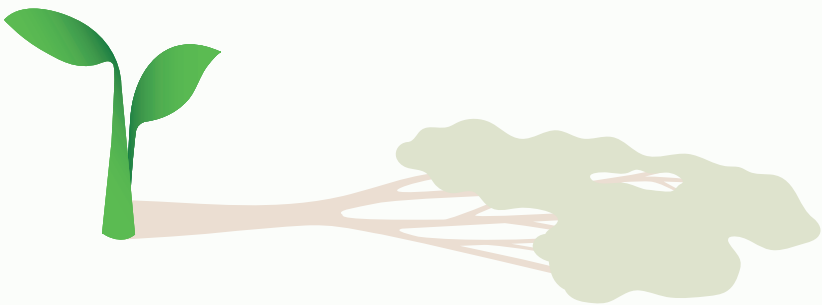
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The Science *of* Motivating Young People



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For Margot, my spouse and best friend

For Susan and Scott, my parents

And for the fun and hilarious Yeager kids,
Scarlett, Tripp, Jack, and Ronan

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Introduction

It seems like everywhere you turn, you hear older adults—Gen Xers, millennials, and boomers—describing *young people today* in dark and despairing terms. In my eighteen years as a developmental scientist, and thirteen years as a parent, I've heard it in the bleachers at my kids' games, in the boardrooms of major corporations I've consulted for, and by the watercoolers at schools I've visited. *They just don't care. They speak a different language. They're entitled. They're too sensitive.* But imagine a world in which older adults interact with young people, aged ten to twenty-five, in ways that reliably leave the next generation feeling inspired, enthusiastic, and ready to contribute—rather than disengaged, outraged, worried, or overwhelmed.

In this world, managers' work will be easier because their younger employees will be motivated and self-sufficient. Parents will be happier because they won't have to dread their children turning into teenagers. Educators will feel more successful and less burned-out because they can reach a stressed-out or disengaged generation of young people. And all the rest of us will be able to bridge the divide between the generations with confidence and without starting a war of words.

I've seen this world in the lives of great managers, parents, educators, and coaches. I've studied what they do and how they talk. I've used the scientific method—hypothesis, experiment, data, results—to understand why they're effective. I wrote this book because I want to share the secrets I've learned. This book is for anyone who wants to experience this better world firsthand in their interactions with young people aged ten to twenty-five. It shows how to stop clashing with the next generation and start inspiring them.

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The idea for this book grew out of a simple observation I made about

a decade ago: many beloved programs to promote youth health and well-being were shockingly ineffective. For example, in the mid-1980s, the U.S. federal government launched the "Just Say No" campaign encouraging young people to "just say no" when they were offered cigarettes, drugs, or alcohol. Not only did the campaign fail to curb teenagers' substance abuse, but studies found it *increased* the appeal of smoking and other drugs. Next, the government tried the Drug Abuse Resistance Education (D.A.R.E.) program. Uniformed police officers visited classrooms to communicate a zero-tolerance policy toward all illicit substances. D.A.R.E. officers lectured students and handed out freebies, such as neon pens, fanny packs, bumper stickers, and T-shirts. At the program's height, 75 percent of school districts in the United States were using it. The problem? It didn't work either. Some studies found that the D.A.R.E. program made students *more* likely to use drugs. In 2007, the Association for Psychological Science warned that D.A.R.E. was on a list of youth programs with the potential to cause harm. That hasn't stopped D.A.R.E. from continuing to be used in the majority of schools in the United States—including my own kids' schools.

The more I dug into the research literature, the more I saw a similar story. I looked at attempts to reduce bullying or teen obesity, programs to improve youth mental health, or efforts to promote healthier social media use. Programs touted by experts rarely yielded benefits. Interestingly, the same or similar programs were often effective with younger children. I became obsessed with a question: Why does our ability to positively influence the trajectories of the young suddenly disappear the moment puberty strikes?

It wasn't just a problem with formal programs. I learned that hardly anyone—managers, parents, educators, coaches—felt like they knew the right thing to say to a young person when it really counted. Young people were a mystery. Unfortunately, the advice most people got didn't help. People told me they felt ineffective, hopeless, or even angry. That obvious and palpable frustration made young people even less inclined to listen. Around the world, this cycle repeated itself over and over, leaving youth and adults exhausted. Two short stories illustrate this point.

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The Mentor's Dilemma

One day, I was having coffee in San Francisco with an old friend, Dr. Alex Sweeney. He's a tall, handsome surgeon. The kind of person others listen to, which has been the case since his days as a high school and college quarterback. After he graduated from one of the country's top medical schools, he landed a prestigious fellowship. Now, he's a professor at a top medical school, specializing in ear, nose, and throat (ENT) medicine. Alex spends a lot of his time doing cochlear implants, which restore people's hearing—literally performing biblical-style miracles. He had a problem, though, and he wanted my advice. Alex supervised medical students and residents who were in their early twenties. When they messed up, he told me, he gave them clear and direct feedback, like that they needed to do an assessment differently or ask for a second opinion. But the residents didn't seem to fix their mistakes the next time. They kept making the same errors, as though he had never said anything to them. Alex couldn't figure out why. "It's frustrating," he told me. He spent all day helping his patients *hear*, but he couldn't make his trainees *listen.*

Here's another story. When writing this book, I followed one new manager and his twenty-three-year-old direct report for a year. They worked for a well-known large fashion-accessory company. (I agreed to mask their identities.) In fashion, young people are essential because they know what's trending better than older folks. In a very real sense, the manager's success depended on the young employee having the courage to provide honest opinions. But the direct report wasn't doing that. Her manager had read every management book, subscribed to every business-school professor's Instagram feed, and listened to every podcast. The manager cared about the direct report's career. But all that conventional wisdom wasn't working. One day in a meeting with senior management, the manager threw the young employee a softball question to solicit her opinion as a member of the target demographic. She flubbed it, and senior management was unimpressed. When the pair debriefed, the manager told her that she had missed an opportunity to share her thinking and get in line for a promotion. The direct report cried. The manager felt exasperated. As it turns out, the young employee felt unfairly criticized and put on the spot, as though

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the manager didn't believe in her. She thought he was trying to make her look bad in front of the higher-ups so that he wouldn't be blamed for her failure. There was a disconnect. The manager was trying to elevate her career, but she felt publicly shamed and privately unsupported. Nobody got what they wanted. A month later, she was gone from the company.

Both Alex and the manager were trapped by the *mentor's dilemma*. This refers to the fact that it's very hard to simultaneously criticize someone's work and motivate them because criticism can crush a young person's confidence. It's a dilemma because leaders feel like they're stuck between two bad choices. They could either put up with poor performance (but be nice) or demand high performance (but be cruel). Neither option is ideal. All too often, both sides—younger and older—tend to leave these interactions frustrated or offended, even though both sides might have entered the interaction with growth in mind.

The mentor's dilemma was first discovered by Geoffrey Cohen, a social psychologist at Stanford University. Cohen was studying college professors who gave rigorous, critical feedback to undergraduates on their writing assignments or presentations. He observed a puzzling trend: students took home their first-draft essays covered in comments but handed in their second drafts with barely any changes. Cohen saw that professors were frustrated and demoralized, thinking (like Alex did with his medical residents), *I've spent all this time giving them feedback, but it was a waste. They never fixed anything. What's the point?*

Coaches face this same dilemma when players don't correct their mechanics after direct feedback, partners at law firms face this when they mark up a junior associate's legal briefs, product designers face this when critiquing junior designers' work, and every parent faces this when children ignore what they've been asked to do. In each case, a leader feels torn between being too nice and too mean. No matter what they choose, things don't go the way they had hoped.

