The Brain Health Book

USING THE POWER OF NEUROSCIENCE TO IMPROVE YOUR LIFE

JOHN RANDOLPH

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PREFACE

INFORMATION ABOUT THE BRAIN—AND HOW TO potentially improve its many functions—has become increasingly available in popular culture. Newspaper articles, online sources, and talk show hosts are often eager to tout the findings from one-off studies that purportedly clarify how the brain works or how it can work better. Commercials and junk e-mails praise the benefits of supplements or other products that are supposed to magically transform the brain's inner workings. But what actually helps, and what's hype? Is there compelling science out there that can be translated and used to inform our decisions, strategies, and lifestyle choices?

In the 2000s, I started taking more notice of the science of brain health. I also wondered why this topic was not being discussed more frequently in my neuropsychology circles or in academic journals. Being a neuropsychologist—a clinical psychologist specializing in brain–behavior relationships—I was much more aware of how to document and diagnose cognitive disorders than how to promote better thinking skills. Throughout my training, I heard repeatedly that once the brain was injured, diseased, aging, or otherwise not working properly, there simply wasn't much we could do about it. I never wanted to believe this.

As I continued to dive into research on brain wellness, I thought it would be useful to summarize some of it for my colleagues at an upcoming meeting. I gave a presentation on the topic and thought perhaps that would be it. Fate then intervened in the form of a publisher who had heard about my seminar and suggested that I consider writing a related book for a professional audience. I accepted this offer and enjoyed the labors and rewards of writing and editing a reference on brain health for people in my field.

During that process, I kept coming back to the idea that people outside my small professional zone would probably be interested in a book that considered the science of brain health. It seemed that it might be useful to translate the research for folks who were curious about neuroscience, neuropsychology, brain health, and related fields, but who hadn't necessarily been educated in those areas. Perhaps consider the science in a way that wouldn't go too far into the weeds but nevertheless clarified some brain-related ideas and terms we might hear in the media. Maybe share some of my own excitement related to recent developments in neuroscience—like our ability to grow neurons by exercising, a concept foreign to essentially all medical professionals and researchers until fairly recently—and help clarify practical applications for our daily lives.

This is that book. I earnestly hope that you enjoy it. I also hope that you become fascinated and inspired by the cutting-edge neuroscience and behavioral research discussed here that is transforming our ability to make our brains healthier. Of course, science should not be kept in a vacuum: you can apply what's reviewed here immediately to potentially improve your own brain functioning, and, ultimately, your life. I've also included some case composites throughout the book that detail how lifestyle choices have positively impacted cognitive skills in people I've worked with. Incidentally, if you're interested in getting into the scientific details, there are plenty of references to academic papers at the back of the book that represent some of the most innovative brain health studies. You're also welcome to not worry about any of that for now.

Either way, I encourage you to get comfortable, read through some or all of the chapters based on your interests, and appreciate that most of what we know of that helps the brain is free or

inexpensive, fun, emotionally enriching, and stimulating (not to mention tasty). Your brain will thank you for it.

The Brain Health Book

PART I

Introduction to Your Brain and How It Works

1

The Four Domains of Brain Health

WHEN WE THINK ABOUT *HEALTH*, WE DEFINE IT IN a number of ways. Physical health refers to our ability to stay free of illness or to recover quickly when we get sick. Cardiovascular health relates to how well our heart and blood vessels are working. Mental health can refer to many things, but usually this is discussed in the context of how we regulate our emotions and manage stress. We all strive to live in ways that maximize our health, although this is certainly easier said than done.

This book focuses on the type of health that I consider "the elephant in the room": brain health, also known as cognitive health. **All other aspects of health fundamentally depend on brain and cognitive health**. The better we make decisions, remember new information, concentrate on tasks, and process information efficiently, the more likely our body will be firing on all cylinders. Your brain's ability to function at its highest level is critically important regardless of whether you're in school, working, raising a family, or retired.

You've probably seen references to brain wellness or cognitive health in lots of places. Your e-mail inbox may have been inundated with messages touting the benefits of supplements you may or may not have heard of. Perhaps you've watched infomercials on TV describing products or programs guaranteed to improve your memory in a short period of time. The supposed benefits of computerized "brain games" are trumpeted broadly. There are also a number of books on the topic of brain health; some have merit, while others might function best as kindling for a holiday fire.

