

WHY WE EAT MORE
THAN WE THINK

Mindless
EATING

"Brian Wansink's discoveries might very well
change your life."—O, *The Oprah Magazine*

BRIAN WANSINK, PH.D.



Mindless Eating

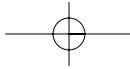
Why We Eat More
Than We Think



Brian Wansink, Ph.D.

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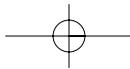
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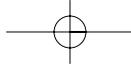
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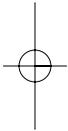




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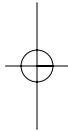


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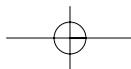
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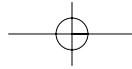
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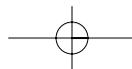
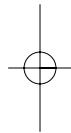
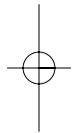
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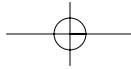
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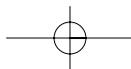
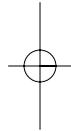
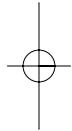
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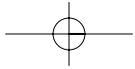
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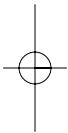
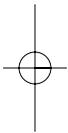


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Introduction: The Science of Snacking

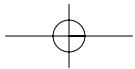


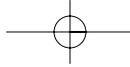
EVERYONE—EVERY SINGLE ONE of us—eats how much we eat largely because of what’s around us. We overeat not because of hunger but because of family and friends, packages and plates, names and numbers, labels and lights, colors and candles, shapes and smells, distractions and distances, cupboards and containers. This list is almost as endless as it’s invisible.

Invisible?

Most of us are blissfully unaware of what influences how much we eat. This book focuses on dozens of studies involving thousands of people, who—like most of us—believe that how much they eat is mainly determined by how hungry they are, how much they like the food, and what mood they’re in. We all think we’re too smart to be tricked by packages, lighting, or plates. We might acknowledge that *others* could be tricked, but not us. That is what makes mindless eating so dangerous. We are almost never aware that it is happening to us.

My lab’s research has shown that the average person makes well over 200 decisions about food every day.¹ Breakfast or



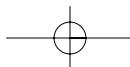
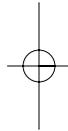
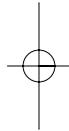


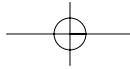
no breakfast? Pop-Tart or bagel? Part of it or all of it? Kitchen or car? Every time we pass a candy dish or open up our desk and see a piece of gum or a PowerBar from 1997 we make a food decision. Yet out of these 200-plus food decisions, most we cannot really explain.

But what if we could? If we knew why we ate the way we do, we could eat a little less, eat a little healthier, and enjoy it a lot more. This is why when it comes to what we eat, lots of people are interested. Getting people to eat healthy foods in the right amounts is of interest to dietitians, calorie counters, and physicians, but also to brand managers, parents, and even governments. It's also of interest to the U.S. Army, *Better Homes and Gardens*, and whoever's making your dinner tonight.

Since founding the Food and Brand Lab in 1997, I have designed and conducted over 250 studies, written over 100 academic articles, and made over 200 research presentations to governments and governors, to top universities and companies, to culinary institutes and research institutes, and I have presented my research results on every continent but Antarctica. Many of the studies in this book have been reported on the front pages of the *Wall Street Journal* and in the *New York Times* and *USA Today*. They have also been reported in the *National Enquirer*, *Annals of Improbable Research*, and *Uncle John's Bathroom Reader*. They've been featured multiple times on *20/20*, the BBC, and other network TV shows, and they've been bantered about by Rush Limbaugh and berated by Dr. Laura.

I'm on a mindless-eating mission. Still, I'm never sure what to say when someone asks how I first became interested in food, psychology, and marketing. I usually say, "I





really liked Vance Packard's 1957 book, *The Hidden Persuaders*, because he tried to show how advertising unconsciously influences us. I think this also happens when we eat, except the hidden persuaders are the way we set up our tables, our kitchens, and our routines."

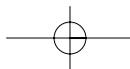
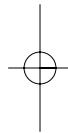
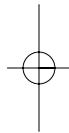
While that's true, it's not the whole truth.

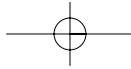
MY BOYHOOD SUMMERS WERE spent with my brother and cousins on my uncle and aunt's 138-acre farm near Correctionville, Iowa. The highlight of the end of every summer was the day Aunt Grace and Uncle Lester took us to town to see a movie, followed by a stop at a place I remember as the Dairy Freeze.

But in 1968, grain prices were low. When I innocently asked Uncle Lester why we weren't seeing a movie that year, he summarized the state of agricultural economics in seven words, "We would if people ate more corn." To an 8-year-old, this pretty much translated into "If I ever hope to see a movie again, I'd better think of a way to get people to eat more vegetables."

Fast-forward to 1984.

With a newly minted master's degree in communication research, I was working on a consulting project for *Better Homes and Gardens (BH&G)*. One day, the director of editorial research, the late Ray Deaton, showed me four different *BH&G* cover ideas for an issue that was being published in 10 months. All four had the same cover photo and looked identical when I first saw them from four feet away. When I moved closer, I discovered the only thing that differed: the six "cover blurbs," or teaser phrases, on the left side of the



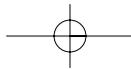


cover. Ray asked me to predict which cover would sell the most copies and why. I pointed to one and said, “I think this one will do best because it uses shorter, little phrases.” Without blinking, he said, “Your intuition just cost us over a million dollars in newsstand sales.” He went on to explain that every month *BH&G* took the best ideas for cover stories, developed four or more sample covers with a different mix of blurbs, and then asked over a thousand nonsubscribers which version they would be most likely to buy off the newsstand. With a circulation base of over 7.2 million readers, they did not use hunches and intuition. They did research so they could predict which magazine a blond, 37-year-old Wisconsin mother of two would pick up, flip through, and buy when standing in the checkout line at Safeway.

I was stunned. I was also hooked. Maybe I could learn to predict what foods people would eat—even if they themselves could not.

Within six months I had applied to a Ph.D. program in Consumer Behavior at Stanford, telling them that I wanted to do research on how to “get people to eat more vegetables.” Six eye-opening years later, I was a marketing professor at the Tuck School of Business at Dartmouth College, with a fuzzy dream of starting a food psychology lab.

