


THE PERSUASION CODE



How Neuromarketing Can
Help You Persuade
Anyone, Anywhere, Anytime

CHRISTOPHE MORIN, PH.D.
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Finally, readers and editors of the book deserve much credit for how it flows. Both Keely Spare and Dr. Bonnie Bright gave us pointed suggestions and had many insights we included in the final work.

ABOUT THE AUTHORS



With more than 30 years of marketing and business development experience, Dr. Christophe Morin is passionate about understanding and predicting consumer behavior using neuroscience. Prior to founding SalesBrain, he was chief marketing officer of rStar Networks, a public company that developed the largest private network ever deployed in US schools. Previously, he was vice president of marketing and corporate training for Grocery Outlet Inc., the largest grocery remarketer in the world. Christophe has received multiple awards during his career. In 2011 and 2013, he received prestigious speaking awards from Vistage International. In 2011, 2014, and 2015, he received a Great Mind Research Award and two distinctions from the Advertising Research Foundation (ARF).

Christophe holds a BA in marketing, an MBA from Bowling Green State University, an MA and a PhD in media psychology from Fielding Graduate University. He is an expert on the effect of advertising on the brains of adolescents. He is an adjunct faculty member of Fielding Graduate University, where he teaches several courses in media neuroscience. He was a founding board member of the Neuromarketing Science and Business Association (NMSBA) between 2011 and 2016.



Patrick Renvoisé is an expert in complex sales and messaging strategies that achieve spectacular results. He headed the global business development efforts at Silicon Graphics, then as executive director of business development at LinuxCare. Pushed by a fervent desire to seek the truth about messaging effectiveness, Patrick turned to neuroscience and psychology. Patrick spent two years researching and formalizing a science-based blueprint of how messages work on the brain. This became the basis of NeuroMap, which has helped thousands of companies worldwide get their messages truly understood by the brains of their customers.

Patrick received a master's in computer science from the National Institute of Applied Sciences (Lyon, France); and he is currently serving as chief neuromarketing officer and cofounder of SalesBrain.

WHY READ THIS BOOK?

You may not realize this, but each day you create messages to persuade others. It could be one of the hundreds of emails you regularly send to your colleagues, friends, or customers. Or you may participate in the creation of an ad, a web page, a corporate video, and slides for a sales presentation. Often, cognitive effort and money are invested in many of these tasks. However, have you ever wondered how effective all these attempts are from the perspective of people's brains? What attention can you truly recruit? What are your chances of rewiring pre-existing beliefs and opinions? Can you trigger the “buy button” in your targets' heads?

This book will help you realize that most of your efforts to persuade others are not optimized for the brain. We are bombarded with persuasive messages throughout the day, which is why 99% of them are being ignored. They “splash” off our brains (see [Figure 0.2](#)). In *The Persuasion Code*, however, you will learn proven strategies to ensure your messages get through.



Figure 0.1 Buy button.

Source: SalesBrain. All Rights Reserved. 2002–2018.

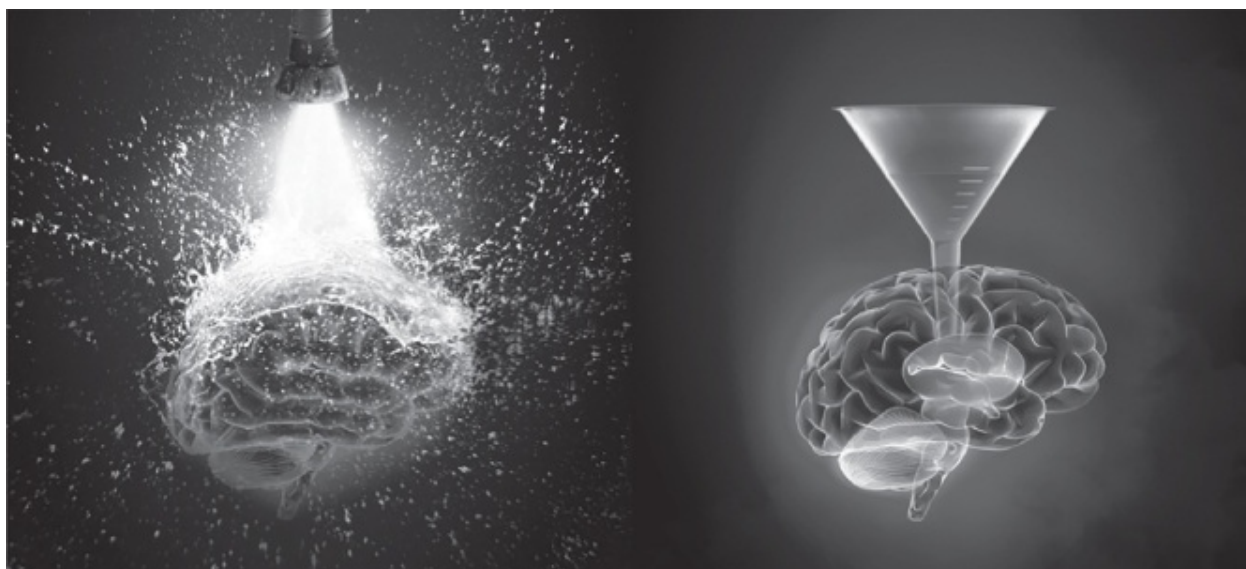


Figure 0.2 The splashing effect.

Source: SalesBrain. All Rights Reserved. 2002–2018.

Simply put, the purpose of our book is to help you use cutting-edge persuasion science to make your messages brain-friendly. This means you will be able to convince anyone, anywhere, anytime!

This book is a long-due sequel to the original book we published under the title: *Neuromarketing: Understanding the “Buy Buttons” in Your Customer's Brain*, the first of its kind to include the term *neuromarketing*. Since then, neuromarketing has become a vibrant field investigating the effect of persuasive messages on our brains. Against all odds, our first book was an international success with estimated sales of over 150,000 copies.

A few months after our book was released, we formed a neuromarketing agency called SalesBrain. SalesBrain became the first company in the world dedicated to training, research, coaching, and creative services using a proprietary neuromarketing model called NeuroMap. NeuroMap is illustrated to help you learn it with ease and is printed on the back of the book cover. Since 2002, over 200,000 executives have been trained on NeuroMap worldwide, including over 15,000 CEOs. With SalesBrain's help, over 800 companies have deployed innovative neuromarketing strategies to accelerate sales cycles, win strategic deals, optimize the effect of websites, brochures, presentation slides, corporate videos, and more. Many of our customers are leaders in their industry with large marketing budgets and teams of talented marketers: Avon, TransUnion, Paypal, Siemens, GE, Epson, Hitachi, along with many others we are not legally allowed to name but you would instantly recognize! Often, neuromarketing practices are

considered too strategic to let competitors know you are employing them to sharpen the effectiveness of sales messages. Meanwhile, many of our raving fans are small to medium-sized companies with limited marketing budgets and modest marketing teams. Yet, many of these companies have generated measurable advantages by using NeuroMap. That is why we can continue to claim today that NeuroMap is the only scientific persuasion model that can explain and improve thousands of messages that are designed to trigger buying decisions.

NeuroMap is based on the dominance of the *primal brain* on our buying decisions. The primal brain is the oldest system composed of a multitude of brain structures (see [Figure 0.3](#)). The primal brain manages critical internal states that control attention and emotional resources to address survival-related priorities below our level of consciousness. Think of it as the operating system of your mind, a set of basic instructions that control how your computer receives input and output. Most users do not change their operating system. You can't really reprogram your primal brain either. Meanwhile, the *rational brain* contributes to the confirmation process of many of our decisions. The rational brain is the most recent, more evolved part of the brain. Think of it as the latest version Microsoft Office(R) for your brain. The rational brain is like a suite of enhanced applications you can learn, change or upgrade during your lifetime. This brain uses higher cognitive resources that help mediate some of the responses of the primal brain. Measuring activity in both brain systems is how we were able to decode the effect of marketing or advertising stimuli on the whole brain.

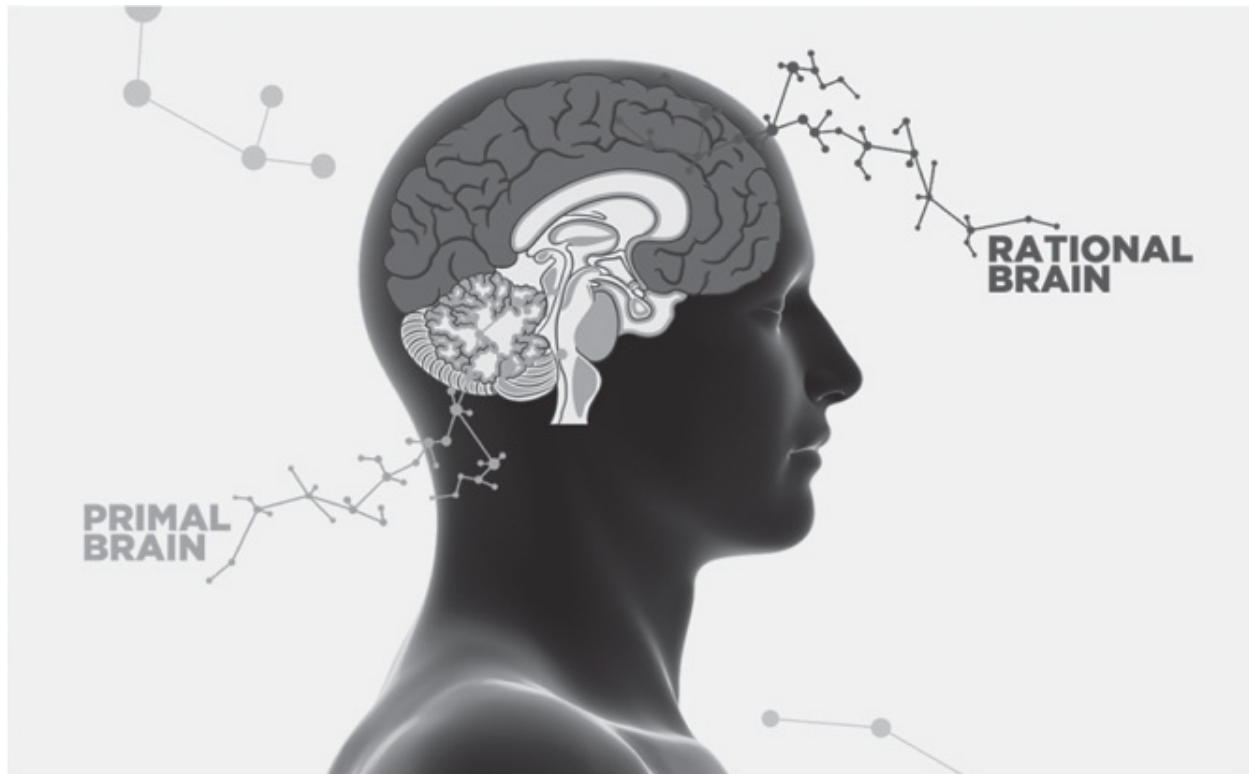


Figure 0.3 Primal and rational brains.

Surprisingly, persuasion is *not* controlled by the rational brain. Rather, it is the *primal brain* that dominates the process, a brain that is mostly unconscious, and preverbal. It appeared long before we started to use words to communicate.

The dominance of the primal brain in our decisions has only been revealed in the past couple of decades by researchers such as Daniel Kahneman, Richard Thaler (both recipients of the Nobel Prize in Economics in 2002 and 2017, respectively), as well as Dan Ariely, John Bargh, and David Eagleman, to name a few who have received public accolades. This book integrates the complex field of decision neuroscience into a proven model you can quickly use to influence the primal brain of your audience, simply but scientifically!

Despite the enthusiasm for brain-based marketing, the size of the neuromarketing industry is still relatively small. A conservative estimate is slightly under one hundred million dollars. However, recent studies conducted by Green Book suggest that marketers plan between 10 and 20% of all their marketing budgets on neuromarketing tools and methods. In the United States alone, the market research industry is a 20-billion-dollar business, which means neuromarketing research services could grab between two and four billion dollars of the potential market within a few years [[1](#)].

Even though the field is now considered more mature, a wider adoption of neuromarketing has just begun. That is the reason that the sequel to our first book is so important. It provides a deep, yet practical approach toward implementing a successful neuromarketing strategy using a tested persuasion model, NeuroMap. Over the past decade, about 60 books have covered the neuroscientific value of using neurophysiological data to decode consumer behavior and advertising effectiveness. However, no book so far has demonstrated the practical and measurable value of applying messaging strategies guided by a scientific persuasion model like NeuroMap. It is our goal to take your interest in neuromarketing, scientific persuasion, sales messaging, advertising effectiveness, website conversion, and sales presentations beyond neuromarketing basics and help you quickly apply the benefits of using *The Persuasion Code*. To achieve that, we will provide a much more comprehensive scientific discussion on the theoretical framework supporting NeuroMap. Also, we will deliver practical, evidence-based guidance to help you apply our persuasion model daily. Armed with both a theoretical and practical understanding of NeuroMap, you will be able to create and deliver messages that catapult the effect of all your persuasion efforts to new record levels. Unlike our first book, in which we cited few case studies and provided limited scientific references, *The Persuasion Code* includes hundreds of scientific references, new research conducted by SalesBrain, and never-published-before materials, as well as many remarkable success stories. In the past 16 years, hundreds of our customers have benefited from NeuroMap. Consequently, this book goes beyond teaching you a proven, brain-based persuasion model. It will inspire and guide you to create your own success story.

In summary, this book will help you:

- Gain a new appreciation for the tremendous amount of brain research that can be easily applied to all your marketing, sales, and communication initiatives.
- Realize how buying choices are affected by multiple brain processes that control attention, emotion, memorization, and decisions.
- Understand how the *primal brain* (evolutionary older layers controlling our automatic and survival-centric behavior), not the *rational brain* (newer cognitive layer), dominates the persuasion process and influences all buying decisions.
- Learn the working principles of the primal brain so you can assimilate how

the complex process of persuasion works without a background in psychology or neuroscience.

- Discover scientific studies, customer stories, and learn scoring techniques that quickly illustrate how your brain-based persuasion strategies can deliver practical, predictable, and measurable outcomes.

Finally, note that the book is structured around three major sections presenting the science, the theory, and the process of persuasion.

The first five chapters were written by Dr. Christophe Morin; in them, he presents the scientific basis of persuasion and NeuroMap. Morin's text concludes with the presentation of the first step of our persuasion process called Diagnose the Pain.

The remainder of the book is written by Patrick Renvoisé. Patrick covers the next three steps in our process to persuade with messages that differentiate your claims, demonstrate the gain, and deliver to the primal brain. Patrick uses many examples and stories to show how you can apply NeuroMap, whether you are selling simple consumer products like toothbrushes or complex multimillion-dollar solutions. Note that this book is written in a way that allows you to skip [part I](#) and [II](#) if you want to know the HOW ([part III](#)) before the WHY ([Part I & II](#)). We do recommend, however, that you read at least the introduction before you do so.

Together, all chapters will give you access to *The Persuasion Code*!

INTRODUCTION

For over a decade now, many neuroscientists and media researchers have claimed that they can crack the neurologic code of advertising effectiveness. Yet, the adoption of scientific methods to investigate and create more persuasive ads or websites has remained curiously low.

IS NEUROMARKETING A COMPLICATED FIELD?

First, when marketing and advertising executives discovered neuromarketing, they often felt that they needed higher education on the workings of the brain to understand and use it. It is true that neuromarketing studies generate gigabytes of information corresponding to complex mechanisms in the brain and that to manipulate this data requires the use of powerful software running cryptic algorithms. There is no question that the process of digging for neuroinsights is time-consuming and somewhat intimidating. So, you may wonder: Can I grasp this quickly? Will it radically help me improve my ability to persuade without causing me additional headaches? Rest assured that with this book you will learn enough about the brain to understand the value of neuromarketing and apply it quickly.

WILL NEUROMARKETING REVEAL FLAWS OF PRIOR CAMPAIGNS?

Marketing and advertising executives are often afraid of what neuromarketing studies may reveal. After all, a scientific persuasion model may provide embarrassing or damaging evidence on the failure of prior campaigns that wasted thousands, if not millions, of dollars. Let's face it, we all avoid confronting information that may question the fundamentals of what we believe. Often, neuromarketing findings are surprising and call into question what we have learned and applied for decades. They tell us why so many of our efforts to influence, sell, or convince did not work. They may even reveal our incompetence or flaws. Peering inside the deep unconscious parts of the primal brain is surprising if not uncomfortable, because it is information that was not

available before. We keep asking people what they want, but the evidence suggests that we cannot easily articulate what we want!

As you embark on your neuromarketing journey, praise yourself for having the courage to question what you know, to challenge what you currently do, and to admit that you may have wasted time and efforts creating messages that were never going to yield any measurable results. Adopting a neuromarketing discipline is humbling, but also empowering. But remember that you may face, if not confront, economic players that are not excited about the neuromarketing revolution.

CAN CREATIVE AND PERSUASION SCIENCE MIX?

Since the inception of SalesBrain, we have met many ad executives who claim they do not need neurophysiological data to understand or predict the effect of their campaigns. Often, they consider neuromarketing research disruptive to the creative process. They do not believe that revealing what cannot be said will provide valuable insights. Worse, they often see persuasion science as limiting their creative freedom. After all, many agencies rely on the power of their creative execution to differentiate themselves. The obvious problem from our exposure to dozens of agencies worldwide (some in the top tier) is that hardly any of them uses credible persuasion theories to support the scientific basis of their messaging strategy. So be prepared to challenge advertising or even creative agencies when you start your neuromarketing journey. They may push back initially until they realize (and accept) that you want more objective measures of the effect of the creative content you buy.

WHY ARE MARKETERS ADDICTED TO WEB ANALYTICS?

In the growing digital marketing space, web and mobile analytics are so easy to produce that marketers often insist that they can easily understand the true impact of ads without more science. Companies like Google, Facebook, and Twitter spend millions of dollars to convince us that their algorithms can reveal and predict the quality of any digital message you create. Their survival depends on it. However, ongoing events have revealed how deceptive many of the web analytics can be. Worse, they often have poor definitions, questionable

assumptions, and even mathematical errors. They are based on behavioral data that give a partial view of how people respond to messages. They ignore the invisible clicks that happen in people's brains!

In 2016, the world's biggest advertiser, Procter & Gamble significantly reduced its Facebook ad strategy claiming that targeting specific audiences was expensive and did not result in a significant difference [2]. Both Facebook and Google argue that they can help advertisers target specific audiences. However, P&G insisted that there was no evidence that precise targeting was worth the effort. Meanwhile, also in 2016, Facebook admitted that it had overestimated a key video metric for at least two years. Only video views of more than three seconds were considered to compute the metric of the average duration of video viewed. That means video views of less than three seconds were not factored in the average, making it much higher than it should have been otherwise. As a result, advertisers were given higher performance scores than they should have received. Although the social network claimed that this was a miscalculation of the average time users spent watching videos on its platform, many advertisers like Publicis were outraged. Publicis was responsible for buying 77 billion dollars in ads in 2015. Keith Weed, Chief Marketing Officer of Unilever, another big advertiser, commented that companies like Google and Facebook do not allow third parties to assess their platform, which means that basically, they grade their homework [3]. Without question, the miscalculation was an embarrassment for Facebook. The company formally apologized and said that they would fix the error in their algorithm. So be warned. Web analytics have limited value and are often flawed. A neuromarketing discipline will make you a smarter buyer of digital advertising by revealing the nature and influence of invisible clicks. As a result, big data players in the advertising space may not be as excited about neuromarketing as you may be.

Meanwhile, since web analytics do not give the complete picture of what happens when buyers' brains are first exposed to ads, you are forced to constantly change your headlines, switch pictures, basically modify your message many times. This ruins your chances to understand why so many of your ads fail to produce any return. Worse, you may select an ad that is still an ineffective ad overall, although it is the highest performing message of your test. Without gaining a better understanding of how ads affect the brain, testing messages (also called A/B testing) is a trap that gives billions of dollars to advertisers and media networks. The pursuit of perfect messages via testing is inefficient, costly, and defies the laws of how persuasion works in the brain.

WHY YOU WILL LOVE A BRAIN-BASED PERSUASION MODEL

Our first book did provide a simple step-by-step process to improve any sales message using a holistic brain-based theoretical framework. However, it was not a scientific book per se; rather, it popularized the value of centering persuasive efforts on the primal brain to ignite and engage the persuasive process throughout the entire brain. Our goal with this book, however, is to demonstrate the scientific and practical validity of a fully researched, fully tested persuasion model called NeuroMap so that you can systematically reduce risk, eliminate wastes and improve your ability to convince any audience.

PART I

DECODING PERSUASION SCIENCE

CHAPTER 1

Why Is Neuromarketing a Game Changer?

Intelligence is the ability to adapt to change.

– Stephen Hawking

This chapter will help you understand why anyone creating persuasive messages should consider using a neuromarketing model. First, we focus on the unique research questions answered by NeuroMap – specifically, an aspect not discussed in other books on the topic. Yes, it is easy to get lost under the hood of the neuromarketing engine with all its shiny bells and whistles. However, knowing the basics will help you quickly become a sharp and discriminant persuader!

In the following five chapters written by me, Dr. Christophe Morin, I bring a devouring passion for cracking the scientific code of persuasion. As you will quickly realize, I am somewhat of a brain nerd and therefore I have lots of information I am eager to share about this topic, while making this portion of the book both informative and enjoyable. I have delivered workshops on neuromarketing to thousands of people around the world for nearly 20 years. As an adjunct professor of media psychology at Fielding Graduate University, I collaborate with top academics to improve our understanding of media effectiveness in all its forms. Also, I have students from all over the world using the teachings of neuromarketing to improve movie scripts, ad campaigns, fundraising drives, and even to decode the neurobiological basis of terrorist propaganda.

