Contemporary research has found that memory is much more than the process for recalling information that has been learned and retained—it is a rich, nuanced process that is an important part of every human activity. This highly readable foundational text provides an overview of the theories and research on human memory from a psychological perspective. Grounded in the premise that all psychological processes depend on memory, and that memory is shaped by the functions it serves, the authors look at a wide range of memory processes and discuss the major theories that have been developed to explain how it functions.

This book describes the major structural and functional theories that guide our understanding of memory. The authors then focus on everyday functions of memory, including memorizing things, remembering to do things (prospective memory), and recalling how to do things, such as skills, procedures, and navigation. Disorders of memory including Alzheimer’s and amnesia are examined along with exceptional memory skills, such as the phenomenon of individuals with highly superior autobiographical memory. The book also addresses the intriguing and controversial topics of repressed and recovered memories, the validity of memory in courtroom testimony, and the effects of remembering traumatic events. Illustrative examples, metaphors, and humor make for a text that is engaging and entertaining, resulting in a valuable, concise introduction for students.

Key Features
• Provides a concise, easy-to-read, yet scientifically based survey of theory and current research on memory
• Grounded in the concept that memory is foundational to all psychological processes and human experience
• Covers controversial and intriguing topics including repressed and recovered memories, memory in legal testimony, amnesia, and the phenomenon of super memory
• Explores the myths and realities surrounding memory loss

The Psych 101 Series
Short, reader-friendly introductions to cutting-edge topics in psychology. With key concepts, controversial topics, and fascinating accounts of up-to-the-minute research, The Psych 101 Series is a valuable resource for all students of psychology and anyone interested in the field.
James Michael Lampinen, PhD, is the youngest of six siblings (Sharon, Linda, John, Judi, Joe). He was born a bit north of Chicago. From a young age, he was interested in science. He received his bachelor’s degree in psychology from Elmhurst College and his PhD in cognitive psychology from Northwestern University. He also did a stint as David G. Payne’s post doc at Binghamton University. He is currently professor and associate chair in the Department of Psychological Science at the University of Arkansas in Fayetteville. His work focuses on memory errors and their applications to legal contexts. This includes eyewitness testimony, memory illusions, and searches for missing or wanted persons (prospective person memory). Jim lives in Fayetteville and is married to Jamie Lampinen. They are raising three children and a dog and are busy making lots of memories together, as evident from the ever-expanding magnet collection on their refrigerator.

Denise R. Beike, PhD, is a would-be novelist who discovered psychological science along the way and never looked back. She received her bachelor’s degree in English and psychology from Indiana University and her PhD in social psychology from Indiana University. She is currently professor and chair of the Department of Psychological Science at the University of Arkansas. Her research interests include the effects of autobiographical remembering on emotions, the self-concept, relationships, and behavior (it affects all of them—see Chapter 6!). She also studies the emotional experiences of regret and missing someone, both of which involve memory. She is the author of various articles and book chapters on these topics, but her proudest accomplishment is her students’ success.
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Índice 299
We thank James Kaufman for inviting us to make a contribution to such a great and innovative book series. We also want to thank Nancy S. Hale for her tremendous patience in guiding us through this process. Several students, former students, and colleagues eagerly discussed the ideas in this book and offered us comments on earlier drafts of this manuscript. We thank them in no particular order: Lindsey Sweeney, Chris Peters, Jack Arnal, Blake Erickson, Kara Moore, Brittany Race, Nicole Wentling, and Holly Cole. More broadly, we want to thank our students and colleagues for all the interesting conversations we have had with them over the years, which have shaped our thinking and our lives. We’d also like to thank the many Facebook friends who cheered us on as we posted daily reports on our book progress—“likes” to you all. And of course, we thank our families and significant others for their love and support, even when we were grouchy as deadlines loomed. In particular, Jim wants to give a special shout-out to Jamie for being his inspiration. We could not have completed this project without the efforts of these remarkable people.
This is sample from Memory 101
Visit This Book's Web Page / Buy Now / Request an Exam/Review
This book is about human memory: how it works, how it sometimes doesn’t work, why it’s important, and why it’s interesting. The authors of this book are a cognitive psychologist (Jim) and a social psychologist (Denise). Cognitive psychologists study how people think, remember, categorize, and use language. Social psychologists study how people think about and interact with other people. One of us is primarily interested in how memories can sometimes become distorted and in the role that memory plays in the legal system. And one of us is primarily interested in the role memory plays in shaping one’s personal autobiography, how memory is used in coping, and why it sometimes makes sense just to forget and move on with things. But we both agree that memory is central to all human endeavors. In fact, a major reason why we chose to focus our careers on memory is because we think that memory is the sine qua non of human psychology. We think you should be interested in memory, too. We think you should be interested in memory because how we process,
store, retrieve, and use memory is intrinsically interesting. We also think you should be interested in memory because memory is important for a variety of different reasons, some obvious and some not so obvious. We think you should be interested in memory because memory is foundational. It is the bedrock on which thinking and reasoning depend. We think that once you read this book, you will agree that memory research is interesting, perplexing, and important.