A “LAB” MAY CONJURE up images of test tubes, bubbling beakers, arcing electricity, and researchers with Einstein hair. Sometimes this is close to the truth, even in food research. Consider the physics of French fries. The Argonne National Laboratory helped McDonald’s discover how to speed up the time it took to cook French fries. A team headed



by physicist Tuncer Kuzay put sensors inside frozen French fries to best determine how to deal with the steam that was created by melting ice crystals. They then designed special frying baskets that cut 30 to 40 seconds off the frying time for each batch.²

In contrast, food psychology labs typically study human behavior, and these labs look like mock living rooms, kitchens, or restaurants. Some might be rigged with one-way mirrors, camouflaged cameras, and tables that have hidden scales under the plates. Others might include a row of cramped three-foot-wide tasting booths where people can taste-test different foods without being distracted. Still others might have small soundproof rooms for in-depth interviews or larger rooms where groups are brought in to answer psychological surveys related to food.

There are dozens of psychology labs that study food either part-time or full-time. They can be found at great universities in the United States, Britain, Canada, the Netherlands, France, Germany, Finland, and elsewhere. They can be found in the U.S. Army. Some of the more secretive ones can even be found in food companies.

Each of these labs uses different methods to study how we eat. But what all the noncommercial labs have in common is that they aim at publishing their findings in the best academic journals they can. Journals like the *Journal of the American Medical Association (JAMA)*; *British Medical Journal (BJM)*; *Obesity Research*; *Journal of the American Dietetic Association*; *International Journal of Obesity*; *Journal of Consumer Research*; *Appetite*; *Journal of Marketing*; *Food Quality and Preference*; or the *Journal of Marketing Research*, to name just a few. Most of the researchers in these labs hope that what they

publish will help make people's lives better. Does it? A lot of it is pretty much ignored. But the 10 percent that does make a certifiable difference is the reason many of these researchers will never retire—even when they're no longer being paid.

In this book, I'll refer most often to four labs that have shaped the questions I see as particularly significant.³

- **The University of Illinois Hospitality Management Program.** One strength of the HM Program at the University of Illinois in Urbana-Champaign is its research restaurant, the Spice Box. This facility has been used by Jim Painter and myself to study how menus, lighting, music, wine, waitstaff, and dining companions influence how much we eat and how much we enjoy the food. It's open only one to two evenings per week, and it costs less than \$25 for an elegant, candlelit, white-tablecloth meal. This is a win-win-win situation. Diners get great meals, students get great experience, and researchers get great studies. The insights discovered there about menu design, food descriptions, food presentation, and ambience are coveted by the food industry, including leading restaurant chains. With dozens of people involved in each research project, many of these results accidentally leaked out to company newsletters and planning meetings months before they were officially published in an academic journal.
- **The Penn State Department of Nutritional Science.** This is the home of Dr. Barbara Rolls' lab, where innovative work with food formulations has shown how variety and caloric density influence how much we eat. If you've read one of the popular weight-loss books *The Volumetrics Weight-Control Plan* or *The Volumetrics Eating Plan*, you are

familiar with some of their work.⁴ The lab's food buffet has conclusively proven to the food industry that it can design profitable, lower-calorie foods that consumers love to eat.

Dr. Leann Birch's lab, also at Penn State, has done much of the most clever pioneering work on how children eat, showing—among other discoveries—that they're just as susceptible to being fooled by food tricks as adults.

- **The U.S. Army Natick Labs.** As Napoleon famously said, “An army marches on its stomach.” Food is a big part of morale in the Armed Forces, as well as a key component of physical readiness and endurance. The strength of the Army Natick Labs is in sensory evaluation, and this lab has employed or hosted about every leading expert in the field. Nearly every day of the year researchers use nine high-tech, computerized taste-testing booths to discover how foods taste differently when they're eaten in the dark, or when they're given bogus expiration dates, or when they're eaten off paper plates instead of olive drab plastic. Led for 40 years by Drs. Herbert Meiselman and Armand Cardello,⁵ the experiments in this lab helped the Army learn how foods can be developed, packaged, and served in ways that make soldiers enjoy them more—and eat them all.
- **The Cornell Food and Brand Lab.** This is my own lab, now relocated from the University of Illinois at Urbana-Champaign to Cornell University. Our focus is on the hidden persuaders around us that influence how much we eat—and how much we enjoy it.⁶

One part of the lab is connected to my office and to viewing rooms by two-way mirrors, hidden cameras, and sensors located under dinner plates. In less than three

hours we can transform the lab to look like a kitchen, or a dining room, or a living room, or a den with a big screen TV. This lets us examine how the placement of the food on the table, the size of the plates, the type of lighting, or the kind of television show people watch—among dozens of other variables—influence how fast they eat and how much they eat. We bring people into the lab for lunch, dinner, parties, or a snack and we carefully watch and measure what they do under these different conditions.

If a study shows something “works” in the lab, we next test it in “real world” settings. We’ve gone to Chicago movie theaters, New Hampshire restaurants, Massachusetts summer camps, Iowa grocery stores, Philadelphia bars, Michigan diners, San Francisco homes, and U.S. Army bases, and we have interviewed or surveyed people in nearly all of the contiguous forty-eight states. We’re looking to see if the same factors that work in the lab also influence everyday people in everyday situations.

Incidentally, all of these studies are preapproved. Today, each study planned by university researchers must be submitted to that university’s Institutional Review Board to ensure it won’t harm the participants.⁷ Why would someone participate? If they’re college students, they usually get extra credit. If they’re “real people,” they’re paid \$10–\$30, or given free food, movie tickets, and so on. Their identity is always protected—whatever they say and do is anonymous, and any record of their participation is eliminated once we analyze the data.⁸

As I mentioned, many of the larger food companies have in-house labs that typically do taste tests. That is, they pay

consumers to try a new food or a reformulated recipe, and to rate whether they like it or not. Although most of these companies are also interested in food psychology, few of them employ the specialists necessary to design subtle experiments and analyze seemingly confusing data. That's why they often come to the academic labs for help or advice.

Some labs, like ours, have a policy of not working directly for food companies. This eliminates conflicts of interest, and enables us to immediately publish our results in scientific journals and to share them with health professionals, science writers, and consumers. But because all labs need money to buy food, pay graduate students, and keep the lights on, this also means we rely on grants and gifts. We've had pieces of projects funded by consumer organizations and by grants from the Illinois attorney general, National Institutes of Health, National Science Foundation, U.S. Department of Agriculture, Council for Agricultural Research, and the National Soybean Research Center. In most years this has worked well and has provided freedom and a sense that good things were happening. In other years, I've had to cover the deficit out of my own pocket. We do the research we think is most urgent and interesting, and *then* we try to find a way to pay for it.

