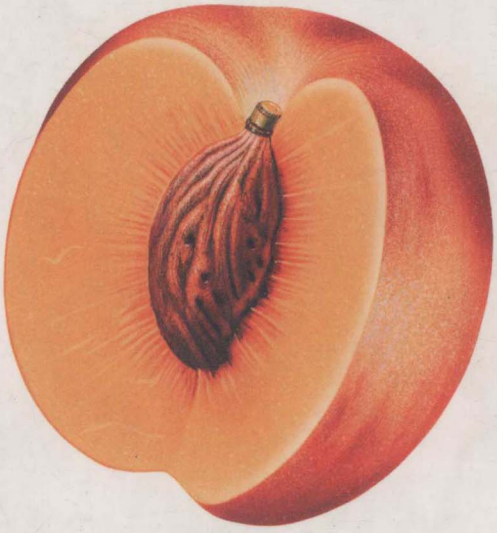
培文书系·心理学系列

PEARSON

COGNITIVE PSYCHOLOGY

认知心理学

第7版



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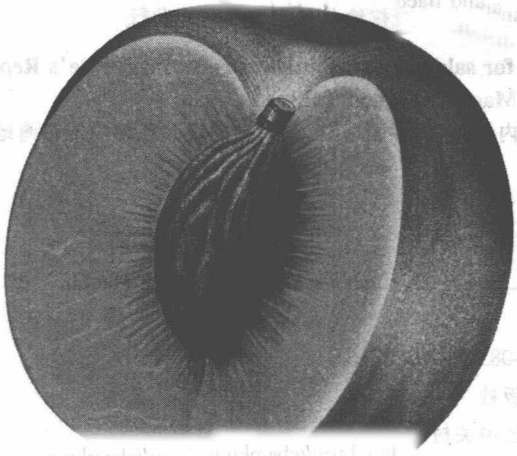

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培文书系心理学英文影印系列旨在面向心理学领域的师生和广大心理科学的从业者和爱好者，推介国外心理学领域的英文原版专著和教材，使我国读者能够接触到原汁原味的第一手资料。

需要重申的是，作者本人的有些观点和结论尚需商榷，有些甚至是不可取的，为此提请读者加以甄别。书中的观点均不代表出版社观点。

北京大学出版社

2005年3月

前 言

■致同学

二十世纪与心理学一起成长的人，目睹了人们在知觉、记忆以及思维方式上飞速而重要的进步。无数认知心理学家借助先进技术，通过辛勤工作，推动了这些进步。先进技术与认知心理学家勤奋研究的结合，极大丰富了人类有关认知、记忆、思维和信息处理（实际上是人类所有认知过程）的知识。

关于认知的重要研究成果之一，是在思维和对应的神经生理活动之间建立起了联系。在二十世纪晚期，这些研究尚处于探索阶段。今天，科学研究的新时代已经到来。我们期望把握这个生机勃勃的时代脉搏，激励你进一步去探究人类的认知过程。希望本书能够让你了解我们认知心理学家走过的历程，准确地向你报告这个领域最出色的想法、理论和实验，以便你更好地理解未来该学科的发展。

本书的内容按照以下认知序列展开：从感觉到知觉、注意、记忆，再到更高层级的认知活动。这是一种惯用的自下而上的方法。这样的体系有助于你理解认知过程，使看起来混沌无序的大量信息得以有序地表达。不过，需要注意的一点是：认知——知觉、记忆、意识、语言的运用、问题解决等需要所有认知过程的同时参与。全面了解认知心理学，需要认识认知的每一个组成部分，这些基本的组成部分通过人类的心理活动编织了一幅精美的认知图画。

在大部分章节里，你会看到题为“日常生活中的认知”以及“试一试”两个方框栏目。如果说我们对学习和认知过程略知一二的话，那么我们知道越投入的读者，对阅读材料的学习效果更好，理解程度也更深。安排这些内容的目的是让你能更深入地了解相关章节的内容。我们鼓励你走进书中的文字，与内容进行互动，认识你周围以及你内在发生的认知活动。

