

SEVENTH EDITION

# Introduction to Psychology

JAMES W. KALAT

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INTRODUCTION TO

# Psychology

SEVENTH EDITION

**James W. Kalat**

*North Carolina State University*

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# Theme Index

## Critical Thinking

### What's the Evidence

Children's understanding of other people's cognitions, 371  
Cognitive aspect of emotion, 454-455  
Dieting requires mental energy, 419  
Emotional conditioning without awareness, 200-201  
Emotional Stroop Test, 522  
Feature detectors in vision, 130-132  
How effective is psychotherapy? 598-599  
Hypnosis & memory, 172-173  
Hypnosis & risky acts, 174  
Infant thoughts about object permanence, 368-370  
IQ scores & environmental differences, 343-344  
IQ scores & heredity, 344-345  
Learning fear by observation, 619-620  
Mental imagery, 273-274  
Neurons communicate chemically, 75  
Obedience to authority, 571-574  
Sexual orientation & brain anatomy, 435-436  
Suggestions & false memories, 258-260  
Televised violence & aggressive behavior, 51-52  
Value of deadlines, 438  
Ways of predicting alcoholism, 629-630

### A Step Further

Archetypes, 499  
Assessing honesty, 518  
Attentional blink, 283  
Attributions, 541  
Auditory imagery, 274  
Burden of proof, 32  
Children's thinking, 367  
Color afterimages, 108  
Color experiences, 110  
Determinism, 6  
Discrimination, 200  
Drugs and psychotherapy, 638  
Erikson's stages, 384  
First impressions, 534  
Framing a question, 299  
Guilty knowledge test, 471  
Hindsight bias, 256  
I/O psychology, 13  
Inferring "surprise," 370  
Intervening variables, 191  
Involuntary treatment, 605  
Kohlberg's stages, 378  
Lineups and multiple-choice testing, 237  
Logical reasoning, 291  
Mind and brain, 7  
Modifying obedience, 574  
Morning and evening people, 155  
Motivations and reflexes, 407  
Nature and nurture, 8  
Placebos, 482  
Reliability, 335  
Retrospective accounts, 648

Score fluctuations, 337  
Sensory storage, 238  
Sleep cycles, 156  
Testing psychological processes, 85  
Unlikely memory reports, 261  
Using reinforcement, 211  
Vicarious learning, 224  
What is abnormal? 582

### Evaluation of Evidence/ Questioning Assertions/ Critical Thinking

Abnormal psychology, defining, 581-582, 586-588  
Algorithms and heuristics, 288-289, 293-295  
Animal intelligence, 21-22  
Appearance vs. reality in children, 372-374  
Attitudes & behavior, 543-544  
Attractiveness, biological value of, 553-556  
Availability heuristic, 294-295  
Barnum effect, 515-516  
Base-rate information, 293-294  
Basic emotions, 455-459  
Big five personality traits, 508-511  
Birth order effects, 392-393  
Brain exercise, 85-86  
Burden of proof, 32  
Cats seeing in the dark, 102  
Children as eyewitnesses, 260-261  
Clever Hans, 35-36  
Cohort effects, 366  
"Collectivist" cultures, 563  
Confirmation bias, 296-297  
Conservation tasks, 374-375  
Correlation doesn't indicate causation, 48-49  
Creativity & longevity, 293  
Criminal profiling, 524  
Critical thinking & common errors, 295-299  
Cross-sectional vs. longitudinal studies, 364-366  
Day care, 40, 394-395  
Deduction & induction, 31  
Delusions, identifying, 646  
Desire for many sexual partners, 57  
Demand characteristics, 43-44  
Doll-assisted interviews, 261  
Double-blind studies, 42-43  
Dreams & activation-synthesis model, 165  
DSM-IV, 584-588  
Dungeons & Dragons, 56  
Elephant gas, 30  
Emotional intelligence, difficulty of measuring, 461-463  
Emotion, problems of measuring, 449-451  
Equinox & balancing eggs, 49-50  
Extrasensory perception, 36-39  
False memory vs. recovered memory, 256-260  
Forgetting, 252-253  
Framing effect, 297-298

Freud's views, 164-165, 257-258, 491-497  
Functional fixedness, 297  
g & alternative explanations, 327-328  
Gender differences in mating strategies, 556-557  
Gender differences in violence, 473  
General examples, 3-4  
Generalizing a concept to a new problem, 289-291  
Genetic influences, 353-357  
Handwriting analysis, 521  
Hindsight bias, 256  
Hypnosis as an altered state, 175-176  
Hypnosis & memory, 172-174  
Infant amnesia, 266-267  
Insect flight speed, 289  
Intelligence, defining, 323, 326-330  
IQ tests & heritability, 337-340, 342-345  
James-Lange theory, 452-453  
Kennedy-Lincoln similarities, 36  
Left brain & right brain, 90  
Low birth weight & development, 359  
Low-tar cigarettes, 628  
Memory deterioration in old age, 154  
Memory tests, 234-235  
Moon phases & behavior, 48  
Moral reasoning, 377-380  
Mozart effect, 34  
Object permanence, 368-370  
Optical illusions, 140-144  
Overconfidence, 295-296  
Parenting styles & children's behavior, 393-394  
Parsimony, 34-39  
Perpetual motion machines, 35, 289  
Personality, difficulty of measuring, 507-508  
Personality test misuses, 523-524  
Persuasion techniques, 545-548  
Prevention of psychological disorders, 608  
Psychotherapy effectiveness, 598-599  
Questioning assertions: General introduction, 2  
Rape and "unwanted sex," 473  
REM & memory, 162  
Reliability & validity, 334-336  
Representativeness heuristic, 293-294  
Repression, 257-258, 495-496  
Rorschach Inkblots, 519-520  
Rumination & gender differences in depression, 636  
Schachter & Singer's theory of emotions, 453-455  
Schizophrenia & brain damage, 649-650  
Schizophrenia & genetics, 648-649  
Scientific method, 32-34  
Self-esteem, 508  
Sensory thresholds, 125-127  
Sexual abuse prevalence, 46  
Sexual orientation, 432-436  
Sight rays, 97  
Signal detection, 126-127  
Sleep & longevity, 49  
Spanking, 209