How can the mentor's dilemma be resolved? Many people swear by the compliment sandwich. This is where you bury your criticism of a young person between two pieces of bland praise, such as: *I like your enthusiasm* (positive), *your work is subpar and needs to improve* (negative), *but thanks for having a great attitude* (positive). It's not hard to see why speakers like

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the sandwich. The two compliments provide twice as many positives as the brutally honest negative. Applying simple arithmetic, the interaction was a net positive. What's not to like?

But here's the problem. Young people don't like the sandwich. The reason why is that they aren't asking themselves if their boss, coach, parent, or teacher is a positive person. Science tells us that when young people are being critiqued by an authority figure, they're asking themselves a deeper, more existential question: *Does this person who has power over my life think I'm incompetent?* Before they can hear the criticism for what it is—helpful advice on how to better meet their goals—they have to feel safe. The compliment sandwich is an attempt to create safety, but the problem is that the compliment is about something trivial. Bland praise for something unimportant and unrelated to personal or professional success doesn't address the young person's main fear. If anything, it confirms their fear that the leader thinks they're incompetent. The leader doesn't say anything good about their work, and even worse, the leader thinks their obvious attempt to placate the young person with hollow praise will work. Listeners just latch on to the criticism and view it as a personal attack.

The fact that common ideas such as the compliment sandwich persist despite their ineffectiveness suggests that we need a systematic science of motivating young people. This book will describe rigorous experiments that have been conducted to tell the difference between common sense and nonsense.

The Wise-Feedback Study

In 2014 I published a scientific experiment with Geoffrey Cohen (and others) on a simple but effective solution to the mentor's dilemma. We called it *wise feedback.* We had instructors be critical with their feedback but accompany that criticism with a clear and transparent statement about the reason they were giving that feedback—namely that they believed the student could meet a high standard if they got the right support. So-called wise feedback is wise (or attuned) to the predicament of young people who don't want to be held to an impossible standard and who also don't want to be talked down to.

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We tested wise feedback in an experiment with middle school students in social studies classrooms. The seventh-grade students wrote first drafts of five-paragraph essays about their personal heroes. Next, teachers covered the essays with critical comments and suggestions: *You need to put a comma here. Explain this idea further. Rearrange that sentence*. Before the students got the essays, though, the research team attached handwritten notes from the teachers—either a treatment note or a control note. (Teachers wrote the notes, but they didn't know which student got which note or what the study was trying to test.)

Half the students, randomly assigned, got the treatment note with the wise feedback, which said, *I'm giving you these comments because I have very high standards and I know that you can reach them.* The other half of the students got a vague control-group note. *I'm giving you these comments so that you'll have feedback on your essay.* That note conveyed no clear reason for the feedback. Teachers handed back the essays in sealed folders so they couldn't see who got which note. Then, students were given a week to revise their essays or choose not to revise them.

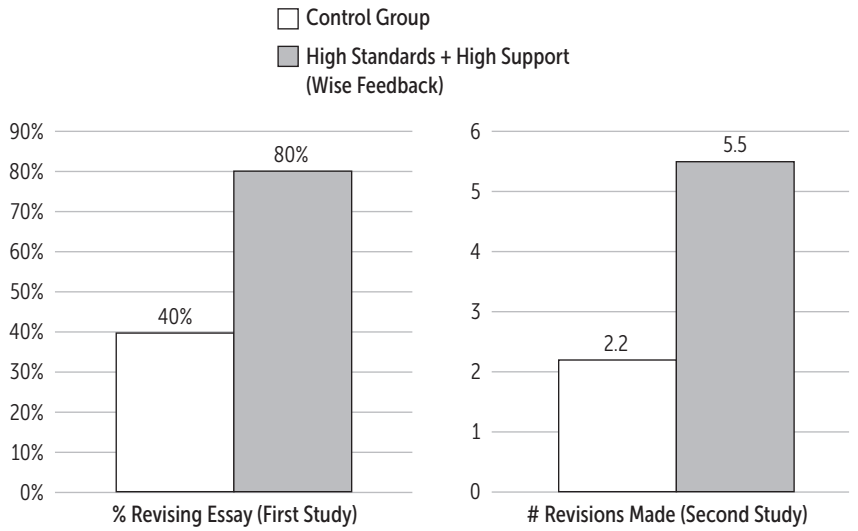
We were hoping that the wise feedback would motivate students in the treatment group to work harder on their revisions. But even we were surprised by how strongly they responded. When students received the wise-feedback note, they were twice as likely to revise their essays: 40 percent of students in the control group revised their essays, but 80 percent did in the treatment group. The next year, when we ran the study with new students in the same teachers' classes, we required all students to revise their essays. We wanted to see if receiving the wise-feedback note would encourage the students who received it to push themselves to do better. Again, it worked. We found that students made more than twice as many of the teachers' suggested corrections, from 2.2 in the control to 5.5 when they got the wise-feedback treatment note.

What's more, the wise-feedback study led to more equitable outcomes. All students benefited from receiving wise feedback, but those belonging to minority groups (in this case, Black students) benefited most. Wise feedback drastically reduced racial disparities in the students' willingness to make revisions.

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Here's the takeaway. When you hold young people to high standards

Figure 1. Effect of wise feedback on whether seventh graders revised their essays



and make it clear that you believe they can meet those standards, you are respecting them because you are taking them seriously. Young people rise to meet the challenge because being respected is motivating. Further, you lift up *all* students and see greater equity.

In this book, I'll share many examples like wise feedback. These are simple, powerful ways of connecting with and motivating young people. They are scientifically proven to have a positive impact on a wide array of people. As I'll show, they work across gender, racial or ethnic, national, and religious groups. There's a simple reason for that. These practices get at the heart of what it means to be a young person, struggling to carve out a place in the adult world.

Employing the science-based strategies in this book may take a little bit of thought, but it doesn't have to take a lot of *time.* The wise-feedback note was just nineteen words. This makes it accessible to anyone.

Years ago, when I shared the wise-feedback study with Dr. Alex Sweeney, it helped him realize why he couldn't get his medical trainees to listen. They were intimidated. They saw his critical feedback as a sign that he thought they weren't good doctors, not as a sign that he was trying to

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make them *better* doctors. Alex changed his approach. He started explaining to the medical residents that he provides critical feedback because he thinks they can improve and that he was taking them and their potential seriously. Like the middle school students in our experiment, Alex's young medical trainees have responded. They've been more open to improving their medical skills in response to his feedback—and happier to get his criticisms. These days, Alex runs one of the top surgical units at his medical school. He's known for getting great medical outcomes *and* having a positive culture that trains doctors and retains the best employees.

The Ten-to-Twenty-Five-Year-Old Brain

It might seem like the best way to deal with a ten-year-old would have nothing to do with the best way for dealing with a twenty-five-year-old. At ten, kids usually don't show any outward signs of puberty; at twenty-five, they could have been in the armed forces for seven years. But looks can be deceiving. In fact, there are hidden neurobiological and motivational similarities across the age range from ten to twenty-five.

Age ten roughly corresponds to the start of pubertal maturation, which is biology's alarm clock for adulthood. Puberty starts a cascade of changes in hormones, the brain, the body, and in social life, all of which are aiming toward creating adults who can contribute to their group's survival. Neuroscientists know that this cascade continues to be influential well into the midtwenties. The connective architecture of the twenty-four- or twenty-five-year-old brain is still affected by its surroundings. This does not mean that the twentysomething brain is irredeemably immature. It means that it's still adapting, not yet stuck in its ways. This makes sense when you realize that the current global economy, which prizes ever-more-technical training, has caused the transition to a stable adult career to happen later and later in life, even later than for every prior generation of humans. Young adults' brains continue to adapt to the environment because it's good for their (and society's) survival. This means that the brains—and motivations—of young people ages ten to twenty-five have far more in common than most people realize. That's good news because we can draw lessons from a wide variety of situations to learn general principles that,

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when implemented, could make our interactions with the next generation go better—and make our lives easier in the process.