Although the subject of brain-based persuasion can be intimidating at first, what you learn about the brain in the next sections may influence your life beyond what you may have imagined when you picked this book. Personally, neuroscience helped me understand complex psychological disorders affecting some of my close family members; it influenced my parenting style and much more. Be assured that choosing to read through these next pages will not just improve your ability to persuade; it may also improve your life. Often, people walk up to me after a lecture and share how learning the basics of neuroscience made it much easier for them to understand why they have struggled (sometimes for decades) to influence or to understand loved ones. I have heard powerful stories that tell desperate attempts to convince a child not to smoke,

compassionate efforts to ask a friend to quit drinking, or frustrating failures to close heated arguments. Let's be clear though; our goal is to discuss the effect of sales and advertising messages on people's brains. However, I believe the value of neuromarketing can be broadened to other aspects of life for which your ability to persuade others can bring relief and hope. In fact, Patrick Renvoisé addresses a broader application of neuromarketing in his popular TEDx talk (tinyurl.com/yb3x79vq).

WHAT NEUROMARKETING CAN TELL YOU OTHER METHODS CANNOT

Right from the beginning of the creation of SalesBrain in 2002, Patrick and I suggested that *traditional marketing research* falls short of its goals, especially when it comes to measuring the effect of advertising messages. Surveys, interviews, or focus groups do not explain the neurophysiological mechanisms underlying consumer behavior. Yet, the subconscious and preconscious functional circuits of the brain are essential to explain our responses to most marketing stimuli [4–8]. That is why neuroscientific methods can generate unique insights compared to traditional research methods – a fact that is now widely accepted by marketing and advertising researchers around the world [7, 9–11]. According to many scholars, the integration of neuroscientific methods in advertising research represents one of the most significant events in consumer research over the past 50 years [12].

Despite initial skepticism and resistance to change, the advertising industry has started to recognize the importance and relevance of this movement. Why? Because collectively, neuromarketing methods go far beyond traditional collection techniques by tracing the biological, physiological, and neurological changes that arise in our brains in response to marketing stimuli. These innovative experimental settings help us analyze instinctive, emotive, and cognitive responses without placing the burden of interpretation on research subjects. You may not realize this, but anytime you answer a survey, it requires an enormous amount of your precious brain energy. Getting paid to participate in surveys does not even reduce this burden! Cognitive energy is priceless. Using brain-based methods means we no longer depend on the conscious and active participation of subjects. We are not asking them to behave like zombies but, simply, to relax and let the messages work on their brains. There is no need for the subjects to verbalize anything either. The point is to allow the exposure to a stimulus to work on their neurophysiology. Meanwhile, we maintain an

environment that is safe, comfortable, and free of artifacts that could compromise the data, such as noise, moving objects, changing light, and temperature conditions.

What value do we get from these methods that traditional surveys and focus groups cannot provide? We get measures of consumer states that are difficult if not impossible for subjects to report consciously. Remember the last time you were asked what you thought of the most recent movie you saw? What a simple question, yet how difficult it would be to answer if you were forced to use emotional scales describing the degree to which it made you happy, sad, excited, nervous, worried, curious, and so on. The same is true of how we respond to advertising messages or even a website. We know these stimuli have some effect on us, but we cannot be trusted to rate with any precision their emotional and cognitive impact on our brain. Research has shown that when people are asked to describe their moods on a daily basis, they use more than three words on average to do so, suggesting that emotions are difficult to identify and report [\[13\]](#).

Let's go back to the key research questions that can be answered uniquely by neuromarketing research and NeuroMap. Neuromarketing research questions are designed to create insights that help you minimize the risk and uncertainty associated with the predictive effect of ads, websites, packaging labels, and more. To help you understand the relevance of these questions, it may help if you recall a campaign or a message you have recently created or used to influence someone. Think of the value of answering any of the following questions before you deployed your campaign.

There are six crucial research questions that can be answered by sound neuromarketing experiments and, of course, by NeuroMap.

Will My Message Grab the Brain's Subconscious Attention?

Attention recruits brain energy to allow your audience to focus on your message and process its content. A lot of that attention is managed below our level of awareness. Therefore, attention is difficult to measure when you ask your audience to describe how much they focused on your message. Consciousness, our ability to observe and report our immediate experience, is both slow and fragile. Your messages are narrative constructions that affect your audience at a much greater speed than consciousness allows. Consequently, we are incompetent at describing the quality of our immediate attention. Instead,

collecting brain data is rather easy because it does not rely on a subject's ability to report. More importantly, it helps measure attention on a millisecond basis, which is a game changer for how you can explain the effect of any marketing stimulus. Stories produce various cycles of attention during which your audience is engaged, moved, or bored, the timeline of which can be captured by different neuromarketing techniques such as reading the conductivity of the skin, decoding facial expressions, tracking eye movements, or monitoring brain waves. A story works in amazing ways. Most of its effect is not accessible to our awareness. Neuromarketing methods are designed to show whether a message has captured any form of attention, conscious or subconscious, automatic or intentional, which makes an enormous difference in your ability to create successful messages.

Case Study #1: Which Animal Images Grab the Most Attention. A prominent nonprofit organization focusing on defending the rights of all animals wanted to find out why some of their ads work better than others to generate donations. They gave SalesBrain three ads that were produced in the past decade: one old and two new. The new ads were not doing better than the old ones, but they could not understand why. We used our NeuroLab to investigate the issue. By doing a complete assessment of the neurophysiological response from a sample of 40 subjects, we discovered that attention was dropping rapidly for any scenes that would fail to show the animals with a salient and clear expression of sadness. Also, a frontal view of the face of the animal was prompting more attention than a side view. This was related to the animal itself, and its capacity to trigger human empathy. However, a lot of the responses appear predicated on the power of the facial expression itself, and whether a scene was showing one or several animals. This hypothesis was confirmed by looking at eye tracking and emotional data on several animals, including cats, dogs, horses, pigs, cows, seals, and even monkeys. After we revealed the persuasion code of their ads, the advertising agency was able to release a new TV spot, which outperformed all the clips they had ever done before. Also, the insights produced by the study guided the photo and video team on how they use images in all their future communications.

Can People Say What They Feel?

We are good at masking and distorting the reporting of our emotions. Recent studies of social media content compared to search questions asked on Google show the extent of our capacity to deceive. Search sentences reveal concerns or interests that do not match what people are willing to disclose openly.

Additionally, search data shows that we choose to share what makes us feel good and hide what lowers our self-esteem. The younger we are, the more unreliable our statements tend to be. I have conducted extensive research on teenagers that helped me realize that collecting their opinions does not begin to explain and predict their behaviors. Fortunately, neuromarketing studies do not depend on what people say, but how their brains respond. When we conduct one, we look at how the participants' neurons fire at millisecond intervals, and what they feel, measured by their brain's response to external stimuli.

The neurons in the brain respond in a fraction of a second, triggering emotional responses before the conscious mind even processes the information. Therefore, a subject may have a subconscious reaction, but once it becomes conscious, he may not feel comfortable sharing it with a researcher. Perhaps he may not feel it is appropriate or wants to be perceived favorably by the researcher. Either way, in psychology, this is referred to as the social desirability bias. Furthermore, even if the subject believes that he is reporting true feelings in response to an advertisement, the brain data may show otherwise. Neuromarketing findings help identify the distance, if not the distortions, between what people say they feel and how they truly feel while measuring the influence of our emotions on our behavior.

Case Study #2: Understanding How Consumers Feel About Banks in Morocco. Wafacash is a wholly owned subsidiary of the Attijariwafa banking group, which is the largest bank in North Africa and the sixth largest on the African continent. Over the past 20 years, Wafacash has enjoyed a dominant market share in the cash transfer and payment banking business in Morocco. The business of cash handling appeals to a majority of Moroccans who do not trust traditional banks: they value the privacy of saving and paying using cash without the requirement of owning a bank account. At the end of 2012, although Wafacash had done its share of consumer studies, the management believed that continuing to conduct focus groups or traditional one-on-one interviews would fail to generate innovative consumer insights. Wafacash commissioned SalesBrain to explore how neuromarketing methods could yield innovative consumer insights to develop and quickly deploy a more effective advertising and communication strategy. We recommended performing a study using voice analysis.

We used voice analysis during 24 in-depth qualitative interviews with customers and noncustomers. The voice analysis software extracted about 20 vocal parameters to identify emotional variables in the interviewee's voice like stress level, cognitive overload, or sadness. Through the use of voice analysis, the bank

executive team received a much more objective view on what their customers felt about their services. For instance, the data revealed the presence of many frustrations and annoyances that had been historically misunderstood by Wafacash.

With a better understanding of their customers' feelings, the management was able to quickly create and deploy a new messaging campaign. The campaign was swiftly accepted and successfully launched throughout a network of 600-plus retail sites.

Which Emotions Trigger Decisions?

We experience thousands of emotions. Therefore, it is impossible to report specific emotions because they flicker, and even when they reach our consciousness, our perception is too slow and not discriminate enough to sort and label each feeling. However, some tools like facial decoding software give us the ability to reveal universal emotional expressions like happiness, sadness, surprise, anger, fear, contempt, and disgust, which are mostly triggered below people's level of awareness. Tiny movements created by our facial muscles produce micro-expressions that appear for less than 35 milliseconds.

Interestingly, only self-reported negative emotions like disgust or anger tend to correlate with brain data. Negative emotions are felt in our guts and do not require the filter and bias of our cognitive interpretation.

Meanwhile, linking emotions and behavior is tricky. Understanding this critical connection requires that both emotions and behavior be defined and measured properly. Unfortunately, emotions are abstract concepts. There is not a tool ready-made to measure all emotions. For instance, there is no such thing as “an anger thermometer,” so to assess anger via a questionnaire, psychologists need to develop a special scale. It is very difficult to do because once you start proposing a scale of a psychological construct, people have differing opinions about what the construct means. Fortunately, neuromarketing studies do not depend on scales or the subjective interpretation of psychological states but, rather, on known and accepted neurophysiological metrics.

Think of how we measure the weight of objects today. People do not argue about the definitions of what is light or heavy. We use standards that have been accepted and used for hundreds of years. Such standards do not exist in traditional marketing research to measure mental states like attention, boredom, engagement, comprehension, memorization, and, of course, *persuasion*. Surveys are entirely dependent on the subjective interpretation people have about the

questions. Are you excited by this ad? Are you bored? These are questions that assume all people will understand the same way, leaving no room for the subjective interpretation of a given emotional state. On the other hand, neuromarketing studies scientifically measure emotional states and remove the error provided by the subjective nature of our language and the limiting processing capacity of our consciousness.

Case Study #3: The Effectiveness of Public Health Campaigns. In 2011, I investigated the effectiveness of public service announcements (PSAs) on teenagers and young adults [14]. PSA researchers have mostly relied on subjects' ability to self-report their feelings to assess a campaign's success, a severe limitation considering how emotional messages are known to produce large subconscious effects. My study tested PSAs that varied by tone. Some were positive, carrying an optimistic and humoristic tone. Others were somber and scary. Because recent neuroscientific discoveries suggest that adolescents use distinct brain circuits when processing subconscious affective responses, I predicted that the persuasive effect of emotional messages would vary between age groups. The findings supported my predictions and demonstrated that neurophysiological methods could predict the effects of public health messages targeting adolescents and young adults. Most notably, I showed that negative emotions generated by threatening fear-based messages produce more effect than positive emotions regardless of age.

Which of My Messages Work Better on People's Brains and Why?

Research subjects get quickly confused and overwhelmed by too many direct questions on the multiple ads they are asked to evaluate. For instance, the Likert Scale is commonly used in advertising research. Here is an example: To what extent do you like this ad? Use a scale of five options going from “A lot” to “Not at all” to answer. However, assessing to what extent an ad is funny or sad does not begin to represent the subconscious effect of millions of neurons firing within milliseconds in our brain. Furthermore, conventional studies ask people to express why they like or dislike various aspects of an ad. Those questions are very taxing on people's cognitive energy and rarely produce significant differences between subjects or even between stimuli.

So how good or helpful is your study if you find out that all your subjects feel the same and none of the ads appear to produce different states? I have conducted my share of such studies that yield little if any meaningful differences

between subjects or worse, between the ads. Why does that happen so often? It is because we cannot begin to report the impact of the excessive amounts of information processed by different layers in our brain. Only the brain itself can do this complicated and tedious task. However, it is done below our level of awareness. By using neuromarketing tools and interpreting the data with a neuromarketing model like NeuroMap, you can assess how persuasion affects different areas of the brain and reveal meaningful differences between subjects and messages.

Case Study #4: Neurobenchmarking Multiple Ads. A large technology company asked SalesBrain to review several ads that had been airing for the past couple of years. The conventional benchmarking data on how well the ads were performing was inconclusive, so the marketing group who commissioned our study was not clear on which direction to go next. In many cases, the number of variables (tone, color, characters, etc.) involved in many advertising messages makes it impossible to isolate and measure the contribution of each variable using traditional methods. However, our neuromarketing study was able to measure the degree to which each ad was able to hold attention, create arousal, move the audience in pleasant or uncomfortable emotional states, and whether the message created any valuable cognitive engagement. The *NeuroScoring* of each ad did provide an objective way to sort the messages based on how well each activated critical persuasion stages in the audience's brains. As a result, our client was able to gain clarity and confidence on what to do next with the creative direction of a new campaign.

Can Neuromarketing Help Me Better Prove the Unique Value of My Solution?

More and more companies are turning to neuroscience to provide stronger proofs of their value proposition. You too may benefit from using a study that can demonstrate that your product or service produces stronger responses in your customers' brains than your competition does. There are many ways to design experiments that compare how subjects respond to your products, not with words but with brain signals. Consider these situations in which neuroscience can offer valuable proofs to demonstrate the strength of your value proposition.

- A Danish chocolate manufacturer wanted to promote the value of giving chocolates on Valentine's Day. In a creative study, Paul Zak [[15](#)] explored the effect of offering chocolate to loved ones while sharing romantic feelings. This experimental condition raised the level of oxytocin of men by

nearly 30%.

Similarly, you could also use neuroscience to demonstrate that:

- A brand of spas is more relaxing than another by measuring how specific jets can reduce stress hormones and raise levels of endorphins.
- A noise canceling system can produce more productive office environments by monitoring cognitive effort and distraction while performing various office tasks.
- The design and color of furniture in a store may impact the emotional and cognitive state of shoppers.

Case Study #5: The Impact of Messages Viewed on Mobile. A large technology company whose revenue largely depends on selling ads for mobile platforms wanted to decode the neurophysiological difference between viewing the same ads on a mobile device versus viewing the same content on a TV. The study was focusing on distinct neurophysiological processes that are known to influence overall engagement with any form of content – namely, attention, emotion, and retention. The study objectively measured these neurophysiological states without any conscious reporting from the subjects. It did prove that there were significant differences between the two delivery platforms, some that were favorable to the mobile platform. For more on this study, visit goo.gl/XjXypL.

Can You Get Higher Returns on Advertising Using a Brain-Based Persuasion Model?

With the benefit of both neurodata and a persuasion model like NeuroMap, SalesBrain's clients can optimize how they market, communicate, and sell their products or solutions. They can also provide better advertising briefs to their agencies. By following a scientific discipline to create all their messages, they remove the risk and uncertainty that so many marketing or advertising campaigns carry. I wish I could share here some of the advertising briefs clients have shared with us. Often, advertisers recommend gigantic creative leaps of faith that put enormous amounts of money at risk. In fact, in my 30 years in marketing research, I have not seen one creative brief supported by a scientific persuasion model! Sadly, some advertising agencies are not motivated to embrace neuromarketing because they perceive that a scientific approach may limit their creative options. But why take so many wild guesses when the discipline and rigor of a tested scientific process can improve the success and ROI of your marketing and advertising dollars? Moreover, this is not dependent

on the size of your company's budget. In fact, you can apply the quality and value of NeuroMap before you launched your next campaign or deploy a new website right after you have read this book!

ROI of Neuromarketing Approach: A Collection of SalesBrain Customer Testimonials

Reading this book is not worth your time unless the value of what it brings to you is proven and measurable. Therefore, we share here a few of customer testimonials. Some of the companies are large, others are medium size, but all share the same conclusion: The investment of time and money they committed to deploying a neuromarketing discipline paid off!

Note that some of the stories are transcripts of video interviews available at www.salesbrain.com.

Neuromarketing helped us deliver our solution more quickly, and helped our customers make decisions more quickly. When our customers' pains line up with our claims and our customers' gains, you can deliver on that solution. Everybody is speaking the same language, and so you get the consistency in message, you get a consistency of delivery. Neuromarketing and the SalesBrain methodology, if you go in 100%, I mean you have to do it all the way, you will find that your results will significantly improve ... and it's not just your revenue, it's not just your productivity. We've had a four times increase in the number of instructors or customers since we've completely converted to neuromarketing. My customers call me back and say, "You make things so easy for me! Love your product! It's so easy!" And when your customers parrot back to you your claims, you know you've won.

Bill Clendenen
CEO, HSI
Health & Safety Training

When – SalesBrain – was able to analyze our customers' pains by using NeuroMap™, that to me was one of the most impressive aspects of the entire process. They knew what questions to ask, they learned our business ... which is not an easy business to learn ... they came in, learned it, and were able to get information, extract it from the people we need it extracted from. It's marketing efficiency. If you can spend a dollar on marketing and generate 10 dollars in revenue ... was it worth it? Absolutely! This has one of those 10 to 1 ratios attached to it in my opinion.

HK Bain
CEO, Digitech Systems
Enterprise Content Management in the Cloud

Backed by hard science that complements excellent market research, Christophe and Patrick use their knowledge to capture your attention in creative and clever ways. Then they show you how to do the same thing with your customers and prospects. Dozens of our companies around the world have seen tangible results from this innovative approach to improving sales.

Pam Hendrickson
COO, Riverside Company
Private Equity

I think every company in America is probably guilty of focusing on what they want to say about their company, rather than focusing on what they need their customers to hear. Neuromarketing has really helped us translate our message, and what we wanted to deliver into something that the customers would want to hear. I was first introduced to neuromarketing in Chicago years ago. I was suspicious, it was the end of the day, and I was ready to move on. I can tell you today in hindsight, that presentation changed my life and our business forever. In 2005, CodeBlue was just a concept in our minds. We have used the SalesBrain model to build this business ever since we've developed it. And today it now represents the majority of the revenue that our business throws out. For anyone who's really serious about growing their business, you've got to embrace the neuroscientific model of SalesBrain.

Paul Gross
CEO, CodeBlue
Third-Party Insurance Claim Administrator

We get asked quite frequently, "Well, why should we use Forensic Analytical?" What is it that differentiates us? How do we say it? The time we spent, just thinking back for the last 10 years of meetings, and getting other consultants, and people together, just didn't feel right. SalesBrain came around and helped us really pare it down to six words. Right people, right perspective, right now. We've been trying to do this for 10 years! The session was one afternoon, they also did our website. It's clear, simple, and it does exactly what we want it to do. It demonstrates our claims right up front. It's not like we're doing anything new, we're just expressing what we've been doing for 25 years, and we're able to say it very elegantly.

Fred Vinciguerra
CEO, Forensic Analytical
Industrial Hygiene and Environmental Health

The entire process in understanding when you're marketing to the primal brain and understanding the core emotional selling process – I realized that we weren't doing that. That we were selling our product more than we were selling feelings. I really wanted the team to adopt – the pains/claims/gains that SalesBrain talks about. Applying those principles, those core principles into an organization and just really pulling that into every aspect of the marketing that we do, whether it's on the phone, whether it's in a presentation with a big bank. Being able to identify crisply what the pain is that we're solving, and how we solve it, and what the benefits are, and create the opportunity to really close the sale is what's happening for us. People here are energized around what it is that we're doing, because they understand it better now. They understand what we're appealing to in the customers. What it is that your customers need versus the features they need.

Rene Lacerte
CEO, Bill.com
Cloud-Based Accounting Solution

I've been working with SalesBrain for nearly 10 years on refining our story and our customer pitch. Recently, we were up against some companies who are a hundred times bigger than we are. So we brought in the SalesBrain guys to help us put that pitch together and finally deliver it. I don't think we were in the running prior to that presentation. We used videos, we used big pictures, we did a whole mini-drama, which was probably funny. And we won!

Stuart Little
Product Marketing Director, Aviat Networks
Microwave Networking Manufacturer

Airgas turned to SalesBrain to help get the attention of our customers in Hawaii to make a good choice on the distributor for their Safety Fall Protection and Respiratory needs. SalesBrain was able to produce a neuromovie that uniquely captured their attention! They found the right tone and style to do that and the campaign has produced measurable results!

Jason Oshiro
Area Vice President, Airgas

Distributor of Industrial, Medical, Safety Products, Tools, and Specialty Gases

The work we've done with Dr. Morin and his team has fundamentally changed the way we measure creative efficacy and design. As the race continues to help machines understand our world, Salesbrain remains focused on advancing our understanding of human intelligence and how marketers can effectively connect with people.

**Ryan Anthony
Creative Director
Vungle**

Neuromarketing hasn't just improved the effectiveness of our marketing, it's made us a better company. We were already aware of the need to translate product features into customer benefits, but we weren't going far enough. Now, we start with a concentrated focus on our customer – their fundamental needs, their pains. It's the difference between really listening to somebody versus just waiting until it's our turn to talk. We believe in the SalesBrain methodology because it works. We win in the marketplace because we bring more value to real people's needs.

**Steven Hausman
President/CEO, Triumph Business Capital**

To conclude, neuromarketing research can achieve better results by finding answers to critical research questions that do not require the conscious participation of people. These answers help you create messages that remove risk and uncertainty while making your advertising dollars work for your growth and profits.

WHAT TO REMEMBER

- Traditional marketing research methods fail to capture the subconscious mechanisms that affect how people respond to any form of persuasive message.
- Neuromarketing tools collect brain data that can objectively explain critical neurological processes subjects cannot self-report. It provides unique insights about how we understand, feel, engage, and ultimately become persuaded by a message.