Standardized and unstandardized personality tests, 516  
 Stereotypes & prejudice, 535-537  
 Sternberg's approach to intelligence, 329-330  
 Stress & health, 482-484  
 Stress measures, 478  
 Subjective well-being & various influences, 466-467  
 Subjective well-being & wealth, 465-466  
 Subliminal perception, 126-127  
 Substance dependence as disease, 628  
 Sugar & hyperactivity, 48  
 Suicide prevention, 608  
 Sunk cost effect, 299  
 Survey questions, 44-46  
 Suspect lineups, 236-237  
 Test bias, 340-342  
 Thematic Apperception Test, 520-521  
 UFOs, 140-141  
 Violence between men & women, 473

## Try It Yourself

Anecdotes and uncanny similarities, 36  
 Attention shifts, 277  
 Attributions and culture, 539  
 Binocular rivalry, 104  
 Blind spot, 102  
 Blue, detection of, 105  
 Brightness contrast, 128  
 Color vision deficiency, 108  
 Colorblindness in peripheral vision, 100, 101  
 Common-sense answers, 3  
 Conditioned responses, 198  
 Conformity, 561  
 Conceptual networks, 275  
 Confirmation bias, 296  
 Cued recall, 235  
 Dark adaptation, 102  
 Depth & size perception, 140  
 Dreams, 167  
 Emotions, postures, and breathing, 452  
 Encoding specificity, 246  
 Expertise, 287  
 Face recognition, 129  
 Facial expression & felt emotions, 453  
 Facial expression & identifying emotions, 457-458, 459  
 Feature detectors in vision, 131  
 Framing questions, 297, 298  
 Functional fixedness, 297  
 Gender differences, 397  
 Generalizing solutions, 290  
 High-school photos, 129  
 Hindsight bias, 256  
 Implicit Association Test, 536  
 Implicit memory, 235  
 Insight problems, 291  
 Longshot bets, 296  
 Memory interference & distinctiveness, 253  
 Memory reconstruction, 255  
 Mental imagery, 273  
 Mental rotations, 273  
 Motion perception, 136  
 Negative afterimages, 106  
 Obsessive-compulsive disorder, 622, 624  
 Opponent processes in color vision, 106  
 Overconfidence, 295  
 Parsimonious explanations, 36, 39  
 Peripheral color blindness, 101  
 Preattentive and attentive processes, 278-279  
 Problem solving, 288  
 Progressive Matrices, 326

Reading during one fixation, 314  
 Retinal disparity, 138  
 Saccades & visual suppression, 314  
 Sensory store, 237  
 Sentence comprehension, 310  
 Short-term memory capacity, 239  
 Spreading activation, 276  
 Stroop effect, 279  
 Subjective well-being, 465  
 Survey methods, 45  
 Taste localization, 121  
 Vestibular sensation & eye movements, 116  
 Weight-loss worries, 419  
 Wording of the question, 45

## Online

Afterimage, 131  
 Blind spot, 103  
 Brightness contrast, 128  
 Change blindness, 281  
 Emotional Stroop test, 521  
 False memories, 255  
 Framing questions, 298  
 High school photos, 129  
 Implicit memory, 235  
 McGurk effect, 309  
 Motion aftereffect, 131  
 Müller-Lyer illusion, 140  
 Overconfidence, 295  
 Psychic phenomena, 39  
 Short-term memory decay, 241  
 Sperling effect, 238  
 Stop Signal Task, 586  
 Universal emotions, 458  
 Word superiority effect, 312

## Applied Psychology

AIDS prevention, 428-429  
 Anger management, 474  
 Animal training, 216-217  
 Antabuse treatment, 631  
 Applied behavior analysis/behavior modification, 217  
 Bedwetting, 592  
 Breaking bad habits, 217-218  
 Cell phones and distraction, 282-283  
 Commons dilemma, 570-571  
 Conflict escalation, 569  
 Contingency management, 632  
 Coyote control, 220  
 Criminal profiling, 524-525  
 Deinstitutionalization, 604  
 Displays and warning signs, 278-280  
 Duty to protect, 605-606  
 Ergonomics described, 13  
 Goal setting, 438-440  
 Group decision making, 565-566  
 Hypnosis & pain, 170  
 Industrial-Organizational psychology, 12-13, 438-442  
 Insanity defense, 606-608  
 Intelligence testing, 22, 324-326, 332-337  
 Involuntary treatment, 605  
 Jet lag, 155  
 Job applicant selection, 12-13  
 Job applications, detecting deception on, 518  
 Job design, 440  
 Job satisfaction, 441  
 Leadership, 442  
 Lie detection/polygraphs, 469-471  
 Marriage counseling, 559  
 Methadone treatment, 632-633  
 Mnemonic devices, 249-251  
 Obedience to authority, 571-573