What is the important change in ten-year-olds that continues to shape their motivation at least until their midtwenties? It is the motivation to experience feelings of *status and respect*. Neuroscientists have shown that during puberty the brain becomes attuned to social status and respect. It craves socially rewarding experiences, sometimes even before the rest of the body has shown the other major signs of puberty. The onset of puberty—specifically gonadarche, which brings us to reproductive maturity and regulates hormones such as testosterone and estradiol—has a powerful effect on the reward-seeking regions of the brain (such as the region called the nucleus accumbens, which is rich in dopamine-receptive neurons). This gives our brains cravings for experiences such as pride, admiration, and respect and makes our brains averse to socially painful experiences, such as humiliation or shame. From the onset of puberty until we take on adult roles in society, we develop appetites for deeper and more meaningful experiences of respect—or, as the cultural anthropologists call it, *earned prestige*.

Any time young people interact with socially powerful people—managers, parents, educators, or coaches—status and respect come to the foreground. Because young people feel sensitive to differences in status, they are subtly reading between the lines with each thing we say, trying to interpret the hidden implications of our words, to find out if we are disrespecting or honoring them. This creates a pervasive disconnect between what adults intend to communicate when we speak and what young people can hear from our words. This is what happened in the control group in the wise-feedback study and in Alex's experiences at the hospital. Young people received critical feedback that came from a good place but they heard it as, *You're not good enough, and I'm looking down on you.* We say one thing, they hear another, and we fight over that misinterpretation, fueling one of the most common forms of conflict between the generations.

This *status-and-respect hypothesis*, which I first proposed with my collaborators Ron Dahl and Carol Dweck in the mid-2010s, contradicted society's popular view of adolescence as an inevitably frustrating developmental stage. Our hypothesis held that adolescents simply have a different

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set of needs that aren't being met. After all, we don't say that infancy is an inherently bad age because babies cry and fuss. Instead, we understand that they have developmental needs for sleep and food that must be met so they can grow and thrive. We find out if babies are hungry or tired, and then we feed them or put them down for a nap. Status and respect are to a young person what food and sleep are to a baby—core needs that, when satisfied, can unlock better motivation and behavior. Meeting young people's developmental needs prevents the worst kids-these-days behaviors that get under adults' skin. If we appreciate these needs, then as parents, teachers, managers, or coaches who support young people, we'll all be able to spend more time being proud of what they accomplish, assured that they are becoming capable members of society, and less time pulling our hair out.

The wise-feedback study pointed to a way to solve the mentor's dilemma: by conferring status and respect on young people. But it was also unsatisfying because it tested just one sentence. I wanted to know: How can leaders go from a onetime note to a whole relationship—or even a whole culture—characterized by high standards and high support? Once I walked out of my laboratory and started talking to real-life practitioners, I started seeing wise-feedback-like tactics making a real difference in young people's lives. One of the most unexpected places I saw this was in the world of coaching young National Basketball Association (NBA) players.

Chip Engelland's Story

When an NBA team selects a nineteen-year-old rookie in the first round of the amateur draft, the rookie usually feels confident and proud—not to mention flush with millions in cash. This confidence can be threatened when, soon after the player is picked, the team's shooting coach tells the player that they need to change their shot—the very thing that got them drafted in the first place. It leads to serious questions, such as: *Does the team think I'm not good enough after all?* Or even: *What if messing with my shot makes my shot worse—causing me to get benched or cut from the team?* The answers to these questions have huge implications, ranging from public humiliation to going broke. NBA coaches, therefore, face a version of

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the mentor's dilemma. If they critique a player's shot, it could cause the player to get defensive and refuse to change. If they don't critique the shot, the player may not live up to their potential—possibly causing both the player and the coach to get fired.

I was surprised at first when I discovered that a professional sports coach, of all people, had a satisfying solution to this mentor's dilemma. Many people think that the stereotype of a high-performing coach is a yelling, foaming-at-the-mouth chair thrower who enforces impossibly high standards, scares the daylights out of players, and breaks their wills, only to build them back up to be more obedient. After all, in the cutthroat world of the NBA, with enormous sums of money on the line, professional coaches don't have time to suffer fools. The NBA coach with perhaps the strongest reputation for being "heart-stopping" and "terrifying" is the legendary Gregg Popovich of the San Antonio Spurs. But did you know that Coach Popovich's Spurs organization is nothing like that stereotype? Although it's true that the Spurs maintain exceptionally high expectations, Popovich's coaching staff also supports players. They're like a family that quarrels but never doubts their mutual love. Over the decade and a half when the Spurs dominated the NBA, winning two championships, one of Popovich's assistant coaches was the walking, talking embodiment of the wise-feedback note. His name is Chip Engelland.

Chip Engelland just might be the best coach you've never heard of. Players and beat writers have described him as a "genius," a "master at what he does," a "guru," a "shot doctor," and a "legend" who's "recognizable by first name alone." Chip was the captain of Duke University coach Mike Krzyzewski's first conference-championship-winning team. At the end of his international professional career, Chip broke into coaching by hosting popular—but demanding—youth shooting camps. By the late 1990s and early 2000s, word of mouth got him gigs working with NBA stars Grant Hill, Steve Kerr, and Shane Battier. After two years on staff at a few NBA teams, Chip was hired by Gregg Popovich and the San Antonio Spurs as their full-time shooting coach. During his seventeen-year tenure with the Spurs, Chip improved dozens of players' shots, including those of NBA legends Tony Parker and Kawhi Leonard, and helped them win two NBA championships. Before Parker worked with Chip, Popovich used to think

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That's a turnover every time Parker shot. Now, with years of Chip's coaching, Parker is a Hall of Famer. "He's the best," Grant Hill said of Chip. "And that's why the best team has him on their bench." These days, Chip works for a rival team, the Oklahoma City Thunder, who, after two years under Chip, have boosted three-point shooting by twenty percent and doubled their win total. Chip is a one-man *Moneyball* strategy. General managers can acquire undervalued players with mediocre jump shots, and after a year or so with Chip, they become all-stars or trade assets. Wherever Chip goes, team success follows.

Does Chip only ruthlessly focus on shooters' flaws? Does he try to break down a player's shot and rebuild it from the ground up? Is he all business, impossible to please? Not in the slightest. Here's how one Thunder player, whose free-throw percentage jumped from the mid-60-percent range to the lower-80-percent range, described him:

> Chip's hard to explain. He's a wizard with what he does. It's not unorthodox, but it's different to every other coach that I've had, who's said, "Shoot this way." . . . He's not trying to change my whole shot or make one big difference. It's just little things.

In the late 1990s, Steve Kerr was the sharpshooting veteran on Michael Jordan's Bulls, but his accuracy was falling. Chip helped him realize that he was releasing the ball off his middle finger, not his pointer finger. That was causing a wobble that made his shot unreliable. Soon, Kerr was back to his three-point-splashing ways.

When Chip turned Kawhi Leonard into a superstar by fixing his shot's release point, Chip said, "I felt his shot didn't need a full makeover. With just a tune-up, he could become a very good shooter, if not great shooter." When Leonard was drafted, nobody thought he needed a tune-up. They thought he needed a whole new shot (or a spot on the bench). But Chip saw it differently. Although he was demanding—forcing Leonard to stop slinging the ball over his shoulder—he was careful to support Leonard psychologically by never disrespecting him. Leonard is now a future Hall of Famer.