- The strategic value of using neuromarketing comes from the possibility of answering critical research questions that have been puzzling marketers, advertisers, and media experts for decades.
- The ROI of neuromarketing dollars is measurable in multiple ways. It will reduce drastic wastes of money spent in creating and deploying messages that don't work. More importantly, it will allow you and your organization to grow faster.

CHAPTER 2

The Neuroscience of Persuasion

I have with me two gods, Persuasion and Compulsion.

– Themistocles, Greek politician 480–479 BC

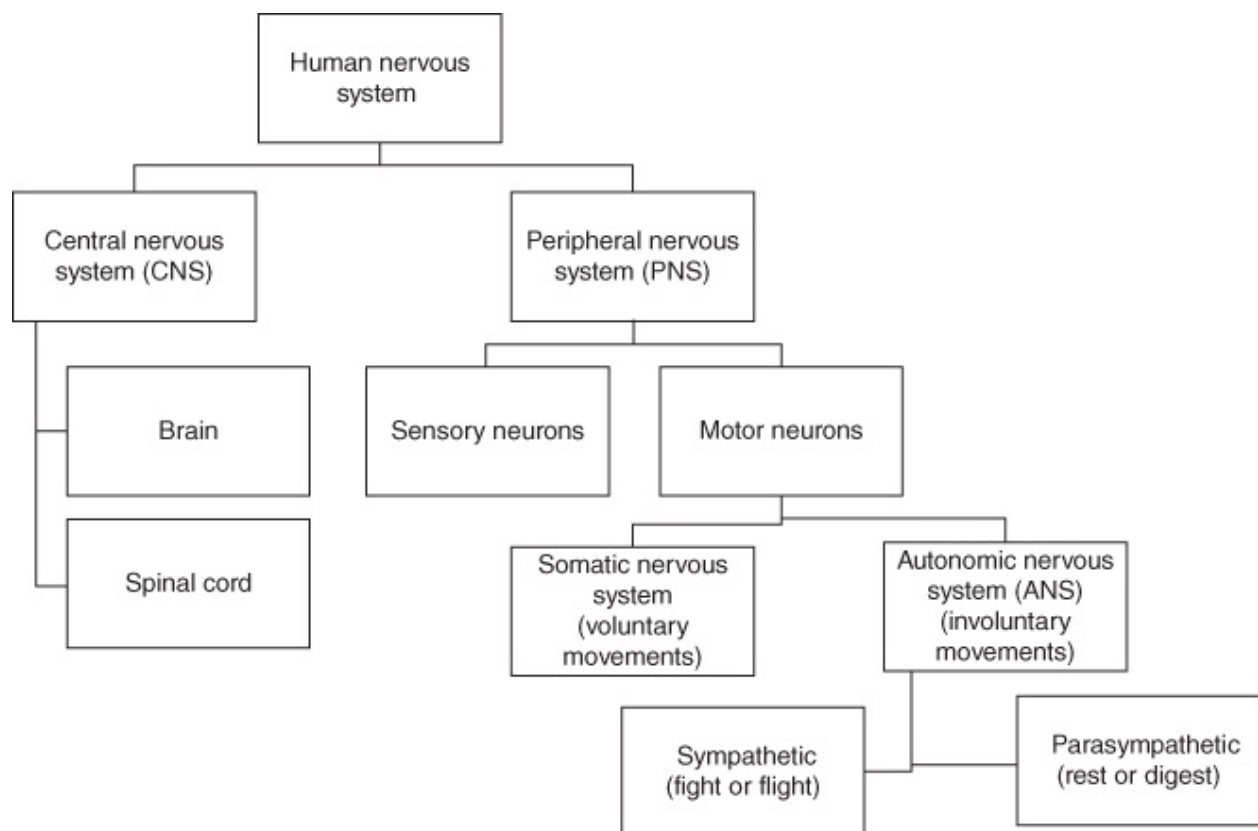
There are thousands of articles and very thick textbooks discussing how the brain works. Some brain areas are known to host functional specializations, and many have evolved over millions of years. Although the anatomical borders of such key areas are often contested, the existence of three critical systems has been widely discussed for decades. The reptilian complex and the limbic system – both of which form what we call throughout the book the *primal brain* – and the neocortex, the youngest and most “rational” part of our brain.

The purpose of this next section is to present accepted definitions and discuss findings that prove that a neuromarketing model can effectively help you crack the code of persuasion. By now you should have realized that traditional methods by which we continue to assess the effect of sales messages, ads, campaigns, websites and pitches have enormous flaws. People do not have the competency to access and therefore explain what effect messages have considering the speed at which the brain processes information. That is why collecting brain data is necessary to decode why few persuasive messages work and so many fail. Brain data is complex, but a considerable amount of knowledge has been produced over the past few decades on how critical functions influence the processing of marketing or advertising stimuli. It is important to note that experienced neuromarketers have an interest in all the functions, not just a few, that can explain and predict the effect of a message. Be wary of neuromarketing agencies that claim they can explain the effect your messages have on the brain by only measuring the activity of the neocortex (typically measured with an electroencephalogram or EEG) or the autonomic nervous system (commonly measured with galvanic skin response (GSR) or heart rate variability (HRV)).

ATTENTION, EMOTIONS, AND DECISIONS IN THE BRAIN

The brain is part of a comprehensive network of organs and their associated nerves that branch out to communicate to our entire body; the brain and its entire network is called the nervous system. The nervous system is responsible for processing, interpreting, and distributing millions of messages that help us sustain life, move, think, reflect, plan, and so much more. We tend to assume that many of our behaviors are guided by consciousness, intention, or free will. Think again! In his book *Consciousness and the Brain*, Stanislas Dehaene reminds us that “in many respects, our mind's subliminal operations exceed its conscious achievements” [16].

There are two anatomical subdivisions of the nervous system that control and monitor the way we react to any stimuli: the *central nervous system* and the *peripheral nervous system* (see [Figure 2.1](#)).



[Figure 2.1](#) The human nervous system.

The Central Nervous System

The central nervous system includes the brain and the spinal cord. It hosts complex processing functions in multiple layers that have evolved over millions of years. When using a functional magnetic resonance imaging (fMRI) scanner,

we can record and interpret brain activity that explains how we feel, pay attention, concentrate, understand, plan, remember, and make decisions or movements.

The Peripheral Nervous System

On the other hand, the peripheral nervous system rules over the motor and sensory neurons that are distributed throughout our body. The motor neurons especially respond to either voluntary movements (somatic nervous system) or involuntary movements (the autonomic nervous system). The autonomic nervous system produces instinctive and emotive neurologic responses and is crucially controlled by older brain layers that are part of the primal brain. Data from the autonomic nervous system can be captured by eye-tracking devices and skin-conductance instruments, as well as from a battery of tools monitoring respiration and heart rates. Together, these recordings produce what is commonly called *biometric data*. Although we can consciously report the effect of some changes in our sympathetic ([Figure 2.2](#)) or parasympathetic nervous systems ([Figure 2.3](#)), especially in situations where we choose to fight or flight, the onset of millions of other biological responses affecting our blood flow, digestion, respiration, and sweat are largely subconscious. This is where neuromarketing studies surpass (by far) traditional methods of data collection based on self-reports. As neuromarketers, we do not estimate emotions; we measure them. By doing so, we do not compress the timeline of a response either. Instead, we synchronize dozens of neurophysiological variables to build a comprehensive time series from both the primal (oldest, subcortical) and the rational (newest, cortical) brain areas.

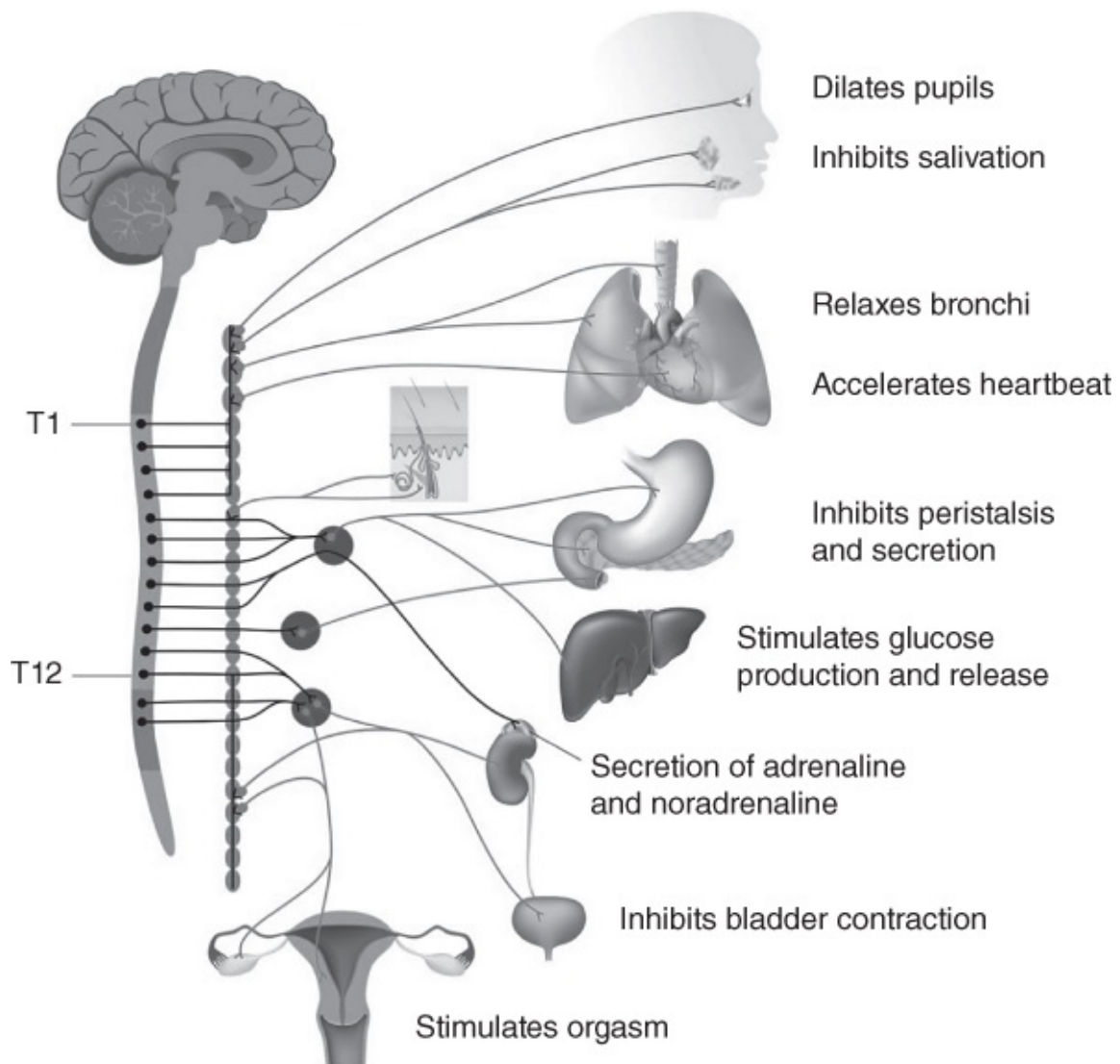


Figure 2.2 The sympathetic nervous system.

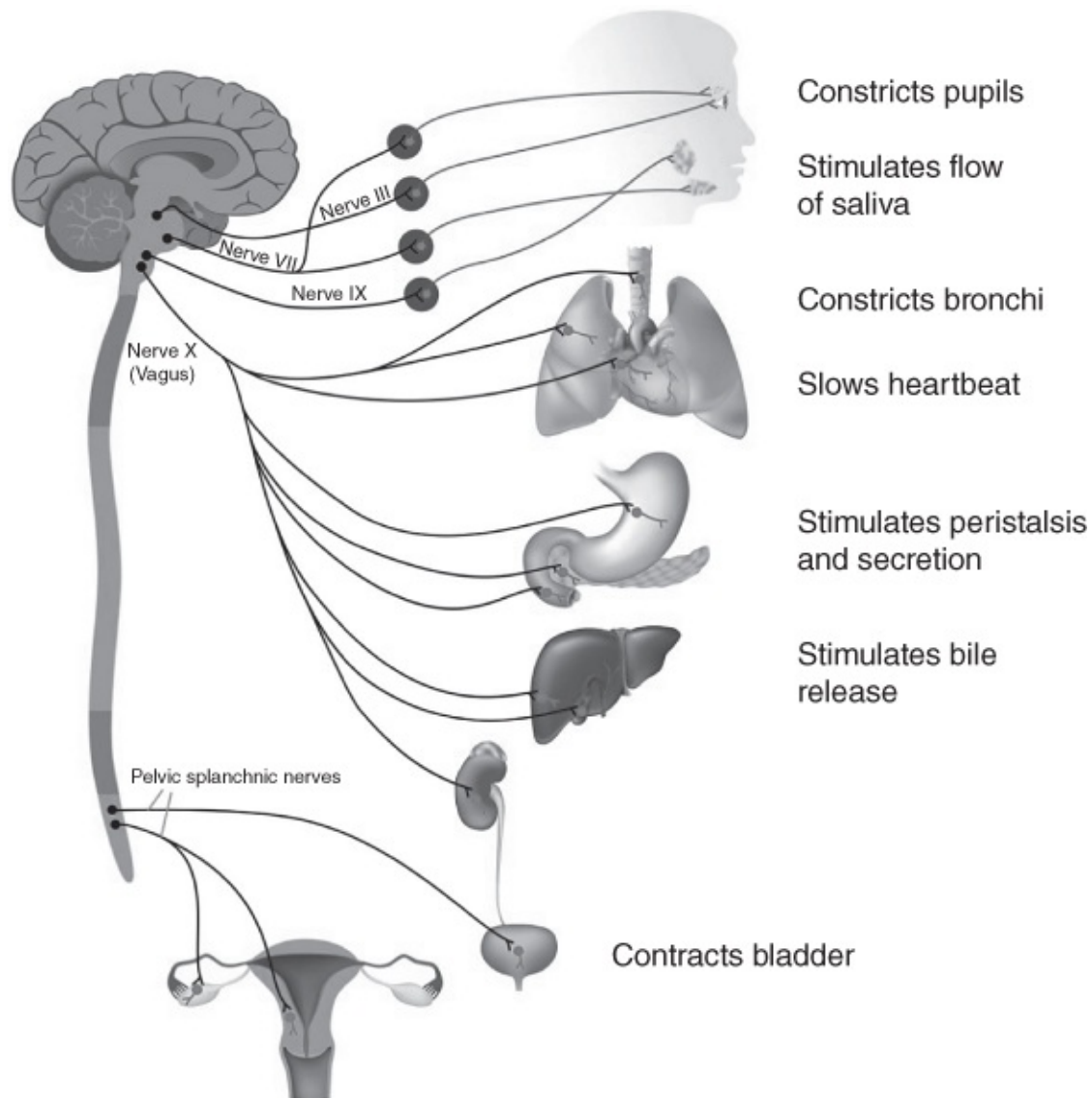


Figure 2.3 The parasympathetic nervous system.

So why is the autonomic nervous system so central to our understanding of the biological basis of people's response to persuasive messages? It is central because it is first and foremost under the command of the primal brain. Representing approximately 20% of the mass of the brain, the primal brain constitutes the most ancient section of our nervous system. Many substructures have dedicated neurons and circuits that work on autopilot to regulate survival functions (e.g., respiration, digestion, heart rate, temperature, sweating, and instinctual facial expressions) [17]. Because of the speed at which the autonomic nervous system reacts, it precedes many aspects of our conscious behavior; therefore, the activity of the autonomic nervous system is a good candidate to assess subconscious responses to advertising messages [18, 19]. The best

methods to observe changes in the autonomic nervous system include tracking the electrodermal activity, measuring the time interval between heartbeats (heart rate variability), and recording respiratory sinus arrhythmia, which shows how heart rate variability is affected by respiration. What matters most about recording the autonomic nervous system activity is to extract data that can explain how much both attention and emotions are triggered by a message. They are the fuel of your message. Therefore, you cannot become an effective persuader unless you have a good grasp on the neurobiological nature of how we focus and how we feel when we respond to persuasive stimuli.

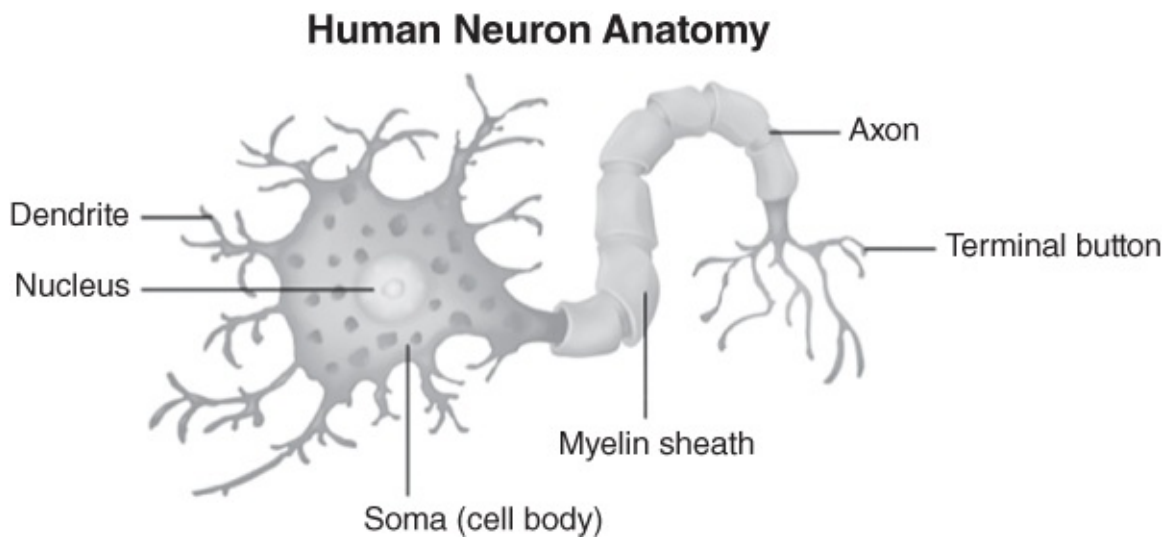
Understanding Attention and the Brain

Attention is brain energy we recruit to process a stimulus. We can control some of our attention willingly, which is known as *selective or voluntary attention*. However, we also frequently allow our attention to process novelty or events that command instant responses which are triggered by the primal brain. For instance, when we move our eyes toward a flashing light in the dark or when we become startled by a sudden loud noise. Also, think about the last time you glanced through the window of a store because a beautiful object caught your attention. This is referred to as *reflexive attention or bottom-up attention*. The speed at which we react correlates highly with the degree to which we control our attention willingly. The higher the speed, the less we control. Because of the voluntary or automatic qualities of attention, different neuronal pathways are at play in the production of higher or lower states of attention.

The idiom *paying attention* says it all. Attention burns valuable oxygen and glucose in the brain, which is why it is both precious and fragile. We often pretend to pay attention because it is socially expected that we do. However, our studies show that marketers always underestimate the amount of brain energy people need to spend to comprehend their messages. In other words, assume that people are not biologically motivated to read your emails, understand your ads, listen to your pitches, browse your website, or remember anything about your selling arguments. That is why the principles we teach you in this book will greatly enhance the probability your message will trigger initial attention, so the primal brain of your audience notices and focuses on your message without thinking about it first.

How can we measure attention in the brain? It is done by recording neurophysiological reactions while people are exposed to a message. That could last for milliseconds, seconds, or minutes. Such reactions generate

electrochemical signals that are traveling to thousands of neurons. Neurons are brain cells that initiate and control all forms of activity in the brain. We have 86 billion neurons and over 100 trillion connections (called synapses) between those neurons. Neurons connect with their axons and dendrites (see [Figure 2.4](#)). Neurons represent only 20% of brain cells. The balance of the cells are called glial cells and, they support neurons while also playing a crucial role in speeding information transmission.



[Figure 2.4](#) Neuron.

The process of *synaptic transmission* directly enables neurons to receive, send, and integrate information throughout the entire nervous system (see [Figure 2.5](#)).

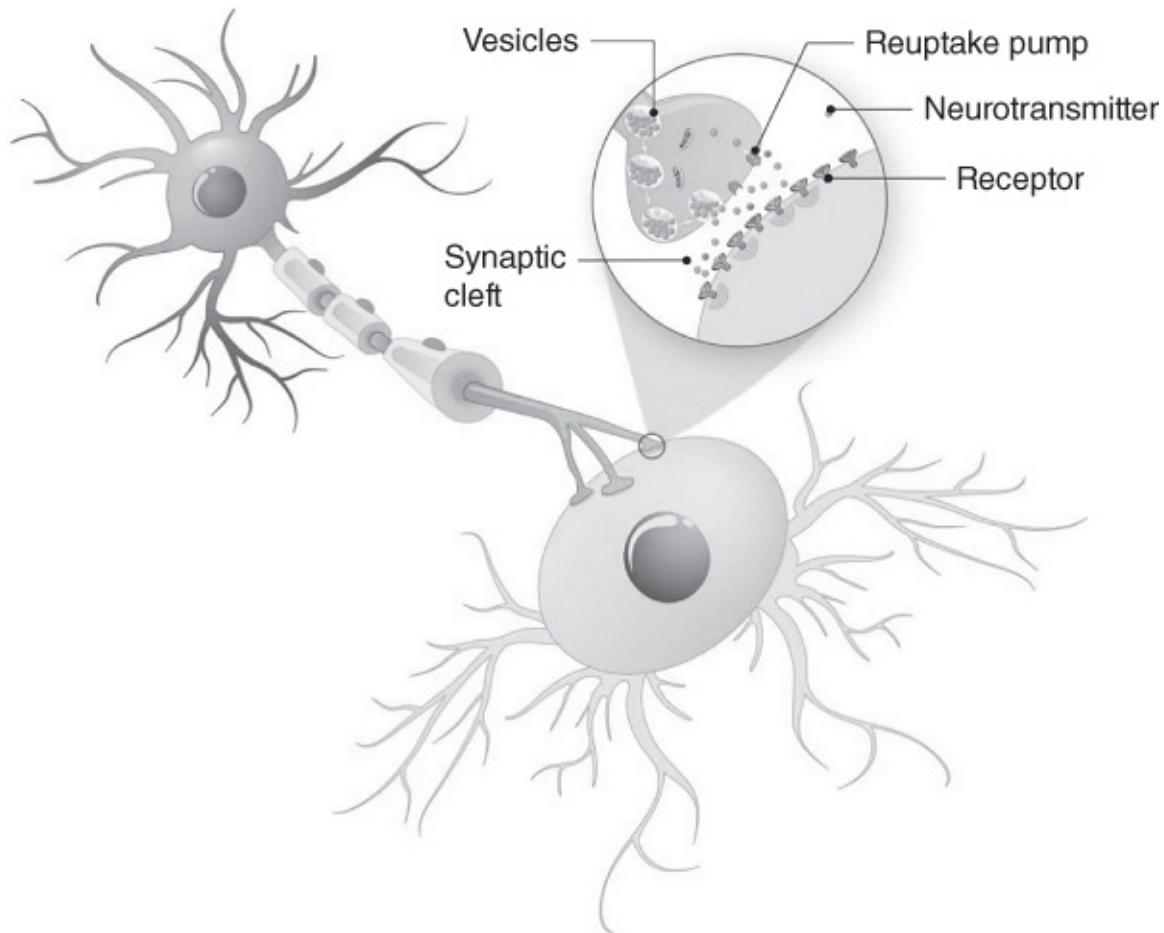


Figure 2.5 Synaptic connection.

