

As I write the preface for this fourth edition of *Cognition*, I'm reminded of the impressive advances in our discipline since the first edition was published in 1983. Cognitive psychologists have explored topics that were not even mentioned in the first edition—topics such as bilingualism, working memory, and children's eyewitness testimony. They have also developed new theoretical approaches. For example, parallel distributed processing was not even mentioned in the first edition, and the topic was discussed in only a paragraph of the second edition. New research techniques have also opened new pathways for exploration; neuroscience research allows us to investigate the biological basis for attention, mental imagery, and language. Cognitive psychologists are increasingly creative in developing their research techniques, so it's exciting to contemplate how the field of cognition will expand during the 21st century.

This research continues to emphasize the astonishing competence of our cognitive processes. We manage to recall the names of classmates from elementary school, details of an event that occurred a decade ago, and even the meaning of foreign language vocabulary we haven't contemplated since high school. Infants who are 14 months old can remember information about a trivial event from three months earlier, and 6-year-olds know about 14,000 words, which they use to construct sentences that are both unique and accurate.

Still, many cognitive psychology textbooks are written in such a dry academic style that they fail to capture these inherently interesting capabilities. Over the years, I've received letters and comments from hundreds of students and professors, telling me how much they enjoyed reading this textbook. Using their feedback, I have tried to write this fourth edition so that the features readers most appreciate are even stronger than in previous editions.

FEATURES OF THE TEXTBOOK

I have now taught the Cognitive Psychology course at SUNY Geneseo approximately 25 times. In writing *Cognition*, I have continually kept in mind students like those in my classes. Here are some of the ways in which I consider this textbook to be student-oriented:

1. The writing style is clear and interesting, with numerous examples.
2. The text demonstrates how our cognitive processes are relevant to our everyday, real-world experiences.
3. The book frequently examines how cognition can be applied to other disciplines, such as education, communication, clinical psychology, medicine, law, and consumer psychology.
4. The first chapter introduces five major themes that are then traced throughout the book, providing students with a sense of continuity across many diverse topics.

5. Many easy-to-perform demonstrations illustrate important experiments in cognition and clarify central concepts in the discipline.
6. Each new term is introduced in **boldface and italic print** and is accompanied by a concise definition that appears in the same sentence; pronunciation guides are included for new terms with potentially ambiguous pronunciation.
7. An outline and a preview introduce the chapters, providing an appropriate framework for new material.
8. Each major section in a chapter concludes with a summary. This feature enables students to review and consolidate material before moving to the next section, rather than waiting until the chapter's end for a single, lengthy summary.
9. Each chapter includes review questions and a list of new terms.
10. Each chapter concludes with a list of recommended readings and a brief description of each resource.

THE TEXTBOOK'S ORGANIZATION

A textbook must be interesting and helpful. It must also reflect current developments in the discipline, and it must allow instructors to adapt its structure to their own teaching plans. Instructors will therefore find the following features appealing.

1. *Cognition* offers a comprehensive overview of the field, including chapters on perception, memory, imagery, general knowledge, language, problem solving and creativity, reasoning and decision making, and cognitive development.
2. Each chapter is a self-contained unit. For example, terms such as *heuristics* or *schema* are defined in every chapter in which they are used. This feature allows instructors considerable flexibility in the sequence of chapter coverage. For example, some instructors may wish to cover the topic of imagery prior to the three chapters on memory.
3. Each section of a chapter is a discrete unit, particularly because every section concludes with a section summary. Instructors may choose to cover individual sections in a different order. For example, one instructor may decide to cover the section on schemas prior to the chapter on long-term memory. Another instructor might prefer to subdivide Chapter 12, on cognitive development, so that the first section of this chapter follows Chapter 5, the second section follows Chapter 7, and the third section follows Chapter 9.
4. Chapters 2 through 12 each include an in-depth section, which focuses on recent research about selected topics in cognitive psychology and provides details on research methods. Five are new to this fourth edition, and the remaining six have been substantially updated and revised.

5. In all, the bibliography contains 1,623 references, 820 of them from the 1990s. As a consequence, the textbook provides a very current overview of the discipline.