There are dozens of other food labs around the world, and I'll acknowledge their work as it comes up, but most of the research described here is from my own Food and Brand Lab. First, I can provide the sometimes ridiculous "color" of what happened. Second, the studies were planned to be interlocking pieces of a big story about the hidden food persuaders in our lives and how we can make mindless eating work in our favor.

Is This a Diet Book?

To those of us who love food, a diet is pretty much “die” with a “t” on the end. (In fact, “diet” comes from a Latin word which means “a way of life.”) I love a great meal. My wife graduated with honors from Le Cordon Bleu culinary school in Paris, and we both passed the first level of certification to become French-certified wine sommeliers. Yet although we end many evenings with a candlelit dinner and a full-bodied glass of wine, I start many mornings with a fast-food breakfast and a full 32-ounce Diet Coke. Reporters often seem puzzled—even semi-disapproving—with my dietary “way of life.” I love all food—the sublime, the ridiculous, the refined, and the gross. Like a parent who loves his or her children no matter how different they are, I love the *galette de crabe* at Le Bec-Fin, the Cini-minis at Burger King, and the braised duck tongue at the night market in Taipei.

This book is not about dietary extremism—just the opposite. It’s about reengineering your environment so that you can eat what you want without guilt and without gaining weight. It’s about reengineering your food life so that it is enjoyable and *mindful*.

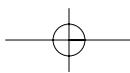
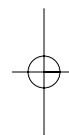
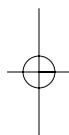
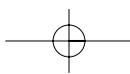
Food is a great pleasure in our life—not something we should compromise. We simply need to shift our surroundings to work *with* our lifestyle instead of *against* it. This book uncovers the hidden persuaders that lead us to overeat and shows us how to eliminate them. On the other hand, if you are running an Army food service, coaxing people to eat in a nursing home, or simply catering to fussy eaters in your home kitchen, the same research can show you how to

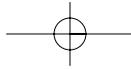
encourage them to mindlessly eat more of the healthy food that they need.

Traditional diet books focus on what dieticians and health practioners know. This book focuses on what psychologists and marketers know. There are no recipes—only scientifically based findings. Marketers already know some of what you will read, and they use it relentlessly so that you buy their hamburger instead of their competitors'. But this is not an evil conspiracy. Some of the tactics they use are the same ones your grandmother used to make sure you had a great Thanksgiving dinner, and they are ones you can use to make your next dinner party a success.

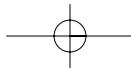
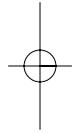
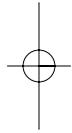
Traditional diet books lead most people to throw up their hands in frustration and deprivation and to buy another diet book that might promise a less painful way to lose weight. Instead, this book shows you how to remove the cues that cause you to overeat and how to reengineer your kitchen and your habits. You won't be a swimsuit model or a Chippendale dancer next week, but you *will* be back on course and moving in the right direction. You can eat too much without knowing it, but you can also eat less without knowing it.

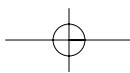
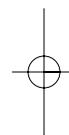
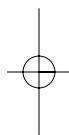
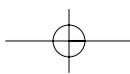
The best diet is the one you don't know you're on. Let's begin.

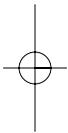
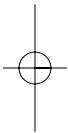
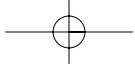




**The best diet is the one
you don't know you're on.**







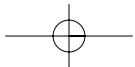
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The Mindless Margin

DID YOU EVER EAT the last piece of crusty, dried-out chocolate cake even though it tasted like chocolate-scented cardboard? Ever finish eating a bag of french fries even though they were cold, limp, and soggy? It hurts to answer questions like these.

Why do we overeat food that doesn't even taste good?

We overeat because there are signals and cues around us that tell us to eat. It's simply not in our nature to pause after every bite and contemplate whether we're full. As we eat, we unknowingly—mindlessly—look for signals or cues that we've had enough. For instance, if there's nothing remaining on the table, that's a cue that it's time to stop. If everyone else has left the table, turned off the lights, and we're sitting alone in the dark, that's another cue. For many of us, as long as there are still a few milk-soaked Froot Loops left in the bottom of the cereal bowl, there is still work to be done. It doesn't matter if we're full, and it doesn't matter if we don't even really like Froot Loops. We eat as if it is our mission to finish them.¹



Stale Popcorn and Frail Willpower

Take movie popcorn, for instance. There is no “right” amount of popcorn to eat during a movie. There are no rules of thumb or FDA guidelines. People eat however much they want depending on how hungry they are and how good it tastes. At least that’s what they say.

My graduate students and I think different. We think that the cues around us—like the size of a popcorn bucket—can provide subtle but powerful suggestions about how much one should eat. These cues can short-circuit a person’s hunger and taste signals, leading them to eat even if they’re not hungry and even if the food doesn’t taste very good.

If you were living in Chicago a few years back, you might have been our guest at a suburban theater matinee. If you lined up to see the 1:05 P.M. Saturday showing of Mel Gibson’s new action movie, *Payback*, you would have had a surprise waiting for you: a free bucket of popcorn.

Every person who bought a ticket—even though many of them had just eaten lunch—was given a soft drink and either a medium-size bucket of popcorn or a large-size, bigger-than-your-head bucket. They were told that the popcorn and soft drinks were free and that we hoped they would be willing to answer a few concession stand-related questions after the movie.

There was only one catch. This wasn’t fresh popcorn. Unknown to the moviegoers and even to my graduate students, this popcorn had been popped five days earlier and stored in sterile conditions until it was stale enough to squeak when it was eaten.

To make sure it was kept separate from the rest of the theater popcorn, it was transported to the theater in bright yellow garbage bags—the color yellow that screams “Biohazard.” The popcorn was safe to eat, but it was stale enough one moviegoer said it was like eating Styrofoam packing peanuts. Two others, forgetting they had been given it for free, asked for their money back. During the movie, people would eat a couple bites, put the bucket down, pick it up again a few minutes later and have a couple more bites, put it back down, and continue. It might not have been good enough to eat all at once, but they couldn’t leave it alone.

Both popcorn containers—medium and large—had been selected to be big enough that nobody could finish all the popcorn. And each person was given his or her own individual bucket so there would be no sharing.