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Shane Battier, former NBA and NCAA champion and Duke basketball player, explained to me what it's like to be on the receiving end of Chip's

wise feedback. One summer Battier was working at Duke's youth basketball camp and Chip was in town. Chip offered to put Battier through a workout. At the end, Chip said, "Your shot is good. You're a great shooter." That made an impression because at the time NBA draft experts were doubting whether Battier's shot would translate to the NBA. Although Chip saw Battier's potential, he also thought Battier could be better with a few tweaks. An instant bond was formed. "He made me believe I could become an all-NBA shooter. That gave me the confidence to work on my shot," he told me. How so? Chip didn't puff up Battier with a compliment sandwich. Chip did it with high standards. He crafted sessions that gradually increased the level of challenge while requiring Battier to maintain the exact same form, whether he was coming off a pick or receiving a pass or shooting off the dribble. Chip's main goal was to strip away unnecessary motions that made Battier's shot unpredictable from one opportunity to the next. He was ruthless in changing small details, such as the position of the pointer finger on the ball or the spread of the thumb to control the ball throughout the shot. He was unrelenting in the need to practice new mechanics in increasingly difficult gamelike situations. While doing so, Chip was exceedingly supportive. After Battier took a shot that Chip knew wasn't great, he didn't yell, *Stop, what are you doing? Do it this way!* Instead he asked, "How did that feel?" Chip respected his players' autonomy and wanted them to do the thinking because they would compete in the game, not him. Often, Chip says to his players, "Hey, it's your script, not mine; you write it. I'm just helping you see how you want to tweak it."

Sometimes, changing a shot was a stressful, nonlinear, frustrating process. Chip didn't let players quit. He assured them of his support. When Chip first started working with the Spurs' Tony Parker, he said, "I'm with you for the ups, downs, and all-arounds. I won't ditch you if it doesn't work right away." Then he critiqued Parker's shot for the next decade, and it got better. Chip takes his players seriously by expecting a lot, but he's there to support them through the process. That's why his players trust him enough to take the terrifying leap of faith needed to change their shots.

In the end, Battier developed his shot and carved out a decade-long career in the NBA, capped by a transcendent performance in the decisive game seven of the 2013 NBA finals, during which Battier made six

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three-pointers, handing the Miami Heat an NBA championship—against Chip's Spurs. (The Spurs got revenge the next year.) "He's much more than a shooting coach," Battier told me. "He's a basketball psychologist."

After meeting Chip, I had to agree. "The mentor's dilemma resonated with me," Chip told me. "As a coach, I'm constantly trying to get young players to take feedback without feeling threatened." Chip explained that "it's fundamentally about the balance between challenge and safety." Challenge (higher standards) helps players grow in their areas of weakness, while safety (support) helps them trust that they won't be harmed, emotionally or physically, by stretching out of their comfort zones.

Chip even took the same approach—high standards, high support—with youth players. This reveals the similarities in optimal strategies from ten to twenty-five. At his youth summer basketball camp, Chip didn't just expect kids to *do* the drills. He expected them to *lead* the drills. By Tuesday of the second week of Chip's youth camp, the players led the drills, not the coaches. They upheld the camp standards for precision and timeliness, they provided critical feedback, and they held each other accountable. Chip did this because he was trying to give them more than a jump shot. He wanted them to have their own "coaches in their heads" that could keep helping them improve long after they left the camp.

Chip showed me that practices aligned with wise feedback can work even in high-pressure situations with serious constraints on our time. Of course, it took a bit of planning for Chip to teach the players how to run the camp, but the second week was a lot easier on Chip and his coleaders. In fact, when reporting for this book, I repeatedly saw that expert managers, educators, and parents tended to have independent, resilient, proactive young people who didn't need constant redirection to stay on task. That saved the adults' time (and frustration) in the long run. When leaders used the science and art of motivating the next generation, they felt effective *and* they got the satisfaction of helping others, making their lives both easier and more fulfilling. Furthermore, they could look back on a lifetime of personal success and meaningful contributions to others. It's a win-win proposition.

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Pete and Leona's Story

It was July 2019. Around 150 people had gathered for Pete Sumners's memorial service at his old office building in Lufkin, Texas. They ate barbecue and peach cobbler on plastic plates and huddled near the air conditioner. Pete's family and friends told stories of his kindness and humor. His employees talked about the jobs he had created and the careers he had elevated. They also talked about how, eighty years earlier, Pete's contributions almost didn't happen.

One Friday in November 1939, Pete loaded all his belongings into a Ford Model A and started driving home to the family farm in the small town of Conroe, Texas. At the time, he was a sixteen-year-old student at Rice University in Houston, majoring in mechanical engineering. He had decided that morning to drop out.

Just three months earlier, Pete had driven to Rice with confidence and pride. He was self-assured, cocky even. After all, he had been a football player and star student at Conroe High School, with a 94.6 GPA (out of 100) and third in his graduating class. But Rice was not Conroe. When Pete received his preliminary grades, he was shocked. He was failing five of his six classes. He wondered if he deserved to be there. Indignant and despondent, stressed and anxious, Pete saw no choice but to give up on his dream.

As Pete drove home that day in 1939, he wondered what he would say to his mother, Leona, about his decision to drop out, and what she would say in return. Leona was a firm but loving woman who had guided her family through the Great Depression. Her warm and demanding demeanor had made her one of the most beloved teachers in the Houston Independent School District. But a few years earlier Leona had developed a chronic respiratory illness after working at an asbestos factory. Her health and strength were failing. Maybe she wouldn't put up a fight, Pete thought, if he explained to her that he wasn't cut out for college after all.

Pete arrived at the farm late on Friday night. The next morning, he was in for a surprise. "She may have been sick," Pete said in an oral history interview later in life, "but this Saturday she found the strength to work me over."

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Smarts had nothing to do with it, Leona exclaimed. She didn't dismiss his fears, but she also didn't accept his excuses. He would persevere, she demanded, because he had potential. But she would also collaborate with him on getting support. He was having a hard time staying organized, so she arranged for him to find lodging in Houston with a prominent doctor. The doctor was married to an old friend of hers who would make sure he stayed on track—and keep him fed. By nightfall Pete was in the car, driving back to Rice. Leona hadn't even let him stay to wash his dirty laundry.

That fateful day marked an inflection point in Pete's life trajectory, one that would be on full display at his memorial service eighty years later. Pete went back to Rice and dedicated himself to his studies. At Rice, he met his wife, Opal, to whom he was married for seventy-five years, and with whom he had a large family. After Pete graduated in 1943, he was deployed to the Pacific theater of WWII. At just twenty-one years old, he used his engineering degree to lead maintenance for a fleet of B-29 bombers on Tinian that were pivotal to the Allied victory. He wouldn't have done any of that if Leona had let him drop out.

After the war, Pete's small engineering business brought air-conditioning to homes and offices around Lufkin. Pete liked to tell stories about what life in east Texas was like before air-conditioning. The air was unbearably hot and muggy. Men often changed their shirts three, four, five times per day. To sleep, you opened the windows and hoped for a breeze. But the open windows invited an onslaught of mosquitos. Such was your daily devil's bargain. It was a revelation when Pete's engineers showed up at your home or office and hooked up central AC. Pete was proud of the comfort he'd brought to thousands in east Texas. And he could only do that because Leona's timely, tough-but-loving guidance kept him on track to becoming an engineer.

Pete's biggest contribution of all, perhaps, was what he did for his employees. Pete's handyman, Tinker, went from being an unskilled teenager to a part owner of the business. Another employee, Jimmy, experienced depression. Pete was patient with Jimmy and never fired him for being unreliable, which could have sent him into a tailspin. But Pete expected a lot of Jimmy when he was feeling well. Jimmy thanked Pete for his life.