Personality testing, 516-523  
 Personality test misuses, 523-524  
 Persuasion, 217, 544-548  
 Prevention of mental illness, 608  
 Prisoner's dilemma, 569-570  
 Psychotherapy, 590-602, 638-640  
 Relaxation techniques, 481  
 School psychology described, 13-14  
 Self-efficacy & workers' performance, 225  
 Shift workers, 155-156  
 Sleep deprivation & safety, 156  
 Stress & coping, 479-482  
 Study habits, 247-248  
 Substance dependence (addiction), 626-627  
 Suspect confessions, 540-541  
 Suspect lineups, 236-237  
 Televised violence, 51-52  
 Virtual reality in therapy, 621  
 Visual prosthesis, 104  
 Weight loss, 417-418  
 Work motivation, 438-442

## Controversial Topics

Children as eyewitnesses, 260-261  
 Controlled drinking, 631-632  
 Daycare, 394-395  
 Deinstitutionalization, 604  
 Dream interpretation, 164-168  
 Duty to protect, 605-606  
 Evolutionary approach to human behavior, 9, 554-557  
 Extrasensory perception, 36-39  
 False memory vs. recovered memory, 254-260  
 Free will & determinism, 5-6  
 Freud & psychoanalysis, 491-498  
 Genetics & nature-nurture, 353-358  
 Hypnosis, 169-176  
 Insanity defense, 606-608  
 Intelligence measurements, 329-330, 337-345  
 Involuntary treatment, 605  
 Lie detection, 469-471  
 Mental illness, labeling, & DSM-IV, 586-588, 590  
 Mind-brain relationship, 6-7  
 Nonhuman language abilities, 302-304  
 Nontraditional families, 395  
 Psychotherapy effectiveness, 598-601  
 Repression, 495-496, 257-258  
 Research ethics, 52-54, 572-573  
 Rorschach Inkblots, 519-520  
 Sexual orientation, 432-436  
 Spanking, 209  
 Stereotypes & prejudices, 534-537  
 Subliminal perception, 127-128  
 Weight-loss methods, 417-418

## Cultural and Ethnic Influences

Abnormal behavior, 582-583  
 Acculturation, 398  
 Adolescence, 386  
 Alcohol abuse and alcoholism, 629, 631  
 Anorexia, 421  
 Attachment, 385  
 Attributions, 539-540  
 Biculturalism, 398-399  
 Bilingualism, 308-309  
 Bulimia, 422  
 Child care, 394  
 Choice of friends, 552  
 Collective unconscious, 498-499



- Color vision & color words, 109-110
- Concepts, 276-278
- Conformity, 563
- Cross-cultural research, 41-42
- Customs, 223
- Culture-reduced IQ tests, 325-326
- Dairy product consumption, 358
- Divorce, 396
- Drawings, understanding of, 138-139
- Dreams, 166
- Emotions, 455-456
- Facial expressions, 457-459
- Flynn effect, 333
- Food selection, 423-424
- Gender role, 396
- Heart disease, 482
- Homosexuality, 434
- Identity development, 387
- Individualism vs. collectivism, 563
- IQ scores, 339-343
- Mating strategies, 536
- Memory & stories, 255
- Minority psychologists, 15
- MMPI, 517
- Obesity, 416
- Old age, 388-389
- Personality, 510
- Personality & age, 512-513
- Psychotherapy, 602
- Reading span across languages, 315
- Schizophrenia, 648
- Seasonal affective disorder, 634
- Self-ratings, 507
- Short-term memory, 239-240
- Stereotypes and prejudice, 534-537
- Subjective well-being, 465-466

## Gender and Sex Influences

- Alcoholism, 629
- Anorexia & bulimia, 420-422
- Cognition, 397
- Depression, 635-636
- Divorce reactions, 396
- Emotional intelligence, 463
- Gender identity, 430-432
- Gender role, 396-397, 501-502
- IQ scores, 339-341
- Marriage, 558-559
- Mate choice, 556-557

- Moral reasoning, 380
- Obsessive-compulsive disorder, 624
- Panic disorder, 616
- Phobias, 618
- Schizophrenia, 648
- Sex-linked & sex-limited genes, 355-356
- Sexism, ambivalent, 535
- Sexual activities, 427-430
- Sexual orientation, 432-436
- Social behavior, 396-398
- Suicide, 642-643
- Violent behavior, 473-474
- Weight concerns, 418-419
- Women psychologists, 15, 24