有的同学也许会从事认知科学某个分支学科的研究。如果本书的内容能够激励你投身于认知心理学的研究，使我们心理学家开创的事业能够后继有人，那么我们将为自己在这本书上付出的心血感到欣慰。最后，我们欢迎大家提出宝贵的意见和建议。

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■致教师

从第一版《认知心理学》的诞生，到今天第七版的面世，本书的基本结构变动不大，但是包含的内容却有很大的变化。早年的版本仅肤浅地比较了认知心理学与今天被称为认知神经科学的研究。现在，认知神经科学在认知心理学的所有领域（甚至心理学的其它领域）占据了如此显著的地位，以至于其它更传统的研究领域开始从教材中消失。本书的第四版、第五版和第六版，逐渐增加了对认识神经科学研究的介绍，第七版更是充分展现了认知神经科学不论是在技术、数据还是在其影响上不同寻常的发展。不过，我们很清楚，认知心理学是对人类大脑思维、推理、语言以及记忆过程的研究。这些认知活动是认知神经科学期望通过自己的研究进行展示、解释和带来启发的。因为认知属于心理学研究的范畴，我们保留了许多经得起时间和实证研究考验的传统研究，并适当地增加了有趣的新研究。介绍新研究而非既往研究的诱惑很大，在某些情况下，如果新近的研究报告呈现了问题的新的一面，那么我们就会介绍新研究，而略去过去的研究。不过，在大多数情况下，由于既往的研究已经足够清晰，因此被本版保留。在坚持认知心理学的心理学角度基础上，本版囊括了大量认知神经科学的研究，以作为认知理论的新验证。

二十多年前撰写第一版《认知心理学》，对我来说是一个特别艰巨的挑战。那时候，除了 Ulric Neisser 的《认知心理学》（现在的经典教材）和我办公室、家中四处堆积的文章和研讨会论文集以外，我（第一作者）没有任何范本可以参照。我非常有幸能够聆听 Ed Simth1974 年在斯坦福大学开设的有关认知的课程（后来我教授这门课）。他对教学材料的组织方式仍然是本书的参照（尽管有一些变动），就像许多其它认知教材一样。在我看来，Ed Smith（国家科学院院士）对全美国乃至全世界认知心理学的教学方式都有或多或少的影响。目前，有数十本认知心理学教材以及更多的其它教材包含了对认知与法律、认知与心理治疗、认知与社会、认知与教育等等问题的讨论。从早年的“认知革命”开始，对认知感兴趣的人发挥的影响力越来越大，远远超出了几十年前我能够预见的范围。然而，在我的印象中，那个时期该学科研究的主要问题在今天依然保持着生命力，尽管其关注的重点已经发生了转移。富有生命力的科学就是这样动态发展的。从二十五年前的第一版到后来的第六版，本书基本上由本版的第一作者完成。第七版的作者增加了两名著名的学者，Kim MacLin 和 Otto MacLin，他们增加了本书内容的广度和深度。在保留原有版本基本写作理念的同时，Kim 和 Otto 为本书带来了清新的文字、学者的真知灼见和更全面的内容。他们曾协助我完成第六版，对本书的内容非常熟悉。此外，我（第一作者）自豪地告诉大家，他们两位都是我的博士生。

第七版尽量保留了前六版的特色，同时增加了新的重要材料，改变了内容重点以反映认知心理学的重要转变。具体而言，我们保留了本书综合全面的特点。过去十年间，认知心理学经历了很大的变化和发展，要想合理涵盖有关认知的所有领域已经变得越来越困难。尽管需

要一些专著来集中讨论某些问题，我们仍然相信许多人需要一本综合的认知心理学书籍。

过去几年曾经用过本书的人，会很高兴地发现本版专门安排篇幅向大家介绍了那些相互矛盾的研究结果，随后对它们进行了总结，并给出了一定的结论。第三版开始使用这种总结的方式，以满足大家的需要。