As soon as the movie ended and the credits began to roll, we asked everyone to take their popcorn with them. We gave them a half-page survey (on bright biohazard-yellow paper) that asked whether they agreed to statements like “I ate too much popcorn,” by circling a number from 1 (strongly disagree) to 9 (strongly agree). As they did this, we weighed their remaining popcorn.

When the people who had been given the large buckets handed their leftover popcorn to us, we said, “Some people tonight were given medium-size buckets of popcorn, and others, like yourself, were given these large-size buckets. We have found that the average person who is given a large-size container eats more than if they are given a medium-



size container. Do you think you ate more because you had the large size?” Most disagreed. Many smugly said, “That wouldn’t happen to me,” “Things like that don’t trick me,” or “I’m pretty good at knowing when I’m full.”

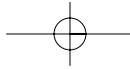
That may be what they believed, but it is not what happened.

Weighing the buckets told us that the big-bucket group ate an average of 173 more calories of popcorn. That is roughly the equivalent of 21 more dips into the bucket. Clearly the quality of food is not what led them to eat. Once these moviegoers started in on their bucket, the taste of the popcorn didn’t matter.² Even though some of them had just had lunch, people who were given the big buckets ate an average of 53 percent more than those given medium-size buckets. Give them a lot, and they eat a lot.

And this was five-day-old, stale popcorn!

We’ve run other popcorn studies, and the results were always the same, however we tweaked the details. It didn’t matter if our moviegoers were in Pennsylvania, Illinois, or Iowa, and it didn’t matter what kind of movie was showing; all of our popcorn studies led to the same conclusion. People eat more when you give them a bigger container. Period. It doesn’t matter whether the popcorn is fresh or fourteen days old, or whether they were hungry or full when they sat down for the movie.

Did people eat because they liked the popcorn? No. Did they eat because they were hungry? No. They ate because of all the cues around them—not only the size of the popcorn bucket, but also other factors I’ll discuss later, such as the distracting movie, the sound of people eating popcorn around them, and the eating scripts we take to movie theaters



with us. All of these were cues that signaled it was okay to keep on eating and eating.

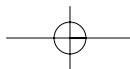
Does this mean we can avoid mindless eating simply by replacing large bowls with smaller bowls? That's one piece of the puzzle, but there are a lot more cues that can be engineered out of our lives. As you will see, these hidden persuaders can even take the form of a tasty description on a menu or a classy name on a wine bottle. Simply *thinking* that a meal will taste good can lead you to eat more. You won't even know it happened.

As Fine as North Dakota Wine

The restaurant is open only 24 nights a year and serves an inclusive prix-fixe theme dinner each night. A nice meal will cost you less than \$25, but to get it you will have to phone for reservations and be seated at either 5:30 or 7:00 sharp. Despite these drawbacks, there is often a waiting list.

Welcome to the Spice Box.³ The Spice Box looks like a restaurant; it sounds like a restaurant; and it smells like a restaurant. To the people eating there, it *is* a restaurant. To the people working there, it's a fine dining lab sponsored by the Department of Food Science and Human Nutrition at the University of Illinois at Urbana-Champaign. The Spice Box is a lab where culinary hopefuls learn whether a new recipe will fly or go down in flames. It's a lab where waitstaff discover whether a new approach will sizzle or fizzle. It's also a lab where consumer psychologists have figured out what makes a person nibble a little or inhale it all.

There is a secret and imaginary line down the middle of



the dining room in the Spice Box. On one Thursday, diners on the left side of the room might be getting a different version of the shrimp coconut jambalaya entrée than those on the right. On the next Thursday, diners on the left side will be given a menu with basic English names for the food, while those on the right will be given a menu with French-sounding names. On the Thursday after that, diners on the left side will hear each entrée described by a waiter, while those on the right will read the same descriptions off the menu. At the end of the meal, sometimes we ask the diners some short survey questions, but other times we carefully weigh how much food our guests have left on their plates. That way we don't have to rely on what they say, we can rely on what they do—which version of shrimp coconut jambalaya they polished off.

But on one dark Thursday night in the first week of February 2004, something a little more mischievous was planned for diners who braved the snow to keep their reservations. They were getting a full glass of Cabernet Sauvignon before their meal. Totally free. Compliments of the house.

This cabernet was not a fine vintage. In fact, it was a \$2 bottle sold under the brand name Charles Shaw—popularly known as Two Buck Chuck. But our diners didn't know this. In fact, all the Charles Shaw labels had been soaked off the bottles and replaced with professionally designed labels that were 100 percent fake.

Those on the left side of the room were being offered wine from the fictional Noah's Winery, a new California label. The winery's classic, italicized logo was enveloped by a simple graphic of grapes and vines. Below this, the wine

proudly announced that it was “NEW from California.” After the diners arrived and were seated, the waiter or waitress said, “Good evening and welcome to the Spice Box. As you’re deciding what you want to eat this evening, we’re offering you a complimentary glass of Cabernet Sauvignon. It’s from a new California winery called Noah’s Winery.” Each person was then poured a standard 3.8-ounce glass of wine.⁴

About an hour later, after they had finished their meal and were paying for it, we weighed the amount of wine left in each glass and the amount of the entrée left on each plate. We also had a record of when each diner had started eating and when they paid their bill and left.

Diners on the right side of the room had exactly the same dining experience—with one exception. The waiter or waitress’s carefully scripted welcome introduced a cabernet “from a new *North Dakota* winery called Noah’s Winery.” The label was identical to that on the first bottle, except for the words “NEW from North Dakota.”

There is no Bordeaux region in North Dakota, nor is there a Burgundy region, nor a Champagne region. There is, however, a Fargo region, a Bismarck region, and a Minot region. It’s just that there are no wine grapes grown in any of them. California equals wine. North Dakota equals snow or buffalo.

People who were given “North Dakota wine” believed it *was* North Dakota wine. But since it was the same wine we poured for those who thought they were getting California wine, that shouldn’t influence their taste. Should it?

It did. We knew from an earlier lab study that people



who thought they were drinking North Dakota wine had such low expectations, they rated the wine as tasting bad *and* their food as less tasty. If a California wine label can give a glowing halo to an entire meal, a North Dakota wine label casts a shadow onto everything it touches.

But our focus that particular night was whether these labels would influence *how much* our diners ate.

After the meals were over, the first thing we discovered was that both groups of people drank about the same amount of wine—all of it. This was not so surprising. It was only one glass of wine and it was a cold night. Where they differed was in how much food they ate and how long they lingered at their table.