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Pete hired Janice as a secretary at seventeen, straight out of high

school. He gave her responsibility and an opportunity to learn. By the time she retired forty years later, she was managing the business. At the memorial service, Janice explained that because of Pete, she gave her kids something she never got: a college education. One is now a doctor, another a lawyer. "My kids can do what they do for so many other people because of what Pete did for me," she told me. Over the years, Pete treated his employees like Leona had treated him. He held them to high expectations, but he gave them his support as well. And it changed their lives, just like Leona had changed his.

The Pete-and-Leona story represents something bigger than just a college-dropout decision. It exemplifies what adults can do for young people at any major fork in the road that leads to a better future for them and their communities.

I'm also drawn to Pete's story for a personal reason. You see, Pete was my grandfather. Leona was my great-grandmother. I never knew Leona because she died in 1941, but I am a product of her tradition. Leona is the reason why Pete met my grandmother, Opal, who gave life to my mother, who has a similar disposition and powerfully influenced me.

I was immersed in these stories growing up, but I never really understood them. We always laughed that Leona was so tough on old Pete. We focused on how harshly she enforced her high expectations. We downplayed her support. I didn't realize it until recently, but our blindness to the true meaning of Leona's actions says something profound about our culture. Our society tends to think that there are only two ways to interact with young people: tough or soft, mean or nice, authoritarian or permissive. We don't realize that you can have a bit of both: you can have high standards *and* high support, like the wise-feedback note. Because we don't realize that, we often emulate only half of what Leona did—either kick her son out or lavish him with free housing. Then, because we get it only half-right, we miscommunicate with young people, preventing them from fulfilling their potential. It's an infuriating cycle. What if we could break out of it?

That day in Lufkin at Pete's office, talking to Janice, my journey of learning became personal. I became determined to find the Leonas and the Petes of the world. I wanted to study their secrets. I would scour

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workplaces, homes, schools, and scientific journals to find out: How do the best managers, parents, and educators get the most out of young people, pushing them to be the best without crushing their spirits? I wrote this book to share what I've learned.

Note that I'm on the same journey of learning as you are. I need this information as well. I manage young people in my research lab. I'm a parent of four, with the oldest just starting her teenage years. I coach baseball and basketball. I used to teach middle schoolers and now I teach in college. I've tried all the ideas in this book. Although I can't say I did them perfectly, I can promise that on the occasions when I got them right, it was worth it.

Those of us on this journey want actual, practical knowledge of how to interact effectively with young people. That's why, for each chapter, I've written questions and suggestions for how to take the ideas and put them into practice. They appear sequentially at the end of the book.

With that, I'd like to welcome you to your continuing education about the wonderful, vexing, and inspiring world of motivating and influencing young people.

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Section I

Understanding Ten-to-Twenty-Five-Year-Olds

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Chapter 1

What We Get Wrong

Terrie's Deathbed

This hospital room in Winston-Salem, North Carolina, was normally reserved for patients on end-of-life care, but on September 8, 2013, it was used as a makeshift video-production studio. The U.S. Centers for Disease Control and Prevention (CDC) had come to record the parting advice of a woman, Terrie Hall, who would die of cancer two days later. In 2000, Terrie Hall found a small sore on the inside of her cheek. A biopsy showed that it was a tumor, and further testing showed the cancer had already spread from her mouth to her throat. Over the next thirteen years Terrie would undergo radiation therapy, chemotherapy, and surgeries that would remove parts of her jaw and her larynx (voice box), leaving her in need of an electronic prosthetic larynx to speak. She used this raw, wheezing, synthetic voice to share her final lessons with the CDC and the world.

Terrie developed cancer because she was addicted to cigarettes. Like 90 percent of adult smokers, she became hooked before she was eighteen. "I had my first cigarette at age thirteen, and age seventeen is when I really started being a regular smoker," she said. In 1964, the U.S. Office of the Surgeon General had released a blockbuster report titled *Smoking and Health*, which informed the world that smoking was, globally, the leading cause of cancer and cancer-related deaths. It was a lost battle for the tobacco companies, but they were winning the war. They had invested millions in

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making smoking look cool. There was the Marlboro Man—a rugged cowboy who tamed the wild terrain, always with a cigarette in hand—and Joe Camel—a classy, "smooth character" who lived the high life surrounded by beautiful women and a cloud of smoke. When the government said that smoking was *dangerous*, it may have helped the tobacco companies' situation. It showed teenagers that smoking was a way to be rebellious and win the admiration of their peers.

As a junior at Forbush High School in 1977, Terrie was a popular cheerleader, constantly invited to parties. Her friends smoked, and she wanted to be with them, so she started smoking too. "It was the cool thing to do," she told the CDC. Soon she was smoking two packs a day, every day, for decades, until her larynx was surgically removed. On her deathbed, she said, "My fear now is that I won't be around to see my grandchildren graduate or get married." And she lamented that "this [raspy synthetic voice] is the only voice my grandson knows. I miss being able to sing lullabies to him." But Terrie was also full of purpose. She wanted the future to be different. She hoped, she prayed, that the CDC or anyone else listening might come up with a better way to prevent young people from ending up like her.

In 1998, after a landmark legal decision against the tobacco industry, the tobacco companies were pressured by the federal government to launch anti-smoking advertisements on television, in newspapers and magazines, on billboards, and on the radio. Suddenly, the same advertising agencies that had made millions coming up with ways to get teens to smoke were charged with doing the opposite. One campaign's tagline said, "Think. Don't smoke." Another tagline said, "Tobacco is whacko if you're a teen." Everyone expected that the more teens saw these ads, the less likely they would be to smoke. But that's not what they found. When a rigorous independent study evaluated the tobacco companies' campaigns, they found that "Think. Don't smoke" and "Tobacco is whacko" caused young people to be *more* likely to think that smoking was cool and rebellious, to think *more* favorably of the tobacco companies, and to trust the companies *more* to look after their health. The anti-smoking campaigns also made teens *more likely to try smoking*. Public health experts were baffled, and the tobacco companies continued making money.

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Anti-tobacco programs aren't the only efforts that flop. Did you know that the most common effect of anti-obesity programs for young people is weight *gain* compared to those who didn't get a program? And did you know that antibullying programs for late middle school and high school students tend to *increase* bullying? As a society, we want to target those age groups to prevent extreme events like suicide or school violence, but the most common programs either backfire or prove useless.

If we want to help the millions of people like Terrie who suffer for decades due to preventable choices made by their younger selves, then we need to confront our society's inability to understand and influence young people. The overwhelming failure of so many of our society's youth-serving programs should be a sign that we need to look more deeply at our fundamental mental models about young people. We owe it to young people to ask the hard question: What if the problem has more to do with us—and how we treat the next generation—than it has to do with who they are?

Taking Your Pills

Dr. Steven Alexander has been a professor of pediatrics for decades at Stanford University's number-one-ranked youth kidney transplant center in the United States. When I met him not long ago, he told me about a fascinating set of challenges his nephrology clinic was facing.

Like all medical professionals involved in kidney transplants, Dr. Alexander is a merchant of happiness and freedom. The kidneys filter out the toxins in your body that you normally excrete through urination. When kidneys lose their function, you need to use a dialysis machine to filter those fluids instead. You endure this agonizing treatment three times per week, for three and a half hours per day. The day before dialysis you're puffy and short of breath because your body cavities are filled with waste liquids. On the day of dialysis, you suffer the pain of having gallons of waste drained out of you. When Alexander's clinic gets you a kidney transplant, you're finally freed from the chains of the dialysis machine, capable at last of living a mostly normal life.