**MEMORY IS INTRINSICALLY INTERESTING**

Memory is intrinsically interesting because it involves a re-experiencing of the past in the present. Look around the room that you are in right now. Presumably, you notice things like the wall, the floor, the ceiling, tables, chairs, wall décor, the book in your hands, other human beings, your pet iguana (or whatever), and so on. Those things all exist in the present, and although it is no simple feat for your brain to process this information in the present, doing so involves, at the very least, making sense of a set of things that are physically there. A digital camera can also process information about what is in the room in the present without too much difficulty, although this occurs in a much different manner from how your visual system processes the same scene.

But now think about the home where you grew up. Can you picture the walls? Can you picture the furniture? Can you remember walking into the house after a hard day at school? Can you mentally count how many windows there were in the house? Can you remember hugging your parents there? Can you remember arguing with your siblings there? Can you picture the bed you used to go to sleep in? Do any embarrassing stories come to mind about things that happened there? Most people can mentally reimagine those sorts of things, even though none of those things are present in the present, so to speak. Yet those memories,
in many cases, can have a kind of perceptual vividness that makes them almost like reliving the original experience. Researchers have found that many of the same brain regions involved in perceiving an event become active again when one remembers the event (Slotnick, 2004). This led Payne and Blackwell (1998) to coin the phrase “re-perception” when describing how memory operates.

But how does this “re-perception” occur? One possible answer is that the brain somehow stores the pattern of activation from the original event in more or less pristine form and then just replays it, the way one would replay a musical concert on CD or a film on DVD. This idea has a great deal of intuitive appeal considering how vivid and detailed some memories seem, but—as we will learn in Chapter 3—it is almost certainly wrong. The reason it’s wrong, partly, is because memory did not evolve for the purpose of answering questions on history tests or reciting lyric poetry, but instead evolved for the purpose of adapting to circumstances based upon experience.

When one of us (Jim) was in his early 20s, he was driving back to college after spending the weekend at home. He was in a hurry because his friends and he had a weekly gathering in which they watched reruns of a program called Star Trek, which involved human beings on a big spaceship with a “mission to explore strange new worlds, to seek out new life and new civilizations, to boldly go where no man has gone before” (opening narration of Star Trek). As he headed down the highway, exceeding the speed limit in a manner that would have pleased James T. Kirk but undoubtedly befuddled Mr. Spock, Jim noticed that his car seemed to be losing power. The car was running, but even as he pressed the accelerator, the power seemed less and less and less. You can probably imagine Jim freaking out, because he certainly didn’t want to be stranded along the side of the road in the middle of nowhere. Remember that this was back when telephones were big, bulky things attached to walls by electrical wires. Telephones had not yet been conceived that fit in your pocket, let alone allowed you to text during class or play Candy
Crush Saga. Before the car was completely out of steam, he managed to get it to a rough-looking truck stop, too late at night on a Sunday for the repair shop to be open. He didn’t have enough money for a hotel. He slept in his car at the truck stop, dreaming of creepy-looking dudes peering in through his car windows (if it were a dream).