There are many types of synaptic connections; some excite neurons, whereas others inhibit them. When a neuron is excited, it is more likely to fire, that is, to send an electrical signal to the neurons with which it is connected. If it is inhibited, it is more likely to stay neutral. Inhibiting neurons does not mean they do not change behaviors though. Both types of synapses enhance or neutralize specific responses generated by the nervous system. Thus, the basis of any movement, action, or decision in the brain is ultimately related to the biological nature of our synaptic connections. Donald Hebb [20] was one of the first psychologists to offer a compelling model of how neurons work. He hypothesized a revolutionary theory with disconcerting simplicity:

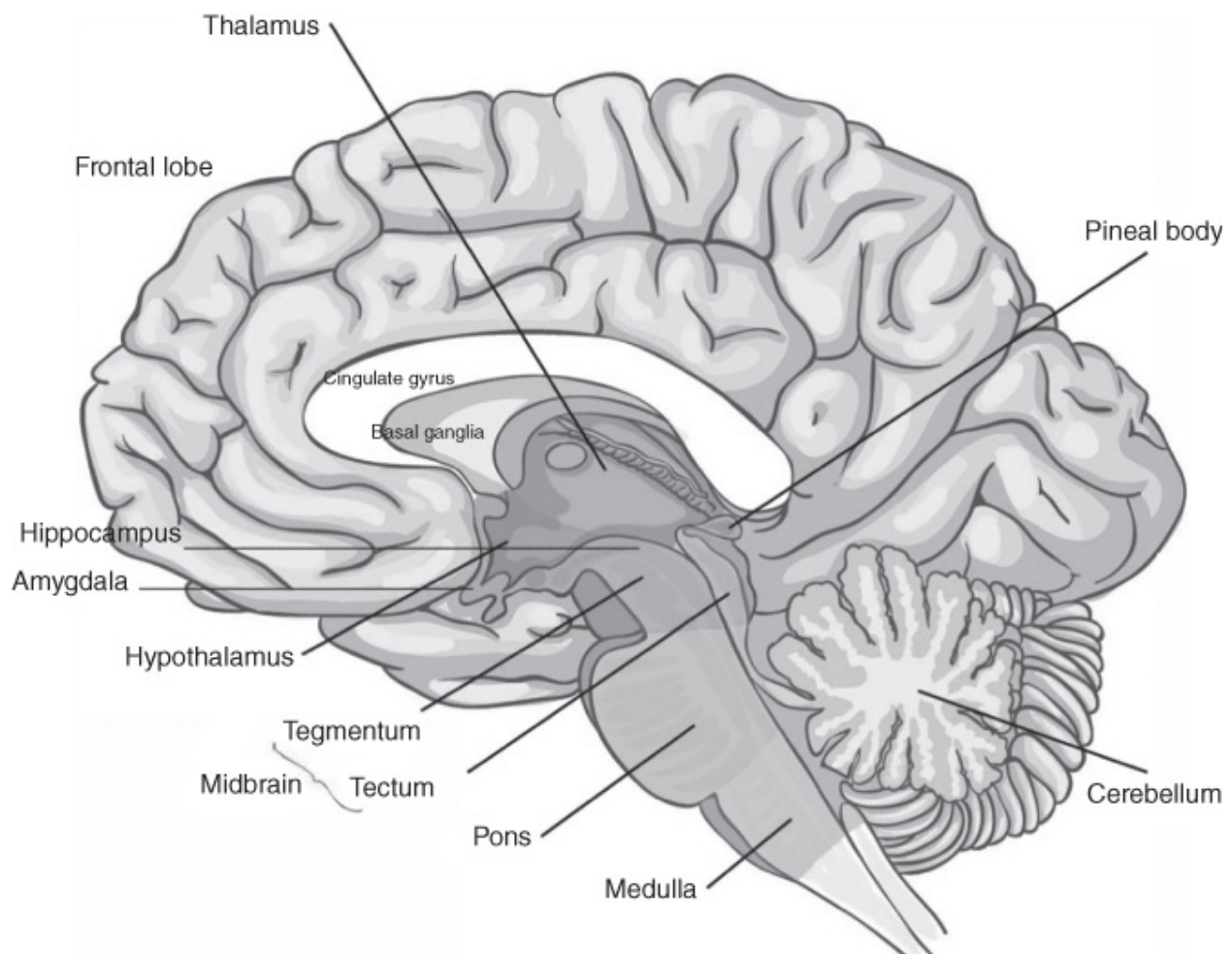
When an axon of neuron A is near enough to excite neuron B and repeatedly or persistently takes part in firing it, some growth process or metabolic change takes place in one or both neurons such that A's efficiency, as one of the cells firing B, is increased. (p. 62)

Hebb's law is often paraphrased by saying, "When neurons fire together, they

wire together” and by doing that, they form the basis of neuronal circuitry. Now, remember this law because it will impress your friends! Though Hebb's theory was proposed decades ago, neuroscientists have confirmed the importance of neural networks in all instinctive, affective, and cognitive functions, and especially in the role of attention, emotions, learning, and decision making [21].

Thankfully, the measurement of excitatory (more) or inhibitory (less) signals in our physiology has been possible for decades and is typically done by recording electrodermal activity, which is also called galvanic skin response [22].

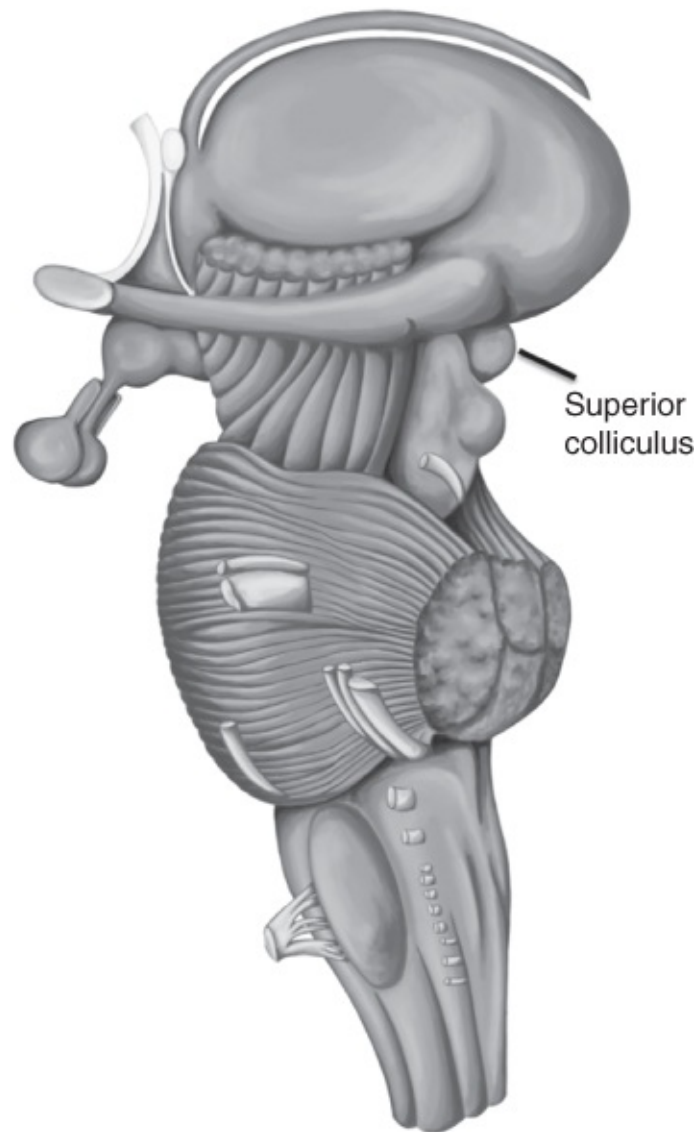
Meanwhile, the thalamus ([Figure 2.6](#)) is a subcortical region of the brain considered to be highly responsible for how we orient our attention. This structure is also part of the limbic system, a critical brain structure of the primal brain.



[Figure 2.6](#) Key brain areas.

In the thalamus, special neurons called *attention-grabbing neurons* are sensitive

to visual stimulation and can direct our attention instantly [23]. The visual response is a key component of how attention and emotions affect our brain. In fact, approximately 55% of the cortical surface is dedicated to vision-related processes, which is more than any other sense [24]. Also, an estimated 10% of our optic nerves terminate in a subcortical structure of the primal brain called the *superior colliculus* (see [Figure 2.7](#)), confirming that we orient our early visual attention without any consciousness.



[Figure 2.7](#) Superior colliculus.

Understanding Emotions and the Brain

Emotions play a huge role in our day-to-day lives. They create the rhythm of our

moods. We feel happy or discouraged because billions of neurons release specific chemical messengers called neurotransmitters that affect our conscious interpretation of our emotional states. In my view, not enough is taught about emotions and their role in guiding our behavior. I would argue that many business books have given a bad reputation to emotions by suggesting that emotions may be in the way of good decisions. I believe that it is the exact opposite.

The word *emotion* comes from the Latin word *movere*, which means to move. Emotions precede a movement and influence the direction of behavior [25]. Long before functional magnetic resonance imaging (fMRI) could verify which areas of the brain light up when we experience fear or anger, Darwin and Ekman [26, 27] identified that many of our emotional responses translate into facial expressions that appear instinctual rather than learned. Emotions shape the way we feel about the world and ourselves and they directly influence our decisions. As the neuroscientist, Antonio Damasio said, “We are not thinking machines that feel, we are feeling machines that think” [28]. Recent neurophysiological discoveries show that strong emotional responses generate a powerful mix of neurochemicals that strengthen synaptic connections between neurons; a condition known to influence behavior and to enhance memory marking in the brain [29]. Fundamentally, the biological reason why emotions have such a profound effect on our behavior is that they change our *homeostasis*, a state of physiological balance our brain naturally seeks to maintain. Emotions can raise our heart rate, increase our blood pressure, and disrupt other autonomic functions such as sleep, perspiration, respiration, and even digestion. Likewise, they can help us calm down, become contemplative, relaxed, or joyful.

Primitive life forms found in unicellular organisms such as bacteria typically only worry about *getting closer* to sources of energy like sugar and *moving away* from toxic substances like an acid. Human emotions have evolved from this primary function to get closer to positive stimuli, or further away from negative ones [30]. So, when we experience an emotion, regardless of its strength or valence (i.e., positive or negative), a cocktail of various molecules (neurotransmitters, neuropeptides, and hormones) floods our brain, causing a cascade of neurophysiological changes in our body. Not surprisingly, we have a limited conscious experience of our emotions. The limbic structure (subcortical) is considered largely responsible for mediating our emotional life. Jank Panksepp, a prominent affective neuroscientist, claims that our feelings – the ability to report the effect of emotions on our psychological states – is an unconditional gift of nature rather than an acquired skill [31].

Studies have shown that whereas the amygdala is involved in most emotional situations, other primal brain structures modulate specific emotional responses. For example, the anterior insula, a subcortical area deeply nested in the brain, is responsible for mediating our experience of disgust [32]. Emotions instantly influence how we feel and how we think. To the degree that emotions last, they create moods that are transient psychological states that color how we perceive events. We all can relate to feeling sad or happy for an extended period. Words alone may not easily reveal our underlying emotional patterns. Fortunately, by using neuromarketing tools, we can create a more objective and accurate recording of the affective states that can be associated with a stimulus of interest.

Evolutionary psychologists, as well as cognitive neuroscientists, tend to view emotional response as an adaptive mechanism that has evolved over millions of years to ensure our species could survive in a difficult environment. In his book, *The Expression of the Emotions in Man and Animals* [26], Darwin insisted that emotions are hardwired and produced by the nervous system of all animals. Meanwhile, at a physiological level, the emotional system of an Asian person is not different from one of a White Caucasian. Likewise, there are no significant anatomical differences between the limbic system of an Italian and a French person (though French people would argue otherwise, no doubt!). However, some studies showed cultural differences in the subjective reporting of physiological responses, which confirms that our conscious interpretation of physiological responses is not as reliable as direct measures of the primal brain [33].

Measuring Emotional Neurophysiological Responses from Advertising Stimuli

Numerous scientific studies have now solidly confirmed that changes in emotional states can be traced in our neurophysiology [21, 34–37]. We sweat when we get excited, our pupils get bigger when we are interested, our heart decelerates when we concentrate and our neurons fire when we think. However, reading the peer-reviewed papers describing these neurophysiological changes would quickly give you a headache or, worse, put you to sleep. Fortunately, we have done the challenging work for you, by identifying the most important insights that relate to the effect of emotions on the brain.

In fact, three important constructs can help you assess how emotional messages affect the nervous system: *emotional valence*, *emotional utility*, and *emotional encoding*. These terms are central to how a neuromarketer can measure and

optimize the effect of messages on the brain.

Emotional Valence. Valence is the direction of an emotion. Emotions that have positive valence help us approach a stimulus, whereas emotions that have negative valence make us withdraw from a stimulus. Valence is mediated by neurotransmitters, neuropeptides, and hormones, which are brain chemicals responsible for how we experience emotions, such as fear, surprise, or even happiness. Humans experience a range of approximately 5,000 emotions that can all be individually coded on a valence scale [38]. Valence is also explained by the importance of a decision. For instance, choosing a car may impact the valence more than buying a toothbrush. We activate a limited set of emotions on a daily basis, sometimes referred to as primal emotions [39]. Also, research has shown that a limited set of primal emotions produce universal facial expressions [27, 40].

Emotional Utility. Utility is a quick measure of gain or loss calculated by our brain to assess the importance and urgency of a decision. When the brain evaluates the relevance and value of a persuasive message, it quickly computes the likelihood that expected benefits exceed the costs. Although you may not realize this, a sales offer, your brain is busy figuring out if the sum of the benefits that is above the cost you must pay. The net difference is commonly referred to as the utility of that decision [41] or its gain, a critical concept of NeuroMap that is extensively discussed in [Chapter 7](#), Demonstrate the Gain.

More importantly, there are two powerful emotions that affect the *perception of the utility* of any buying decision: the *fear of regret* and the *fear of loss*.

The fear of regret may arise when the outcome of a situation is not what we expect. This happens when you consider the utility of the decision to fall short of your expectations. On the other hand, the feeling of loss appears when we no longer own or control something we value. In fact, Knutson and his colleagues [41] from Stanford produced convincing neuroimaging evidence showing that we use distinct circuits when we expect a gain or a loss. The fear of loss activates the insula (which also fires when we experience disgust) and deactivates the medial prefrontal cortex, whereas the expectation of gain generates more activity in the nucleus accumbens. The nucleus accumbens is a subcortical structure considered part of the basal ganglia, a key component of the reward system controlled by the primal brain. Knudson's research confirmed that, when facing difficult choices, we tend to display loss-avoiding behaviors rather than use rational thinking, a scientific fact that is central to the fundamental tenet of NeuroMap and explains primal brain dominance.

Meanwhile, Hare and his colleagues [42] also revealed that two specific brain areas are involved in computing utility or the gain of a decision: the ventromedial prefrontal cortex and the ventral striatum. The role of the ventral striatum (also a substructure of the basal ganglia) is especially interesting because it is involved in reward learning and novelty decision making. More activity in the ventral striatum also translates in excitation of dopamine-rich neurons located in the brainstem, a key subcortical structure of the primal brain!

Emotional Encoding. Emotional encoding represents the effect a message has on memory, which is often a measure of how a persuasive message ultimately succeeds. Being able to remember an advertisement does correlate positively with the probability of selecting a brand [43, 44]. After all, how can you decide if you do not remember which brand you are supposed to pick and why? The study of how information encoding is performed in the brain has received considerable attention from neuroscientists since the mid-1990s. Though it is still very difficult to crack the neural code of memory in general, it is clear that subcortical areas of the brain such as the hippocampus and the amygdala have an important role in creating and maintaining our long-term memories [32]. This may surprise you, but crucial functions such as remembering our short-term and long-term experiences are largely controlled by the primal brain and without much of your awareness involved.

Also, research conducted by Bogdan Draganski and his colleagues [45] demonstrated that gray matter volume increases as a result of learning, offering scientists more tangible ways to measure the neuroanatomical correlates of emotional marking. How cool is that? The more you store information, the more you create circuits in your brains! In fact, a famous study conducted on London cab drivers [46] confirmed that by having to remember the names and location of London's 25,000 streets, their brains had a larger hippocampus than most people. That is because the hippocampus is responsible for storing and organizing our long-term memory. You can think of your long-term memory as a muscle: the more you work it out, the stronger it will be.

THE NEUROMARKETING RESEARCH MATRIX

You now understand the research questions that neuromarketing can uniquely answer plus how important it is to collect data from various subdivisions of the nervous system.

Let's put all the conventional marketing research methods in perspective by

comparing them to the most popular neuromarketing methods (see [Figure 2.8](#)). Except voice analysis, which is not supported by much peer-reviewed research, the other neuromarketing methods listed have all been used and accepted by the research community for quite some time.



	PRIMAL 	RATIONAL 	
Probing level	Attention and Emotions	Cognition and Recall	
Measures	Approach or Avoidance Arousal Visual attention	Associations/Intentions/ Beliefs/Attitudes/Awareness/ Memorization Retention/Decisions	
Consciousness level	Subconscious	Subconscious (Implicit)	Conscious (declarative)
Layers voice analysis (LVA)	X		
Biometrics (EDA-HRV-RSA)	X		
Facial decoding	X		
Eye tracking	X	X	X
EEG	X	X	X
fMRI	X	X	
Self-reported data (panel, surveys, interviews)			X

Figure 2.8 Neuromarketing research matrix.

Researching advertising stimuli is a probing exercise. You are investigating the underlying causes that can explain how people react. There are multiple levels in this probing journey. The most primal responses are the way we orient our attention and respond emotionally. These responses are mostly controlled by subcortical brain structures that form a system we call the primal brain, one that is operating mostly below our level of consciousness. Meanwhile, the rational brain or cortex is what we use to access higher cognitive functions like reasoning, language, and predictions. A lot of calculations and predictions humans perform are not entirely conscious. For instance, most of the visual processing calculations performed in the visual cortex happen below our level of awareness. However, thanks to the cortex, we do have the ability to observe and

report many of our experiences. For example, we can speak a language and perform critical thinking with awareness and intention. We can also solve math problems, engage in self-reflection, and, more importantly, we can assess risk and formulate predictions.

Activity of the primal brain can be monitored by performing voice analysis, measuring galvanic skin response or EDA, heart rate variability (HRV), Respiratory Sinus Arrhythmia (RSA), tracking eye gaze, decoding facial expressions, frontal lobe dominance (EEG) and recording blood flow changes (fMRI). High-resolution fMRI can also measure early visual processing activity performed in the superior colliculus (SC). Briefly introduced earlier, the superior colliculus is a poorly known yet critical visual processing station that is located at the top of the brainstem; it helps us see without knowing we see before it reaches more evolved cortical areas [\[37\]](#).

Activity of the rational brain can be measured by EEG, fMRI, and eye tracking for the portion of the visual activity that is processed with more intention (consciousness) in the visual cortex. The visual system located in the cortex has at least two dozen distinct regions where neurons perform extensive computation before passing the information to another region. Visual perception is generated first through intuitive and automatic decoding performed in the primal brain below our level of consciousness, whereas visual cognition is only possible with the more specialized neurons of the visual cortex located in a large area at the back of our rational brain.

As a persuasion expert, you need to accept that you cannot fully decode the effect of a message on your customers' brains unless you probe multiple levels of consciousness. The good news is that, with neuromarketing tools, cognitive psychologists and neuroscientists have already defined most neurometrics measuring attention or emotions for over a decade. For instance, we know that subcortical areas drive our attention, and we can use arousal data coming from the conductivity of the skin to measure it. We also know that our emotions produce tiny contractions of our facial muscles that can be detected and decoded in real time. Furthermore, we can measure variations of intensity and frequency of certain brain waves. We can assess cognitive effort from electrical activity and use tested algorithms to predict cognitive engagement. I could easily argue that there are less heated debates between neuromarketers on what we measure than among conventional marketers when they discuss ways to measure attention, emotions, awareness, and engagement.

Indeed, for neuromarketers, the definitions of constructs like attention, emotion,

retention are dictated by patterns of neuronal activity, not by words with subjective interpretations that may vary from one research company to another. Moreover, questions that are used in surveys to measure these states require complex cognitive processes that often distort the answers. Considering the critical importance of the subconscious mechanisms that control and influence decisions, it is easy to recognize that self-reported methods offer an incomplete and often inaccurate picture of consumer behavior and buying decisions.