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When Dr. Alexander started in nephrology in 1976, the transplant procedure was still new. Children and adolescents rarely kept their

transplanted kidneys for very long. Back then, fewer than 30 percent of children lived for three years or longer. Now the survival rate after three years is closer to 95 percent. The medical profession has spent billions developing new surgical techniques and medications, they have created a vast infrastructure to keep organs viable long enough to make it to a recipient, and they have trained world-class surgeons. The most important discovery of all was highly effective drugs to prevent the body from rejecting the transplanted kidney. These drugs, called immunosuppressants, stop the immune system's attacks on a new kidney that came from someone else's body. The miracle of taking an organ out of one person and sewing it into the body of a child in need has now become routine.

And yet, every year, scores of Dr. Alexander's patients lose transplanted kidneys when they shouldn't. The reason why is simple to diagnose but hard to solve: *doctors can't get ten-to-twenty-five-year-old patients to take their immunosuppressant pills regularly*.

"I think I'm so clear, as clear as can be, and then two weeks later, they're taking their pills completely wrong," one exasperated doctor told me.

"Surgeons would have a record of one hundred percent kidney survival if they could get the young people to take their meds," Alexander told me. Indeed, a study of every transplant in the United States to date showed that kidney rejection is almost at zero for children under ten years old because their parents make them take their pills. But every year from age ten to seventeen, when young people seize more freedom and autonomy, rejection rates inch up. The rates stay high until age twenty-five, when they start going back down dramatically. Thus, ten to twenty-five are the problem years.

Here's a story I once heard from a nurse at Stanford's pediatric nephrology clinic. She called parents of patients whose blood tests indicated problems. The nurse would say, "Your son's blood tests say there is zero medication in his bloodstream, and he's having symptoms. Are you sure he's taking his medications?" She would hear the mom ask her son, "You're taking your pills, right?" followed by a loud and obnoxious "*Of course, Mom!*" from the son. The nurse would calmly explain that it's biologically impossible for the patient to show no trace of the medicine in his blood

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if he's taking it, unless he has a rare disorder that perfectly and completely metabolizes the medicine before it works. In either scenario, the patient would need to come into the clinic immediately for further testing. After a long pause, the nurse would hear the mother come back on and say, "Okay, he told me he's not taking the meds. He'll start. Thanks for calling."

Parents may be compassionate, but kidneys are not. Without the immunosuppressant, the body starts to reject the kidney within a day. "Kidney transplants are unforgiving. You absolutely must take immunosuppression every day," Alexander explained to me. After a few days the transplanted kidney is rejected by the body. The young person goes back on dialysis for years—or forever.

This isn't just Dr. Alexander's problem. In fact, 35 to 45 percent of all adolescents and young adults who receive transplants—kidneys, livers, hearts, stem cells—don't take their pills as prescribed. And this problem hasn't gotten better over time, despite improved surgical techniques and medication. A prominent physician recently reviewed the entire history of pediatric kidney transplants and reached a dismal conclusion: "We appear to be no closer to solving the problem of nonadherence than we were forty years ago. . . . It remains a critical and often unsurmountable detriment" to transplant survival. When it comes to changing the behavior of young people during the critical window of ten to twenty-five, medicine has not delivered results. What's going on?

One clue comes from deeper reflection on the flaws in the "Think. Don't smoke" and "Tobacco is whacko" anti-smoking campaigns. Both campaigns tell youth what to do (i.e., "Don't smoke" is a command). That's potentially a poor fit with how adolescents want to feel at a neurobiological level. Likewise, transplant-education sessions involve telling, telling, telling. Doctors, nurses, and pharmacists hold three separate conversations with young patients and their parents. The authority figures describe the consequences of not taking the immunosuppressant pills and make the young person repeat everything back to them, like a comprehension quiz. It's the young person's job to listen and obey.

"You don't get educated on how to talk to adolescents," one experienced doctor told me. "Doctors are trained to communicate scientific information, not pay attention to what's stopping humans from acting on

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the information. So everything we say comes across as a threat, like, 'If you don't do this, then I'm going to have to increase your meds.' " Indeed, one transplant recipient gave a keynote to doctors and nurses at a professional conference. "The doctors tried many fear tactics on me," he said. "It didn't work." He lost his first kidney and was by then on his second.

The limited scope of this conversation could come across as disrespectful to young people because it fails to seriously address how the medication will affect the patients. "I hated the pills. I didn't seem to take my pills seriously," one transplant recipient said. "People don't realize how hard it is to take your medication twice a day," another patient told me.

Here are some of the side effects of immunosuppressants: diarrhea, weight gain, numbness, and a fruity smell on your breath. "One of them made me hairy," a patient told me. "I kind of looked like a werewolf and had a unibrow." Another told me, "I feel like I'm a fat kid. I can't take my shirt off with a girl." Oh, and the doctor tells you not to drink alcohol. Think about how those side effects conflict with your plans for a teenage social life. The kidney doctor with a clipboard and a white lab coat was telling you to accept your new life, with no objections, as an overweight, hairy kid with digestive problems, numb extremities, and stinky breath who can't party and is embarrassed to swim shirtless. Skipping the pills—and their side effects—allows a young patient to temporarily forget that they're different. It gives them a way to feel socially normal, however briefly.

The medication itself, therefore, is a potential threat to social survival. Maybe some young people do listen. Many others nod along, making their body language look like they're listening, but they're faking it. Their neurons are not processing the information. This is a reason why the standard patient-education process doesn't always convince young people to adjust their habits and routines so that they take their medication seriously.

And that is why, after billions of dollars spent over the last forty years to turn the miracle of pediatric organ transplants into a routine surgical procedure, the single biggest unsolved scientific puzzle has nothing to do with nephrons or the immune system. It has everything to do with navigating the complex world of adolescent behavior change.

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Dr. David Rosenthal, a pediatric heart-transplant doctor at Stanford University, told me that his experience working with teenagers makes him

feel that he is "living in an alternative universe from my patients. I cannot imagine what they're thinking." Likewise, Dr. Steven Alexander warned that "we need to understand what young people need and give them what they need—or get ready to pay the consequences."

Questioning Our Model of Young People

Failed attempts to motivate and influence young people—like "Think. Don't smoke" or the conventional patient-education approach in most transplant clinics—come from what I call the *neurobiological-incompetence model*. According to this model, a young person is a flawed and deficient thinker who can't comprehend the future consequences of their actions. Thus, young people need to be told what to think and do repeatedly by adults who know better. Consider, for example, that the tagline "Think. Don't smoke" is a command from a supposedly wiser and smarter and more responsible adult public health expert, implying that young people aren't currently thinking.

Over the last two decades, a scientific revolution has been brewing in the study of young people. It's pushed back against the neurobiological-incompetence model. This revolution asserts that youth are not *problems to be managed* but instead are *resources to be cultivated*. This new scientific consensus was spelled out in two major reports. One was issued in 2019 by the National Academies of Sciences, Engineering, and Medicine titled *The Promise of Adolescence*. Another more digestible summary was issued around the same time by the UCLA Center for the Developing Adolescent (CDA) and the FrameWorks Institute. Combined, the reports pulled insights from more than twenty-five leading neuroscientists, hormone experts, psychologists, anthropologists, and more.

The UCLA report explained why much of the behavior of young people that worries or annoys us does not come from ten-to-twenty-five-year-olds being inherently incompetent. Rather it comes from this age group's attempt to learn how to be socially successful in the world. This usually means having social standing in the eyes of their peer groups and their communities' adult authorities. Said differently, young people want *status and respect from peers and mentors*, earned by making meaningful

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contributions. This suggests that if we can understand their perspectives and what they really want, then the same motivational drives that lead to problematic behaviors such as smoking, unhealthy eating habits, or bullying can be channeled instead into important contributions to our organizations, families, schools, and society.