This book isn't promoting a quick fix related to improving how your brain works. Think about it: if we were able to change our brains over a short period of time with a magic pill or strategy, wouldn't we all be doing this already? The brain has evolved to its current incredible state over hundreds of thousands of years. A marketing pitch that claims to change it meaningfully in a few days or weeks is simply, as my grandmother used to say, "hogwash."

That being said, there is a large body of scientific research that clarifies what we can do, over time, to help our brains work more efficiently, encode new information more effectively, and concentrate more precisely on the task at hand. **The focus of this book is on translating the science of brain and cognitive health into a program you can use.** We will consider a variety of strategies, lifestyle activities, dietary choices, and other factors that are known to promote the brain's ability to function well. We will also discuss ways to learn positive, brain-healthy habits one step at a time and get around the barriers that may have interfered with developing these habits in the past. Changing our behavior is hard. But developing new routines and ways of living is doable, particularly when done using incremental steps over time—and when we take some related tips from science.

Here's how this book is organized. The first three chapters will provide some background information about neuroscience, cognitive health, and how the brain works. Later in this chapter, I'll introduce what I consider to be a useful and easily remembered model of brain and cognitive health. We'll refer to this model throughout the book as a broad perspective on how we can think about positive strategies and lifestyle changes known to nurture and improve the brain.

Beginning with Chapter 4, you'll see a consistent three-part structure in the chapters. I'll start

each chapter with a section called "The Background Science." This is where I'll summarize recent and past research that's been done on a given topic, say, benefits of exercise for the brain or how nutrition affects our thinking skills. This section will help clarify the importance of a topic as it relates to the brain so that you'll understand why the topic has been included in the book. In case you're interested in learning more, there are references to important studies in the chapter notes section at the end of the book.

A review of the science will set up the next section of each chapter, "The Bottom Line." As you might have guessed, "The Bottom Line" will be a brief summary of key scientific findings and related applications that you can refer to at any time as a quick refresher.

The final section of each chapter is "The Brass Tacks." This section will help you put everything together and do some personal strategic planning to move you in the direction you want to go. It will be laid out in a worksheet format to help you create your own blueprint for developing brain-boosting habits. You'll see spaces where you can record your current level of activity, clarify barriers that have gotten in the way in the past (or might in the future), and set near-term and more distant goals for increasing that activity over time. This sort of strategic planning can be very powerful in effecting change. We know that monitoring our own behavior is one of the best ways not only to improve awareness of what our tendencies are but also to make changes we want (or need) to make.

It's important to point out that this book is designed so that the reader can begin any section or chapter at any time. Don't feel compelled to read chapters in order, from start to finish; perhaps the chapter on exercise is of particular interest, or maybe you'd like to start with the content related to social activity and the brain. There are many different ways to promote brain and cognitive health, and you should take a look at what seems to be most relevant for you as you strive to make positive lifestyle changes.

MYTHS AND MISCONCEPTIONS ABOUT THE BRAIN

Sometimes in popular culture, we hear things about how the brain works from the news, people we know, and heathcare professionals. It's remarkable how some of this information can be repeated again and again, even if there really isn't scientific evidence supporting it. **Let's review and critique a few common beliefs (or misconceptions):**

- Significant memory loss is a natural part of the aging process.

Don't believe this one for a second. This is one of the biggest misconceptions about the aging process: that no matter what, our brains will atrophy and we'll develop Alzheimer's disease or another form of dementia. In fact, until we get into our nineties, most of us will not experience significant memory or other cognitive impairment. Even then, over 50% of people remain dementia free for most of that decade. Further, we know that some people have brains that age remarkably well—a group of elders who researchers call "Superagers"—and show very few if any brain-related changes even compared to people 30 years younger. They also show memory abilities that rival those of middle-aged adults. The bottom line is that memory impairment is definitely not part of the typical aging process for most of us.

- Our lifestyle activities in midlife don't have much of an impact on our memory and other thinking skills later in life.

If you thought this was true, you probably wouldn't be reading this book. We're learning more

and more about how our activity levels, diet, and overall interest or disinterest in wellness affect how cognitively healthy we are in the future. For example, we know that higher physical fitness in midlife is linked to better brain health 20+ years later. Throughout this book, we'll discuss how engaging in different lifestyle activities will increase the chances of having a better-looking and better-working brain down the road.

- Positive changes in the brain occur throughout life.