To conclude, the promise that marketers can fully decode the effect of ads by solely engaging in dialogues with an audience is a complete fallacy. That is why polls do not predict elections [\[47\]](#) and between 75% and 95% of all new products fail [\[48\]](#). Only neuromarketing methods objectively assess the effect your messages have on the brains of your audience, information that they are not able to share consciously. Meanwhile, you do need to make sure your research considers two brain systems that implicate multiple critical brain structures. Although we do not currently directly measure the activity of many of these substructures, we know that they influence the subconscious and conscious processing of persuasive messages. [Figure 2.9](#) identifies the most critical brain substructures that play a significant role in how our brains process persuasive messages.



PRIMAL 	RATIONAL 
The pons: control of sleep and arousal	Frontal lobes: control important cognitive skills such as problem solving, working memory, goal setting, concentration, emotional control, predictions. Often assimilated as a "personality control panel."
The medulla oblongata: regulation of critical survival functions like breathing and heart rate. Houses the reticular activating system , which controls sleeps and mediates arousal.	Parietal lobe: sensory integration. Contains the primary sensory area where impulses from the skin and touch are interpreted. Is also involved in spatial and mathematical processing functions. Responsible for handwriting and body position.
The cerebellum: mediates automatic movements. The cingulate gyrus: involves many autonomic, emotional, and basic cognitive responses, including early forms of language. The basal ganglia: supports learning habits and sequence of movements. The amygdala: mediates fear and hijacks body to confront or avoid situations. The hippocampus: serves to organize and store long-term memories. The hypothalamus: directs many responses to keep body in a state of balance. The thalamus: relay station for motor and sensory signals between the brainstem and the cortex. The midbrain: allows rapid processing of responses to external stimuli.	Temporal lobes: include primary auditory cortex. Critical for memory association and formation. 90% of all humans have their language functions hosted in the left temporal lobe. Many structures of the limbic system are located in the temporal lobes. Important structure for processing conceptual representations for semantic knowledge. Also include the fusiform area, which is essential to decode faces and associated expressions. Occipital lobe: contains most of the anatomical region of the visual cortex. There are more than 30 distinct cortical visual areas. Simple cells of the primary visual cortex calculate edges while complex cells use the information of simple cells to represent shapes. Visual perception is like an analytic process, with neurons sensitive to colors, others to contours, but an overall visual impression is created to form a coherent representation.

Figure 2.9 Critical substructures of the primal and rational brains.

Although there are numerous methods by which you can collect brain data, we argue that a competent neuromarketer must combine sensors that probe multiple areas of the brain to decode how persuasion works. At SalesBrain, we use voice analysis, galvanic skin response, facial decoding, EEG and eye tracking to monitor the primal brain activity, and we use again EEG or electroencephalograms to record activity from the rational brain. We have developed proprietary algorithms to score primal and rational activity, as well as one overall score of neuropsychology called the NeuroMap Score. To collect the raw data, we use a software developed by Imotions. The configuration of the neurolab we use is presented in [Figure 2.10](#).



Figure 2.10 SalesBrain neurolab (Imotions)

WHAT TO REMEMBER

- The brain is a complex network of areas that have evolved over millions of years.
- The cognitive functions have appeared relatively recently during our evolution, whereas the neurological circuitry of our most basic survival-centric responses is ancient.
- In the past three decades, numerous studies have clarified how attention and emotions affect us and their dynamic role in influencing our decisions.
- Neuromarketing helps marketers measure neurophysiological activity arising from autonomic and mostly instinctual responses, but also cognitive and emotional activity mediated by the central nervous system.
- Recent research suggests that neuroscientific methods generate valuable insights on the hidden processes that affect the ways messages work on our brains.
- A wide variety of tools are now available to produce data that complement information that is critical to our understanding of consumer behavior, persuasion, and media effect.
- Individually, each method can provide important insights. However, without measuring both the subcortical activity (primal) and the cortical (rational), the interpretation of brain data is inaccurate and ineffective.

- You do not need to be a neuroscientist to understand the critical importance of measuring more than what people can tell you about the effect of your messages. Neuromarketing is designed to help you figure out once and for all what a brain-friendly and persuasive message is.
- Neuromarketing research has helped us develop a convincing theoretical model that you can learn and apply without conducting complicated studies. It is called NeuroMap.

PART II

DECODING PERSUASION THEORY

CHAPTER 3

NeuroMap: A Brain-Based Persuasion Theory

In theory, theory and practice are the same. In practice, they are not.

—Albert Einstein

We have spent almost two decades researching how sales and advertising messages affect our brains. This work led to the creation of NeuroMap, the persuasion model you are about to discover. Persuading is not easy and until recently it was considered more an art than a science. By deconstructing the effect of messages on the brain, we have created a simple, yet scientific model to help you develop and deploy persuasive messages targeting anyone, anywhere and anytime. Using NeuroMap will make all your attempts to persuade more successful and less risky. So how widespread is the use of persuasion models in advertising to begin with? You would expect that companies that spend millions of dollars would always use scientifically based persuasion models to guide the creation of their campaigns. Well, most don't.

Recently, I decided to thoroughly research the effect of public health messages and propaganda campaigns on adolescents [49]. Each year, hundreds of millions of dollars are spent to warn us that smoking is dangerous, drugs can kill, or texting and driving is not just an imprudent behavior but dangerous. What I found (sadly) is that most of the public service announcements (PSA) campaigns do not use persuasion models to guide their creative development process and hardly any use brain-based models. According to a meta-analysis conducted by Whitney Randolph (the only one we can find!), less than one-third of empirical articles on PSA report using any persuasion theory at all [50]. From our experience dealing with many Fortune 500 companies, this trend is not specific to PSA campaigns; it appears to be the norm among most advertising campaigns. I believe that is why such a large majority of advertising campaigns fail. So let's clarify what a persuasion theory is and why it matters to use one to save time and money.

POPULAR PERSUASION THEORIES

A persuasion theory is a model that can explain and predict the probability messages have to influence or convince. Presumably, good persuasion models

help creators of messages be more systematic in the way they approach the development of a narrative to convince. Reviewing popular persuasion theories can be confusing. There are several models that have been cited for decades, yet there is little evidence that any are effective. The differences between the most popular models highlight the challenges faced by researchers to deconstruct the critical processes involved in explaining and predicting the effects of persuasion. Although the following brief review explains why there is often confusion and discord among persuasion researchers, it also shows that emerging neurocognitive models offer the best hope for creating and testing radically more powerful advertising messages.

Here are summary descriptions of the most popular persuasion models of the past two decades. You may be familiar with a few of them, but usually, only academics or persuasion researchers have heard of them.

The Elaboration Likelihood Model

Inspired by the cognitive theoretical movement, this model [\[51\]](#) states that a persuasive message will trigger a logical succession of mental processes that engage either a central (cognitive) or peripheral (emotional) route. Both routes represent the levels of thinking performed by recipients to understand the meaning of the information. The central route ensures that the message is considered further (or elaborated), in which case the message has achieved its persuasive intent. However, if a message is processed by the peripheral route, the effect is predicted to be mild. According to the Elaboration Likelihood Model, a good message is only elaborated if it appeals at a deep and personal level. Advocates of the Elaboration Likelihood Model argue that an effective campaign must include strong proofs to establish the credibility of the claims used in a persuasive message. However, despite its wide popularity, the critical flaw of the Elaboration Likelihood Model is to assert that persuasion is possible if recipients only engage cognitively with the content of a message, a fact that is not supported by NeuroMap and by most neuromarketing research studies of the past decade.

The Psychological Reactance Theory

According to this theory, humans are deeply motivated by the desire to hold themselves accountable and free from other's rules and suggestions [\[52\]](#). The psychological reactance theory predicts that if people believe that their freedom to choose how they want to conduct their lives is under attack or manipulated,

they will experience an ardent desire to react as a way to remove the pressure. Reactance is believed to be at its peak during adolescence because teens have a strong drive toward independence and form beliefs and attitudes that often compete with those recommended by their parents. This model further predicts that explicit persuasive messages trigger more resistance than implicit attempts. Also, Grandpre [53] demonstrated that reactance to persuasive messages increases with age. This may further explain why campaigns invoking the role of parents discussing the dangers of smoking are not effective [54]. The major flaw of the model, however, is the suggestion that persuasive messages are always recognized consciously, a fact that is clearly no longer defensible based on the evidence generated by neuromarketing studies.

The Message Framing Approach

This model is based on the notion that a persuasive message can be framed in two ways: either *a loss* if recipients fail to act/buy or *a gain* if recipients agree to act/buy [55]. Loss-framed messages are typically effective when they raise consciousness on the risks or loss associated with a lack of action. For instance, you may kill people by texting and driving, or you may be financially ruined if your house is destroyed by a fire and you have no insurance. Experiments using this approach have demonstrated that loss-framed messages are better at preventing risky behaviors than changing them, suggesting that the effect may only be short-term [56–58]. Our research also shows that loss-framed messages work better than gain-framed messages because of the role played by the primal brain.

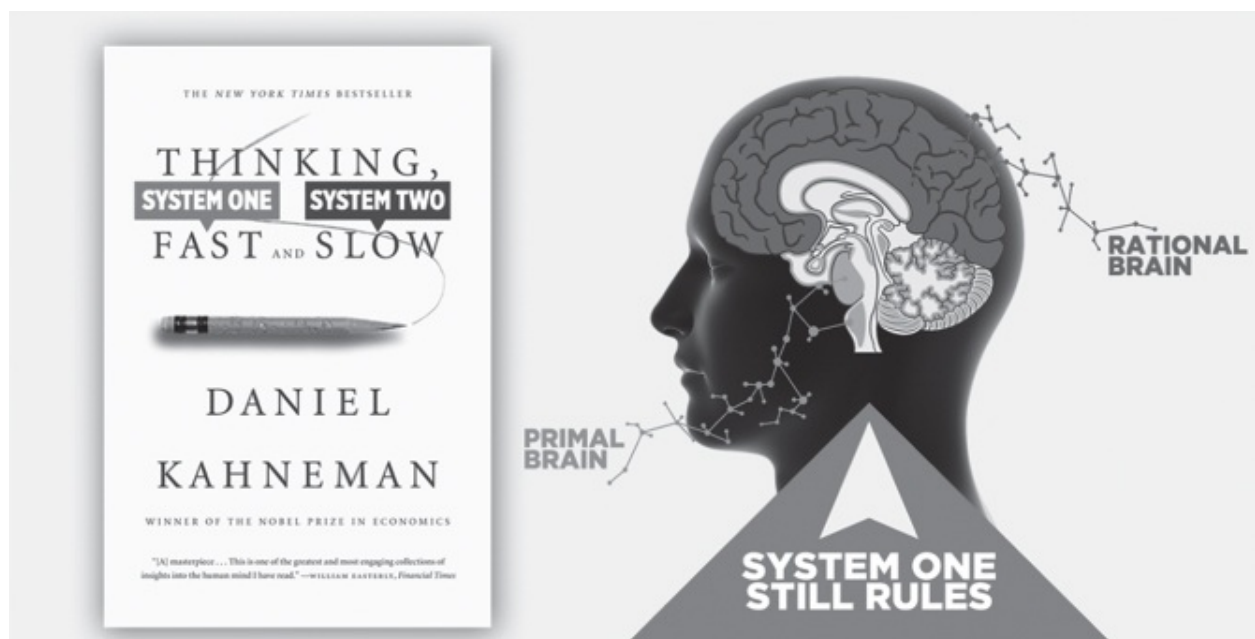
The Limited Capacity Model of Mediated Message Processing

The Limited Capacity Model is another model inspired by the field of cognitive psychology. It provides a conceptual framework based on a series of empirical studies examining the relative effect of message elements on key cognitive functions such as *encoding, storage, retrieval, information processing, and limited capacity* [59]. The model suggests that allocation of brain resources may be equally distributed among several cognitive subprocesses leading to inconsistent results in recall and general effect on recipients. Studies using the Limited Capacity Model indicate that adolescents remember more details from public service announcements than college students do and require more speed in narratives to stay engaged. This model did confirm that key cognitive differences exist between adolescents and adults and that these differences may

alter the subprocesses involved in processing persuasive campaigns [60]. However, it lacks scientific credibility and is largely ignored by the persuasion scientists today.

Kahneman's Two-Brain Model

The dual processing theory was originally introduced by Stanovich and West [61], and is also known as the System 1 and System 2 theory. It was eventually popularized by Daniel Kahneman through his seminal book *Thinking, Fast and Slow* [62], for which he received the Nobel prize in economics. The tenets of this approach are both simple and profound. Although the research supporting this model was done to study rationality and explain cognitive processes in a multitude of decision-making tasks, the value of the theoretical framework extends far beyond cognitive psychology. In fact, it speaks directly to the nature of human cognitive biases and how they affect our day-to-day choices. For Kahneman, humans regularly access two decision systems that have different if not opposing priorities. System 1 is the most primitive part of the brain. It is automatic, unconscious, and requires low computational resources. System 2 is the newest part of our brain. It is more intentional, needs more consciousness, and has access to more cognitive resources to establish goals and calculate consequences of our decisions. Kahneman argues that System 1 rules over most of our decisions ([Figure 3.1](#)).



[Figure 3.1](#) Thinking, fast and slow.

SALESBRAIN'S MODEL OF PRIMAL DOMINANCE: NEUROMAP

NeuroMap expands the dual system model in profound ways (see [Figure 3.2](#)). First, we recognize that even though anatomical borders of each system are the subject of ongoing discord among neuroscientists, they have gained wide acceptance among members of the neuromarketing community. At SalesBrain, we call System 1 the primal brain and System 2 the rational brain, but we consider that the primal brain not only rules our decisions, it dominates the persuasive process. There are key differences between the primal and rational brains we have already introduced but need to reemphasize.

	PRIMAL BRAIN	RATIONAL BRAIN
Evolutionary age	<ul style="list-style-type: none"> • 500 million years old 	<ul style="list-style-type: none"> • Three to four million years old
Processing	<ul style="list-style-type: none"> • Fast but limited 	<ul style="list-style-type: none"> • Slow but smart
Cognitive capabilities	<ul style="list-style-type: none"> • No thinking-reading-writing • Very basic math • Vigilance, intuition, and senses • Drives short-term actions 	<ul style="list-style-type: none"> • Thinking-reading-writing • Complex math • Predictions and risk assessment • Confirm actions
Dominant processing levels	<ul style="list-style-type: none"> • Instinctive and emotional 	<ul style="list-style-type: none"> • Cognitive
Time management	<ul style="list-style-type: none"> • Present only 	<ul style="list-style-type: none"> • Past, present, and future
Consciousness level	<ul style="list-style-type: none"> • Low 	<ul style="list-style-type: none"> • High
Capacity to control	<ul style="list-style-type: none"> • Very low 	<ul style="list-style-type: none"> • Moderate to high

Figure 3.2 The primal and rational brains.

Source: SalesBrain. Copyright 2012–2018.

The primal brain only “lives” in the present because the notion of time is too abstract for a survival-centric brain. Also, it is much older in terms of evolution, but it can process information at remarkable speed because your life depends on it! We are not conscious of what the primal brain does most of the time. For example, we do not think about our breath, even though we can, but for the most

part, it just happens. It is all regulated below our level of consciousness. So, the primal brain cannot think much, it certainly does not read, write, or perform arithmetic. It is guided primarily by vigilance, intuition, and senses that guide our short-term actions. Because it is the fastest brain to respond and it oversees our survival, we believe that the primal brain also dominates the persuasive effect. The default processing style of the primal brain is instinctive, intuitive, and preverbal. Unfortunately, most persuasive messages are seeking to motivate people to make long-term decisions and use text to convince; therefore, they are not primal brain friendly!

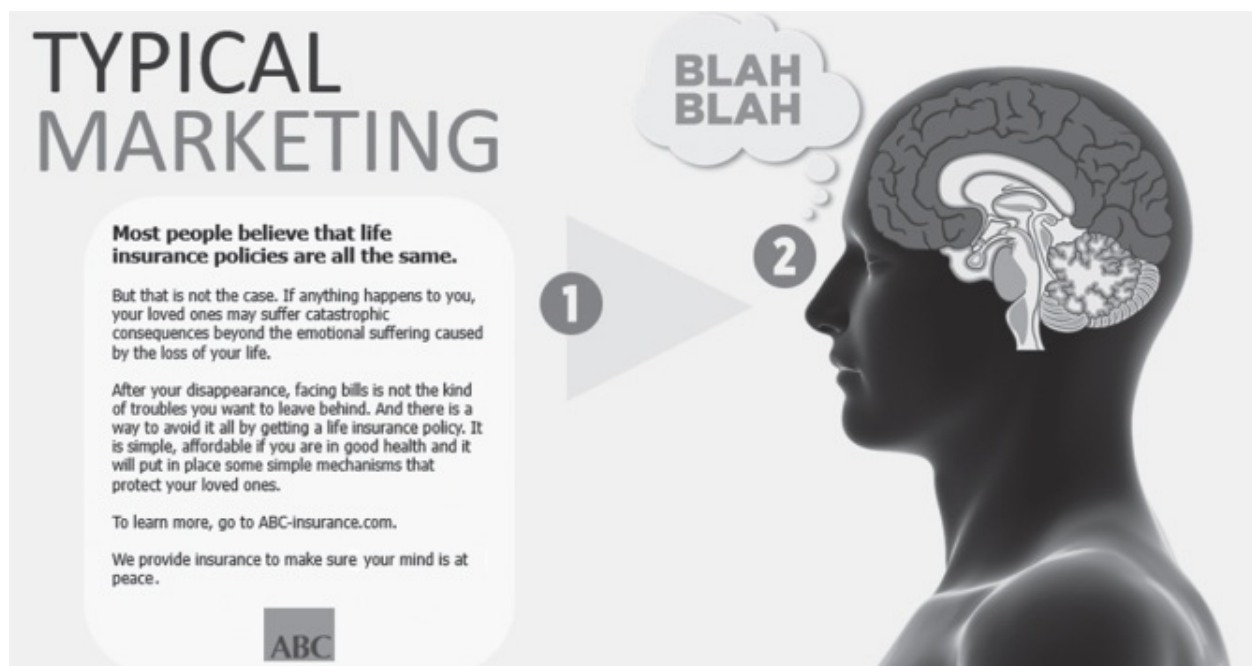
Meanwhile, the rational brain is much younger, much slower, and does have the capacity to think, read, write, and do complex math to predict, assess risk, and engage in long-term goal setting. The rational brain can travel through time. Although memory is a highly distributed system, critical circuits of the rational brain allow us to file, organize, and retrieve information over a considerable amount of time. With the help of our frontal lobes, we also project a lot of our attention and thinking in the future. In fact, you could argue that few of us truly live in the present because we get lost in our worries of the past or the future. Thankfully, we do have some level of consciousness because of the rational brain; we can reflect on our experiences and even share them with others. That gives us more ability to control the rational brain than the primal brain.

NeuroMap: The Bottom-Up Effect of Persuasion

When we first published our persuasion model in 2002, we suggested that the reptilian complex was the ultimate decision maker. The model was radical, if not controversial. At the time, we did not have as much scientific evidence to support the theory as we do today. Indeed, the research and case studies we have accumulated since 2002 confirm that persuasive messages do not work unless they first influence the primal brain – that is, System 1 [14]. In fact, the primal brain is largely influenced by the reptilian complex, a system composed of the brainstem and the cerebellum. NeuroMap is based on the dominance of the primal brain over the rational brain. NeuroMap predicts that when a message is friendly to the primal brain, it will quickly radiate to the upper sections of the brain where the information will be elaborated using critical thinking and logic. In short, NeuroMap supports the dual processing model proposed by Kahneman and his argument that System 1 rules, but also provides enhancements that can be directly applied to a persuasion model. Indeed, we have convincingly identified that successful persuasive messages *capture* the primal brain first and *convince* the rational brain second. We call this the *bottom-up effect of*

persuasion. Both conditions are necessary for a message to work on the brain! In our view, the reason why so many persuasive messages fail is because they do not trigger the bottom-up effect. Worse, they try to appeal first and foremost to the rational brain.

Here is an example of an ad for an insurance product ([Figure 3.3](#)). Because text cannot be processed by the primal brain, it can only be processed by spending much cognitive effort. Because the rational brain does not control the initial flow of cognitive energy, the message will be quickly discarded.



[Figure 3.3](#) Rational message.

Instead, this next message has far better chance to trigger a primal brain response. As provocative or shocking as this next message may be ([Figure 3.4](#)), it does recruit attention and activates the bottom-up effect. We do not really want to think about the value or importance of getting life insurance. However, once reminded that we could die quickly, we do.

