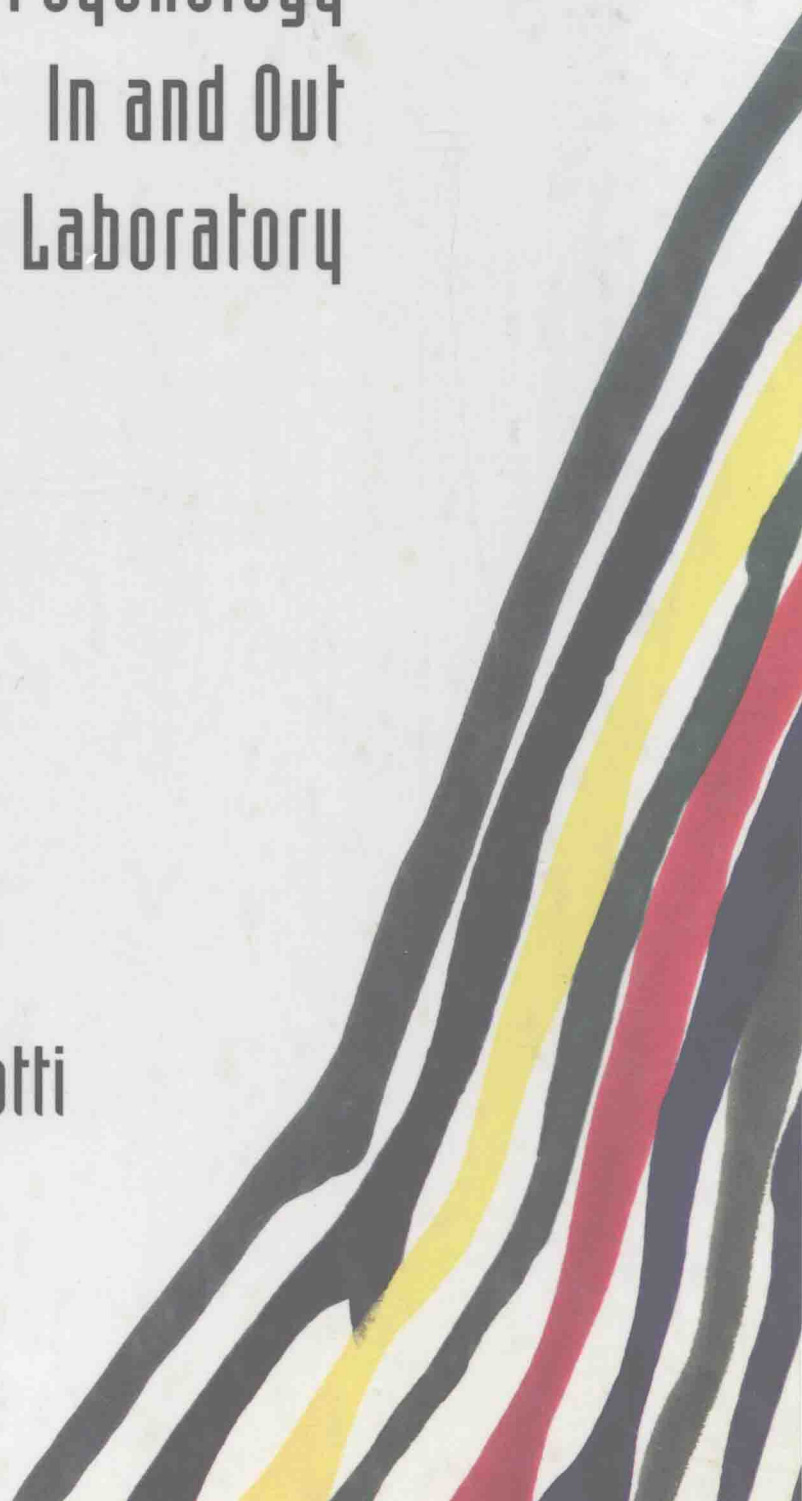
Cognitive Psychology In and Out of the Laboratory

Kathleen M. Galotti



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PREFACE

Cognitive psychology is a challenging area in which to do research. The subject matter is exciting: it raises questions about how the mind works—how we perceive people, events, and things; how and what we remember; how we mentally organize information; how we call on our mental information and resources to make important decisions. These questions have fascinated me for years.

For me, even more of a challenge than doing research is teaching cognitive psychology to undergraduate students while conveying to them my own excitement about the field. Although cognitive psychologists find topics within the area deeply puzzling, important, and stimulating to think about, some students regard these topics as boring or mechanical. My primary goals in writing this book were to address this perceptual gap and to show the relationships between elegant, sophisticated theoretical models and everyday cognitive experiences. To attain these goals, I have used many examples drawn from personal experience.