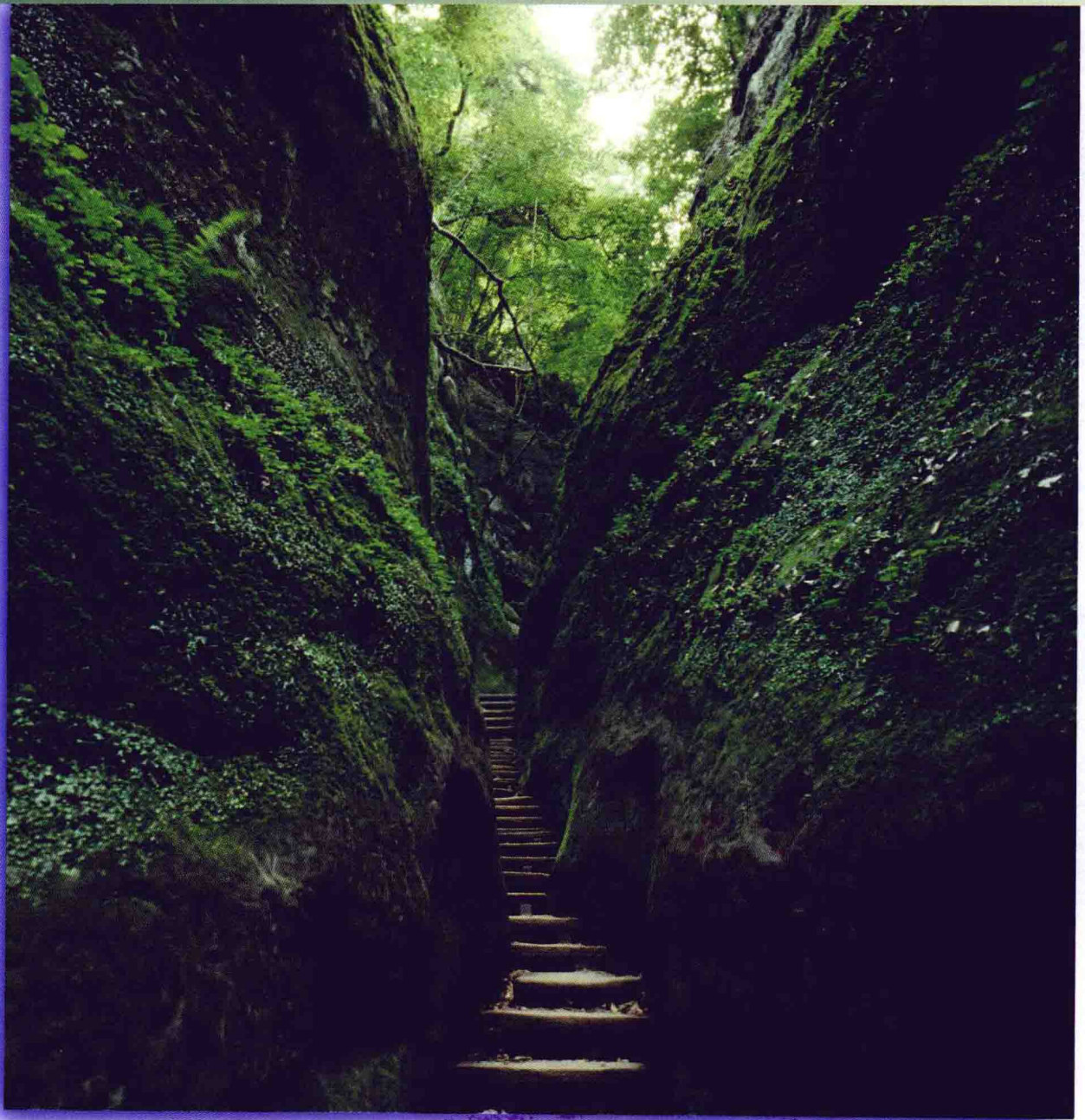
## Evolution/Nature and Nurture

- Alcoholism, 628-630
- Altruism, evolutionary basis of, 570
- Anorexia, 420-421
- Circadian rhythms & evolution & genetics, 153
- Depression, 635-636
- Emotions, evolution of, 468
- Evolutionary psychology introduced, 9
- Experience & brain structure, 85-86
- Expertise, development of, 285-287
- Family influences, 392-396
- Gender differences, 396-398
- Genetics & behavior, 353-358
- IQ scores, influences on, 337-345
- Language Acquisition Device, 305
- Language development, 305-309
- Language in nonhumans, 303-304
- Learning & evolutionary specializations, 220-223
- Mate choice, 553-557
- Nature-nurture issue introduced, 7-8
- Newborn capacities, 360-362
- Nonhuman animals' intelligence, 21-22
- Obesity, 416-417
- Obsessive-compulsive disorder, 622
- Panic disorder, 616
- Personality differences, 511-513
- Prenatal development, 358-360
- Schizophrenia, 648-649
- Sexual differentiation & hormones, 430-432
- Sexual orientation, 434-435
- Sleep, evolution of, 157-158

- Species differences in vision, 98, 99, 101
- Subjective well-being, 467
- Taste sensitivity & genetics, 122
- Temperament, 391-392
- Violence, 472-473

## Neuroscience

- Action potential, 70-72
- Alzheimer's disease, 266
- Amnesia and brain damage, 263-266
- Antidepressant medications, 638-640
- Anxiety & the amygdala, 468-469
- Autonomic nervous system, 83-84, 449-451
- Binding problem, 86-87
- Circadian rhythm mechanisms, 156
- Drug effects on the brain, 178-183
- Electroencephalograph (EEG), 83
- Emotions & prefrontal damage, 461
- Emotions & brain activity, 451
- Experience & brain structure, 85-86
- Feature detectors in vision, 129-132
- Fetal alcohol syndrome, 359-360
- Functional magnetic resonance imaging (fMRI), 84, 451
- Hunger & hypothalamus, 415-416
- Language & brain areas, 306-307
- Language & brain size, 304-305
- Mind-brain relationship, 6-7
- Narcolepsy & neurotransmitters, 163
- Neuroanatomy, 78-82
- Neurons, 69-70
- Neurotransmitters & behavior, 75-77
- Pain & endorphins, 117-119
- Phantom limbs, 119-120
- Positron-emission tomography (PET), 84, 451
- Post-traumatic stress disorder & hippocampus, 477-478
- Schizophrenia & brain abnormalities, 649-650
- Schizophrenia & neurodevelopmental hypothesis, 650-651
- Sexual orientation & hypothalamus, 435-436
- Sleep stages & EEG, 159-161
- Split-brain phenomenon, 87-90
- Synapses, 72-75
- Visual pathway, 102-104
- Visual receptors, 99-101
- Williams syndrome, 305