The next day, his dad, an expert mechanic among other things, trekked out to see what was wrong with the car. The alternator belt had broken, allowing the battery to eventually run out of power. To this day, Jim can picture that entire event, and to this day, he also knows to check the alternator belt if a car starts to lose power. Did that event happen precisely how he remembers it happening? Probably not. But he has retained the gist of it: how bad and scary it was to have a car break down like that; what caused the car to break down; what to do if a car breaks down in that particular manner. Memory is our teacher, and it evolved to teach us, not to serve as a recorder of minutia and trivia.

Memory teaches us about other things as well. Memory teaches us about other human beings. We interact with someone and, after many experiences with the person, start to form an impression of that person. Is the person smart, or not so smart? Nice, or not so nice? Honest, or not so honest? Fun, or not so fun? We don’t have to remember everything the person said or did in exquisite veridical detail. We just need to remember enough to form an impression and to assure ourselves that the impression is a solid one. We need enough information to approach or avoid. We use memory in the same way when forming impressions of ourselves. Indeed, as we will discuss in Chapter 6, the impression we have of ourselves revolves at least partly around the life story that we have concocted for ourselves in our own personal autobiography. Is that autobiography completely true and accurate? Almost certainly not. It’s been said that one should never let the truth get in the way of a good story, and it seems that human memory obeys that maxim when telling stories about the self. But the story, unless one is pathologically self-deceptive, does get the broad strokes right. And this makes sense. Memory
did not evolve to be your individual VCR player; it evolved to get
the gist right.

As discussed in a ton of detail in Chapter 6, memory serves
many other functions as well. Memories can serve to entertain.
When people get together what do they do? They tell stories.
The stories, of course, are based on memories, even if they end
up being exaggerated for effect. You may even reminisce a bit
when you are by yourself and feeling kind of bored. Memories
can serve to define ourselves to others. When someone asks you
to tell them something about yourself, you may well respond
with a particular memory that you think aptly summarizes who
you are. These have been called self-defining memories (Singer &
Blagov, 2004) and may at times also be self-serving memories
(Alston et al., 2013). And memory can also serve as a kind of
control on our emotions. When we are sad, we can try to buck
ourselves up with our memories. How exactly memory operates
to serve these important functions is the tale told in the early part
of this book. Chapter 2 describes some of the nuts and bolts of
how memory operates. And Chapter 3 goes into a good deal of
detail about how memory is basically a simulation of the past,
not merely a tape replay.

MEMORY IS FOUNDATIONAL

Try this. Go to PsycINFO, the online searchable database of arti-
cles published in psychology journals. Type in the search term
“memory” and see what you get. When we did this on April 30,
2014, we obtained 187,059 hits. When we add to the search
terms related to the word “remember” or “mnemonic,” the num-
ber jumps to 210,586. Those are very large numbers and should
convince you that nobody could be familiar with everything that
has been written about memory. Roughly 1 in 20 articles listed in
PsycINFO includes some variant of one of those three words. But
that’s not the half of it. There are many topics in psychology for
which memory is an implicit part of the conversation even if it’s not mentioned directly.