Dr. Ron Dahl, a University of California, Berkeley physician and neuroscience researcher and cofounder of the Center for the Developing Adolescent, likes to tell a story to illustrate the main takeaway of the landmark UCLA report. The story involves a discussion he had with a diverse group of education scholars, including the Dalai Lama and scholars in Tibetan Buddhist traditions. After Dahl shared some of the emerging insights from the science about puberty and adolescents' increased motivation to gain status and respect, he heard them chuckle. Through the translator Dahl learned that they often observed young boys demonstrating a hilarious version of the hunt for status and respect. In the Buddhist monastery, the best way to gain prestige and respect is by showing kindness, compassion, and empathy. This led youth to try to outdo each other in these values. I imagine them saying, *After you! No, after you!*, each trying to one-up the others' loving-kindness. This was an example where the boys had discerned the cultural currency of status and respect—living a principled spiritual life in service of others. They were intrinsically motivated to distinguish themselves and earn prestige that garners the respect of their community, considering the values of the group. This shows that puberty isn't destructive; it's instructive. It fuels young people's desire to become contributing members of the group. "We shouldn't fear puberty. We should help youth learn to harness it for good," Dahl told me.

Interestingly, one of the best illustrations of this new scientific consensus comes from one of the only public health efforts to have ever shifted smoking behavior: the "Truth" campaign.

The "Truth" Campaign

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One day in the spring of 1998, the public health establishment's old guard faced off against the new guard in a meeting that would ultimately

drastically improve one of the United States' longest-standing public health crises.

The meeting was called by officials from the state of Florida, who were trying to select an advertising agency for a multimillion-dollar campaign to reduce teenage smoking. The money would come from a settlement to a class action lawsuit between Florida and the tobacco companies, as compensation for the cost to the state of treating smokers for cancer.

On one side of the conference room sat a platoon of conventionally trained government epidemiologists, the scientists who specialize in stopping the spread of diseases. The old guard had been invited to make sure that the winning ad agency upheld the CDC's so-called *approved strategy* for stemming the tide of teenage smoking. Across the table sat Alex Bogusky, the creative director at then-upstart advertising agency Crispin Porter + Bogusky, which was trying to win the business. The leader of the new guard, Bogusky was in his midthirties but looked ten years younger. He wore an impish grin, and the twinkle in his eye gave the impression that a wild idea lurked just around the corner. His frame was fit and lean from decades of mountain biking and other adventure sports. Next to Bogusky sat his artistic directors, all in their early twenties.

What was the CDC's approved strategy? It involved three messages for teenagers: (1) smoking causes cancer, (2) smoking makes your teeth yellow, and (3) smoking isn't sexy. The CDC wanted Bogusky's ads to drill this information into as many teenage heads as possible.

This approved strategy was the result of the epidemiologists' hyperrational way of thinking about youth behavior, rooted in classical economic thinking. In this model, people decide something by weighing the relative costs and benefits, as well as an outcome's likelihood and the time horizon. That is, if teenagers thought that smoking gave them a near-certain likelihood of a benefit in the immediate term (e.g., a nicotine buzz) but a very unlikely cost in the long term (e.g., cancer), then they would tend to choose to smoke. From this perspective, the appropriate public health response is to (1) make long-term costs seem far more certain (e.g., smokers would definitely get cancer) and (2) make near-term costs also seem more certain, such as changes to the teenager's appearance (yellow teeth) or social life (unsexiness).

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Bogusky thought this whole theory—and the CDC's implementation of it—was doomed to fail. Weeks earlier, he had sent his young art directors undercover to skate parks and malls to test out the CDC's approved strategy. Fully 100 percent of the teens they talked to could already eloquently describe, lit cigarette in hand, how smoking caused emphysema and cancer. They didn't need someone to explain that. Were they worried about yellow teeth? Maybe when they were fifty! But not now. And by the way, smoking seemed to them to be a main reason why they were having lots and lots of sex. Smoking made their lives great! This research showed Bogusky that even if his ad campaign brought the CDC's approved strategy to millions, it wouldn't stop teens from smoking. It was conveying information that they either already knew to be true or already knew to be false. Not only was it redundant, it was also insulting. Telling a teenager something that they think they already know—especially when it's an adult doing it "for their own good"—comes across as an affront to their autonomy and competence. It's disrespectful.

Back in the conference room, Bogusky watched his words carefully. His firm needed the work. They were small but talented, working with midlevel clients to sell mountain bikes or shoes. The Florida anti-teen-smoking campaign had the potential to be a multimillion-dollar breakthrough. The approved strategy was throwing a wrench in Bogusky's plans, however. It wasn't just bland—it was harmful. "This is a double cross from the tobacco companies," Bogusky told the Florida team. "It's a backhanded way for the companies to hire me to increase smoking." He said this because the tobacco settlement had one stipulation: the money had to be spent on *telling kids not to smoke.* Bogusky thought that strategy would drive millions of teens to smoke *more*, putting the money back into the tobacco companies' pockets. "If that's how you're spending the settlement money, I don't want to be a part of it," Bogusky told them.

Bogusky said this because he noticed a far more subtle, but just as fatal, flaw in the CDC's approved strategy. As far as Bogusky could tell, it was not informed by what young people wanted. Usually the first question ad executives ask themselves is: Do people already want the product, or do they not? There is a reason why cars, beer, and fast food are the crown jewels of most ad executives' portfolios. These are products that most people

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already want. The ad just needs to give them permission to buy them, and everybody makes money. Ad campaigns to get people to take health precautions, by contrast, aren't nearly as successful, for the simple reason that most people don't want to take health precautions. The CDC's approved strategy was encouraging teenagers to use self-control to deny themselves something they wanted. Bogusky, and any ad executive worth their salt, knew that a self-denial strategy would lose every time to a strategy geared toward giving people permission to pursue what their hearts most desired.

Bogusky suspected that the CDC experts had no idea what teenagers wanted out of smoking. Therefore they had no idea how to give them an alternative that could displace smoking. That's why he prodded them, "Have any of you ever asked a teenager why they smoked—like, what they got out of it?" They were silent. Bogusky was disappointed, but he understood why. "They thought teenagers were dumb," he told me. The CDC experts were coming from what we now know to be the neurobiological-incompetence model—like most public health experts at the time. In that model, the only reason a young person would choose the long-term certain harm (e.g., cancer) over long-term certain health is because of incompetent decision-making. In this view, the teenage brain was myopic, unable to weigh long-term risk correctly. It wouldn't matter *why* they made irrational choices. It simply mattered that they were carrying out their mental utility-maximization calculations incorrectly. According to this model, any new ad campaign should feature adults telling them what choice to make.

Bogusky's starting assumption was different. He thought, fundamentally, that teens were smart. They only smoked, he reasoned, because the companies had found a way to present smoking to them as a solution to a problem they cared about. A key fact driving his logic was that about 30 percent of Americans smoked at the time, and just like Terrie Hall about 90 percent of them had started when they were teenagers. Further, most adults wanted to quit but couldn't because of their addictions. Thus, Bogusky and his team concluded that smoking must have met a uniquely *adolescent* need, not an adult one. After all, most adults didn't want to be doing it.

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What was that adolescent need? In Bogusky's analysis, smoking served as a public, visible way for young people to declare their adultlike status.

As young people moved from an age at which all their decisions were made for them into an age at which they took charge, teen smokers wanted to communicate to anyone around them that *I make my own decisions about my own body*. The tobacco companies understood this on a deep level. They knew—and used marketing research to confirm—that smoking shows the world that you are in total control of your life and death. Therefore you have the status and rights afforded to adults. The fact that smoking could kill you in the distant future didn't make teens feel dumb. It made them feel like courageous advocates of their right to self-determination.