| *To my family*





## ABOUT THE AUTHOR



**James W. Kalat** (rhymes with ballot) is Professor of Psychology at North Carolina State University, where he teaches introduction to psychology and biological psychology. Born in 1946, he received an AB degree summa cum laude from Duke University and a Ph.D. in psychology from the University of Pennsylvania, under the supervision of Paul Rozin. He is also the author of *Biological Psychology, Eighth Edition* (Belmont, CA: Wadsworth, 2004). In addition to textbooks, he has written journal articles on taste-aversion learning, the teaching of psychology, and other topics. A remarried widower, he has three children, two stepsons, and two grandchildren.

# Preface to the Instructor

A couple of years ago, I was on a plane that had to turn around shortly after takeoff because one of its two engines had failed. When we were told to get into crash position, the first thing I thought was, “I don’t want to die yet! I was looking forward to writing the next edition of my textbook!” True story.

I enjoy writing textbooks, and I hope the students enjoy reading them. However, even under the best of circumstances, students will remember only a limited amount of material from any course. I know I have forgotten many of the facts I learned in college years ago. When I was recently looking over copies of tests I gave at the start of my college teaching career, I discovered that I have forgotten some of the facts that I used to *teach*. Learning facts should not be the goal anyway. Especially in psychology, I hope the field will continue to progress so that many of the facts we now teach will be supplanted by new research.

Ideally, a course or textbook in psychology should accomplish two goals. The first is to instill a love of learning, so that our graduates will continue to update their education. I fantasize that some of my former students occasionally pick up copies of *Scientific American*, *American Scientist*, *Cerebrum*, or similar publications and read about psychological research. The second goal is to teach people skills of evaluating evidence and questioning assertions, so that when they do read or hear about some newly reported discovery, they will ask the right questions and draw the appropriate conclusions (or lack of them).

Throughout this text I have tried to model the habit of critical thinking or evaluating the evidence, particularly in the **What’s the Evidence** features, which describe research studies in some detail. I have pointed out the limitations of the evidence and the possibilities for alternative interpretations. The goal is to help students ask their own questions, distinguish between good and weak evidence, and ultimately, appreciate the excitement of psychological inquiry.

## Approaches, Features, and Student Aids

Many years ago I read in an educational psychology textbook that children with certain learning disabilities and attention problems learn best from specific, concrete examples. I remember thinking, “Wait a

minute. Don’t we *all* learn best from specific, concrete examples?” It is for this reason that science classes use laboratories: to let students try demonstrations and experiments. Few introductory psychology classes offer laboratories, but we can nevertheless encourage students to try certain procedures that require little or no equipment. At various points the text describes simple **Try It Yourself** exercises, such as negative afterimages, binocular rivalry, encoding specificity, and the Stroop effect. The CD-ROM that accompanies this text offers additional **Online Try It Yourself** activities, which use sound or movement to illustrate points that a printed text cannot. These activities are also available on the companion Web site at [http://psychology.wadsworth.com/kalat\\_intro7e/](http://psychology.wadsworth.com/kalat_intro7e/). Students who try these activities will understand and remember the concepts far better than if they read about them only in abstract terms. A few of the online activities even enable students to collect and report their own data.

Reading the material is good, but using it is better. The **Concept Checks** pose questions that attentive readers should be able to answer, with a little thought. The answers are available at the end of each chapter’s modules. Students who answer correctly can feel encouraged; those who miss a question should use the feedback to reread the relevant passages. Questions marked **A Step Further** are more challenging and a possible basis for class discussion or short extra-credit papers. Because these questions invite creativity, none has a single “correct” answer; nevertheless, the Instructor’s Resource Guide provides my attempt to answer them.

Education has long been a very traditional field in which the procedures had hardly changed since the invention of chalk and desks. Recently, however, educators have been learning to use the power of new technologies, and this text offers several important technological enhancements. The Web site mentioned above includes the Online Try It Yourself exercises as well as flash cards, quizzes, an online glossary, and links to other interesting sites related to each chapter. However, the links may differ from the text as we try to keep the list up-to-date. It also includes a new “virtual study center” in which a student answers questions and then receives a personalized Self-Study Assessment and study plan. The new vMentor option enables students to obtain live tutoring from an experienced instructor.

The **Try It Yourself CD-ROM** *with Critical Thinking Video Exercises* accompanies this text and includes a series of short videos, with accompanying questions to encourage critical thinking. Video topics include neural networks, addiction, and weight loss. On the CD you will also find the Online Try It Yourself exercises as well as a convenient portal to the Web site. *PsychNow! 2.0* is another optional CD-ROM with a series of fascinating interactive presentations.

