanced thinking and problem-solving skills from infancy through adulthood.

confirmation bias At the dualistic stage of research, seeking out only evidence that supports your view and dismissing evidence that contradicts it.

Connections

How do you determine if the statistics found in the results of a scientific experiment are credible? See Chapter 12, p. 382.

*For more on the debate on capital punishment, see pages 262–265.

Students at this stage may also be unable to recognize ambiguity, conflicting values, or motives in real-life situations. In light of this, it is not surprising that young people are most likely to fall victim to con artists, financial fraud, and identity theft, despite the stereotype that the elderly are more vulnerable to scam artists.¹⁴

Students are most likely to make the transition to a higher stage of cognitive development when their current way of thinking is challenged or proves inadequate. During the transition, they come to recognize that there is uncertainty in the world and that authorities can have different positions. Some educators called this period of disorientation and doubting all answers “sophomoritis.”¹⁵

Stage 2: Relativism. Rather than accepting that ambiguity and uncertainty may be unavoidable and that they need to make decisions despite this, students at the relativist stage go to the opposite extreme. They reject a dualistic worldview and instead believe that all truth is relative or just a matter of opinion. People at this stage believe that stating your opinion is the proper mode of expression, and they look down on challenging others’ opinions as “judgmental” and even disrespectful. The belief that all truth is relative can also lead to a type of mental paralysis. Furthermore, despite their purported belief in relativism, most students at this stage still expect their professor to support his or her opinion.

Having their ideas challenged, grappling with controversial issues, encountering role models who are at a higher stage of cognitive development, and learning about their limits and

the contradictions in their thinking can all help students move on to the next stage of cognitive development.

Stage 3: Commitment. As students mature, they come to realize that not all thinking is equally valid. Not only can authorities be mistaken but also in some circumstances uncertainty and ambiguity are unavoidable. When students at this stage experience uncertainty, they are now able to make decisions and commit to particular positions on the basis of reason and the best evidence available. At the same time, as independent thinkers, they are open to challenge, able to remain flexible, and willing to change their position should new evidence come to light.

As students mature,
they come to realize that not
all thinking is equally valid.

As we mature and acquire better critical-thinking skills, our way of conceptualizing and understanding the world becomes increasingly complex. This is particularly true of older students who return to college after spending time out in the “real world.” Unlike people at the first stage who look to authority for answers, people at the third stage accept responsibility for their interactions with their environment and are more open to challenges and more accepting of ambiguity.

EXERCISE 1-1



STOP AND ASSESS YOURSELF

1. Imagine that you are a participant in Milgram’s study of obedience. What would you have done if you protested and the experimenter in charge answered, “The experiment requires that you continue”? Discuss your answer in light of the stages of cognitive development. Discuss also what you might do to make it less likely that you would obey an authority figure in a situation, such as the Milgram study.
2. College professor Stephen Satris maintains that the relativism of the second stage of development is not a genuine philosophical position but a means of avoiding having one’s ideas challenged. Student relativism, he writes, “is primarily a method of protection, a suit of armor, which can be applied to one’s own opinions, whatever they may be—but not necessarily to the opinion of others. . . . It is an expression of the idea that no one step forward and judge (and possibly criticize) one’s own opinion.”¹⁶ What is your “suit of armor”? Discuss strategies you might take to break out of this “suit of armor.” Relate your answer to your own stage of cognitive development.
3. Most college students do not make the transition to the third, or commitment, stage of cognitive development. Why do you think this is so? Discuss ways in which the curriculum and college life in general might be restructured to encourage cognitive growth in students.
4. Today, more people are returning to college after having children and/or having worked for several years. This phenomenon is especially prevalent in community colleges, where the average age is 28.¹⁷ Discuss whether there are differences in how students of different ages in your class think about the world, and how interaction among students at different stages might enrich our thinking.
5. The first three questions of the “Self-Evaluation Questionnaire” in the Think Tank feature represent the three stages of cognitive development. Which stage, or transition between stages, best describes your approach to understanding the world? What are the shortcomings and strengths of your current stage of cognitive development? Develop a plan to improve your skills as a critical thinker. Put the plan into action. Report on the results of your action plan.

CHARACTERISTICS OF A GOOD CRITICAL THINKER

Critical thinking is a collection of skills that enhance and reinforce each other. In this section, we'll be discussing some of the more important skills for effective critical thinking.

Analytical Skills

As a critical thinker, you need to be able to analyze and provide logical support for your beliefs rather than simply rely on your opinions. Analytical skills are also important in recognizing and evaluating other people's arguments so that you are not taken in by faulty reasoning. We'll be studying logical argumentation in more depth in Chapter 2 and in Chapters 5 through 9.

Effective Communication

In addition to analytical skills, critical thinking requires communication and reading skills.¹⁸ Communication skills include listening, speaking, and writing skills. Being aware of your own communication style, as well as of cultural variations and differences in the communication styles of men and women, can also go a long way toward improving communication in a relationship. We'll be learning more about communication in Chapter 3, "Language and Communication."

Research and Inquiry Skills

Understanding and resolving issues requires research and inquiry skills such as competence in gathering, evaluating, and pulling together supporting evidence. For example, in researching and gathering information on what would be the best major or career path for you, you need to identify your interests and talents first and then evaluate possible majors and careers in light of these interests and talents. Research skills are also important in understanding and moving toward a resolution of a complex issue, such as affirmative action in college admissions.

Inquiry and gaining greater insight requires asking the right questions, as Milgram did in designing his study of obedience. While most people were asking what sort of twisted monsters the Nazis were or why the German people allowed Hitler to have so much power, Milgram asked the more basic question: How far would ordinary citizens go in obeying an authority figure? Despite the fact that experiments such as Milgram's were declared unethical by

the American Psychological Association in 1973 because of long-term psychological distress suffered by many of the participants, his scientific experiments still stand as classics in the field.

As critical thinkers, we need to avoid confirmation bias and the tendency to selectively see and interpret data to fit into our own worldviews, as happened in the study on student's views of capital punishment (see page 7). This is a practice that often leads to stalemates and conflict in personal as well as in political relations. Our research should also be accurate and based on credible evidence. We'll be learning more about researching and evaluating evidence in Chapter 4.

Flexibility and Tolerance for Ambiguity

Too many people defer to others or fail to take a position on a controversial issue simply because they are unable to evaluate conflicting views. As we mature, we become better at making decisions in the face of uncertainty and ambiguity. Effective decision making includes setting clear short-term and long-term goals in our lives and developing a realistic strategy for achieving these goals. Critical thinkers also build flexibility into their life plans so that they can adapt to changes, especially since most of us haven't had sufficient experience to finalize our life plan during our first few years of college. We'll be discussing the process of developing a life plan in more depth later in this chapter.

Connections

How do scientists identify a problem and develop a hypothesis for studying a problem?
See Chapter 12, p. 367.

Open-Minded Skepticism

Critical thinkers are willing to work toward overcoming personal prejudices and biases. They begin with an open mind and an attitude of reflective skepticism. The point is not simply to take a stand on an issue—such as what career is best for me? Is abortion immoral?—but rather to critically examine the evidence and assumptions put forth in support of different positions on the issue before coming to a final conclusion. In doing so, effective critical thinkers are able to balance belief and doubt.

First put forward by French philosopher and mathematician René Descartes (1596–1650), the **method of doubt** suspends belief. This method of critical analysis, which has traditionally been preferred in fields such as science and philosophy,

method of doubt A method of critical analysis in which we put aside our preconceived ideas and beliefs and begin from a position of skepticism.