和前几版类似的是，在大多数章节的开篇，都有一段对本章内容历史发展的简短回顾。由于认知心理学发展的速度非常快，我们认为读者需要了解某个研究主题既往的研究发展，以便于他们能够在以往研究的背景之上，理解新的资料。相对应地，每章都以介绍近期的一项认知神经科学研究为结尾，以突出本章某方面的内容。

■总览

- 每章都以一些思考题开头。我们认为这些问题能够引起学生的兴趣，并启发他们在钻研本章内容前能够自己作一些思考。如果学生事先对将要学到的知识有一些了解的话，他们会把关键内容学得更好。在每一章的篇首增加一些相关的问题，会引导学生对本章的学习和思考，在某些情况下，问题可以用来引发读者的好奇心。
- 每章的内容都在前一版的基础上进行了更新。应读者的要求，部分章节的内容进行了很大的调整。
- 正如前文提及的，每章都以“认知神经科学的焦点”为结尾。这一部分从认知神经科学研究的问题或使用的研究技术上，讨论了近期某项围绕本章核心概念展开的认知神经科学研究。
- 章节内容按照信息加工的序列展开：从感觉/大脑系统对信号的知觉开始，进而延伸到更高层次的信息加工过程，比如记忆、语言和思维。尽管本书介绍的认知模型不只限于认知的信息加工模型(INFOPRO)，但这样的顺序比较容易被学生和教授接受。此外，我们认为，认知是不同的认知过程同时工作的结果。尽管顺序了解系列信息加工过程相对比较容易，但需要指出的是，认知活动是很难由单个的任务完成的，记忆如果缺少知觉的帮助，就会变成一副美丽但缺少色彩的图画。
- 在第七版里，我们通过以下两种方式简化了方框栏目的内容。首先，我们将部分内容直接并入了正文。我们认为，这样做增加了正文的例子，学生可以更专注于正文内容。其次，保留以及新增的方框栏目都归到了“日常生活中的认知”和“试一试”这两个主题下。这两个栏目启发学生从日常生活经验、简便易行的演示或实验中分析或思考当前讨论的问题。
- 本版增加了生动并富有启发意义的新的艺术作品。
- 我们还准备了试题库、教员手册、幻灯片和相关网址，备大家使用。

在编写认知心理学综合教材的时候，我们希望为那些喜欢在一学期的课程里集中讲

解自己偏爱的问题的教授，提供一本有吸引力的教材。也许在一学期的一门课程里，可以讲完本书十六章的内容，但大多数教授告诉我们他们只选择讲解了部分章节。考虑到这一点，本书在编写的时候，使章节内容的安排做到了可以略去部分章节，而不会影响本书的连贯性。下面是我们建议的一些课程内容组合：

1. 对认知的概要介绍——第 1、3、4、6、7、8、11、13、15、16 章。
2. 认知神经系统——第 1、2、3、4、5、6、7、9、10、12、15 章。
3. 应用的方法——第 1、3、4、5、6、7、8、9、10、11、13、14、15、16 章。
4. 对思维/问题解决的着重介绍——第 1、4、5、6、7、8、9、10、11、14、15、16 章。
5. 记忆——第 1、2、3、6、7、8、9、10、11、12、13、14、15 章。
6. 认知发展——第 1、2、3、4、6、7、8、9、10、11、12、13、14、15、16 章。