Each chapter of this text is divided into two to five modules, each with its own “In Closing” section and Summary. Modules provide flexibility for the instructor who wishes to take sections in a different order—for example, operant conditioning before classical conditioning—or who wishes to omit some section altogether. Modular format also breaks up the reading assignments so that a student reads one or two modules for each class. Key terms are listed and defined at the end of each chapter. At the end of the text, a combined Subject Index and Glossary provides definitions of key terms as well as page references for those terms and others.

## What's New in the Seventh Edition

Does psychology really change fast enough to justify a new edition of an introductory text every 3 years? Some areas of psychology admittedly do not. For example, I don't have much new to say about Freud, classical conditioning, or the gross anatomy of the brain. (The anatomy of the brain hasn't changed much in the last 3 years. Evolution is very slow!) Other areas do change. This edition has almost 550 new references from 2001 or later, including many in the areas of cognition, emotion, and abnormal psychology. A few entirely new topics have emerged, such as research on the effectiveness of psychological profiling of criminals (Chapter 13, Personality). Even in topics where the content has not changed much, an author always finds many small ways to clarify the discussion, and my publisher has improved or replaced many of the photographs and figures. Throughout the text you can find many new Concept Checks, Try It Yourself exercises, and What's the Evidence sections. There are also new Online Try It Yourself activities to supplement the ones already available for the previous edition. Each of these activities is referenced in the text.

The main organizational change in this edition is the relocation of genetics. In the previous edition, genetics constituted the first module of Chapter 3 (Biological Psychology). Several reviewers commented that the result was a very long chapter on biology. Several also said they preferred to treat genetics as the start of developmental psychology. So, heeding all this advice, I have moved the genetics module to the start of Chapter 10 (Human Development). Genetic issues do show

up in some earlier chapters, especially Chapter 9 (Intelligence); however, it is possible to deal with those issues without a detailed background in genetics.

Chapters 7 (Memory) and 12 (Emotions, Stress, and Health) have been greatly reorganized. In Chapter 11 (Motivation), the old module on Achievement Motivation was replaced with a new one on Work Motivation, focusing more heavily on issues of industrial/organizational psychology. Here is a chapter-by-chapter list of major changes:

### Chapter 1 (What Is Psychology?)

- Forensic psychologist added to the list of service-provider specialties.

### Chapter 2 (Scientific Methods in Psychology)

- New introductory section, including clarification of the idea of falsifiability.
- New discussion of *burden of proof*, the idea that in science, as well as law or debate, someone advocating a position that should be demonstrable (if it is true) is obligated to demonstrate it.
- New examples of coincidence; influence of the wording of a survey; positive, negative, and zero correlations; correlation and causation; and random assignment.
- Replaced What's the Evidence section on the effects of media violence with new evidence on the same issue—an experiment by Zillman and Weaver (1999) and an analysis of correlational evidence by Huesmann, Moise-Titus, Podolski, and Eron (2003).

### Chapter 3 (Biological Psychology)

- The major change is the movement of the genetics module from Chapter 3 to the start of Chapter 10 (Development).
- Updated discussion of the binding problem—the question of how activity in disparate brain areas produces a unified experience.

### Chapter 4 (Sensation and Perception)

- Many new and improved figures. See especially Figures 4.16 (color constancy), 4.62, and 4.63 (optical illusions).
- New research reports that some people have as many as three times as many optic nerve axons as others do; the result is major variations in their ability to perceive weak or brief visual stimuli.
- New section on culture and color terms. One hypothesis for why many cultures in tropical areas lack a separate word for *blue* is that extensive exposure to the sun accelerates aging of the lens, impairing the ability to see short-wavelength light.
- New brief discussion of pitch recognition and tone deafness.
- New discussion of the sensation of itch. It is conducted by a separate pathway in the spinal cord and is independent of pain.

### Chapter 5 (States of Consciousness)

- New introductory sections for the chapter as a whole and the first module.
- Hypnosis: Emphasized new evidence that hypnotizability closely matches suggestibility without hypnosis.
- Updated the discussion of marijuana. Recent evidence ties the cellular mechanisms of marijuana to stimulating negative-feedback receptors on the presynaptic neuron. That is, marijuana decreases the release of both excitatory and inhibitory neurotransmitters.

### Chapter 6 (Learning)

- Changed the terms unconditioned reinforcer and conditioned reinforcer to primary reinforcer and secondary reinforcer.
- New What's the Evidence section on the possibility of conditioning emotional reactions without awareness.
- Shortened and simplified the section on contiguity and contingency.
- Reorganized the order of presentation in the Operant Conditioning module.
- Added a discussion of the controversy on whether physical punishment of children is always bad.

### Chapter 7 (Memory)

- This chapter has been greatly reorganized. The second and third modules now focus on storage and retrieval.
- Expanded the discussion of suspect lineups and how psychological research has improved police investigations.
- New: Emphasis on the value of practicing something in varied ways.
- A new study is highlighted in a What's the Evidence section dealing with false memory. Seeing a photograph from early childhood increases the likelihood of endorsing a false memory from that age.
- Added a discussion of Alzheimer's disease.
- Update on infant amnesia. A fascinating new study reports that infants who learn a new skill can display it months later in their actions but cannot describe it with words they did not know at the time of original learning.

### Chapter 8 (Cognition and Language)

- The first module has been extensively reorganized.
- A new What's the Evidence section on cultural differences in categorization. Although the Spanish word *botella* translates as the English word *bottle*, not everything called a bottle is also called a *botella*. However, people speaking English and Spanish have about the same ideas of which bottle-type objects are similar to each other.
- Major revision of the section on attention, with a new discussion of change blindness.