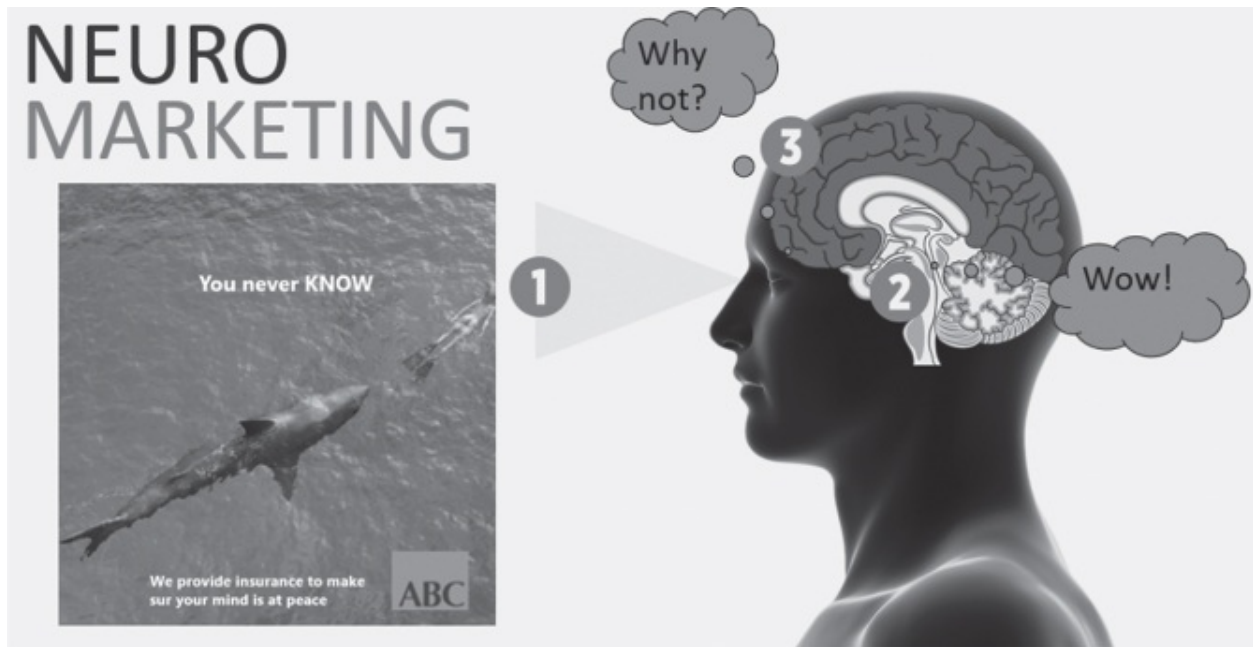


Figure 3.4 Primal Brain Friendly message.

Proving the Dominance of the Primal Brain

Here are other ways by which we can quickly demonstrate the ongoing dominance of the primal brain. For instance, try to solve the equation shown in [Figure 3.5](#) quickly: How much is the candy if the cookie costs one dollar more than the candy?



Figure 3.5 Candy equation.

The answer is 5 cents, not 10 cents! It seems so weird that you and over 95% of people we have tested on this question fail to solve a seemingly easy math equation. However, the error can be explained by the dominance of the intuitive

and fast nature of the primal brain, which made you jump to the wrong conclusion. Here is another test demonstrating primal dominance ([Figure 3.6](#)). Which bet would you favor?

YOU MUST BET

OPTION 1: **50% CHANCE TO WIN \$1000**
50% CHANCE TO WIN \$0

OR OPTION 2: **100% CHANCE TO WIN \$500**

[Figure 3.6](#) Gain maximization bet.

Most people pick option 2, a more attractive positive outcome created by using the number 100%. This option “frames” a perception of choosing the option with the highest probability of gain, even though both options have the same mathematical gain expectancy.

However, notice how you feel about the next two options now. Which one would you pick ([Figure 3.7](#))?

YOU MUST BET

OPTION 1: **50% CHANCE TO LOSE \$1000**
50% CHANCE TO LOSE \$0

OR OPTION 2: **100% CHANCE TO LOSE \$500**

[Figure 3.7](#) Loss-avoidance bet.

You probably picked 1, and you most likely did so faster than when you evaluated the two options of the first bet. Option 2 frames the perception that you will lose \$500 for sure, whereas option 1 creates the perception that you may still have a chance not to lose anything at all. When facing such options, the primal brain instantly activates a loss-avoidance bias, a bias that is central to

most of our buying decisions.

The loss-aversion bias was first discovered by Kahneman and Tversky. In fact, some researchers even quantified the loss-aversion bias at 2.3 times the value of winning. This means that if you lose \$1, it takes winning \$2.3 to offset it. Note that this explains why it is always hard to sell something: the negative emotion your customers will experience to pay \$1 for anything can only be overcome by the positive emotion generated by receiving something they would perceive as being worth at least \$2.3. This also explains why offering a 50% discount is so effective: it compensates for the 2.3 loss aversion bias. Meanwhile, many other so-called cognitive biases can be explained by NeuroMap.

Cognitive Biases Explained by NeuroMap. A cognitive bias can be defined as a predictable pattern of deviation from logical reasoning. Cognitive biases prevent us from making systemic and completely rational decisions.

Psychologists have studied the nature of these biases for centuries, and most recently Buster Benson, a software engineer with a passion for decoding human behavior proposed an interesting nomenclature of *188 such biases* [63]. Many social biases, for instance, preserve our self-esteem and stem from our ego-centrism [64–66]. A full discussion of this topic is beyond the scope of the book. However, we believe that many of these biases can be explained by the dominance of the primal brain over the rational brain: if all our behaviors were rational, these biases would not exist.

Error Management Theory and Cognitive Biases

Psychologists Martie Haselton and Danie Nettle [67] proposed a very powerful model to integrate most cognitive biases based on the theory of evolution called the error management theory (EMT). According to EMT, we collectively suffer from “paranoid optimism” a dynamic tension that pushes us on one end to “play safe” and on another to “seek risk.” The paradoxical nature of this tension is a function of our drive to survive. For instance, men tend to overestimate how much women desire them. Haselton and Nettle argue that this tendency may have been reinforced over thousands of years to increase the number of sexual opportunities, and therefore increase the number of children from one pool of genes. They also argue that decision-making adaptations have evolved to make us “commit predictable errors.” They posit that EMT predicts that human psychology contains evolved “decision rules that are biased toward committing one type of error over another.”

NeuroMap can also explain and predict the same biases. The dominance of the

primal brain is crucial during events that compromise our survival. In the absence of enough cognitive energy and the required need to act quickly, we activate programs that minimize risk. Now let's go back to the tendency to be overly optimistic. This does not easily reconcile with the drive to avoid risk. For instance, people tend to be overly optimistic about health problems they face [68]. In that case, EMT states that we have more sensitivity to harms that may arise from external sources (others) than harms that can come from internal sources (us). This suggests that we have different biases based on the origin of the risk. Once again, this is predicted by NeuroMap. External threats are urgent for the primal brain to process and trigger our instinctive response to avoid risk and uncertainty. However, internal threats are typically more complex to assess and therefore are more likely to engage cognitive resources from the rational brain, which may be more naturally inclined toward optimism and hope. Haselton and Nettle call this phenomena “paranoid optimism.” They observe that we appear fear-centered about the environment (primal) but optimistic about the self (rational).

Top Cognitive Biases

We summarize next some of the top cognitive biases that have been popularized by successful thought leaders and authors like Malcom Gladwell, Dan Ariely, and Buster Benson.

The Bias of Thin-slicing

Malcolm Gladwell's book *Blink: The Power of Thinking Without Thinking* [69] tells curious stories in which people make seemingly absurd decisions using a limited amount of information. He calls this bias “thin-slicing” and draws examples from a wide range of situations involving scientists, doctors, executives, art experts, and more. In all these cases, logic and rationality are missing. Choices are made in the “blink of an eye” even though they may involve smart and educated decision makers. Although Gladwell does not investigate the neuroscience of “thin-slicing,” NeuroMap can explain many of the situations he describes. For instance, in the presence of too much information, the primal brain takes over while the rational brain stalls. Furthermore, when our primal brain dominates plenty of emotional factors influence our decisions beyond our level of consciousness. Although there are clear benefits from allowing the primal brain to control an enormous number of our decisions, it can lead us to make very bad choices. Remember the example of trying to find how much the candy was worth? Your primal brain took over,

and most likely you did not get the right answer!

Another important book discussing the faulty nature of many of our decisions is *Predictably Irrational* by Daniel Ariely [70]. The book presents several cognitive biases that affect many of our decisions, basically because the primal brain controls the process below our level of awareness. Following are a few cognitive biases.

The Bias of Relativity

To decide, we need to be able to contrast options that appear radically different. By offering two options that are about the same, and a third that is radically different, most people will choose the third. The primal brain is wired to make quick decisions, and contrast allows that level of efficiency. When we easily compare and contrast options, we are allowing the dominance of the primal brain to rule our choices.

The Bias of Anchoring

Our first decisions may considerably influence the rest of the decisions we make regarding the same product or solution. This suggests that we are wired to repeat decisions we find satisfying. That is why habits are so addictive. We argue the reason we do that is because the primal brain wants to reduce cognitive effort by retrieving old patterns of behavior. It also explains why it is so difficult to change our behavior in general or shift to another brand of toothpaste!

The Bias of Zero Cost

We always prefer *free* options over *fee* options because we perceive that there is no risk when the item has no price. According to Ariely, the reason free shipping offers are so effective is that it lifts the objection of adding any cost on top of the price of an item. In fact, the zero-cost bias reflects the loss-avoidance bias of the primal brain. It is not logical and rational to wait in line for a free ice cream, yet thousands of people do it because they are under the dominance of their primal brain, which seeks instant gratification!

The Bias of Social Norms

We act based on what is expected of our community of reference (social norm), and this may influence the way we respond to market offers. If the offer is aligned with the social norm, we accept the offer. If it is not, we reject it. What this explains is that incongruence between our primal brain (compliance reduces

risk or regret) and the rational brain (evaluation of a market offer) disrupts the bottom-up effect. NeuroMap predicts that for messages/offers to work, they must stimulate both the primal and the rational brains.

The Bias of Multiplying Options

According to Ariely, we pretend that we prefer more options than fewer. Paradoxically, to survive, we are better off reviewing a limited number of options. We will discuss this bias when we elaborate on *contrastable* as a persuasion stimulus later in this chapter. We argue that the primal brain hates too many choices. The rational brain does not mind going through an extensive evaluation process, but it may delay decisions in the process. This creates a paradox in many of our decisions. We tend to say we want options, but at a deeper level, we do not want to face the cognitive burden of choosing among many. NeuroMap posits that a persuasive message can trigger decisions when it asserts that there is only *one* good decision: the one you suggest!

The Bias of Expectations

What we expect influences our behavior. This bias is the direct consequence of the dominance of the primal brain over the rational brain. What we want is known to emerge in primal subcortical areas of the brain. What we want shapes what we expect, and what we expect does overrule what we logically and rationally report we need.

The Cognitive Bias Codex

Completing an inventory of the most common cognitive biases is challenging. Academics have not agreed on key definitions, so the topic remains the subject of heated debates. In 2016, however, Buster Benson, a software engineer with a passion for decoding human behavior proposed an interesting nomenclature of 188 biases [63]. The result of his work is one visual you can see in [Figure 3.8](#). The picture does not do it justice, so I recommend you visit the website, which you can easily find by searching Cognitive Bias Codex.

COGNITIVE BIAS CODEX, 2016

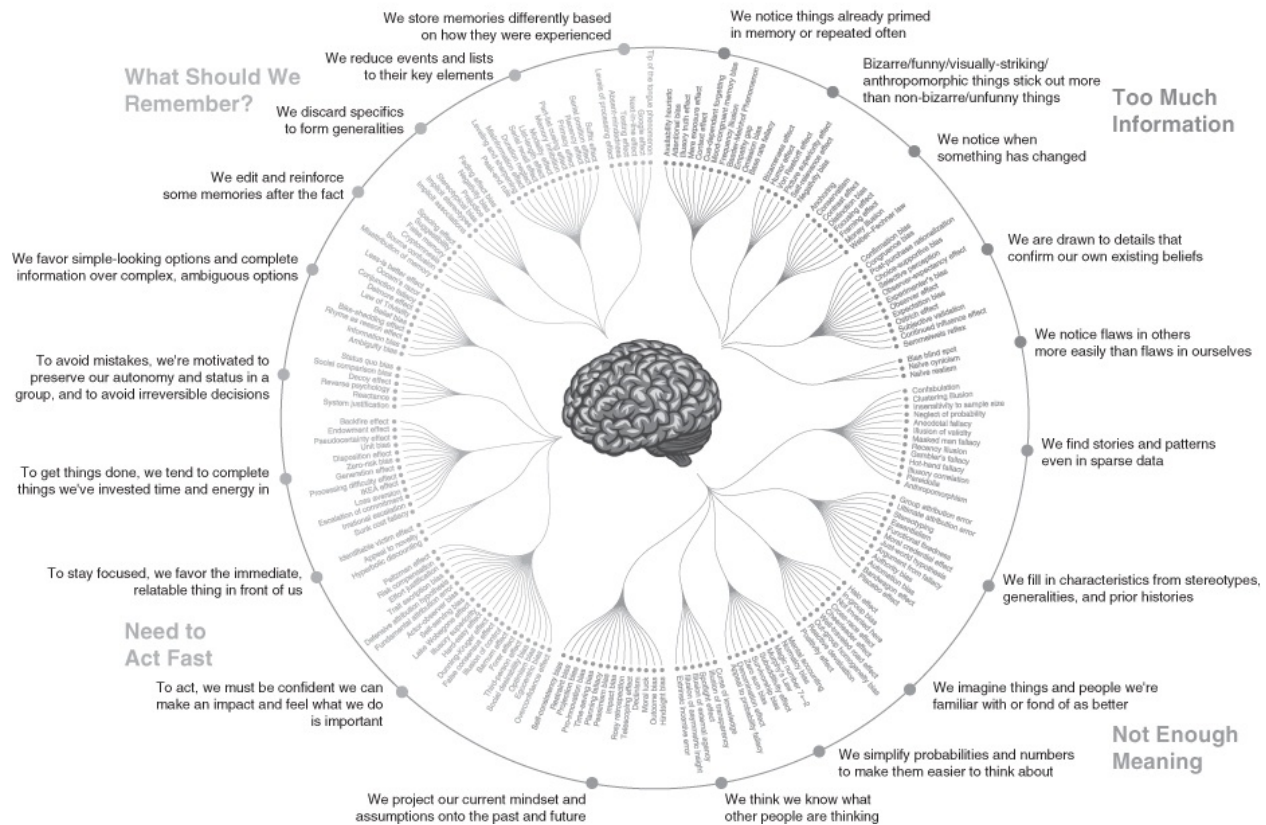


Figure 3.8 Cognitive Bias Codex.

Source: Used by permission from Buster Benson.

Even though Benson's work is arguably exploratory in nature, we find it impressive. More important, NeuroMap can explain and predict all categories of the cognitive biases that are identified by the model. They are as follows:

Too much information: The dominance of the primal brain is based on survival priorities that are deeply anchored in our biology. Cognition came later. We are not wired to process a lot of information, spend ample time finding patterns, or agonize over decisions. Too much information freezes the primal brain.

Not enough meaning: Our primal brain does not have the cognitive resources to compute and resolve complex arrays of data. If the pattern of a situation is completely new, and not urgent or relevant, the primal brain will not be able to retrieve a previously stored set of commands that would accelerate the processing of the information. We love cognitive fluency because it conserves valuable energy.

Not enough time: Time is directly related to how much energy the brain needs to process information. In the primal brain, faster is always better. Therefore, situations that require time do not appeal to our older brain structures and receive low priority.

Not enough memory: Our brain is not designed to store much information. The reason is simple. Encoding is costly, because of the energy required to store but also to maintain and retrieve our memories. Recent research demonstrates that memorizing attaches specific neurons to our memories. In fact, by using light to stimulate nerve connections, Dr. Malinow and his team successfully removed and reactivated memories by stimulating synapses in rats' brains [71]. This only proves further that the brain welcomes situations or events that make it easy to hold information in working memory and not highly dependent on long-term encoding. The primal brain favors such conditions over others.

To conclude, NeuroMap provides a simple yet practical model for developing and deploying persuasive messages: it helps you consider cognitive biases by following a linear creative development process. It is designed as a sequence of steps to maximize the impact of your persuasive arguments. Igniting the primal brain requires using only six stimuli in the brain. The six stimuli will provide you with simple guidelines for the creation of any persuasive message. The value of the six stimuli model is now supported by nearly 20 years of scientific and empirical evidence.

WHAT TO REMEMBER

- Persuasion has been studied for decades, but old models have ignored for too long the dramatic role played by subconscious brain structures.
- Persuasion is a bottom-up effect between two main brain systems named the primal and rational brains.
- NeuroMap shows that persuasive messages do not work unless they first and foremost influence the bottom section of the brain – the primal brain, which reacts to emotional, visual, and tangible stimuli (see [Chapter 4](#)) and can amplify or abort any persuasive attempt.
- Once a message has “engaged” the primal brain, persuasion radiates to the upper section of the brain where we tend to process the information more sequentially and confirm decisions in the frontal lobes.

- Most of the 188 cognitive biases can be easily explained and predicted by NeuroMap.

CHAPTER 4

Applying Six Stimuli to Persuade the Primal Brain

Some balance of the emotional and rational systems is needed, and that balance may already be optimized by natural selection in human brains.

–David Eagleman, neuroscientist and author

We learned in [Chapter 3](#) that persuasion can be explained and predicted from the quality of messages that appeal to the primal brain. [Table 4.1](#) will help you make the transition from the science of NeuroMap to its practical application.

Although we recognize the value of identifying 188 cognitive biases [63], we believe there is a limited number of meta-biases (biases above other biases) that can explain and predict why we are so irrational in our choices. We have identified six primal meta-biases that mediate the way persuasive messages work on the brain. These meta-biases can all be explained by the dominance of the primal brain. The term *stimulus* means a detectable change in the environment that will elicit a predictable response from the primal brain of your audience. We suggest that, together, the six stimuli ([Figure 4.1](#)) work as a system of communication you can use to influence the primal brain.

[Table 4.1](#) Primal biases.

Primal Stimulus	Primal Bias	Primal Goal
Personal	To survive	Protect from threats
Contrastable	To speed up	Accelerate decisions
Tangible	To simplify	Reduce cognitive effort
Memorable	To store less	Remember limited information
Visual	To see	Rely on the dominant sensory channel
Emotional	To sense	Let neurochemicals guide action

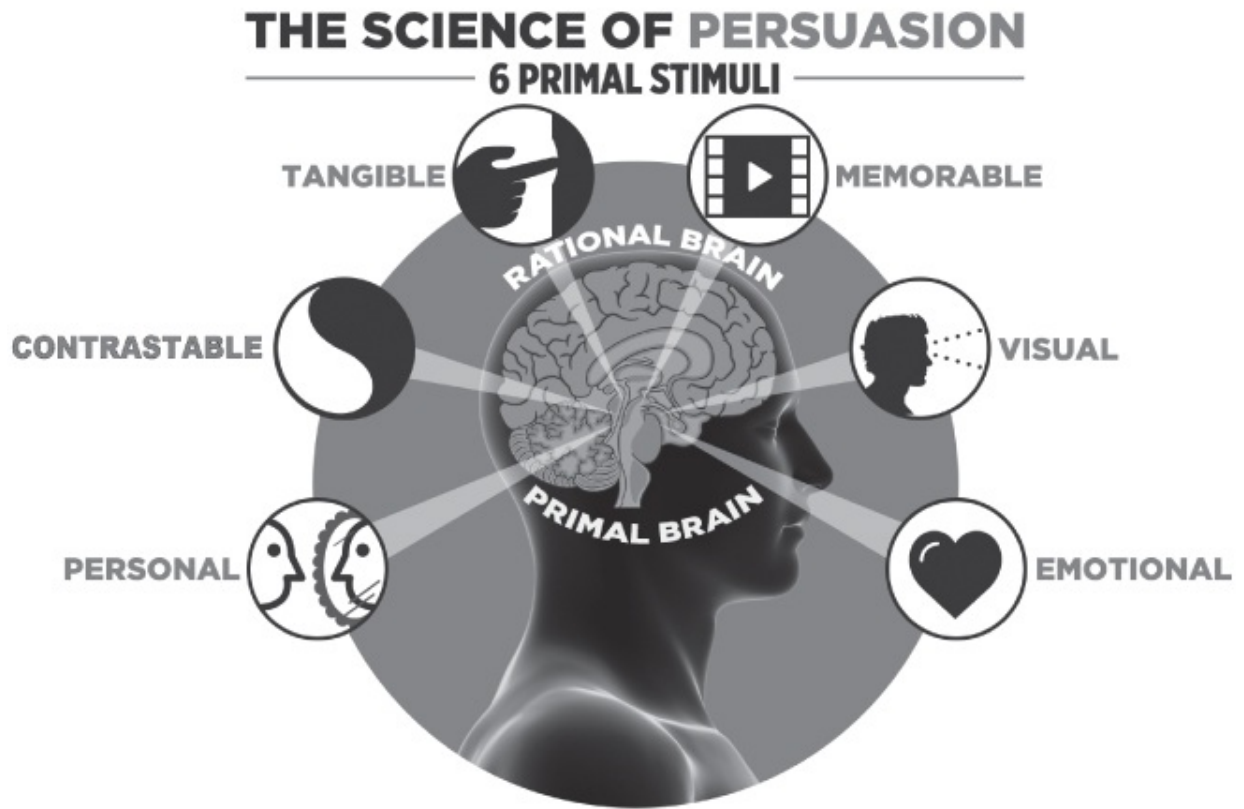


Figure 4.1 Six stimuli.

That is why we call it a language. This analogy is important because it points to the value of using *all* six stimuli to maximize the persuasive power of your messages. After all, when you learn to speak a foreign language, using just verbs will not take you far in a conversation. Another way to understand NeuroMap is to consider the six stimuli as a creative checklist that has already been used successfully by thousands of persuaders over the past 16 years.

Now, let's explore each stimulus in more details.

PERSONAL



“Let's try to teach generosity and altruism, because we are born selfish.”

– Richard Dawkins, Evolutionary biologist and author of *The Selfish Gene*

The first stimulus to activate the primal brain is to make sure your message centers fully on the person or group you are trying to persuade. Because the primal brain is driven to help us survive, humans are fundamentally wired to be self-centered and to attend first to what affects us personally. Jaak Panksepp, a neurobiologist who has studied the emotions of animals extensively, argues that “the utility of selfishness has promoted the evolution of many self-serving behaviors” [39].