以上仅是一些基本建议，供你在选择自己喜欢的章节或增加专题时参考。

很多人为本书的出版做出了贡献，我们非常高兴能够在此向他们表示谢意。本书多年来的忠实读者当面或通过电子邮件表达了对本书的意见、建议和想法。我们衷心感谢你们的长期支持，你们的反馈对我们来说非常重要。此外，给我们提供反馈的同学们，是你们让我们得以与本书的目标读者保持了联系。不少研究者给我们提供了最新研究发现，我们尤其要对你们表示感谢。我们感谢第五版、第六版的评审人。以下各位评审人的审阅意见使第五版、第六版的质量大大提高：印第安纳大学的 Tom Busey，新奥尔良大学的 William S. Cassel，乔治·梅森大学的 Linda D. Chronsniak，Muskingum 大学的 Darlene DeMarie-Dreblow，威斯康星大学 Whitewater 分校的 Doug Eamon，北卡罗莱纳大学 Charlotte 分校的 Paul Foos，芝加哥 Loyola 大学的 Paul Jose，Marquette 大学的 Kristy A. Nielson，圣托马斯大学的 Greg Robinson-Riegler，弗吉尼亚大学的 Barbara A. Spellman，新墨西哥州立大学的 Laura A. Thompson。感谢本版的评审人，特别是 Hannover 大学的 John Krantz，他花了大量的时间为我们提供了有益的、建设性的批评意见。我们还要感谢以下几位同学：北爱荷华州大学已毕业的研究生 Mike Anderson，他用了差不多一个暑假的时间来搜集文章、上网和审校章节；北爱荷华州大学的本科生 Becky J. Fisher 和 Scott Shaw 帮助我们完成了教员手册、试题库和索引。感谢编辑 Karon Bowers 的热忱和支持，感谢助理编辑 Lara Torsky 在很多细节工作上对我们的帮助，感谢 Omegatype 杰出的工作人员；感谢我们的学生，感谢他们的指引和反馈；感谢我们的同事，感谢他们的鼓励（并帮助我们承担教学工作）。最后，我们感谢多年来所有使用本书的教员，没有你们，我们不可能完成第七版的出版工作，欢迎你们向我们提出宝贵的意见和建议。

Preface

To the Student

Those of us who grew up with psychology during the twentieth century saw rapid and important developments about the way people perceive their world, how they form memories, and how thought occurs. These developments are due to the dedicated efforts of numerous cognitive psychologists aided by an improved technology. This combination has yielded a rich harvest of knowledge about perception, memory, thinking, and information processing—indeed, all of human cognition.

Among the important findings in cognition is the establishment of a connection between the thinking mind and its corresponding neurophysiological activities. These advances were pioneered during the last part of the twentieth century. Today, a new epoch in all areas of scientific endeavors is anticipated. It is our aim to catch the spirit of these lively times and to stimulate you to investigate the topic further. It is hoped that the contents of this book will let you know where we cognitive psychologists have been; report accurately the best ideas, theories, and experiments; and prepare you to comprehend future developments.

The book follows a sequential model of human cognition from sensation to perception, to attention, to memory, to higher-order cognition; a bottom-up approach, as it were. That system is easy to grasp and gives an order to what may otherwise seem to be a chaotic lot of information; however, it is noted that cognition–perception, memory, consciousness, language use, problem solving, and other topics engage all processes simultaneously. A comprehensive view of cognitive psychology involves an appreciation of all of its components as they weave their exquisite pattern through the mental life of members of our species.

In most chapters you will find boxes called "Cognition in Everyday Life" and "Try This!" If we know one thing about learning and cognition it is that an involved reader learns material better and probably at a deeper level of understanding. These sections

are designed to draw you into one or more themes central to the chapter. We encourage you to allow yourself to be drawn in and interact with the text, and to recognize aspects of cognitive psychology all around (and within) you.

Some students may choose to follow a career in a branch of the cognitive sciences. If the contents of this book stimulate you to work toward continuing the job we psychologists have started, the labor will have been entirely rewarded. Finally, we are interested in what you think about the book and would welcome your reactions and comments (seriously!).

To the Instructor

From the first edition of *Cognitive Psychology* to this seventh edition, the basic organization of the text has changed only a little but the substance has changed considerably. In the earlier editions only perfunctory cross-references were made to what we now call cognitive neuroscience. Now, the prominence of cognitive neuroscience is palpable in all areas of cognitive psychology (and many other areas of psychology) to the extent that other, more traditional fields are beginning to be squeezed out of some textbooks. The remarkable advancements in cognitive neuroscience, not only in technology but also in data and their implications, are fully appreciated in the present edition, gaining ground in the fourth, fifth, and sixth editions; but we are clearly mindful that cognitive psychology is the study of the human mind: its thoughts, its reasoning process, its language, its memory. These subjects (and others) are the topics of cognition that cognitive neuroscience serves to illustrate, explain, and illuminate (in more ways than one). Because cognition is psychology, we have retained many of the conventional studies that have endured the test of time and the empirical test of science and, when appropriate, have added an interesting new study. There is a great temptation to substitute a new study for an old one, and in some instances, when the more recent paper illustrates a new facet of a problem, substitution is justified. However, in many cases an older study is perfectly clear and has been retained. In addition to holding on to the psychological aspects of cognitive psychology, this seventh edition also has a multitude of new studies on cognitive neuroscience that are included as new verification for cognitive theories.