- New material on overconfidence and on generalizing solutions to new problems.
- Discussion of the positive features of heuristic reasoning. For example, the heuristic "a city I've heard of is probably bigger than one I haven't heard of" usually works.
- Deleted the section on gambling, moving parts of it to other places.
- New section on limits of our language understanding. For example, doubly embedded sentences are virtually incomprehensible, and sentences with negatives or double negatives are often confusing.

### Chapter 9 (Intelligence)

- Changed order of presentation in first module, discussing the IQ tests before the theories that are based on them. Also some reordering in the second module.
- Added criticisms of Sternberg's triarchic theory of intelligence.
- Added discussion of "multiplier" effect that shows how environmental influences can magnify what was originally a small genetic influence.
- New evidence that heritability of IQ is much lower among impoverished families.

### Chapter 10 (Human Development)

- Reorganization: The module on genetics was shortened, revised, and transferred from Chapter 3 to Chapter 10 where it introduces the discussion of heritability and early development. Genetics is combined with part of what used to be the first module, but the section on object permanence, previously in the first module, is now in the second as part of the discussion on Piaget's sensorimotor stages.
- The discussion of cross-sectional and longitudinal research methods was moved from the third module to the second to introduce research on age differences. Added a discussion of sequential designs, which are preferable to both cross-sectional and longitudinal.
- Several topics moved within Module 10.2 on cognitive development.
- Reorganized and simplified discussion of the limitations of Kohlberg's approach to moral reasoning.
- Material on self-esteem was moved to Chapter 13 (Personality).

### Chapter 11 (Motivation)

- Deleted section on primary and secondary motives and Maslow's hierarchy of needs.
- Added a new section on delay of gratification.
- Reorganized the hunger module, starting with the physiology and ending with food selection, including cultural influences.



- Revisions of anorexia/bulimia section include interesting new research that compares bulimia nervosa to drug addiction.
- Preliminary evidence from a large, new cross-cultural survey of sexual behavior.
- Replaced old Module 10.4 (Achievement Motivation) with a new module (Work Motivation). It overlaps the old module somewhat but includes much new information from an industrial/organizational perspective.
- Added a new What's the Evidence section on the value of deadlines. Students who were required to meet evenly spaced deadlines for writing papers, or who chose to set evenly spaced deadlines, did better than those who chose to set later, more lenient deadlines for themselves.

### Chapter 12 (Emotions, Stress, and Health)

- The first two modules have been vastly rewritten and reorganized, with much new research. The first is now The Nature of Emotion, and the second is A Survey of Emotions.
- Revised description of the James-Lange theory, with supporting evidence.
- New discussion of methods of measuring emotion and the limitations of each.
- New discussion of the role of emotion in moral decisions.
- Greatly revised and expanded discussion of emotional intelligence.
- New discussion of sadness, crying, and depressive realism.
- Schachter and Singer experiment is now presented as a What's the Evidence section.

### Chapter 13 (Personality)

- New research shows that acting extraverted makes people feel happy, even if they are ordinarily introverted.
- Added a new section, Issues in Personality Measurement, which includes a discussion of research on self-esteem. Many of the reported conclusions about self-esteem depend on the method of measurement, which varies from study to study.
- New section on personality profiling of criminals, highlighting the weakness of the evidence for any usefulness of this procedure.

### Chapter 14 (Social Psychology)

- New material on implicit measures of stereotypes and prejudice.
- Expanded previous brief discussion into a new section on Cultural Differences in Attribution and Related Matters.
- Added a new section on Cultural Differences in Conformity, which challenges the common characterization of southern Asian cultures as "collectivist."

- Several revisions in the section on Trying to Save a Marriage.
- New brief discussion of Zimbardo's old prison study, at start of section on Obedience to Authority.

### Chapter 15 (Abnormality, Therapy, and Social Issues)

- Added a short section on historical trends in psychotherapy.
- Added a section on attention-deficit disorder/attention-deficit hyperactivity disorder, with a new Online Try It Yourself activity demonstrated to be sensitive to impulsiveness.

### Chapter 16 (Specific Disorders and Treatments)

- A modified introduction to the chapter acknowledges major overlap among many disorders.
- New research on why obsessive-compulsive patients distrust their own memory: The act of repeated checking makes the most recent check less salient.
- New section on the motivations behind addiction: Is the goal to gain pleasure, to avoid withdrawal symptoms, or to produce a reduction of stress?
- New evidence indicates identified genes increase the depression-inducing effects of stress. Neither the genes nor the stress alone produces depression.
- Antidepressant effects have been demonstrated for aerobic exercise, regular sleep habits, and just "doing something."
- Interesting finding: Just encouraging depressed people to be more active produces as much antidepressant effect as a full psychotherapy regimen.
- Added cautions about diagnosing schizophrenia from occasional hallucinations or apparent delusions.
- Recent data indicate that schizophrenia has become more common and more serious among men than women.
- Added reasons to be skeptical of reported relationships between schizophrenia and genetics and brain damage. Some of the reported brain abnormalities may be due to alcohol abuse and not to schizophrenia itself.
- Expressed emotion looks less convincing than before as a cause of schizophrenia relapse. A parent's expressed emotion correlates better with the patient's previous behavior than with future behavior.