Years ago, neurologists thought that the brain was essentially set in stone beginning fairly early in life. Once the brain had gone through its initial development, it simply was done growing. The only changes thought to occur at that point were negative ones: loss of neurons, atrophy of the cerebral cortex, and depleted brain chemicals or neurotransmitters. Now we know the story is nowhere near that bleak. In fact, it's almost the opposite: the brain continues to grow and adapt throughout life, into our eighties and beyond. I was struck by a study a few years ago that found that sedentary individuals in their eighties who began an exercise program experienced significant (and positive) changes in the connections between multiple brain regions. Becoming more active and making wellness-oriented lifestyle choices—at any point in life—will inevitably fine-tune the brain.

Along these lines, studies show that people who stay mentally or physically engaged experience growth in different parts of the brain—evidence of new neurons or better connections between existing neurons—and perform better on standardized cognitive tests. This refers to what we call *plasticity*: the ability of the brain to change, adapt, and grow over time in positive ways.

- Forgetting something you recently learned or used to know is an early sign of dementia.

When I see patients for neuropsychological evaluations, this is often their greatest fear. They may have recently met someone whose name they can no longer recall or forgotten an appointment that had been scheduled a few months ago. Perhaps they can't remember the name of a street they used to drive on years back. One of the fundamental tenets of brain functioning is this: we actually forget lots of things, and that's okay. Can you name what you had for dinner four nights ago? Can you remember the name of someone you briefly met for the first time at a concert last month? Simply put, when we are exposed to new information, some of it sticks (and we'll talk later about how to improve this process), and some of it doesn't.

Dementia is a different animal. Not remembering where you parked your car at a shopping mall is relatively common. Forgetting whether you drove, took the bus, or rode in a taxi to the mall is more troubling. Another example: we all misplace our keys from time to time, but few of us mistakenly put our keys in the freezer when we get home. If you're truly concerned about cognitive changes, and others who know you are too, it might be a good time to see a neuropsychologist or neurologist for an evaluation. That being said, it's important to note that many people experience memory and other cognitive lapses because of stress, sleep problems, chronic pain, inattention, and other factors that probably don't reflect a brain-related disorder per se.

- Medications that treat memory problems are very effective.

Unfortunately, at this point, this is a misconception. We have a few medications that improve daily functioning for some people, but the gains are usually minor and short lived. There simply is no silver-bullet medication or supplement that returns one's memory to where it once was. Don't

believe the marketing hype of the latest "brain health supplement" you hear about on TV or elsewhere. Fortunately, we do know that social engagement, exercise, mental stimulation, and other lifestyle choices are associated with better cognitive skills and may even prevent dementia in some people.

- If it's going to affect us, Alzheimer's disease usually starts in our forties or fifties.

The earliest that Alzheimer's disease begins to affect most people is in their mid to late sixties, although mild cognitive impairment—memory or other cognitive difficulties that do not cause significant problems in daily life—can begin somewhat earlier. There is a very rare form of early-onset Alzheimer's disease that can occur in midlife, but the vast majority of Alzheimer's cases start after age 65.

- Once your memory has begun to decline, there's nothing you can do about it.

Also untrue. Most of us experience subtle changes to our thinking skills as we get older, beginning sometime in middle age. Our life experiences, well-established professional skills, and ability to proceed through life more efficiently than when we were younger can all provide a buffer against those mild changes. But we also know that individuals who age the best—cognitively and physically—are the ones who stay the most active. The science also indicates that even individuals with cognitive impairment, including those with dementia, can enhance their brain skills through exercise and other types of activity.

- We only use 10% of our brains.

Simply put, if this were accurate, brain scans such as brain magnetic resonance imaging (brain MRI) would show large areas of dead tissue. While it may be the case that people use their brains differently, unless you have a neurologic disorder such as stroke or dementia, you're generally using all of your brain in different ways throughout the day (and night).

THE C.A.P.E.^{SM} MODEL OF BRAIN HEALTH

Throughout this book, we'll use an easy-to-remember model—the C.A.P.E. model—as a reference for four key domains that are linked to better brain and cognitive health. C.A.P.E. is an acronym that stands for the following:

- Cognitive strategies
- Activity engagement
- Prevention of cognitive problems
- Education about the brain

Because I'm a big fan of learning information in different ways, we can also consider this model in graphical form (Figure 1.1).