Compared to those unlucky diners given wine with North Dakota labels, people who thought they had been given a free glass of California wine ate 11 percent more of their food—19 of the 24 even cleaned their plates. They also lingered an average of 10 minutes longer at their table (64 minutes). They stayed pretty much until the waitstaff starting dropping hints that the next seating would be starting soon.

The night was not quite as magical for those given wine with the North Dakota label. Not only did they leave more food on their plates, this probably wasn't much of a meal to remember, because it went by so fast. North Dakota wine drinkers sat down, drank, ate, paid, and were out in 55 minutes—less than an hour. For them, this was clearly not a special meal, it was just food.

Exact same meals, exact same wine. Different labels, different reactions.

Now, to a cold-eyed skeptic, there should have been no difference between the two groups. They should have eaten the same amount and enjoyed it the same.

They didn't. *They mindlessly ate.* That is, once they were given a free glass of "California" wine, they said to themselves: "This is going to be good." Once they concluded it was going to be good, their experience lined up to confirm their expectations. They no longer had to stop and think about whether the food and wine were really as good as they thought. They had already decided.

Of course, the same thing happened to the diners who were given the "North Dakota" wine. Once they saw the label, they set themselves up for disappointment. There was no halo; there was a shadow. And not only was the wine bad, the entire meal fell short.

After our studies are over, we "debrief" people—often by e-mail—and tell them what the study was about and what results we expect. For instance, with our different wine studies, we might say, "We think the average person drinking what they believe is North Dakota wine will like their meal less than those given the 'California' wine." We then ask the kicker: "Do you think you were influenced by the state's name you saw on the label?" Almost all will give the exact same answer: "No, I wasn't."

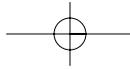
In the thousands of debriefings we've done for hundreds of studies, nearly every person who was "tricked" by the words on a label, the size of a package, the lighting in a room, or the size of a plate said, "I wasn't influenced by that."

They might acknowledge that others could be “fooled,” but they don’t think *they* were. That is what gives mindless eating so much power over us—we’re not aware it’s happening.

Even when we *do* pay close attention we are suggestible—and even when it comes to cold, hard numbers. Take the concept of anchoring. If you ask people if there are more or less than 50 calories in an apple, most will say more. When you ask them how many, the average person will say, “66.” If you had instead asked if there were more or less than 150 calories in an apple, most would say less. When you ask them how many, the average person would say, “114.” People unknowingly anchor or focus on the number they first hear and let that bias them.

A while back, I teamed up with two professor friends of mine—Steve Hoch and Bob Kent—to see if anchoring influences how much food we buy in grocery stores. We believed that grocery shoppers who saw numerical signs such as “Limit 12 Per Person” would buy much more than those who saw signs such as “No Limit Per Person.” To nail down the psychology behind this, we repeated this study in different forms, using different numbers, different promotions (like “2 for \$2” versus “1 for \$1”), and in different supermarkets and convenience stores. By the time we finished, we knew that almost *any* sign with a number promotion leads us to buy 30 to 100 percent more than we normally would.⁵

After the research was completed and published in the *Journal of Marketing Research*, another friend and I were in the checkout line at a grocery store, where I saw a sign advertising gum, “10 packs for \$2.” I was eagerly counting out 10 packs onto the conveyer belt, when my friend commented, “Didn’t you just publish a big research paper on that?”



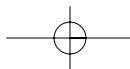
We're *all* tricked by our environment. Even if we “know it” in our head, most of the time we have way too much on our mind to remember it and act on it. That's why it's easier to change our environment than our mind.

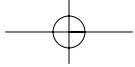
The Dieter's Dilemma

We've all heard of somebody's cousin's sister who went on a huge diet before her high school reunion, lost tons of weight, kept it off, won the lottery, and lived happily ever after. Yet we also know about 95 times as many people who started a diet and gave up in discouragement, or who started a diet, lost weight, gained more weight, and *then* gave up in discouragement.⁶ After that, they started a different diet and repeated the same depriving, discouraging, demoralizing process. Indeed, it's estimated that over 95 percent of all people who lose weight on a diet gain it back.⁷

Most diets are deprivation diets. We deprive ourselves or deny ourselves of something—carbohydrates, fat, red meat, snacks, pizza, breakfast, chocolate, and so forth. Unfortunately, deprivation diets don't work for three reasons: 1) Our body fights against them; 2) our brain fights against them; and 3) our day-to-day environment fights against them.

Millions of years of evolution have made our body too smart to fall for our little “I'm only eating salad” trick. Our body's metabolism is efficient. When it has plenty of food to burn, it turns up the furnace and burns our fat reserves faster. When it has less food to burn, it turns down the furnace and burns it more slowly and efficiently. This efficiency helped our ancestors survive famines and barren winters.



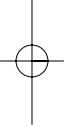


Deprivation Diets and the Academy Awards: Pounds That Are Here, Gone, and Back Again Next Week

You know how it is. One day you're mindlessly eating ice cream in front of an open freezer door and—*bam*—all of a sudden you remember you have to be at the Academy Awards ceremony in three days.

How do the movie stars lose those last-minute pounds before walking the runway at the Oscars? An article in *People* showed that what they usually do is drastic, painful—and temporary.⁸

- EMMA THOMPSON: I try not to eat sugar, and I don't eat bread and biscuits. Actually, to be frank, I really don't eat any of the things I love, which is unfortunate. But I will get back to ice cream soon, which is my favorite food.
- TARA REID: I won't eat that morning and that week I will only eat protein—egg whites and chicken. It makes a big difference. You look hot for a week, but you gain it all back the next. I also drink way more water.
- VIVICA A. FOX: I pop herbal laxatives and drink as much coffee as I can to flush everything out.
- MELISSA RIVERS: I limit my calorie intake and work out like crazy. I try to eat really clean the week prior. I always substitute one meal for just a salad with dressing on the side, and I dip my fork in the dressing.
- BILL MURRAY: I did 200,000 crunches.



Drastic? Yes. Successful? As you can see from their answers, these deprivation diets worked only as long as was absolutely necessary. Five minutes after the Academy Awards ceremony is over, it's back to the normal routine, and the 10 pounds that were lost begin to find their way home again. Unless you're not yet finished with your 200,000 crunches.



But it doesn't help today's deprived dieter. If you eat too little, the body goes into conservation mode and makes it even tougher to burn off the pounds.