The primal brain evolved over millions of years. As such, it still rules our most primitive, survival-centric behavior. The primal brain is the oldest structure of our nervous system, and some parts are believed to be nearly 500 million years old. Although the primal brain is ancient and rather small (about 20% of the mass of the entire brain), it remains largely in control of all the functions that are critical to our life like respiration, digestion, and automated motor commands – essentially all the functions that are regulated by the autonomic nervous system. The primal brain also produces a multitude of key neurotransmitters like serotonin, dopamine, and norepinephrine, all part of a special group of molecules called monoamines. Monoamines are chemical messengers that form the basis of how networks of neurons fire and wire during brain activity. Because they influence so many affective responses, they have been intensively studied for decades. Each neurotransmitter has its complex network linking older regions of the brain (primal) with newer ones (rational).

In a brilliant paper discussing how hardwired selfishness and altruism crosses, evolutionary psychologist Gerald Cory [72] suggests the existence of a dominant “self-preservation” program that can explain our tendency to seek power, attack, and express less empathy for others. His approach is inspired by the triune theory of Paul McLean [73]. Although many neuroscientists contest the triune theory, it has the merit of suggesting the existence of three main brain structures that evolved over a considerable amount of time. McLean first coined the term *reptilian complex* to describe the function of a group of brain structures that is mostly involved in regulating critical survival functions like breathing, eating, and sexual reproduction. He suggested that the limbic system, which hosts many important networks involved in emotional processing, developed when the earliest mammals appeared and, therefore, called it the *paleomammalian complex*. Finally, McLean observed that the uppermost layer of the brain, which enables the highest cognitive abilities like thinking, planning, predicting is found

in all mammals' brains but, more importantly, is especially large in the human brain. He called that layer the *neomammalian complex*.

The reason that the McLean model has been largely abandoned is that we know now that older brain structures like the basal ganglia (considered part of the limbic system) are not only found in reptiles but also in the earliest jawed fish. We also know that the earliest mammals had neocortices and presumably some ability to use higher cognitive functions as well. Finally, and more importantly, the three layers do not operate independently from each other. However, taking all that into account, the evolutionary nature of our brain development is a biological reality that was well-captured by the McLean model, and it is continuing to influence important psychological theories such as the Triune Ethics Model.

The Triune Ethics Model

Davide Narvaez [74] developed a theory of ethics based on the McLean model, which is appropriately labeled the Triune Ethics Theory. It is a psychological theory based on the neurobiological roots of our multiple moralities. The Triune Ethics Theory suggests that there are three types of moral orientations that have evolved over millions of years: the ethic of security, the ethic of engagement, and the ethic of imagination. The ethic of security is based on the critical urgency of attending to any threat and is driven by the dominance of primitive systems hardwired into our primal brain. Therefore, fear and anger urge us to feel safe and practice self-centeredness. Narvaez confirms that the primal brain is very self-focused. It seeks routines and avoids novelty, a view that explains the importance of making messages *personal* to grab attention. Gerald Cory, another acclaimed psychologist who spent his lifetime investigating the role of evolution also asserts that we are under the influence of critical survival and emotional forces that we cannot consciously control [75]. He further states that from “the predominantly survival-centered promptings of the ancestral protoreptilian tissues, as elaborated in the human brain, arise the motivational source for egoistic, surviving, self-interested subjective experience and behaviors.”

Meanwhile, this discussion on personal would not be complete unless we highlight the seminal contribution of Freud to the topic of ego dominance in our daily behavior.

Freud's Psychoanalytical Model

For Sigmund Freud [76], the basic nature of humans was instinctual (primal), largely controlled by innate forces that act below our level of consciousness. He established that our core instincts are sexuality and aggression. Instincts are automatically activated when we experience an unpleasant tension. In his psychoanalytical model, the sexual instinct ranges from pure erotic pleasure to satisfying thirst or hunger, whereas the instinct of aggression refers to the destructive need to return to a state of nonexistence, a concept that he simply labeled the *death instinct*. According to Freud, drive reduction brings the body back into a natural state of homeostasis.

For Freud, the price we pay to live in a civilized society is to feel and hold a permanent psychological tension [77]. According to him, all behavior has underlying psychological causes, an idea that he called psychic determinism. He proposed a structural model of personality based on our ability to manage our psychic energy, which consisted of the *id*, the *ego*, and the *superego* [78] (Figure 4.2).

The *id* is present at birth and is entirely unconscious during our entire lifetime. It controls the total supply of our psychic energy and transforms basic biological drives into *pain avoiding* psychological tensions. The *id* is also called the primary process and can be described as the biological component of personality. We would argue that the influence exerted by the *id* reflects the dominance of the primal brain on our behavior. The *ego* develops out of the *id* by the time a child is eight months old. In Freud's terms, the *ego* is “a kind of facade of the *id*, like an external, cortical, layer of it.”

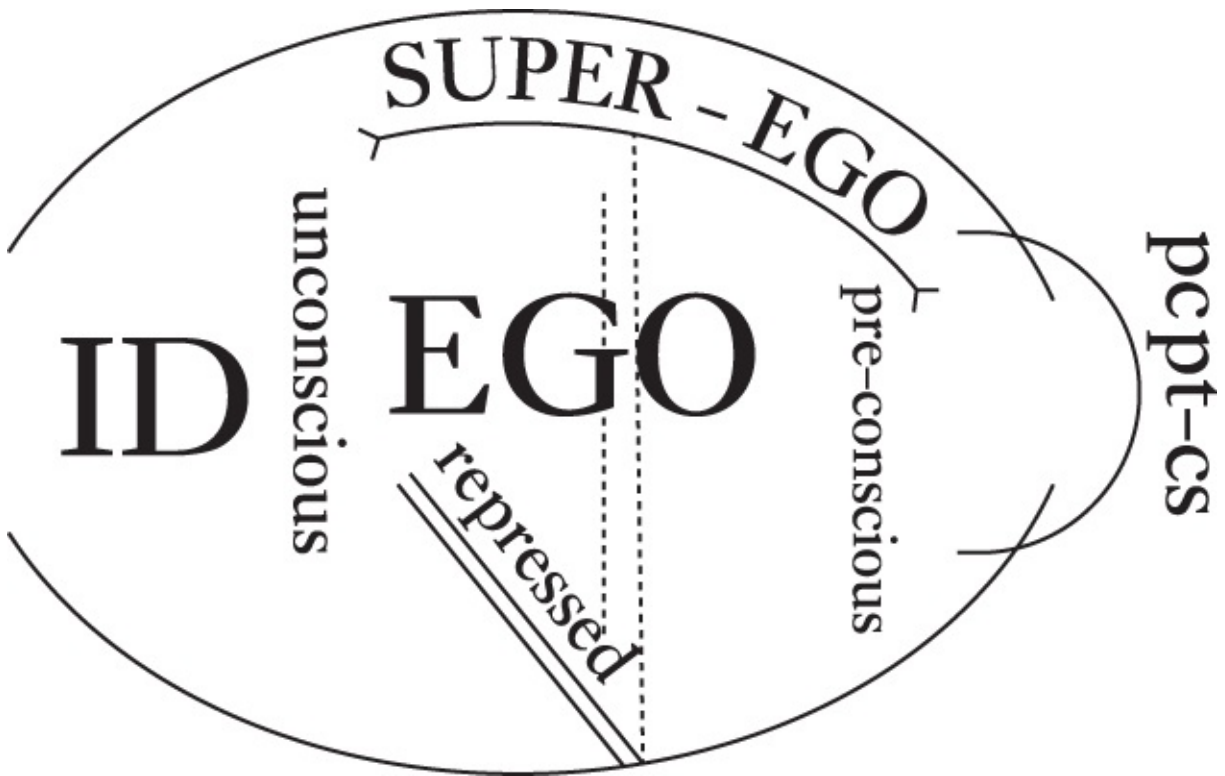


Figure 4.2 The id, the ego and super ego (1933 Illustration by Freud).

Even though the model presented by Freud is over 100 years old, it is still regarded by many psychologists and psychiatrists as the most important building block to understanding human behavior. It focuses on the predominant role of the unconscious, what we consider to be the direct influence of the primal brain. Since Freud was a highly regarded neuroscientist during his time, it is not completely surprising that even contemporary neuroscientists have taken a special interest in his model. In 2008, Mark Solms conducted an interview for the magazine *Mind* in which he discussed Freud with Erik Kandel of Columbia University [79] (2000 Nobel laureate in physiology), who confirmed that one of Freud's biggest contributions is the suggestion that the same unconscious mechanisms are at play in a healthy mind as they are with someone struggling with a mental disorder. Kandel also claimed that psychoanalysis is “still the most coherent and intellectually satisfying view of the mind” [80]. Like Kandel, Mark Solms also believes it is possible to link specific brain areas to the three components of personality defined by Freud: the id, the ego, and superego. The instinctual id maps nicely to the primal brain, whereas the emotional ego is best associated with the higher limbic structures and the posterior sensory-centric part of the cortex (both considered part of the rational brain).

Although many of us struggle with the idea that selfishness may drive so much

of our behavior and is one of the key drivers of our decisions, for Richard Dawkins [81], the most plausible answer to this puzzling question is in our genes. In his famous book *The Selfish Gene*, Dawkins convincingly presented a gene-centered view of evolution that has continued to rock the scientific community since the book was first published over 40 years ago. Dawkins wrote, “genes are in a sense immortal...our basic expectation by the orthodox, neo-Darwinian theory of evolution is that genes will be selfish.”

Applying the Personal Stimulus to Persuasive Messages

There are two ways to make your message more personal and, in doing so, more persuasive:

Focus on Your Audience First. Make sure you put your audience, prospect, or listeners at the center of the message. So many ads or presentations forget this simple rule. Admit it: Have you not ever started a presentation by saying, “Good morning, ladies and gentlemen. Today I would like to tell you about *our* company, *our* values, *our* mission statement, *our* technology...”? The image in [Figure 4.3](#) is indicative of just how interested and excited the primal brains of your audience will be while listening to your introduction.



[Figure 4.3](#) Man sleeping during pitch.

In a matter of a few seconds, you only prove that you have no intention of

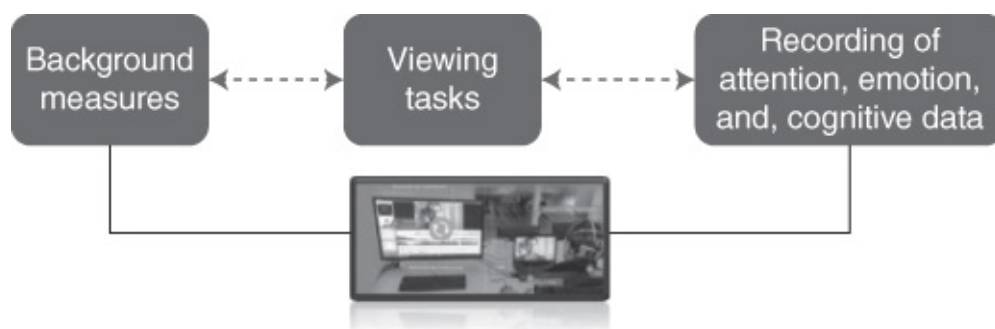
putting your audience at the center of the story because it is all about *you* instead of *them*!

According to Kahneman [82], we experience 20,000 psychological “present” moments per day, each three seconds long. Since the primal brain craves input that is personal, a substantial portion of these moments is spent thinking about us!

Focus on a Pain That Is Relevant to Your Audience. Our primal brain seeks to protect us. Therefore, in your attempts to persuade, highlight, if not magnify, a threat, a risk, or a pitfall that your solution can solve. As a result, you will command immediate attention. Too often, messages focus on the solution (business centered) and not the problem (personal). NeuroMap suggests that before offering a solution, you need to remind your audience of a pain they have experienced or do not want to face. This is not to manipulate or create undue stress. It is simply to recognize that the primal brain will not dedicate energy unless your message is both urgent and relevant to the person you are trying to engage.

The Neuroscience of Personal

Since there are no studies testing the neurophysiological effect of making a message more personal, we decided to create our own. We recruited 30 participants, half males, half females with an average age of 33 years old. We collected data from their skin (GSR), their hearts (ECG), their faces (facial coding), their cortex (EEG), and their eyes (eye tracking). The neurophysiological variables helped us measure how much each persuasive stimulus (a total of 12) sustained visual attention, triggered emotions, produced cognitive effort, cognitive distraction, and cognitive engagement. The experimental design is presented in [Figure 4.4](#).



[Figure 4.4](#) SalesBrain's neuro study.

For personal, we tested the following research question:

...or personal, we tested the following research question:

Can making an ad more personal improve its persuasive effect on the primal brain?

We used the following advertising stimuli to test our hypothesis:

- Video footage of people flying a wing suit. The video was filmed from two perspectives:

Personal (objective) perspective: watching this footage makes the viewer see the landscape as if he/she was flying in a wing suit.

Impersonal (subjective) perspective: viewer is observing others jump and fly in a wing suit.

- Fishing Print Ads

A first ad featured a fishing boat and promoted business-centric claims, like the boat is safe, comfortable, and so forth.

A second ad featured someone catching a big fish and highlighted customer-centric claims like the joy of bringing a fish home.

The results supported the hypothesis:

- The personal video segments making the viewer experience flying in a wing suit triggered much more attention (+14%) and more emotional arousal (+25%), as well as more negative emotions (+143%) than the video segments giving a more impersonal experience of the flight.
- The ad featuring someone catching a fish triggered much more attention (+39%), far more arousal (+520%), more positive emotions as well as more cognitive engagement (+52%) than the ad focusing on the fishing boat. It also captured more visual attention in critical areas of interest.

Personal Neuroinsights: Raise the impact on the primal brain by making your message personal. When putting your customers at the center of the narrative, you can quickly transport your audience in the story of your value proposition.

What to Remember About Personal

- We are wired to be selfish.
- Perceiving something as personal makes us proactively scan our environment for what is relevant and urgent to us.
- If you cannot magnify a pain that matters to the members of your audience,

you will not grab their attention.

CONTRASTABLE



CONTRASTABLE

“We are so constituted that we can gain intense pleasure only from the contrast, and only very little from the condition itself.”

– **Sigmund Freud, neurologist and founder of psychoanalysis**

The priority of the primal brain is to accelerate decisions, and we do that best when we have limited options. This points to an important paradox in consumer behavior: customers tend to tell you they want lots of brand options, even though they *subconsciously* resist using valuable energy to evaluate and sort the best ones. I did not discover this paradox by practicing conventional marketing. Rather, I detected this puzzling contradiction nearly 20 years ago by observing shoppers in grocery stores. At the time, I was the vice president of marketing of a grocery chain called Grocery Outlet. Grocery Outlet sold top brands at bargain prices in 12 US states. Our products' variety was somewhat limited given the nature of our retail concept, so I wanted to know if we could increase our sales by adding additional brands for certain categories of products. I conducted focus groups, and sure enough, when I asked customers if they wanted more choices, they always *said* yes. However, when I observed them shopping in the stores, they systematically froze in front of too many possible choices. When faced with too many options that were not immediately *contrastable* with one another, customers were unable to quickly and easily differentiate among assorted brands. This explained why our category sales did not move quickly when we added brands. Customers were overwhelmed by being in front of so many options.

That is the paradox of choice. It is also the title of an excellent book by Dr. Barry Schwartz [[83](#)], in which Schwartz demonstrates that we do not get happier from getting more choices, and therefore we subconsciously seek to have fewer options. Even though we may complain when we have limited choice, this

response is a function of the thinking routine of our rational brain. After all, it is logical to assume that in the presence of more choices, we have a greater probability of finding what we want. However, since the primal brain dominates our decision-making process, we want to avoid *at all cost* the time, energy, and risk of a lengthy decision cycle, which is what more choices will bring.

Schwartz's book cites many studies proving the bias for our preference to have limited choices. For instance, a study performed in a gourmet store featuring 24 varieties of jam in one experimental condition and only six in another demonstrated that presenting fewer varieties could increase sales tenfold [84]. Meanwhile, according to renowned Yale medical doctor Jay Katz [85], we choose to outsource many of our decisions in order to escape the burden of making decisions, even when our lives are at stake. According to Katz's research, a majority of patients prefer others to make decisions about their care, rather than making their own choices. We recommend the contrastable stimulus to push customers toward a simple and obvious choice: the best solution to their pain!

The Use of Contrastable Offers in Comparative Advertising

The most common use of contrastable in advertising is *comparative advertising*, where one brand compares itself to another. There are many research papers on the effect of comparative advertising, but few make any reference to consumer neuroscience and none provide a brain-based interpretation of its results.

According to Professor Fred Beard, a general conclusion we can draw, though, is that comparative advertising works! – especially for “products of high quality,” where claims are well substantiated and focused on salient benefits that are believable [86]. Beard explains that comparative advertising works especially well for companies that have a smaller market share. This makes perfect sense! How can you convince anyone to buy your product unless you do the challenging work of finding what your unique differentiators are first?

Although infomercials have a less than positive reputation because consumers often say they do not like them, this unique format of advertising has a remarkable effect on us. Infomercials work on the primal brain because they use customer stories to present evidence of a sharp before-and-after contrast. For instance, they typically feature individuals with serious problems (such as being overweight or having acne) who went through a radical transformation thanks to a “miraculous” product. There are very few studies on the effect of infomercials because formats and products vary greatly. However, one experiment conducted

by a group of researchers from Southern Illinois University [87] managed to provide clarity on why infomercials work so well. They decided to create messages formatted in three ways: an advertising (aspirational) message, an infomercial, and a direct experience. The researchers hypothesized that the level of credibility gained by viewing or experiencing these three different formats would follow a continuum from low credibility (advertising message), to medium credibility (infomercial) to the highest credibility (direct product experience). Presumably, direct experience would have the highest level of credibility because people tend to believe and remember more what they do than what they see. The results support what we would predict with NeuroMap. The superiority of infomercials over regular television ads was striking. In fact, infomercials' scores placed them very close to the direct experience format. Furthermore, the more infomercials used contrast between the pain of the products they solved and the solution, the more effective they were. The contrastable stimulus acts as a catalyst for consumer decisions, and if the success stories shared are credible, it pushes the primal brain to decide in seconds.

Applying Contrastable to Persuasive Messages?

There are easy and practical ways to make your message more contrastable: increase the saliency or prominence of your benefits and compare them against other brands or, if you don't have competition, compare them to the losses of not buying your solution at all.

Find the Salient Benefits of Your Solution. The primal brain will not accept the burden of making complicated decisions. Too often, sales messages spew a list of reasons that customers should consider a solution. However, these reasons do little to motivate the primal brain to commit the energy required to consider them all. Therefore, you need to distill a limited number of benefits, and then demonstrate that no other brand or company can deliver a solution that is as unique and as effective as yours. Later in this book, we will elaborate further on how you can find your claims. Claims represent the compact list of the top benefits you offer. They can accelerate the decision and create contrastable situations that make immediate sense for the primal brain. Typically, claims will provide direct solutions to pains and grab attention to make your message completely relevant to an urgent threat or risk that your audience faces. Once you magnify a pain and show how your solution can solve it, customers will beg to buy your solution. As David Ogilvy famously suggested, selling is easy: “Just light a fire under people's chairs, and then present the extinguisher!”

Compare Your Solution to a Competitor. Contrasting your product or solution with that of a competitor is a good strategy. “Before and after” stories can do that as well. Show the life of one of your customers before they own your product or solution – it should be painful to see! – and then show the relief of their pain as the contrast. This scenario is the typical story that you see in an infomercial and for a good reason: it works!

The Neuroscience of Contrastable

For contrastable, we tested the following research question:

By comparing two products, two services or two situations, can we raise the persuasive impact on the primal brain?

We used the following advertising stimuli to test our hypothesis:

- Video advertisement for a dental discount card

One ad featured customers of a dental-care plan but did not show any form of contrast between “before” becoming a member and “after.”

One ad featured a short story of two people who had to face the urgent need for dental care. One had a discount plan, the other did not.

- Weight-Loss-Supplement Print Ads

Two ads featured a man who lost 39 pounds using a leading weight loss supplement.

- The first ad showed a man who had already lost the weight and showed the product.
- The second ad showed a man who had lost the weight but also showed a picture of him before he lost weight.

The results supported our hypothesis:

- For the dental discount card ads, the ad featuring the contrast between before and after scored much higher on the primal brain than the other ad (+119% on the NeuroMap score)
- For the weight loss supplement ads, using a contrastable picture drew 38% more attention than the other one. It also produced less distraction and less cognitive effort.

Contrastable Neuroinsights: By making your ads more contrastable, you can

raise the impact on the primal brain. Using contrast will also reduce cognitive effort by easing the choice customers need to make.

What to Remember About Contrastable

- Despite what we say, we do not like multiple buying options because it overwhelms our primal inclination to decide quickly and to do so with the least amount of brain energy.
- Comparing two situations makes decisions easy for the primal brain.
- Rather than stating: “Choose us because we are one of the leading companies in the XYZ industry,” highlight only a few unique benefits (claims).
- Contrast stories of before and after, or your brand against the competition, to help your customers decide.

TANGIBLE

“It is hard to explain just how a single sight of a tangible object with measurable dimensions could so shake and change a man.”

– H. P. Lovecraft, American author



Making something *tangible* means to achieve simplicity and minimize the cognitive energy necessary to process your message. The primal brain does not have the cognitive resources offered by the rational brain, yet it dominates the initial review process of any persuasive message.

Our Brain Is Green

The brain conserves energy all the time. You are looking at an organ that's only about three pounds – 2% of your body mass. However, it requires 20% of our entire energy to run properly, more than any other organ in the human body. Two thirds of that energy is used to fuel electrical impulses, and the remaining third is to perform cell-health maintenance. At rest, our bodies consume about

1,300 calories per day of which the brain burns about 260 calories. Interestingly, the stomach is second in energy consumption. Indeed, we use 10% of our energy to digest, absorb, metabolize, and eliminate food. Why do you think there is such dynamic tension between the brain and the stomach right after lunch? That is why it is not recommended that you try to close a deal while people are still chewing on their food! There is a fierce competition between the brain and the stomach for precious energy.