Writing the first edition of *Cognitive Psychology* more than twenty years ago was particularly challenging because I (RLS) had no example to follow except the now classic book of the same title by Ulric Neisser, which was published in 1967, and the hundreds of articles and symposium papers that were unsystematically strewn about my office and home. I did have the good fortune to sit in on Ed Smith's class on cognition at Stanford University in 1974 (a course I later taught). His organization of material is still in the background (although somewhat modified) in the present book as well as in many other texts in cognition, and it seems to me that Ed Smith, who was inducted into the National Academy of Sciences, had a hand in the way cognitive psychology is taught throughout the United States and the world. There are now several dozen textbooks in cognitive psychology and many more that discuss topics as far ranging as cognition and the law, cognition and psychotherapy, cognition and society, and cognition and education, to name but a few. Since those early days of the "cognitive revolution," the sphere of influence of those interested in this topic has expanded greatly, far exceeding what I

envisioned decades ago. However, it is my impression that the major topics that formed the discipline during that time are still viable today, although the emphasis has shifted over the past years—such is the dynamic nature of viable sciences. Since writing the first edition more than a quarter century ago through the sixth edition, the writing has been mostly a solo effort by the first author. In this seventh edition you will find the addition of two remarkable scholars, Kim MacLin and Otto MacLin, who have added breadth and depth to the book. Kim and Otto bring fresh writing, insightful scholarship, and an increased comprehensiveness to the book while at the same time retaining the essential philosophy of the original editions. Both are intimately familiar with the contents of the book and had assisted in the sixth edition. In addition, I (RLS) am proud to say that they are both Ph.D. students of mine.

In this seventh edition we have tried to retain the best features of the previous six editions while adding important new material and changing the emphasis of the book to reflect important changes in the field. In particular, we have retained the comprehensive nature of the book. With the field undergoing significant change and development during the past decade, it has become increasingly difficult to cover all areas of cognition reasonably. Although there is a need for specialized books that are written from a specific point of view, we trust that many will welcome a comprehensive book on cognitive psychology.

Those of you who have used *Cognitive Psychology* for the past few years will be pleased to find that for material that presents contradictory findings, an exposition is given, followed by a summary of the results in which certain conclusions are made. This summary was first used in the third edition and is in response to the needs many of you have expressed.

As with previous editions, most chapters begin with a brief review of the historical antecedents of the topic presented. Since the field of cognitive psychology changes so rapidly, we believe it is important for readers to know something of the history of a topic so that they may understand new information within the context of past events. Each chapter correspondingly ends with a recent study in cognitive neuroscience that highlights an aspect of that chapter.

Overview

- Each chapter begins with preview questions we call "Hmmm . . . ?" These are the questions we think capture students' interest and encourage them to wonder about these concepts prior to delving into the chapter material. We know that learning of essential knowledge is facilitated if the student has a clue about what he or she is expected to learn. The addition of several pertinent questions at the beginning of the chapter will direct the student's perspective on the chapter, and in some cases, the questions are designed to pique the interest of the reader.
- Each chapter has been updated, and several chapters have been significantly reworked, often in response to requests from users.
- As mentioned briefly earlier, each chapter ends with a section called "Spotlight on Cognitive Neuroscience." In this section, a recent study is discussed that focuses on a key concept in the chapter from the perspective (either topically or methodologically) of cognitive neuroscience.