HIGHLIGHTS OF THE FOURTH EDITION

As I emphasized earlier, the discipline of cognitive psychology has made tremendous advances since the third edition of this textbook was published in 1994. Research in the areas of memory and language has been especially ambitious, and theoretical approaches to the discipline have been greatly expanded. Feedback from people who have used the textbook suggested that the sequence of 12 chapters in the fourth edition should remain the same as in the third edition. However, every page of this textbook has been updated and rewritten. Some of the more noteworthy changes include the following:

- Chapter 1 features updated information on the history of cognitive psychology, more material on neuroscience techniques (including functional magnetic resonance imaging), new coverage of artificial intelligence, and more details on the parallel distributed processing approach.
- Chapter 2 now includes a new in-depth section on face perception, a new discussion of the cognitive unconscious, and updated coverage of divided attention, selective attention, feature integration theory, and the biological basis of attention.
- Chapter 3, on models of memory, now contains sections on the long-term recency effect and the generation effect, as well as expanded coverage of Tulving's model and parallel distributed processing.
- Chapter 4 now features an in-depth section on the working-memory approach to short-term memory, with an emphasis on this approach throughout the chapter; new material has also been added on sensory memory, the duration of short-term memory, and the code in short-term memory.
- In Chapter 5, the sections on determinants of accuracy, expertise, and memory improvement are rearranged and updated; the discussion of eyewitness testimony now examines the false memory controversy and the constructivist approach.
- Chapter 6 features a new in-depth section on imagery and interference; the discussion has been updated on rotation of mental images, ambiguous figures, and the neuropsychology of imagery.
- Chapter 7, on general knowledge, has shortened the coverage of semantic memory and updated the sections on schemas, the tip-of-the-tongue phenomenon, and metamemory.
- Chapter 8 is the most thoroughly revised chapter of this fourth edition. The chapter now begins with an introduction to the nature of language, and a new

section on neurolinguistics has been added. New coverage is added to the sections on Chomsky's theory, ambiguity, speech perception, saccadic eye movements, word recognition, inferences in reading, and metacomprehension.

- In Chapter 9, new material has been added to the production process, narratives, and bilingualism; a new in-depth section focuses on the maintenance of first-language skills among immigrants.
- Chapter 10 features updated coverage on the means-ends heuristic, the analogy approach, expertise, problem solving and memory, mental set, verbalization and problem solving, and creativity.
- In response to comments from professors who used earlier editions, Chapter 11 has been significantly shortened, so that cognitive processing is examined for conditional reasoning but not for syllogisms. New material has been added on hypothesis confirmation, the small-sample fallacy, base rate, and overconfidence. The in-depth section now focuses on the framing effect.
- Chapter 12 features a new in-depth section on memory in children (including eyewitness testimony); also included is new research on infant memory, working memory in the elderly, children's language, and pragmatic mastery.

In preparing this new edition, I made every possible effort to include up-to-date research. I examined every relevant entry in *Psychological Abstracts* between 1992 and 1996; this investigation was supplemented by numerous specific *PsycLIT* searches. Furthermore, I examined every relevant book reviewed in *Contemporary Psychology*. In addition, I wrote to more than 200 researchers, requesting reprints and preprints. The research on cognition is expanding at an ever-increasing rate, and this textbook captures the excitement of the current research.

Professors should contact their Harcourt Brace & Company sales representative to obtain a copy of the Test Item File. This ancillary has been extensively revised for this fourth edition, with 240 new questions added. I have continued to emphasize conceptual knowledge in these questions, as well as applications to real-world situations. The testbank is now available in computerized formats.

ACKNOWLEDGMENTS

I have many individuals to thank for their impressive efforts on this book. First, I would like to praise the people at Harcourt Brace & Company. Earl McPeck, executive editor at Harcourt, helped to clarify the goals for this fourth edition, and he guided my writing during the preparation and revision of the manuscript. Amy Hester, who served as my developmental editor, arranged for a superb set of reviewers, organized the reviewers' feedback in an exemplary fashion, and helped to make decisions about the book's structure. I would also like to acknowledge the expertise of two individuals whose expertise was valuable during the final preparation of this book: Lisa Hensley, associate editor, and Van Strength, developmental editor.

I also want to thank many Harcourt people who worked on the production of this fourth edition. Tamara Vardy is a superb project editor. I truly appreciate her