This type of weight loss is not mindless. It's like pushing a boulder uphill every second of every day.

How much weight loss triggers the conservation switch? It seems that we can lose half a pound a week without triggering a metabolism slowdown.⁹ Some people may be able to lose more, but everyone can lose at least half a pound a week and still be in full-burn mode. The only problem is that this is too slow for many of us. We think weight loss has to be all or nothing. This is why so many impatient people try to lose it all and end up losing nothing.

Now for our brains. If we consciously deny ourselves something again and again, we're likely to end up craving it more and more.¹⁰

It doesn't matter whether you're deprived of affection, vacation, television, or your favorite foods. Being deprived is not a great way to enjoy life. Nevertheless, the first thing many dieters do is cut out their comfort foods. This becomes a recipe for dieting disaster, because any diet that is based on denying yourself the foods you really like is going to be really temporary. The foods we don't bite can come back to bite us. When the diet ends—either because of frustration or because of temporary success—you're back wolfing down your comfort foods with a hungry vengeance. With all that sacrificing you've been doing, there's a lot of catching up to do.

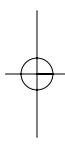
When it comes to losing weight, we can't rely only on our brain, or our "cognitive control," a.k.a. willpower. If we're making more than 200 food-related decisions each day,



The Bigger the Deprivation, the Bigger the Fall

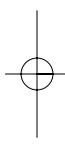
“... a nationally known psychologist and expert on eating disorders was arrested in a West Hartford, Conn., convenience store after, according to police, passing out from inhaling the aerosol from three cans of whipped cream.”

—“*News of the Weird*,” October 2005¹¹



as our research has shown, it’s almost impossible to have them all be diet-book perfect. We have millions of years of evolution and instinct telling us to eat as often as we can and to eat as much as we can. Most of us simply do not have the mental fortitude to stare at a plate of warm cookies on the table and say, “I’m not going to eat a cookie, I’m not going to eat a cookie,” and then not eat the cookie. It’s only so long before our “No, no, maybe, maybe” turns into a “Yes.”

Our bodies fight against deprivation, and our brains fight against deprivation.¹² And to make matters worse, our day-to-day environment is set up to booby-trap any half-hearted effort we can muster. There are great smells on every fast-food corner. There are warm, comfort-food feelings we get from television commercials. There are better-than-homemade-tasting 85¢ snacks in every vending machine and gas station. We have billions of dollars’ worth of marketing



giving us the perfect foods that our big hearts and big tummies desire.

Yet before we blame those evil marketers, let's look at the traps we set for ourselves. We make an extra "family-size" portion of pasta so no one goes hungry at dinner. We lovingly leave latchkey snacks on the table for our children (and ourselves). We use the nice, platter-size dinner plates that we can pile with food. We heat up a piece of apple pie in the microwave while the lonely apple shivers in the crisper. Best intentions aside, we're Public Enemy #1 when it comes to booby-trapping the diets and willpower of both ourselves and our family.

The good news is that the same levers that almost invisibly lead you to slowly gain weight can also be pushed in the other direction to just as invisibly lead you to slowly lose weight—*unknowingly*. If we don't realize we're eating a little less than we need, we don't feel deprived. If we don't feel deprived, we're less likely to backslide and find ourselves overeating to compensate for everything we've forgone. The key lies in the *mindless margin*.

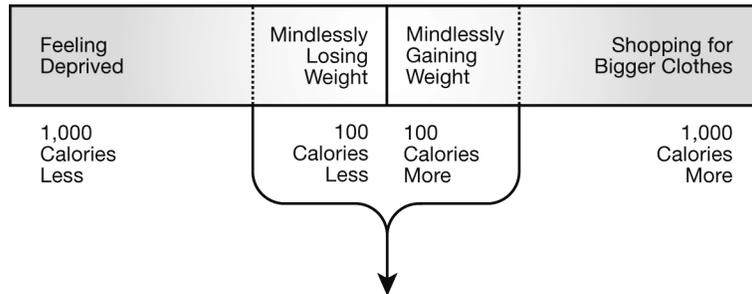
The Mindless Margin

No one goes to bed skinny and wakes up fat. Most people gain (or lose) weight so gradually they can't really figure out how it happened. They don't remember changing their eating or exercise patterns.¹³ All they remember is once being able to fit into their favorite pants without having to hold their breath and hope they can get the zipper to budge.

Sure, there are exceptions. If we gorge ourselves at the all-you-can-eat pizza buffet, then clean out the chip bowl at the Super Bowl party, then stop by the Baskin-Robbins drive-through for a belly-buster sundae on the way home, we realize we've gone too far over the top. But on most days we have very little idea whether we've eaten 50 calories too much or 50 calories too little. In fact, most of us wouldn't know if we ate 200 or 300 calories more or less than the day before.

This is the mindless margin. It's the margin or zone in which we can either slightly overeat or slightly undereat without being aware of it. Suppose you can eat 2,000 calories a day without either gaining or losing weight.¹⁴ If one day, however, you only ate 1,000 calories, you would know it. You'd feel weak, light-headed, cranky, and you'd snap at the dog. On the other hand, you'd also know it if you ate 3,000 calories. You'd feel a little heavier, slower, and more like flopping on the couch and petting the cat.

If we eat way too little, we know it. If we eat way too much, we know it. But there is a calorie range—a *mindless margin*—where we feel fine and are unaware of small differences. That is, the difference between 1,900 calories and 2,000 calories is one we cannot detect, nor can we detect the difference between 2,000 and 2,100 calories. But over the course of a year, this mindless margin would either cause us to lose ten pounds or to gain ten pounds. It takes 3,500 extra calories to equal one pound. It doesn't matter if we eat these extra 3,500 calories in one week or gradually over the entire year. They'll add up to one pound.



The Mindless Margin

This is the danger of creeping calories. Just 10 extra calories a day—one stick of Doublemint gum or three small Jelly Belly jelly beans—will make you a pound more portly one year from today.¹⁵ Only three Jelly Bellies a day.

Fortunately, the same thing happens in the opposite direction.

One colleague of mine, Cindy, had lost around 20 pounds during her first two years at a new job. When I asked how she lost the weight, she couldn't really answer. After some persistent questioning, it seemed that the only deliberate change she'd made two years earlier was to give up caffeine. She switched from coffee to herbal tea. That didn't seem to explain anything.