Let's discuss the four parts of the model. The "C" of the C.A.P.E. model, *cognitive strategies*, refers to different techniques we can use to enhance our ability to remember, organize, and manage information in daily life. Some people use their cell phone calendars to record and later remind them of upcoming appointments; others prefer paper-based organizers. So-called sticky

notes are a great way to clarify tasks that need to be completed in the near future (or decorate the perimeter of our computer monitors at work). Reminders from kitchen timers can help us remember to turn off the stove or to take a mid-day medication dose. These are all examples of cognitive strategies, specifically what we call *external strategies*—strategies that are external to or outside of us. Any sort of physical aid used to help us manage the daily flow of information would fall into this category.

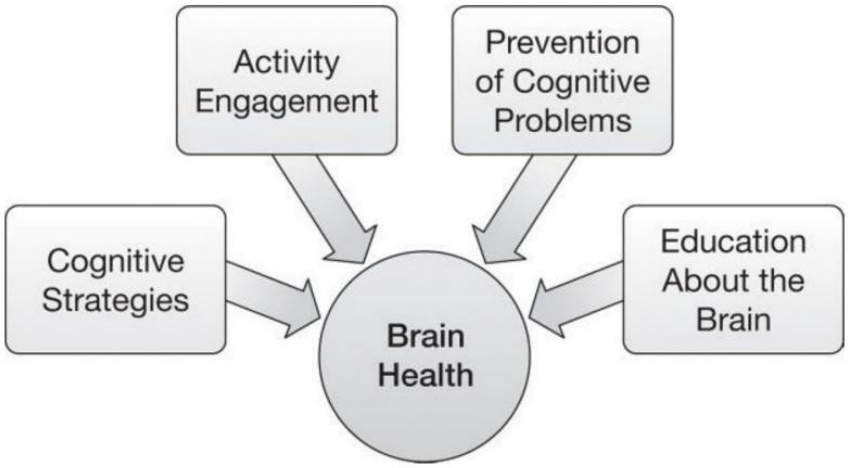

FIGURE 1.1 C.A.P.E.[SM] Model of Brain Health

Another (often complementary) type of strategy is the *internal strategy*—a technique we generate mentally to facilitate learning, recall, or other cognitive processing. Susan was a patient of mine who regularly used a great internal strategy: creating stories with information she wanted to learn and retrieve later. Despite having some memory problems, she was able to craft some great tales, including one where cereal boxes walked to the produce section to attend a tomato and bell pepper soirée, followed by an after party in the freezer section with some truly chilled-out Lean Cuisines—funny, creative, and much better (at least for her) than trying to remember a boring and somewhat random grocery list.

The C.A.P.E. model itself is an example of an internal strategy; an acronym like C.A.P.E. serves as a quick reference to the broader process of helping our brains work better. We'll talk much more about cognitive strategies in Chapter 4.

The "A" of the C.A.P.E. model refers to *activity*, more specifically, engagement in lifestyle activities. What types of activities, you ask? There are three primary types of activity that have been researched extensively and are linked to better brain functioning. The most science to date has been devoted to the first type of activity referenced by the C.A.P.E. model: *physical activity*. The benefits of exercise on the brain have received quite a bit of press, and you may have seen some related stories in your local newspaper, online, or on TV. The research points almost entirely in the same direction: the more fit and physically active you are, the better your brain will work, and the more robust your processing speed, memory, and other cognitive skills will likely be.

There's also evidence that people who exercise regularly are less prone to developing cognitive impairment later in life, including some forms of dementia. And if you're reading this book in midlife, keep in mind that physical fitness in our forties and fifties is strongly associated with our cognitive health in older age. Fundamentally, exercise may be the best thing we know of to keep our brains healthy and reduce the risk of cognitive decline. We'll discuss this topic in more detail in Chapter 5.

The second type of activity referenced by the C.A.P.E. model is *social activity*. More attention has been paid to this area lately as scientists have considered the positive impact of social engagement on emotional health and the detrimental effects of social isolation. We also see that from a cognitive standpoint, regularly interacting with friends, family members, or coworkers is associated with better brain skills.

