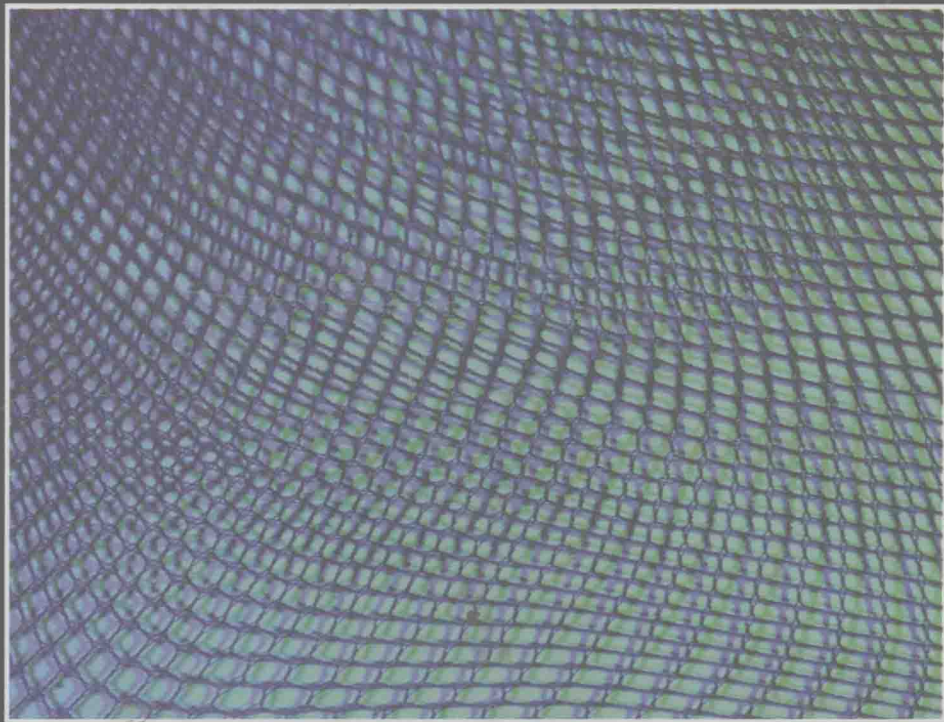


COGNITIVE PSYCHOLOGY

FIFTH EDITION



JOHN B. BEST

Cognitive Psychology

Fifth Edition

John B. Best

Eastern Illinois University



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Cognitive Psychology

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In memory of my daughter Adrienne

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Preface

To the Student

Cognitive psychology is not a very old scientific discipline, but it has changed a lot in its brief existence, and it continues to develop at an astonishing pace. To an author, this explosion of knowledge presents both opportunities and problems. It's certainly an exciting time to be a cognitive psychologist, and communicating the theories and findings of cognitive psychology to a student such as yourself, who is hearing it for the first time, is an exciting opportunity for an author. However, one of the problems resulting from the pace of change and sheer volume of material is that any book such as this one must be simply an "introduction" to the field. If I were to include coverage of every topic of interest to cognitive psychologists, the result would be an unmanageable volume from which no professor, no matter how skillful, could teach, or which no student, no matter how dedicated, could assimilate.

As it stands, there will be plenty to keep you busy. I've tried to be mindful of that, and I've incorporated into the book some features that I hope will enable you to learn the material in as painless a manner as possible. Each chapter begins with an overview. In the overviews, I've used an anecdote as a springboard into the questions and issues of the chapter. Each chapter contains summary sections at various points—sometimes these are explicitly labeled, and sometimes they can simply be found at the conclusion of the chapter's major headings. These should offer breathing spaces and logical starting and stopping places within the chapter if you don't want to try to read the chapter in just one sitting. One of my objectives in writing the book is to show you how cognitive psychologists think about attacking a problem, and how they analyze it. I believe that the material will be easier for you to assimilate if you understand something about the methods and approach that cognitive psychologists use. To get these points across, I've included in most of the chapters a "Focus on Research" section. Some of the findings in the Focus sections may be redundant with those of the text, but the main point is to shine a light on the theorizing and methodology that cognitive psychologists use.

Each chapter closes with some Concluding Comments. The comments are intended as a summary, but I didn't want them to be simply a rehash of the material in the chapter. So, although the concluding comments summarize the chapter, I also intended them to point out some implications of that chapter's material, to examine how certain "themes" or ideas in cognitive psychology are reworked in different areas, and so on. Following the Concluding Comments is a list of key terms that were used in the chapter. Most of the key terms also appear in the Glossary. I recommend that you learn the definitions of all the key terms. Finally, many of the chapters include a section called "Using Your Knowledge of Cognition." Sometimes students complain that the material in cognitive psychology is rather abstract and, by implication, alien or remote. The point of the Using Your Knowledge sections is to show you that cognitive psychology can be applied, sometimes without much difficulty, to many issues that arise during a typical day.