Payne et al. (1999) once asked readers to imagine what it would be like if they had no memory, if their memories were completely shot—kaput. They pointed out that the first thing people imagine in these circumstances, no doubt from watching too many movies, is walking around muttering things like, “Who am I?” and “Where am I?”—not recognizing friends, family, or pets. As Payne et al. point out, those things would almost certainly not happen if one had literally no memory. The reason they would not happen is because if one had no memory, it would be impossible to walk around in the first place—the ability to walk depends crucially on memory for the sequence of muscle contractions necessary to ambulate. Nor would you be muttering anything, since the ability to mutter depends on memory for words and memory for how to speak. You wouldn’t be asking “Who am I?” because you wouldn’t have any self-concept in the first place. You might think you’d be stuck in the moment, thinking only about the present, but that’s not true either, since the ability to think about the present requires you to make use of categories learned in the past. You couldn’t think thoughts like “What a pretty birdie,” because concepts such as birdie and pretty are all things that are stored in memory as well. Not only would your memory be destroyed, but your perceptual apparatus would also be greatly compromised, because perception depends crucially on memory (Kang et al., 2011). Without memory you’d just be lying there like a blob, which makes it especially hard to get a date on Friday nights.

Of course, actual memory deficits are not that extreme. Usually they involve impairment of one type of memory or another, not the whole kit and caboodle. In fact, as will be discussed in Chapter 8, even people with fairly dense amnesia have some ability to use their memories and some memory systems that are preserved. But the thought experiment illustrates an important reason to study memory—memory is foundational. Memory is important in pretty much everything human beings do. So if you
are interested in human beings, then you should be interested in memory.

The Psych 101 Series, of which this book is a part, deals with just about every branch of specialization within psychology. And every book also deals with memory in one way or another. Interested in intelligence? Intelligence requires recalling information to reason about it and recalling reasoning strategies and heuristics that have worked in the past. Interested in depression? People with depression have memory biases that cause them to focus on negative life events. Interested in language? Language requires a memory for words and grammar, as well as tying together clauses with prior clauses stored in memory. Interested in social cognition? Social cognition requires accessing memory for information one has stored concerning other people. There is no aspect of human psychology that does not depend crucially on memory. If you are interested in psychology in any of its facets, you had better also know a lot about memory.

PRACTICAL APPLICATIONS

At a more practical level, memory research has a number of important applications. One obvious field is the field of education. In fact, a burgeoning field of cognition of instruction deals with applying research from experimental psychologists to help improve learning (Carver & Klahr, 2001). Obvious examples of this include helping children learn basic facts such as the meanings of words, historical facts or figures, mathematical equations, and parts of speech. However, memory is also important for helping children learn how to think and solve problems. In fact, most attempts to teach problem solving involve some variation on giving children examples and hoping that they will learn from these examples. So you show a child how to solve one type of mathematical equation and hope that over time he or she will be able to use those examples to solve new math problems on
his or her own. For this approach to work, it requires the student to be able to remember the prior example and how it was solved, then transfer that solution to the new problem. No easy task! Such learning is sometimes called analogical learning or case-based learning (Gentner & Markman, 1997; Riesbeck & Schank, 1989).

Memory is important for schoolwork, but it doesn’t stop being important after you’ve left school. There are many cases in which being able to accurately recall the details of events can be of crucial importance. Imagine you are sitting at home watching the latest episode of Flip or Flop when all of a sudden your cell phone rings. It’s a number you don’t recognize, but against your better judgment you answer the phone. It’s a survey researcher from the local university, wanting to know about your eating habits. You guiltily think about the Cheetos you had earlier in the day. They ask you: In the past week, how many times have you eaten various foods (e.g., spinach, kale, powdered doughnuts)? How accurate do you think you would be in answering those questions? Research suggests not very accurate at all (Krosnick, 1999). And yet public health researchers rely on such surveys in helping them to understand topics such as America’s obesity epidemic. Or how about this. You are subpoenaed to come into court as part of a lawsuit being filed against the company that you work for. You are asked about meetings in which you took part 1, 2, or even 3 years ago. You are asked to testify fully and truthfully. How accurate do you think your memory would be? In Chapter 3, we’ll talk about research showing that when people try to remember events, they sometimes remember the events in a way that diverges from historical reality. These are called memory illusions or false memories and can be a big problem in legal proceedings (Lampinen, Neuschatz, & Payne, 1998).