While you might not think intuitively that spending time with a friend is exercising your brain, consider the complexities of social encounters (particularly good ones). As you attend and listen to your friend, you're considering his or her thoughts, perspectives, and feelings, and then you use this information to provide a thoughtful response, perhaps sharing your own experiences in the process. Social interaction is both a remarkable human accomplishment *and* something that requires considerable brain horsepower. The many cognitive abilities used during even simple conversations—paying attention to what the person is expressing verbally and nonverbally, mentally juggling the details of the conversation (an example of *working memory*), trying to consider the person's perspective (what's called *theory of mind*)—certainly give the brain a thorough workout. We'll consider how social engagement impacts the brain in Chapter 6.

The third part of the "A" in the C.A.P.E. model (and the last part of what I like to call the "activity triad") is *mental or intellectual activity*. Mental activity takes many forms; a few include reading, doing crossword puzzles, playing musical instruments, and going to museums. Staying mentally active at school or work certainly counts, as does managing a busy household with multiple schedules and events to keep track of. Mental activity remains important throughout life, and stretching the brain by learning new things or pushing ourselves intellectually pays significant neurological dividends.

The science indicates that people who are more involved in mental activities tend to show fewer cognitive changes (particularly decline) in midlife and beyond and are at less risk of developing dementia. There are some really interesting studies looking at large groups of people who are and are not mentally active, and the results are often quite striking in terms of how the brains of both groups are working. We'll come back to this topic in Chapter 7.

Incidentally, activities that include multiple aspects of the activity triad can be particularly powerful for the brain; think playing tennis or racquetball, which have strong physical and social components, or volunteer work, which can be mentally stimulating and often involves lots of social activity.

Moving on, the next part of the C.A.P.E. model, the "P," refers to *prevention of cognitive problems*. We now know of many factors that contribute to diminished brain health. By modifying these factors, we may be able to improve how our brain works and possibly even prevent some types of dementia.

For example, there is evidence that diets with lots of saturated fat are bad for the heart—and the brain too. In contrast, people who adhere to a Mediterranean-style diet seem to have brains that are more efficient at processing information and remembering new things. This type of diet includes lots of fruits and vegetables, olive oil, certain types of nuts (like walnuts), beans, fish, and a little wine, with little to no red meat or dairy products. We'll look at the science of nutrition and the brain in detail in Chapter 8.

We also know that managing stress effectively is another way to prevent problems with attention, memory, and other thinking skills. Reducing stress protects certain brain structures (such as the hippocampus, a vital memory region) from being bathed in potentially toxic hormones that are released when we feel chronically tense. Sleep difficulties, some medical problems, and smoking can really reduce brain horsepower too. In Chapters 9 to 11, we'll talk more about these and other factors we can manage to potentially prevent cognitive problems.

The final part of the C.A.P.E. model is the "E," which stands for *education about the brain*. The

entire book essentially covers this part of the model, although Chapter 12 has a particular focus on strategies to lock in new brain-boosting habits based on our understanding of how the brain works.

The myths noted earlier represent just a fraction of misguided beliefs that many people hold about the brain and our thinking skills, often through no fault of their own. As a neuropsychologist, I often see patients who are concerned that they are having "memory problems," when in fact they are experiencing increased stress, anxiety, or depression that leads them to perceive that their memory isn't what it used to be. Some of my work, in turn, involves helping people understand that appropriate stress management or treatment of emotional concerns can lead to better perceptions of how their memory is working.

In a related vein, when people feel that their memory is failing them, they may be noticing normal age-related changes to their thinking skills. While frustrating and embarrassing at times, these changes do not necessarily portend serious cognitive disorders such as dementia. We actually begin to experience some reduction in our processing speed and name retrieval when we're in our forties. Our life experience and wisdom help us compensate for these lapses, but they can certainly be annoying. Having realistic expectations for what our brain does well and where it may slip up from time to time can be reassuring.

Now that I've laid out many of the topics we'll be covering in this book, I wanted to offer an opportunity to consider the types of brain-promoting activities you currently engage in. Take a quick look at the following, which are questions from a measure I developed with some colleagues called the Cognitive Health Questionnaire, and rate yourself:

1. How much light physical activity or exercise do you get in a typical week? (Note: One period of activity is 20 to 30+ minutes of mild exercise from gardening, general housework, bicycle repair, slow walking, and so on.)
   _____ None or minimal (0 points)
   _____ One period of activity (1 point)
   _____ Two periods of activity (2 points)
   _____ Three periods of activity (3 points)
   _____ More than three periods of activity (4 points)