## Teaching and Learning Supplements

You're familiar with those television advertisements that offer something, usually for \$19.95, and then say,

"But wait, there's more!" Same here. In addition to the text, the publisher offers many supplements:

- Study Guide**, by Mark Ludorf, Stephen F. Austin State University, provides learning objectives, chapter outlines, other study aids and practice test items, with an explanation of why each wrong answer is wrong. It also includes a language-building component by Eric Bohman, William Rainey Harbor College.
- Test Bank**, by Peter Miene, Winona State University, includes some items from the previous edition, some items contributed by James Kalat, and many new ones by Peter Miene. That bank is also available in ExamView® electronic format. Many of the items have already been tested with classes at North Carolina State University, and the Test Bank indicates the percentage correct and point biserial. Note also that the Test Bank includes a special file of items that cut across chapters, intended for a comprehensive final exam.
- Instructor's Resource Guide**, by Nancy Melucci, Long Beach City College, is both thorough and creative. It includes suggestions for class demonstrations and lecture material; it also contains the author's suggested answers to the Step Further questions in this text.
- Multimedia Manager Instructor's Resource CD-ROM**, by Nancy Melucci, Long Beach City College, is designed to facilitate an instructor's assembly of PowerPoint® or similar demonstrations.
- Self-Study Assessments**, a new feature, were developed and written by Jori Reijonen, Kalamazoo Valley Community College. Students can take a pretest, and the program will develop a personalized Self-Study Assessment based on their answers. The Self-Study Assessments are available for all students on the companion site: [http://psychology.wadsworth.com/kalat\\_intro7e/](http://psychology.wadsworth.com/kalat_intro7e/)
- PsychStudy**, the enhanced version, comes with an instructor grade book and integrated learning modules and is available as a free bundle option.
- Try It Yourself CD-ROM with Critical Thinking Video Exercises** offers videos designed to promote critical thinking about various topics in the text as well as the interactive Online Try It Yourself exercises.
- Theme Index** (located at the front of the text) directs you to pages where important issues, such as applied psychology and gender and culture influences on behavior, are discussed.
- PsychNow! 2.0** is an enjoyable interactive CD designed to help with the difficult concepts in psychology. At the end of each chapter, you can find suggestions of where to look on this disc for relevant material.

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*James Kalat*



# Preface to the Student

Welcome to introductory psychology! I hope you will enjoy reading this text as much as I enjoyed writing it. When you finish, I hope you will write your comments on the comments page, cut the page out, and mail it to the publisher, who will pass it along to me. If you are willing to receive a reply, please include a return address.

The first time I taught introductory psychology, several students complained that the book we were using was interesting to read but impossible to study. What they meant was that they had trouble finding and remembering the main points. I have tried to make this book interesting and as easy to study as possible.

## Features of This Text

### Modular Format

Each chapter is divided into two or more modules so that you can study a limited section at a time. Each chapter begins with a table of contents to orient you to the topics considered. At the end of each module is a summary of some important points, with page references. If a point is unfamiliar, you should reread the appropriate section. At the end of a chapter, you will find suggestions for further reading, a few Internet sites to visit, and a list of important terms.

### Key Terms

When an important term first appears in the text, it is highlighted in **boldface** and defined in *italics*. All the boldface terms reappear in alphabetic order with definitions at the end of the chapter and again in the combined Subject Index and Glossary at the end of the book. You might want to find the Subject Index and Glossary right now and familiarize yourself with it. You can also consult or download a list of key terms with their definitions from this Internet site: [http://psychology.wadsworth.com/kalat\\_intro7e/](http://psychology.wadsworth.com/kalat_intro7e/)

I sometimes meet students who think they have mastered the course because they have memorized all the definitions. You do need to understand the defined words, but don't waste time memorizing definitions word for word. It would be better to try to use each word in a sentence or think of examples of each term. Better yet, when appropriate, think of evidence for or against the concept that the term represents.

## Questions to Check Your Understanding and Go Further

When you read a text, you should want to find out how well you understand it. At various points in this text are Concept Checks, questions that ask you to use or apply the information you just read. Try to answer each of them and then turn to the indicated page to check your answer. If your answer is correct, you can feel encouraged. If it is incorrect, you should reread the section.

You will also find an occasional item marked A Step Further . . . Here you are asked to go beyond the text discussion and think about possible answers to a more challenging or speculative question. I hope you will spend time with these questions, perhaps talk about them with fellow students, and maybe ask your instructor for his or her opinion. (Instructors can check for my own answers in the Instructor's Resource Guide. But to these items, there is no single right answer.)

### Try It Yourself Activities



The text includes many items marked Try It Yourself. Most of these can be done with little or no equipment in just a minute or two. You will understand and remember the text far better if you do try these exercises. In some cases you will understand the text *only* if you try them. I recall a couple of test questions that were answered correctly by almost all of my students who tried a particular Try It Yourself exercise and missed by almost everyone else. A word to the wise . . .

Also available are 19 Online Try It Yourself activities. These interactive exercises can be accessed through your CD-ROM or at:

[http://psychology.wadsworth.com/kalat\\_intro7e/](http://psychology.wadsworth.com/kalat_intro7e/)

The purpose of these is the same as the Try It Yourself activities in the text; the difference is that online activities can include sounds and motion. Often, the description of some research study will be easier to understand after you have experienced it yourself. You will also remember it better.

### What's the Evidence Sections



Every chapter except the first includes a section titled What's the Evidence? These sections highlight research studies in more than the usual amount of detail, specifying the hypothesis (idea being tested), research