Finally, I'd like to invite you to enjoy your course in cognition! If the course has the same reputation at your school that it does at mine, then this may not be a course that you have been particularly looking forward to taking. But while I think that the course can be challenging, I view it as a positive challenge. If you learn this material, I think you will be doing yourself a big favor both in terms of building a solid foundation for later study in any area of psychology, and in providing yourself with knowledge you may use to operate your own cognitive system at a higher level. As you can see, I'm optimistic that you will get a lot out of this course!

To the Professor

My intention is that the book be used by upper-division students who are taking their first course in cognition. The book can be covered comfortably in a semester-long course, although I do not cover the entire book in my own semester-long course. Some knowledge of research methods, experimental design, and statistics is presupposed, but most of the experiments in the book are described in enough detail that student readers who have not had those courses will be able to read the book and maintain good comprehension. Although almost every chapter contains some references to previous and future chapters, the chapters nevertheless can stand on their own, and so the sequence implied by the table of contents is just a suggestion.

Users of previous editions will find that there have been quite a few changes—in fact, too many to list here. I'll limit myself to describing only the major foci of change. Chapter 1 is now focused on what I've described as three "levels of analysis": The mental, the neural, and the cognitive. In Chapter 2, there is more coverage of the "pop-out" phenomenon, and there is coverage of the recognition by components model (Biederman). The work of David Marr is also described in Chapter 2. The chapter on cognitive processes in vision has been deleted in this edition. The material on memory (Chapters 3 and 4) has been organized explicitly around two alternative views: the view that memory is the result of some sort of storage and the view that memory is the result of a recomputation, or reconstruction at retrieval time. Chapter 4 now includes a lengthy discussion of J.R. Anderson's ACT-R theory. Chapter 6 includes more discussion of the relationship between connectionist models and actual cognitive neural science processes. Cognitive neuropsychology also plays a greater role

in Chapter 7 than it did previously. Chapter 8 now includes material on dyslexia, and relates difficulties in reading to other cognitive processes used in communication, specifically with regard to speaking and listening. Chapter 9, the developmental chapter, now includes material on childrens' theory of mind. Chapter 10, the reasoning chapter, now includes material on the neuropsychology of "higher" cognitive processes—this kind of material is seldom seen in a first book. The discussion of deontic reasoning has been expanded, and there is a discussion of reasoning about causal influences, which includes a description of the Cheng model. Chapter 11 deals with concepts and categories and is new to this edition. Chapter 12, the problem-solving chapter, now includes a discussion of some recent work in the production and use of operators in moving through the problem space.

To help you get the most out of this text, an *Instructor's Manual* contains chapter overviews; demonstrations; a resource list of approximately 20 annotated, correlated websites; about 50 test items per chapter; transparency masters with approximately 80 figures from the text; and computer software correlation for the *Mel-Lab*, *Mindscope*, *Superlab*, *MacLaboratory*, and *Psyscope* programs.

Also available through your ITP representative is *Thomson World Class Learning™ Testing Tool*, a fully integrated suite of test creation, delivery, and classroom management tools. This invaluable set of tools includes *World Class Test* and *Test Online* and *World Class Manager* software. The program provides text-specific testing options designed to offer instructors greater flexibility. A complete description of each component and a self-running demonstration can be found at www.worldclasslearning.com.

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This is the first edition of the book to have been produced by Brooks/Cole, and their excellent editorial staff made sure that the transition went very smoothly. I'd like to thank my senior acquisitions editor, Marianne Taflinger, who spent major portions of her time with me, and who was very patient, especially in academic year 1997-98 when I served as the chairperson of our Psychology Department. I thank Tessa McGlasson, production editor, for shepherding the book through production with a minimum of hassle. David Lynch, copyeditor, has done a prodigious job of cleaning up the writing and catching my all-too-numerous errors: he has earned my humble thanks. In addition, Jennifer Wilkinson has enthusiastically supported and guided me in the production of the ancillaries, and I thank her warmly as well.

A number of specialists have given willingly of their time and talent by reviewing the previous edition, and by reviewing portions of the current edition too. Their comments have proved invaluable to me to making the book the best it can be. They are:

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When I started the revision process back in the summer of 1996, the chairperson of our department was Fred L. Yaffe. I'd like to thank Fred for his consideration in assigning my teaching duties, and for all his support in helping to keep my lab functional and operational. When I became the chairperson in June of 1997, and I saw all that the position entailed, my gratitude for Fred's work on my behalf increased geometrically. In addition to our former chair, I would like to thank all of the nineteen Psychology faculty at EIU for their encouragement, and for being so stimulating and so great to work with.

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Finally, how can I thank my family enough? To my wife, Lorraine, and our sons, Frank and Matthew: As you know, producing this edition has tried my patience and exhausted me at times. Thanks for being the greatest family anyone could ever ask for.

John B. Best

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