2. How much moderate or vigorous physical activity or exercise do you get in a typical week? (Note: One workout is 20 to 30+ minutes of moderate exercise from brisk walking, hiking, jogging, cycling, swimming, working out at the gym, dancing, and so on.)
   _____ None or minimal (0 points)
   _____ One workout (1 point)
   _____ Two workouts (2 points)
   _____ Three workouts (3 points)
   _____ More than three workouts (4 points)

3. How often do you socialize with family members other than your partner in a typical week? (Note: Socializing = interacting with someone other than your partner for at least 10 minutes at a time.)
   _____ Never or rarely (0 points)
   _____ Once (1 point)
   _____ Twice (2 points)
   _____ Three times (3 points)
   _____ More than three times (4 points)

4. How often do you socialize with friends in a typical week? (Note: Socializing = interacting with someone other than your partner for at least 10 minutes at a time.)
   _____ Never or rarely (0 points)
   _____ Once (1 point)
   _____ Twice (2 points)
   _____ Three times (3 points)
   _____ More than three times (4 points)

5. How many times per week do you do something that makes you consider or remember new information? (Note: Activities might include reading a newspaper, magazine, or book for at least 10 minutes; going to a museum or art gallery; doing crossword puzzles or Sudoku.)
   _____ Never or rarely (0 points)
   _____ Once (1 point)
   _____ Twice (2 points)
   _____ Three times (3 points)
   _____ More than three times (4 points)

6. How many times in a typical week do you use strategies or techniques to help you remember or organize information? (Note: Strategies might include using a paper or computer calendar; writing lists or notes; using mental images of things you need to remember; using an alarm clock or smartphone alarms.)
   _____ Never or rarely (0 points)
   _____ Once (1 point)
   _____ Twice (2 points)
   _____ Three times (3 points)
   _____ More than three times (4 points)

Now, for questions 1 to 6, tally your responses. Here's a general interpretation you can use for your total score:

> 0 to 6: You're not doing much in terms of activities that could help your brain. You might want to read most if not all of this book to get some ideas on how to add activities into your daily routine.
> 7 to 14: You engage in some brain-healthy activities but could probably ramp up your efforts. You may want to read specific chapters related to areas where you're not doing too much right now.
> 15+: You're doing a lot of the right things to maintain if not improve how your brain is working. This book can help supplement what you're already doing and potentially give you new ideas to scale up your efforts even further.

Also, try this one:

> How many of the following strategies do you use in a typical week to help you remember or organize information? (Check all that apply.)
>
> _____ Paper organizer/calendar/planner (such as an appointment book)
> _____ Computer or smartphone organizer/calendar
> _____ Wall calendar

_____ Sticky notes or other notes

_____ Lists (e.g., grocery lists, daily to-do lists, checklists)

_____ Kitchen timers or smartphone alarms

_____ Creating mental images of things you need to remember

_____ Grouping or "clustering" new information together (e.g., using an acronym such as CLOG to remember to go to the *cleaners*, *library*, *office*, and *grocery store*)

_____ Putting new information in rhymes or stories

For this last item, you should probably be using a minimum of two to three strategies listed above (or two to three related strategies that might not be listed here). This question relates to content in Chapter 4, so if you're looking to boost your strategy use, you might start there.

We've got many interesting brain health topics to delve into, so let's get to it. I hope you'll enjoy and be stimulated by the material in the chapters to come. Perhaps more important, my goal is to introduce concepts that you can begin applying to your life immediately to put you on the road to building a better brain.