A textbook author can choose either to be comprehensive and strive for encyclopedic coverage or to be selective and omit many worthwhile topics and studies. I hope to have struck a balance between these extremes but must confess to a preference for the latter. Again, this reflects my own teaching goals; I like to supplement textbook chapters with primary literature from journals. I have tried to keep chapters relatively short in the hope that instructors will supplement the text with other readings. My firm belief is that the best courses are those in which instructors are enthusiastic about the material; the relative brevity of the text is intended to encourage instructors to supplement and customize it with added coverage on topics they find especially interesting.

Finally, I hope to encourage instructors and students alike to consider cognitive phenomena as having contexts that both foster and constrain their occurrence. Too often, topics in cognitive psychology are presented as absolute, unchanging aspects of everyone's experience. Recent work in developmental psychology, cross-cultural psychology, and individual

differences strongly suggests that this presentation is at best, oversimplification; at worst, fiction. I hope newer work in cognitive psychology can retain its rigor and elegance but can frame questions and issues more inclusively, reflecting a recognition of the ways in which people and situations differ, as well as share similarities.

This book is intended for a one-semester or one-term course for students who have already completed an introductory psychology course. The book is organized into five parts. The first, containing the introductory chapter, locates the field historically, theoretically, and methodologically. In Part I, I introduce the major schools of thought that underlie the field of cognitive psychology. Part II is a review of topics that would generally be regarded as core aspects of cognition: perception, attention, and memory. The emphasis in these chapters is to review both the "classic" studies that define the field and the newer approaches that challenge long-standing assumptions. The focus of Part III is on knowledge representation and organization. These chapters focus on questions of how we mentally represent and store the vast amounts of information we acquire throughout our lives. Part IV covers topics such as reasoning and decision-making perhaps more extensively than in other books, probably due to my own research interests. In these chapters, I have tried to draw several connections between laboratory-based models and real-world problems.

Part V is the one that departs most from a "prototypical" cognitive psychology textbook. The last two chapters, on individual differences and cross-cultural approaches, include material not often covered in cognitive psychology courses. I feel strongly that these topics belong with a thorough examination of cognitive phenomena. Although it is true that traditional cognitive psychologists don't always consider these issues in their work, I believe they ought to and, in the future, will.

Acknowledgments

The actual writing of this book has been a 5-year project. However, the groundwork for the book evolved over 15 years, stretching back to my own undergraduate and graduate education. I was fortunate to have benefited from the rigorous and dynamic teaching of Blythe Clinchy at Wellesley College and of Jonathan Baron, John Sabini, and Henry and Lila Gleitman at the University of Pennsylvania. My education and thinking about cognitive and developmental issues continues to profit from interactions with colleagues at Carleton College, particularly Lloyd Komatsu, Steve Kozberg, and Peter Guthrie.

One of the real joys of working at Carleton has been the privilege of teaching some incredibly talented, motivated, and energetic students. Many of them volunteered to read parts of this book and provide me with feedback from a student's point of view. For doing so, and especially for resisting the temptation to gloat over their prof's spelling errors and grammatical

or logical lapses, I thank Alex Boyer, Sara Brose, Terri Huston, Andrea Matchett, Dan Simons, and James Whitney. Melissa Mark read every chapter and prepared extensive commentary on each one, and therefore deserves special mention and gratitude. Other current and former Carleton students helped me with the mundane but necessary tasks of checking references or writing for permissions, including Stephanie Aubry, Julie Greene, Simin Ho, Kitty Nolan, Scott Staupe, Jennifer Tourjé, Elizabeth White, and James Whitney. My two secretaries, Ruby Hagberg and Marianne Elofson, and their student assistants—Karen Dawson, Ruby Eddie-Quartey, Lareina Ho, and Aimee Mayer—helped me with the author index.

Carleton College has supported this project through a sabbatical and two summer faculty development grants. Dean Roy Elveton enthusiastically endorsed this endeavor from the start and found ways to fund it. He has returned from the "dark side" of administrative duties to become a most trusted mentor and colleague in the Cognitive Studies Program and Philosophy Department at Carleton. Much of the early work on the book was completed during a sabbatical leave spent at the Claremont Graduate School and Pomona College. Colleagues there, including Bill Banks, Dale Berger, Mary Gauvain, and Kathy Pezdek, provided a stimulating and productive environment in which to write.