So, the quality of making things tangible is the quality of serving information to the brain that does not require much mental effort. We welcome speed and simplicity because we welcome the opportunity to not waste cognitive energy. Let's simply reflect on one idiom that says it all: *paying attention*. What does this expression imply? That you are asking people to “spend something,” which is effectively brain energy. The reason we are so bad about consciously controlling our attention is that the primal brain is the guardian of that spending. Before you can even think of selling anything, you must sell the value of using your audience's energy to process your message.

When was the last time you were attending a workshop and found yourself thinking, “I wish this were harder on my brain?” It does not happen. The teachers we loved are those that made it easy and fun for us to comprehend their message. The same is true for your persuasive messages. Your audience is not prepared to read or hear all your explanations. You must take the burden of making your message crisp and simple so that they will know within seconds there is not a better option or a better decision than the one suggested by your message.

EEG data measures how much messages create cognitive effort. We do that by recording and analyzing brain waves, especially in the frontal lobes, where we control our concentration and use our working memory. Irrespective of how smart research subjects are, we always find that they do not enjoy exerting cognitive effort when processing advertising messages. Nobody will ever complain that your message is too easy to understand. On the contrary, people will stop paying attention if your message is too abstract, or too intangible. If you sell a physical product, arguably it might be easier to get people's attention from the primal brain, because that product has a physical form. It is real, concrete. However, if you sell software or a financial service, clearly you have a much bigger challenge to make it tangible.

Since our primal brain is biased to make quick decisions, we avoid complexity all the time. For instance, a 2012 study from Google and the University of Basel

demonstrated that web visitors judge the aesthetic beauty and the perceived functionality of a website in about 50 milliseconds [88]. That is less time than it takes to snap your fingers or trigger a smile. First impressions are formed in the primal brain. Speed is inversely related to complexity. The research on the neurobiological basis of first impressions is rather scant. Aesthetic perception is an arduous process to understand and testing messages that have different aesthetic styles is tricky. Most of the media research on the subject comes from web analytics collected from websites that have varying degrees of complexity. However, a study confirmed that web pages of moderate complexity receive more favorable consumer responses [89]. Another one further established that web pages that are perceived as visually complex produced negative arousal and increased facial tension [90].

The Power of Cognitive Fluency

The value of making your message more tangible is supported by the study of how much we enjoy *cognitive fluency*. Cognitive fluency is the subjective experience of ease or difficulty to complete a mental task. It is a well-researched bias that explains how much we favor processing information that is easy to understand. For example, we prefer people whose names are easier to pronounce than others [91]. Also, we remember better what is easier to learn [92]. Shares in companies that have easy-to-pronounce names tend to outperform others. The fluency of many cognitive processes is “pre-assessed” by the primal brain. Anything that appears complicated within the first few milliseconds is likely to be rejected by the rest of the brain. For instance, whenever I talk about our persuasion model, I hold a brain in my hand to establish that I am passionate about the topic. Doing so increases people's attention and reinforces the perception that I am competent to talk about neuroscience! More importantly, it makes the SalesBrain model easier to understand because I am not just relying on words to explain it. It makes a complex topic more cognitively fluent.

In fact, using less energy to comprehend anything may be the ultimate expression of the brain's intelligence according to a fascinating study examining how much energy chess players consume [93]. Using an EEG to study the patterns of neuronal activity while playing a game, expert chess players were compared with beginners, and the results were very surprising. Master players had lower brain activation, and therefore displayed more neural efficiency than beginners. Experts use less brain energy than a novice. They also perform many tasks subconsciously [94]. Some scholars suggest that this study may unveil the neurobiological basis of intelligence. By that, they mean that intelligence may

well be the ability of the brain to minimize the amount of brain energy used for a particular task.

Applying Tangible to Persuasive Messages

There are three effective ways to make your messages instantly more tangible:

1. Use analogies and metaphors as shortcuts that help people grasp the essence of what you communicate.
2. Use familiar terms, patterns, and situations when you explain. We learn best by pointing to what we already know.
3. Remove abstraction by providing concrete evidence to prove what you say.

The Neuroscience of Tangible

For tangible, we tested the following research question: *Can concrete evidence create more persuasive impact on the primal brain and reduce cognitive effort on the rational brain?*

We used the following advertising stimuli to test our hypothesis:

- Dental discount-card video ads

One ad featured customers of a dental care plan without showing real customers as tangible evidence that the service was as good as the ad suggested.

One ad featured several video testimonials of the dental care plan customers.

- Duct tape billboards

One ad featured the product and one unproven claim: “It holds.”

Another ad featured the tape as if it was holding a billboard together.

The results supported our hypothesis:

- The ad for the dental discount card featuring the testimonials produced a primal brain score 10 times higher than the basic ad, which did not include tangible evidence from customers.
- The billboard demonstrating the value of the duct tape received a primal brain score that was twice the score of the billboard demonstrating nothing concrete about how strongly the tape could hold.

Tangible Neuroinsights: By making your ads more tangible, you will create more impact on the primal brain and reduce cognitive effort on the rational brain.

What to Remember About Tangible

- The primal brain is the guardian of our cognitive energy.
- Don't expect messages that create cognitive effort to persuade.
- Making a message complicated is easy but achieving cognitive fluency is difficult.
- You need to work hard to create a simple, yet persuasive message.

MEMORABLE



“I'm trying to make sure that there's comedy as well as sadness. It makes the sadness more memorable.”

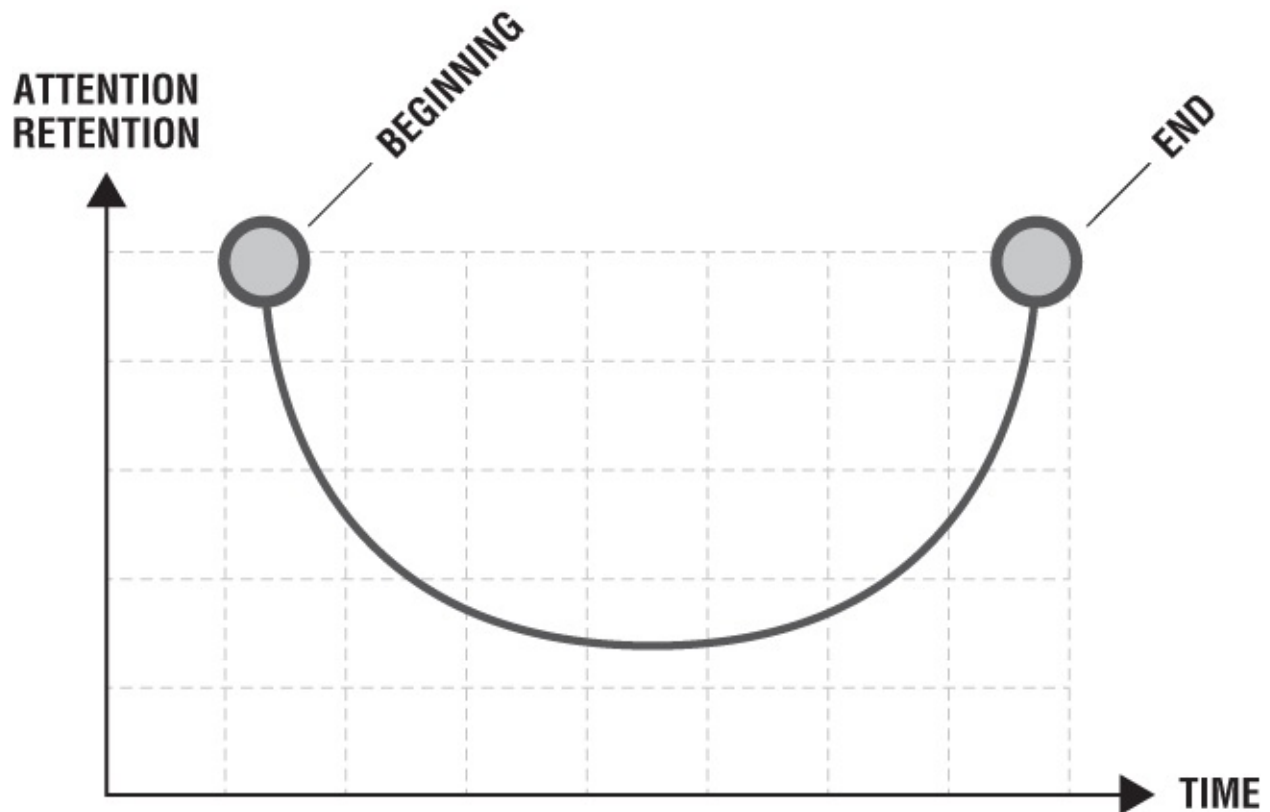
– Rick Moody, American novelist

Memory, or how information is encoded, is a complicated function of the brain. First, it is largely distributed across many brain areas, some located in the primal brain (hippocampus, amygdala), but also in newer cortical areas like the temporal lobes or the prefrontal lobes. A full discussion on memory is beyond the scope of this book but discussing short-term memory and how you can improve your ability to impress upon your audience to make your messages more memorable is extremely important.

The U-shape Curve of Memorable

First, the effect of a message on our short-term memory is very much like a U-shape curve. For example, do you remember your first car? We all typically do. Do you remember your last car? Not that difficult either. However, do you

remember your fourth car? Not that easy! Discovered more than 60 years ago and proven by countless studies, the U-shape curve effect is also known as the *recency and primacy effect*. We tend to remember the first occurrence (primacy) of an event and the last occurrence of an event (recency), but we forget what happened in between (see [Figure 4.5](#)).



[Figure 4.5](#) Beginning and end effect.

Psychologists have shown that the primacy effect plays not only a role in the recall but also in decision making. For instance, the result of the reward we receive for a first experience greatly influences our subsequent behavior, a phenomenon called *outcome primacy* [95]. Thus, beginning and end points are important aspects of what happens with a message over time. It is because we have a unique – yet fragile – ability to remember. Therefore, the introduction of your message and its conclusion represent special opportunities to amplify the effectiveness of your story. You cannot afford to talk as much about your business, your mission statement, your products, and your services at the onset of your presentation or advertisement, because this part of your story is of *no interest* to the primal brain ([Figure 4.6](#)). Additionally, explaining your value from your perspective will inflict undue effort on your audience's brains. By communicating too much about your technology, your people, your products,

you are on a mission to fail.

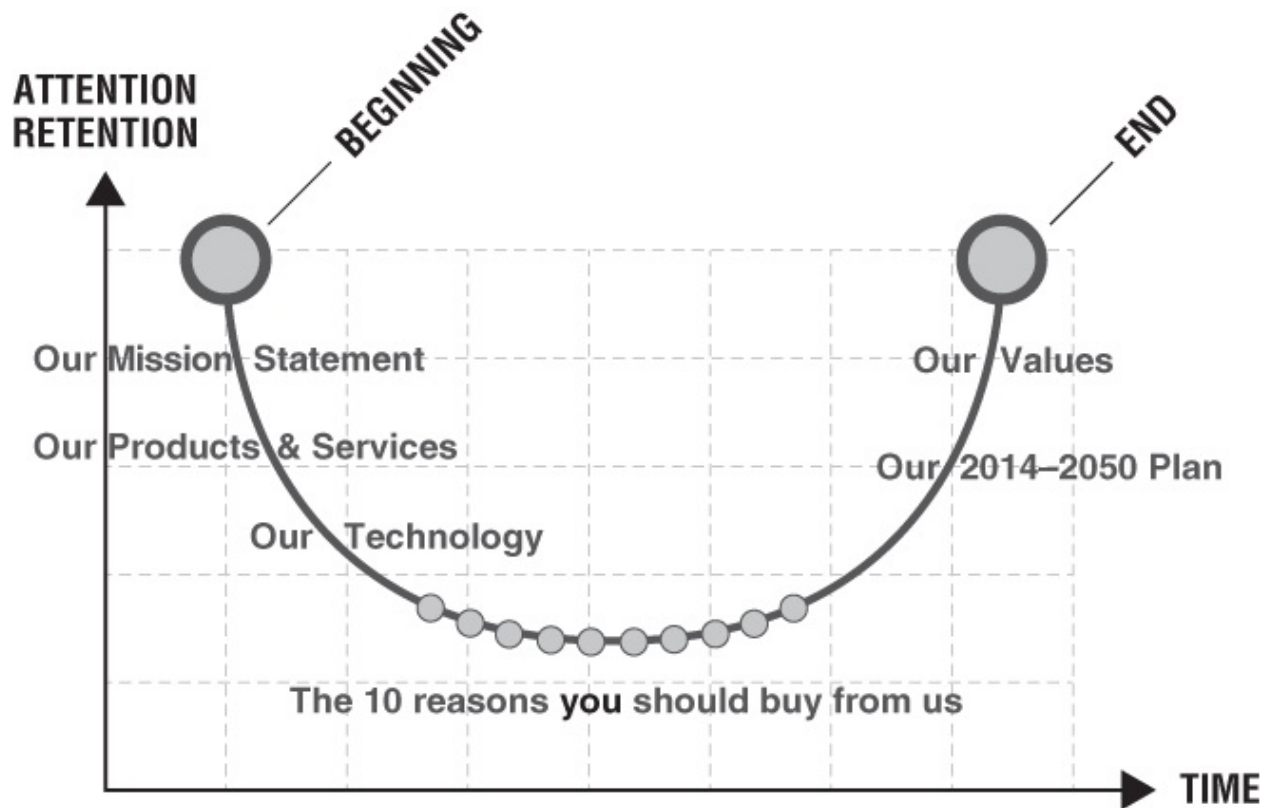


Figure 4.6 Spraying reasons to buy.

The Neuroscience of Message Recall

Message recall is the ability to retrieve and report information that has been presented to you for a few milliseconds, seconds, or minutes. There are three subsystems involved in this process:

1. Sensory memory, defined as the retention of information by your sensory structures
2. Short-term memory
3. Working memory

Sensory Memory. Our senses can store information for a very short period. For the auditory sense, it is called *echoic* memory. For vision, it is referred to as *iconic* memory.

Physiological recordings allow researchers to measure the trace of sounds in our brain. Echoic memory is critically influenced by the saliency of sounds we hear. For instance, a scream will tend to be remembered more than a whisper. Also,

emotion is likely to influence how much we remember what we just heard. Indeed, we may retain entire sentences when our attention is heightened by a strong emotional response. This can help us retrieve several seconds of auditory information. On the other hand, our immediate recollection of visual stimuli is very poor. Estimates coming from visual studies suggest that we typically recall between 300 and 500 milliseconds of visual information we have just received. So, although both echoic and iconic memories are only able to hold information for a very short period, these forms of memory *can* store much more information we may not be able to recall consciously. Therefore, building a strong emotional beginning, especially re-enacting a pain is critical. And finishing with a strong emotional “close” in your message is very important. Both techniques will be further developed in [Chapter 8](#), Deliver to the Primal Brain.

Short-Term Memory. Compared to sensory memory, *short-term memory* can retain seconds and minutes from any interaction. It has long been proposed that short-term memory is directly dependent on the stimulation of sensory memory first [96]. In other words, short-term memory does not work well unless our senses have engaged in the recording of tiny fractions of our experiences. Meanwhile, long-term memory is also highly dependent on short-term memory, confirming that memorization is a complex process, distributed in multiple areas of the brain, but organized at its core by the primal brain.

In the 1950s, many psychologists were investigating how much we could effectively store in our short-term memory. Studies from George Miller [97] initially suggested that no matter what information people were asked to remember (digits, words), the number of items that they could easily remember was around seven. However, there was a critical flaw in this conclusion. Although some information can be classified as “bits” – elementary pieces of information – other types of information represent groups of bits, commonly labeled “chunks or packets.” Using chunks makes us more efficient than remembering bits. For instance, we can easily remember a word of 13 letters, like “neuromarketing.” However, whereas some of the chunks (like words) may pass on to long-term memory, a large majority won't. In fact, recent research suggests that long-term memory may not be as dependent on short-term memory as once thought. Instead, long-term memory may be critically influenced by sensory memory. This further suggests that using seven reasons (or more) to influence your customers is not optimized for their short-term memory. On the contrary, it confirms that your first goal should be to strongly activate their sensory memories. To achieve that, you cannot exceed three chunks of information (typically three words) to describe your value proposition – that is,

your *claims* – and you need to make them visual, the dominant sense in the brain!

Working Memory. The concept of *working memory* is critical to how you can make your message more memorable. Working memory holds information in our brains for a short period (short-term memory), and transforms the information to guide a decision, a thought, or a movement. Working memory can be stimulated by input coming from your senses (the ringing of your alarm clock), or from your long-term memory (retrieving the address of the restaurant where you are meeting a friend). As you realize by now, the whole point of presenting a persuasive message is to make sure it is easy for people's brains to manipulate the information they receive. Therefore, your ability to persuade is completely dependent on the activation of your audience's working memory. Studies prove that the frontal lobes are extensively involved in activating the process by which we hold and manipulate short-term information we receive. And SalesBrain's research shows that only messages that engage the primal brain first are successfully processed by our working memory.

Applying Memorable to Persuasive Messages

- To make your message memorable, create a narrative that will have limited and short attention dips.
- Narratives that work on the brain grab attention at the beginning and the end of each segment.

The Neuroscience of Memorable

For memorable, we tested the following research question: *Can concrete evidence create more persuasive impact on the primal brain and reduce cognitive effort on the rational brain?*

We used the advertising stimuli shown in [Figure 4.7](#) to test the hypothesis that the beginning and end of an event matter more than the middle. We presented a list of 10 words to our subjects and we measured their recall after 20 seconds. We use words that are known to be influential words. The data does confirm the U-shape curve of recall.

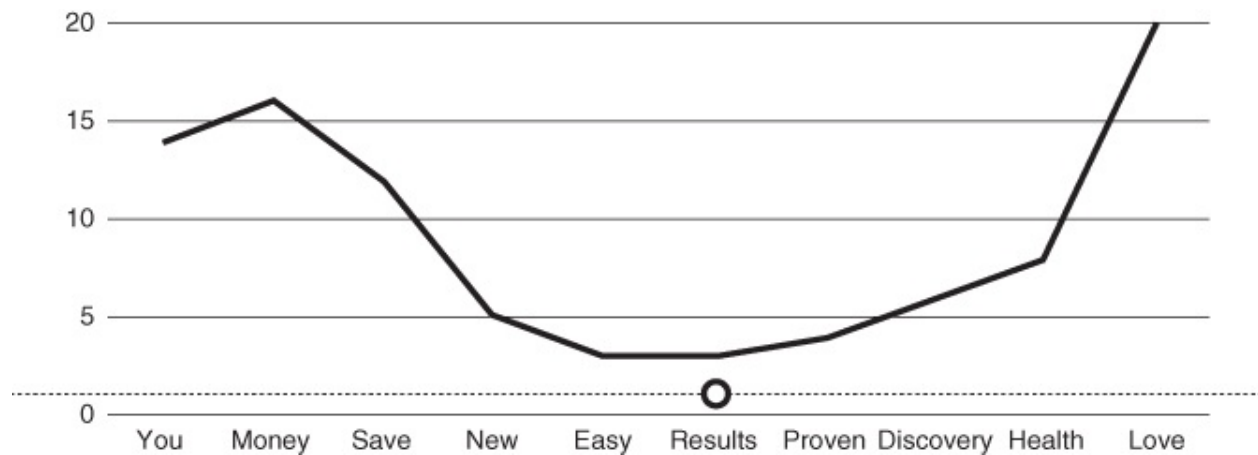


Figure 4.7 Beginning and end recall.

Memorable Neuroinsights: Recognize that memorization is a complicated process for the brain. Make sure what you say is easy to retain and put a special emphasis at the beginning and the end of your message.

What to Remember About Memorable

- We are wired to remember basic information to guide our short-term actions.
- Message recall is affected by sensory memory, which further influences both short-term and working memory. Both are critical systems that make encoding fragile.
- The primal brain needs a solid narrative structure with a strong beginning and strong end to create attention and retention.
- Messages imprint better in the brain if they focus on the pain first.

VISUAL



“Dialogue should simply be a sound among other sounds, just something that comes out of the mouths of people whose eyes tell the story in visual terms.”

– *Alfred Hitchcock, Filmmaker*

When we conduct a neuromarketing experiment, data we collect from the visual system gives us crucial information on the effectiveness of persuasive messages. Why? Because the visual sense is the dominant channel through which we perceive the world around us.

The Visual Sense Is Dominant

Nearly 30% of the neurons in the brain are visual neurons. Researchers have confirmed for decades that the visual sense dominates other sensory processing systems. This phenomenon is commonly referred to as the Colavita effect [98], named after a researcher who was able to prove the superiority and speed of visual processing over auditory processing when subjects were asked to consider bimodal stimuli. In a recent study, researchers examined the neurophysiological correlates of visual dominance using EEG and confirmed the Colavita effect in multisensory competition [99]. They found that irrespective of the intensity of a stimulus, its type, its position (before or after audio, for example), the demands on attention, and arousal, the subjects committed more energy to the visual sense than any other sense. What is interesting about this research is that auditory stimuli tend to accelerate visual responses, suggesting that the brain looks for other sensory inputs to enhance visual processing. Also, while the visual sense is the fastest to engage, it has a longer processing cycle than auditory information.

The visual system is activated when we see and imagine while being conscious or unconscious (includes dream activity). Most persuasive messages rely on the direct delivery of visual information, which is typically processed by our eyes first. Eyes are sensors that convert photon particles (light), into information that the brain can understand – that is, electrochemical signals. These signals travel along the optic nerve, through the optic chiasm, and enter the brain first in the brainstem. From there, visual data travels to reach neurons that are located at the back of the brain in the occipital lobe, also called the *visual cortex*. There are over 30 columns of neurons responsible for processing color, motion, texture, patterns, and so forth. They are organized in visual areas that attend to basic information first, and more complicated interpretation next. However, what's really important, and rarely discussed in textbooks or research papers, is that before all this visual information goes to the back of the brain, some of it is processed by the primal brain ahead of the visual cortex [100]. Indeed, the first point of connection of the optic tract is in the brainstem. The brainstem houses critical visual stations – namely, the lateral geniculate nucleus and the superior