A specific example of cases in which memory needs to be accurate is when witnesses make an identification of a potential criminal. Eyewitness identification is part of approximately 77,000 criminal cases per year, but evidence suggests that
eyewitness identification is often subject to error (Lampinen, Neuschatz, & Cling, 2012). We know this partly because of the large number of DNA exonerations that have happened in recent years. In fact, not too long ago, Nathan Brown was released after spending 17 years in prison for an attempted rape in Metairie, Louisiana (Possley, 2014). The main source of evidence against Mr. Brown was an identification made by the victim. DNA testing proved by clear and convincing evidence that someone other than Mr. Brown was responsible for the attack. In Chapter 4 we discuss some of the factors that influence the accuracy of memory in eyewitness identifications.

Another example of how memory is important is in helping us to achieve our goals. The average person’s day is filled with a large number of tasks and goals that he or she needs to accomplish. Sometimes people write to-do lists to remind themselves of these goals, but other times people rely entirely on their memory. Such memories are called prospective memories (McDaniel & Einstein, 2000). Prospective memory is not always successful and is a major source of consternation for the person who forgets to do the particular task, as well as for other people who were expecting the person to do the task. How prospective memory works, and how it can be improved, is discussed in Chapter 5.

But wait—there’s more. Memory is part and parcel of how we define ourselves. For instance, the philosopher John Locke (1690/1995) argued that what makes us the same person now that we were in the past, what gives our life unity, is simply our memory of the past. When I remember myself delivering pizzas at age 19 and think of myself now teaching psychology classes at an age slightly older than 19, the thing that unifies my self-concept over time is my life story, which is stored in my autobiographical memory. Because autobiographical memory is so intimately tied to the self, it not only defines us, but is also tied to our goals and our emotions in an especially strong manner. Autobiographical memory is discussed in Chapter 6. Sometimes the events that happen in our lives are none too pleasant. They are things that
we’d just as soon forget. Yet, those memories sometimes are very hard to forget and can even become intrusive. The role of trauma in memory is something we’ll get into in Chapter 7.

We also know that memory is of practical importance, because we know that when people suffer certain kinds of brain damage, they can experience severe memory problems. Because memory is involved in pretty much every aspect of life, such memory problems can be particularly debilitating and can affect work, social interactions, navigation, and daily living. Yet despite the problems caused by memory deficits, research has also shown that even people with dense amnesias retain some ability to form new memories. The complex set of loss of function and preserved function that occurs in amnesia is the topic of Chapter 8.

Finally, we conclude the book by talking about the role memory plays in our lives and the lives of people with superior memories. We talk about how superior memories differ from average, run-of-the-mill memories and how such abilities can be developed and maintained. We also talk about whether one really needs a superior memory in the first place. This all happens in Chapter 9, the concluding chapter of the book.

LET’S GET STARTED

We are all familiar with our own memories, but often we think of memory only in the context of memorizing. This isn’t surprising since, as students, we spent an awful lot of time with highlighters and flashcards trying to cram information into our brains. Traditional presentation of memory research within general psychology and cognitive psychology textbooks reinforces this view. But human memory is a much richer, more nuanced, and more interesting topic than that. In fact, memory is an important part of just about every human activity. People certainly use memory when they study for exams. But they also use memory when they talk with their friends, plot against their enemies, celebrate their
victories, solve problems, and try to remember what was on their shopping list. People so value memory that they will gladly pay more to obtain life experiences than material goods, because experiences can be savored indefinitely in memory. And many of the material goods we purchase, we purchase simply to serve as reminders to salient life events (e.g., consider souvenir shops).

Our guiding assumption in writing this book is that all psychological processes depend on memory and that memory is shaped by the functions that it serves. Memory is a foundational mental ability, important in its own right, but also important in the role it plays in other mental functions. To understand memory is to understand much of human psychology. We look forward to having you join in this journey with us. But as the old adage says, the longest journey starts with a single step. So let’s get stepping!

REFERENCES