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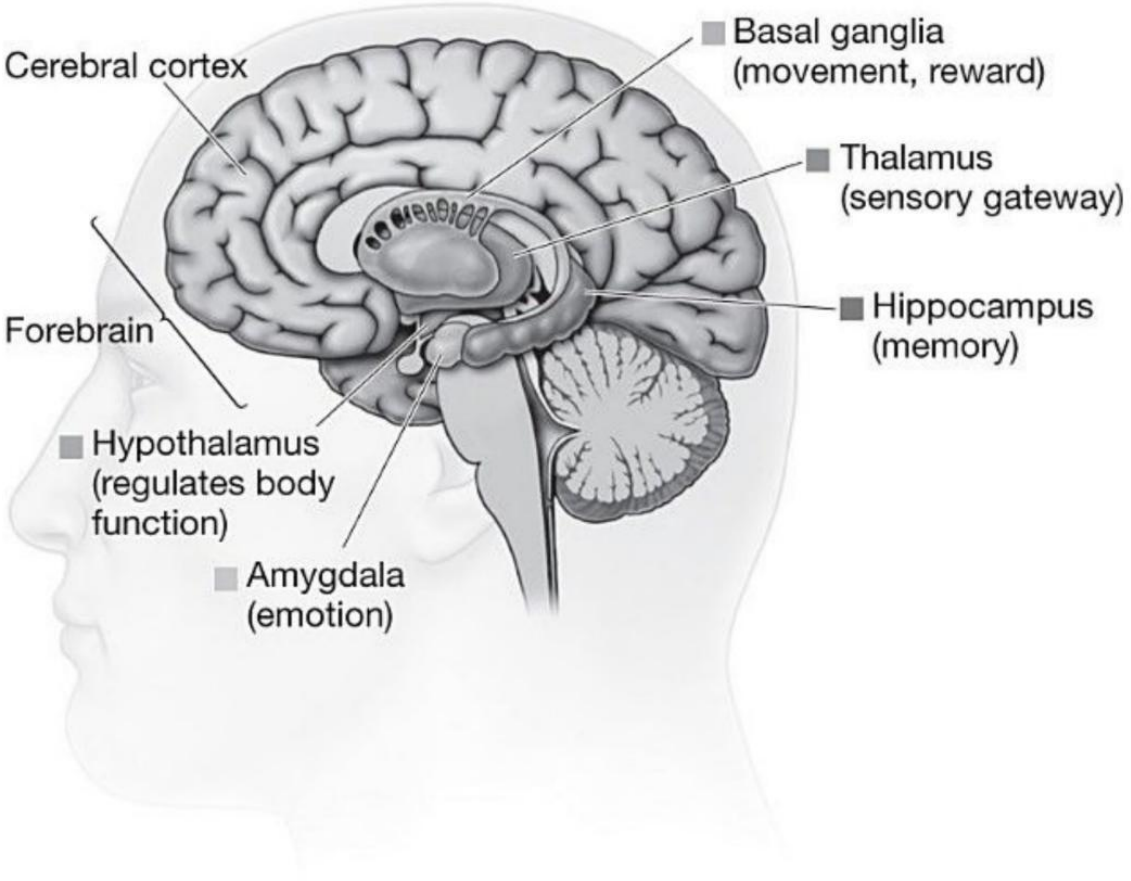

FIGURE 2.3 Subcortical Regions of the Brain

Source: Figure 3.24 in Psychological Science, *fifth edition, by Michael Gazzaniga, Todd Heatherton, and Diane Halpern. Copyright © 2016, 2013, 2010, 2006, 2003 by W.W. Norton & Company, Inc. Used by permission of W.W. Norton & Company, Inc.*

H.M. had intractable epilepsy, and his neurosurgeon believed that removing most of his hippocampus (an area of the brain where seizures can originate) would reduce or eliminate his seizures. The subsequent surgery was a success. H.M. no longer had seizures. However, despite this life-altering change, he would never be able to live independently again. Why? From that day forward, he was essentially unable to remember anything new—the names of his doctors, recent news, even what he had for breakfast an hour earlier. As the title of a recent book on H.M. noted, he was stuck in "Permanent Present Tense." His dramatic example helped neuroscientists understand the importance of the hippocampus for learning and remembering new information, primarily by studying his lack of both after his consequential surgery.

With modern brain science, we no longer need to rely on case studies of brain damage to learn how the brain works (or doesn't). In fact, we can now consider not just brain dysfunction and pathology but also the opposite: *the process of brain growth and development* throughout the entire life span. State-of-the-art neuroscience allows us to study the healthy brain, rather than focus exclusively on the diseased or injured one.

The hippocampus was and continues to be a shining star of this research. As we'll discuss later in the book, early research looking at the effects of exercise on the brain found that the hippocampus responds powerfully to exercise. Unlike what was considered neurological dogma until fairly recently, we in fact grow new neurons in the hippocampus when we exercise, and these neurons are associated with improved ability to learn and remember. More recent studies have

Important Note: *The Brain Health Book* is intended to provide general information on the subject of brain health. It is not a substitute for professional diagnosis of or treatment for cognitive impairment. If you are experiencing memory or other cognitive loss, see a healthcare provider who specializes in those areas. Also see your doctor or other healthcare provider before you undertake a new exercise program and before you add new foods to your diet, if you have or may have allergies.

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