"Oh yeah," she said, "and because I gave up caffeine, I also stopped drinking Coke." She had been drinking about six cans a week—far from a serious habit—but the 139 calories in each Coke translated into 12 pounds a year. She wasn't even aware of why she'd lost weight. In her mind all she'd done was cut out caffeine.

In a classic article in *Science*, Drs. James O. Hill and John C. Peters suggested that cutting only 100 calories a

How Much Will I Lose in a Year?

If you make a change, there's an easy way to estimate how much weight you'll lose in a year. You simply divide the calories by 10. That's roughly the number of pounds you'll lose if you're otherwise in energy balance.

One less 270 calorie candy bar each day = 27 fewer pounds a year
One less 140 calorie soft drink each day = 14 fewer pounds a year
One less 420 calorie bagel or donut each day = 42 fewer pounds a year

The same thing works with burning calories: walking one extra mile a day is 100 calories and 10 pounds a year. Exercise is good, but for most people it's a lot easier to give up a candy bar than to walk 2.7 miles to a vending machine.

day from our diets would prevent weight gain in most of the U.S. population.¹⁶ If the majority of people gain only a pound or two each year, anything a person does to make this 100-calorie difference will lead most of us to *lose* weight. We can do it by walking an extra 2,000 steps each day (about one mile), or we can do it by eating 100 calories less than we otherwise would.

The best way to trim 100 or 200 calories a day is to do it in a way that doesn't make you feel deprived. It's easy to rearrange your kitchen and change a few eating habits so you don't have to think about eating less or differently. And the silver lining is that the same things that lead us to mindlessly gain weight can also help us mindlessly lose weight.

How much weight? Unlike what you hear in 3:00 A.M. infomercials, it would not be 10 pounds in 10 hours, or 10 pounds in 10 days. It's not even going to be 10 pounds in 10 weeks. You would notice that, and you would feel deprived. Instead, suppose you stay within the mindless margin for losing weight and trim 100–200 calories a day. You probably won't feel deprived, and in 10 months you'll be in the neighborhood of 10 pounds lighter. It won't put you in this year's *Sports Illustrated* swimsuit issue, but it might put you back in some of your "signal" clothes, and it'll make you feel better without costing you bread, pasta, and your comfort foods.

Cutting out our favorite foods is a bad idea. Cutting down on *how much* of them we eat is mindlessly do-able. Many fad diets focus more on the *types* of foods we can eat rather than *how much* we should eat. But the problem isn't that we order beef instead of a low-fat chicken breast. The problem is that the beef is often twice the size. A low-fat chicken breast that we resent having to eat may be no better for our long-term diet than a tastier but slightly smaller piece of beef.

If we're looking at only a 100- or 200-calorie difference a day, these are not calories we'll miss. We can trim them out of our day relatively easily—and unknowingly. Herein lies the secret of the mindless margin.



**“I’m Not Hungry but
I’m Going to Eat This Anyway.”**

Over coffee, a new friend commented that he’d lost 30 pounds within the past year. When I asked him how, he explained he didn’t stop eating potato chips, pizza, or ice cream. He ate anything he wanted, but if he had a craving when he wasn’t hungry he’d say—out loud—“I’m not hungry but I’m going to eat this anyway.”

Having to make that declaration—out loud—would often be enough to prevent him from mindlessly indulging. Other times, he would take a nibble but be much more mindful of what he was doing.

Reengineering Strategy #1:

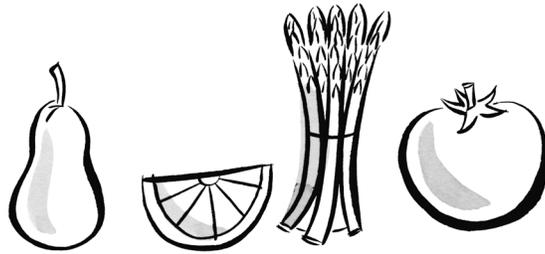
Think 20 Percent—More or Less

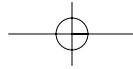
While most Americans stop eating when they’re full, those in leaner cultures stop eating when they’re no longer hungry. There’s a significant calorie gap between the point where an Okinawan says, “I’m no longer hungry,” and where an American says, “I’m full.” The Okinawans even have an expression for when to stop eating. They call the concept *hara hachi bu*—eating until you’re just 80 percent full.¹⁷

- **Think 20 percent less.** Dish out 20 percent less than you think you might want before you start to eat. You probably won’t miss it. In most of our studies, people can eat 20 percent less without noticing

it. If they eat 30 percent less they realize it, but 20 percent is still under the radar screen.

- **For fruits and vegetables, think 20 percent more.** If you cut down how much pasta you dish out by 20 percent, increase the veggies by 20 percent.

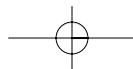
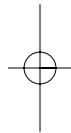
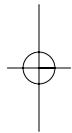




Notes

Introduction: The Science of Snacking

1. The average person initially believes they only make about 15 food-related decisions per day. See Brian Wansink and Jeffrey Sobal, “Hidden Persuaders and 200 Daily Decisions,” *Environment and Behavior* 39:1 (2007): 106–23; and Brian Wansink and Collin R. Payne, “Daily Food Decisions and Estimation Biases” (2006), under review at *Psychological Reports*.
2. See “Out of the Frying Pan, Into the Fryer,” *The Economist* 330:7486 (Jan. 15, 1994) 89, which reported how government research scientists are sometimes hired out for civilian business use.
3. The labs mentioned here are only a few of the many, but they’re the ones that influenced my thinking the most. Some labs, like those run by C. Peter Herman, Janet Polivy, and Patty Pliner at the University of Toronto have generated many foundational insights over the past 35 years. The labs of Carol Bisogni, David Levitsky, Jeffrey Sobal, Carol Devine, and Christine Olson at Cornell have challenged conventional thinking related to issues of family dining, college weight gain, and the impact of breakfast on how much we eat. Other labs, such as Kelly Brownell’s at Yale, have produced the insights related to



clinical treatment of the obese. Paul Rozin's lab at the University of Pennsylvania has given us most of our insights about food fears and neophobia. James O. Hill's Center at the University of Colorado is examining how food and exercise relate, and Dennis Bier's lab at the Baylor Medical School focuses on the use of psychology to understand childhood obesity.