I owe a special debt to Vicki Knight, my editor at Brooks/Cole. Her wise counsel, sharp sense of humor, love of animals, and excellent taste in restaurants has made this project one I've looked forward to working on. Her knowledge of psychology and its pedagogy never ceases to astound me. Vicki took over this project from Phil Curson and thus was "stuck with" it, but she never made me feel like a burden and never stinted on her time and encouragement. I am extremely grateful to have had the chance to work so closely with such a gifted individual. Lauri Banks Ataide, Susan Haberkorn, Carline Haga, Diana Mara Henry, Laurie Jackson, Tessa A. McGlassum, and Katherine Minerva have all displayed much graciousness and patience in working with a novice author. Nancy Ashmore, publications director at St. Olaf College and a close friend, provided almost all the photographs. She found ways of putting on film ideas that I could only describe imprecisely—and did it all without ever losing her characteristic calm demeanor! Thanks, Nancy.

The following reviewers all provided useful commentary and feedback on portions of the book at various stages of completion: Sharon Armstrong, Central College (Pella, IA); Terry Au, University of California, Los Angeles; Ira Fischler, University of Florida; John H. Flowers, University of Nebraska–Lincoln; Margery Lucas, Wellesley College; Robert Seibel; Steven M. Smith, Texas A & M University; and Margaret Thomas, University of Central Florida. Other colleagues, including Jonathan Baron, Michael Flynn, and Kenneth Schweller also provided extensive comments on one or more chapters. The remaining gaps and shortcomings in the book reflect my own stubbornness.

The most important source of professional and personal support

throughout this project remains to be thanked. Lloyd Komatsu, my husband, colleague, collaborator, coach, cheerleader, and fellow dog-lover, has made innumerable contributions throughout the project. He has read and commented on several chapters, argued numerous points, brainstormed, and celebrated each milestone of the book's progress. His professional and personal integrity, commitment to teaching, broad background in the field, and general cleverness have helped me focus my energy, develop a sound professional philosophy, and keep the project in perspective. I am both humbled and grateful to have so much of his energy and support.

—Kathleen M. Galotti

BRIEF CONTENTS

CONTENTS

PART I

Overview

CHAPTER 1

Traditions Within Cognitive Psychology

This book is about cognitive psychology—that branch of psychology concerned with how people acquire, store, transform, use, and communicate information. Put differently, cognitive psychology deals with our mental life—what goes on inside our heads when we perceive, attend, remember, think, categorize, reason, decide, and so forth. To get a better feel for the domain of cognitive psychology, let's consider a few examples of cognitive activity.

You're walking along a dark, unfamiliar city street. It's raining and foggy, and you are cold and a bit apprehensive. As you walk past a small alley, you catch some movement out of the corner of your eye. You turn to look down the alley and start to make out a shape coming toward you. As the shape draws nearer, you are able to make out more and more features and you suddenly realize that it's . . .

What cognitive processes are going on in this admittedly melodramatic example? In general, this example illustrates the initial acquisition and processing of information. In particular, the cognitive processes depicted include **attention,** mentally focusing on some stimulus (the mysterious shape); **perception,** interpreting sensory information to yield meaningful information; and **pattern recognition,** classifying a stimulus into a known category. In recognizing the shape as something familiar, you no doubt called on **memory,** the storage facilities and retrieval processes of cognition. All of this processing occurred rapidly, probably within a few seconds or less. Most of the cognitive processing in this example appears so effortless and automatic that we usually take it for granted.

An ordinary activity, such as reading a map, involves a great deal of cognitive processing.

Here's another example.

You're in a crowded, public place, such as a shopping mall during the holiday season. Throngs of people push past you, and you're hot and tired. You head for a nearby bench, aiming to combine some rest with some people-watching. As you make your way, a young woman about your age jostles up against you. You both offer polite apologies ("Oh, excuse me!" "Sorry!"), glancing at each other as you do. She immediately exclaims, "Oh, it's you! How *are* you? I never thought I'd run into anyone I know here—can you believe it?" You immediately paste a friendly but vague smile on your face, to cover your frantic mental search: Who *is* this woman? She looks familiar, but why? Is she a former classmate? Did you and she attend camp together? Is she saying anything you can use as a clue to place her?

This example illustrates your use of memory processes, including **recognition** (you see the woman as familiar) and **recall** (you try to determine where you know her from). Other cognitive processes are involved here, too, although they play a lesser role. For instance, you perceive the entity talking to you as a person, specifically a woman, more specifically a vaguely familiar woman. You pay attention to her. You may be using vari-