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- The organization of the chapters and sections follows an information-processing sequence that starts with the perception of signals by the sensory/brain system to higher-order processes such as memory, language, and thinking. This sequence has been one that students and professors find easy to follow although the Information Processing (INFOPRO) model of cognition is not the only model students are exposed to in this book. And it is our opinion that cognition is such that all parts work together more or less simultaneously. While people have little difficulty following a sequential processing model, it should be pointed out that memory without perception is like a beautiful painting without paint.
- We have streamlined the boxed material in this edition in two important ways. First, some of the content has been incorporated directly into the text. We feel this provides more examples to keep the student engaged in the material. Second, the remaining boxes (and some new ones) have been reorganized around two themes: "Cognition in Everyday Life" and "Try This!" These boxes encourage the student to analyze or contemplate the immediate subject matter in terms of an everyday experience or an easy-to-do demonstration or thought experiment.
- New artwork has been added that is both lively and instructive.
- A test bank, instructor's manual, PowerPoint slides, and companion Web site are all available for your use.

In writing a comprehensive book on cognitive psychology, it is our intention to present a work that would be attractive to many professors who prefer to select their favorite topics for coverage in a one-term class. It may be possible to cover all sixteen chapters in one course, but most professors have told us that they select certain chapters and not others. The book has been written so that some chapters may be dropped without losing the continuity of the book. Following are several suggested models:

1. A brief, general introduction to cognition—Chapters 1, 3, 4, 6, 7, 8, 11, 13, 15, and 16.
2. A cognitive neuroscience system—Chapters 1, 2, 3, 4, 5, 6, 7, 9, 10, 12, 15, and 16.
3. An applied approach—Chapters 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, and 16.
4. A thinking/problem-solving emphasis—Chapters 1, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, and 16.
5. A memory course—Chapters 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15.
6. A cognitive development course—Chapters 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16.

These models are only basic suggestions to which chapters of your own liking and/or specialty may be added.

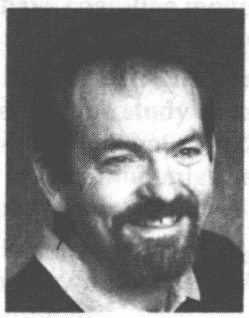
Many people have contributed to this book, and it is a pleasure for us to recognize them here. Many of you, faithful users over the years, have expressed your opinions of the book in person or by email. Your continued use is most deeply appreciated, and your comments have been most important. Also, the students who have written or given feedback have helped us keep in contact with the most important group—namely, the people to whom the book is directed. Many researchers have kept us informed of their latest discoveries, and to you we are particularly obliged. We acknowledge the re-

viewers of the fifth and sixth editions. The fifth and sixth editions were made measurably better by the reviews provided by Tom Busey, Indiana University; William S. Cassel, University of New Orleans; Linda D. Chrosniak, George Mason University; Darlene DeMarie-Dreblow, Muskingum College; Doug Eamon, University of Wisconsin–Whitewater; Paul Foos, University of North Carolina–Charlotte; Paul Jose, Loyola University of Chicago; Kristy A. Nielson, Marquette University; Greg Robinson-Riegler, University of St. Thomas; Barbara A. Spellman, University of Virginia; and Laura A. Thompson, New Mexico State University. Thanks also to the reviewers for this edition, especially John Krantz, Hannover College, who spent a great deal of time to provide us with useful, constructive criticism. Thanks are due to several students: Mike Anderson, former graduate student at UNI who spent much of one summer collecting articles, surfing the Internet, and reviewing chapters; and Becky J. Fisher and Scott Shaw, both undergraduates at UNI, who helped us at every turn on the instructor's manual, test bank, and indexing responsibilities. Thanks to our wonderful editor Karon Bowers for her enthusiasm and support, to editorial assistant Lara Torsky for her continuous help with the details, and to the absolutely fantastic staff at Omegatype; to our students, for their guidance and feedback, and to our colleagues, for their encouragement (and some course release time too). And finally, we'd like to thank all of the instructors who have adopted the text for all these years. Without you this seventh edition would not have been possible. We thank you all. Please let us know how we are doing (we mean it!).

R.L.S.

M.K.M.

O.H.M.



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