4. See Barbara Rolls and Robert Barnett, *The Volumetrics Weight-Control Plan* (New York: HarperTorch, 2000) and Barbara Rolls, *The Volumetrics Eating Plan: Techniques and Recipes for Feeling Full on Fewer Calories* (New York: HarperCollins, 2005).
5. See Herbert L. Meiselman and Howard G. Schutz, "History of Food Acceptance Research in the US Army," *Appetite* 40: 3 (June 2003): 199–216.
6. We have a pro-choice mission. It's "to conduct and disseminate quality research that *helps people use food to be who they want to be.*" For some people this could involve eating less, eating more nutritiously, or eating in a way that enables them to better enjoy their food. For health professionals and companies, this means designing ideas for changes that can help them more effectively help their clients or customers use food in a productive way. For administrators involved in food aid, this means giving them ideas that help their food-distribution efforts be more effective.
7. Until a few years ago, most research in business schools, and often research that related to sensory studies and food intake, was given a general class of approval or exemption. This was given as long as the research didn't threaten the participants, and as long as they gave their consent and could quit the study at any time. Because of litigation related to medical school research, such exemptions are no longer possible.
8. Some participants enjoy being part of a pool of people who are repeatedly involved in studies. We call this the "Food Psychology Panel," and its size has fluctuated between 300 and 3,000 over the past 20 years. Unlike most of the participants

in our studies, we don't eliminate these people's contact information. At their request, we keep them "in the loop" about new studies and by sending them newsletters as to what we are learning and how they can apply this in their lives.

1. *The Mindless Margin*

1. See Brian Wansink, "Environmental Factors that Increase the Food Intake and Consumption Volume of Unknowing Consumers," *Annual Review of Nutrition* 24 (2004): 455–79.
2. On average, those given the medium-size bucket ate 61.1 grams, while those given the large bucket ate 93.5 grams. Nobody finished all of their popcorn, which had been popped in partially hydrogenated (meaning "bad" trans fats) canola oil. This study was filmed for the ABC News' *Morning Edition*. It can be viewed at www.MindlessEating.org. See Brian Wansink and SeaBum Park, "At the Movies: How External Cues and Perceived Taste Impact Consumption Volume," *Food Quality and Preference*, 12:1(January 2001): 69–74.
3. The Spice Box can be found in Bevier Hall on the campus of the University of Illinois in Urbana. It's open January through April, and reservations can be made by calling 1-217-333-6520. It now serves dinner on Tuesdays and Fridays. The article described here is: Brian Wansink, Collin Payne, and Jill North, "Fine as North Dakota Wine: Sensory Experiences and the Intake of Companion Foods," *Physiology and Behavior* 90:5 (2007), 712–16.
4. Special mega-cudos to Jill North, co-author and manager of the Fine Dining Program. After we designed the study, designed the labels, purchased the wine, and set up the experimental protocol, I was called out of the country. Instead of postponing the study, she managed to pull it off in one long evening with the help of the rest of our team.
5. See Brian Wansink, Robert J. Kent, and Stephen J. Hoch, "An

- Anchoring and Adjustment Model of Purchase Quantity Decisions," *Journal of Marketing Research* 35:1 (February 1998): 71–81.
6. The speed at which you gain weight after going off a diet is almost always directly related to the speed you lost the weight to begin with. If you miraculously lose 10 pounds in two days with the new Celebrity Fad Diet, you're likely to miraculously gain it back almost as fast.
 7. See Maureen T. McGuire, Rena R. Wing, Mary L. Klem, and James O. Hill, "What Predicts Weight Regain in a Group of Successful Weight Losers?" *Journal of Consulting and Clinical Psychology* 67:2 (1999): 177–85.
 8. Quotations were adapted from "Last-Minute Diet Secrets," *People* (March 16, 2004): 122–25.
 9. This conclusion is from a series of studies alluded to in David A. Levitsky, "The Non-Regulation of Food Intake in Humans: Hope for Reversing the Epidemic of Obesity," *Physiology & Behavior* 86:5 (December 2005): 623–32.
 10. Much of the best work on restrained eaters has been conducted by Janet Polivy and C. Peter Herman. A typical example of this is Janet Polivy, J. Coleman, and C. Peter Herman, "The Effect of Deprivation on Food Cravings and Eating Behavior in Restrained and Unrestrained Eaters," *International Journal of Eating Disorders* 38:4 (December 2005): 301–09.
 11. This syndicated column was widely reprinted with the name of the nationally known psychologist. It was taken from "News of the Weird," *Funny Times* (October 2005): 25.
 12. The best current thinking on this is being done by Roy Baumeister. See Roy F. Baumeister, "Yielding to Temptation: Self-Control Failure, Impulsive Purchasing, and Consumer Behavior," *Journal of Consumer Research* 28:4 (2002): 670–76. Other research includes that by Erica M. Okada, "Justification Effects on Consumer Choice of Hedonic and Utilitarian Goods," *Journal of Marketing Research* 42:1 (2005): 43–53; and by Baba Shiv and Alexander Fedorikhin, "Heart and Mind in

Conflict: The Interplay of Affect and Cognition in Consumer Decision Making,” *Journal of Consumer Research* 26 (December 1999): 278–92.

13. N. E. Sherwood, Robert W. Jeffrey, Simone French, et al., “Predictors of Weight Gain in the Pound of Prevention Study,” *International Journal of Obesity* 24:4 (April 2000): 395–403.
14. If you burn off the same number of calories each day as you eat, you are “in energy balance.” The exact number of calories you need to be in energy balance varies depending on your weight and how much you move during the day. Smaller adults burn fewer calories a day than larger adults; active people more than inactive people.
15. A pound is roughly equivalent to 3,500 calories. Eating three Jelly Belly jelly beans a day (12 calories) would lead to 4,380 calories over the year. Similarly, drinking one can of Coca-Cola (139 calories) each day would amount to 101,470 calories—29 pounds—over a two-year period.
16. See James O. Hill and John C. Peters, “Environmental Contributions to the Obesity Epidemic,” *Science*, 280 (5368): 1371–74.
17. See Bradley J. Willcox, M.D., D. Craig Willcox, Ph.D., and Makoto Suzuki, M.D., *The Okinawa Program* (New York: Clarkson Potter, 2001).

2. *The Forgotten Food*

1. People generally thought they ate about 28 percent less than they actually did. See Brian Wansink and Lawrence W. Linder, “Interactions Between Forms of Fat Consumption and Restaurant Bread Consumption,” *International Journal of Obesity* 27:7 (2003): 866–68.
2. Two excellent research projects addressing this are David A. Booth and Richard P. J. Freeman, “Are Calories Attributed or