Anthropologists like to point out that our human ancestors often had ceremonies—rites of passage—in which youth declare, in front of their communities, that they were adults. Outside of a few religious and cultural traditions, modern society has lost the rite of passage ceremony. But that doesn't mean that the underlying need that it served in our evolutionary past has been erased. Smoking filled that void. "Cigarettes were the best product ever to meet teens' needs to demonstrate their status as adults," Bogusky told me. "Once we understood that, we were like: *Why wasn't the teen smoking rate one hundred percent?*"

This helps explain why the conventional anti-smoking strategy would never work. You can't tell a young person to ignore their vital need to demonstrate their competence and status in front of the people whose opinions they care about any more than you can tell a baby to stop being hungry or needing to sleep. If you want to prevent the problematic behavior, you need a replacement that meets the need underlying the behavior. That realization never occurred to the CDC experts. They were blinded by a simplified rational-actor model.

Bogusky assembled a new approach. He would embolden youth to fight back against the greedy, predatory corporate forces that lured teens into a deadly addiction. "If we were to turn the tables on tobacco, we surmised that we could not take away their tool of rebellion without giving them an alternative," CP+B's president, Jeffrey Hicks, wrote in a 2001 article. "Attacking the duplicity and manipulation of the tobacco industry became 'truth's' rebellion." That day in Miami, like a scene out of *Mad Men*, Bogusky pitched a brilliant series of ads. The "Truth" campaign, as

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he wanted to call it, would depict young people exposing the lies of the tobacco companies, acting as passionate agents of change who wanted to be forces for good. The suits from the CDC, so entrenched in the rational-actor model from economics, responded with skepticism. "How do you know it will work?" they asked. "I can't guarantee it will work," Bogusky told them, "but I can guarantee that everything you're planning on doing now will backfire." He got the green light.

One of Bogusky's first "Truth" commercials in Florida showed actors portraying tobacco executives stalking the halls of a hospital on their way to thank a customer who, like Terrie, was on their deathbed. The executives in the commercial wonder aloud, "What are we going to do to replace you?" The executives then turn and stare longingly and creepily at a teenage girl in the waiting room. Another commercial asked, "What's the connection between a fifty-one-year-old executive and a bunch of teenagers?" Then they cut to a boardroom full of middle-aged executives saying, "They're our only source of replacement." An initial evaluation found that Bogusky's Florida "Truth" commercials reduced middle schoolers' smoking rates by 19 percent and high schoolers' by 8 percent.

One year after the Florida lawsuit was settled, all fifty states signed a master settlement agreement with the tobacco companies, which created a billion-dollar fund to support continued anti-smoking advertising, institutionalizing "Truth" into a lasting initiative. Soon CP+B was making national ads that ran on MTV and during the Super Bowl. The money again had to be spent on telling teens not to smoke, but the settlement added a new stipulation. The ads could not personally attack the tobacco executives. Bogusky's creative talent got to work. Soon they developed the "Truth" campaign's most well-known ads. One depicted twelve hundred young people outside a major tobacco company's high-rise tower. On cue, the young people dropped to the ground, looking dead. The camera panned over the motionless bodies. Silence. Then one young person dramatically held up a sign saying, *Tobacco kills 1200 people a day.* He told the tobacco companies to "tak[e] a day off."

The "Truth" campaign was a stroke of genius. They took the marketing tactic that got teens to start smoking and flipped the script. If a teenager refused to smoke, it didn't mean they were doing what grown-ups said.

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It was showing the world they were a rebellious and autonomous person worthy of an adultlike status. By rejecting cigarettes, they could fight back against injustice and protect the vulnerable by joining a chorus of hundreds of peers who approved of them. The campaign ensured that the underlying adolescent needs for belonging, connection, status, and respect were fulfilled by a healthy behavior (not smoking) rather than an unhealthy one (smoking).

Think about how "Truth" signals respect for young people in a way that "Think. Don't smoke" doesn't. The latter has an insulting implication that the problem is young people's inability to think clearly. The "Truth" ads, by contrast, depicted young people as the only ones who could think clearly enough to fight back against the manipulation that the establishment failed to protect them from. Adults who stand on the sidelines are complicit in a horrifying scheme perpetrated by the tobacco companies, which kills thousands of Terries annually.

When researchers evaluated the national "Truth" campaign, they found striking results. Wherever the ads played, teenagers' desires to try or continue smoking declined. Crucially, the campaign made young people think that smoking wasn't cool—the only approach to have ever done so. These attitude changes translated into better public health outcomes. Starting with the launch of the "Truth" campaign, teen smoking rates declined every year, from about 28 percent to under 6 percent. Teen smoking was almost eliminated as a public health problem. To this day, public health experts consider the "Truth" campaign to be (along with seat belt ads in the 1970s) one of the two most successful public health efforts in U.S. history.

What lessons can we take from the story of the "Truth" campaign? It shows that young people can in fact make choices that are good for their long-term health if we give them a route to status and respect. "Young people are not idiots," the current CEO of the "Truth" initiative told me. "They make decisions about what's valuable to them, so it's our job to make nonsmoking a valuable decision, on their terms." Instead of trying to get young people to care less about status or respect and more about their long-term self-interest, we should spend more time figuring out how to present choices to them in a way that aligns with the social rewards they already value.

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The "Truth" campaign raises the possibility that similar solutions could prove effective for other challenges that adults face with adolescents, perhaps even medication adherence. As parents, educators, and managers, we are perennially frustrated with young people who don't keep themselves safe, do their homework, or take the initiative at work. But what if we could choose a different way? The answer to that question comes from a scientific revolution in the science of young people.

A Scientific Revolution

Dr. Ron Dahl is one of the leading minds in the science of adolescence. He may be in his midfifties, but he acts young at heart—brimming with energy, and daring to raise big questions that nobody else would touch, a lot like the adolescents he specializes in. Dahl has spent decades conducting research on the basic workings of the adolescent brain. But he can hardly keep himself from bouncing from human neuroscience to animal research on puberty to the cultural anthropology of adolescence in preindustrial societies to the behavioral experiments in my research. Dahl's eclectic and driven style of research is partially the result of experiences from his youth. He grew up in a working-class family in Kane, Pennsylvania, over one hundred miles from any major city. His brother went down a tragic path of addiction, but Dahl didn't. He attributes this in part to the influence of a mentor in high school, his humanities teacher Arlene Heath. She lived and breathed the wise-feedback note, demanding excellence and having vigorous debates with him but always caring for him. For thirty years until she died in her nineties, she wrote him letters to challenge him to think more broadly, beyond the boundaries of science, and to ask the bigger questions about what it means to be human. Dahl dislikes the negative incompetence view of adolescence in part because he knows how young people can be inspired and empowered by mentors like Arlene.

Dahl cofounded the Center for the Developing Adolescent with colleagues like Dr. Adriana Galván at UCLA to spread a more accurate—and optimistic—science of adolescence. (I am a member of the center's scientific steering committee.) Dahl, Galván, and the rest of the scientists at the Center for the Developing Adolescent are on a mission to explain why the

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neurobiological-incompetence model is wrong—and how to use this more accurate view of youth to better society.

According to the incompetence model, young people's brains are incapable of correctly weighing the future consequences of their behaviors—such as how an impulsive action now could lead to poorer health later. In this model, young people lack working prefrontal cortices, which is the part of the brain that controls planning. What's more, their brains are swimming in hormones that make them impulsive and ready to jump on any short-term pleasure or avoid any short-term pain, regardless of the long-term consequences. Young people's feeble prefrontal cortices, according to the incompetence model, are no match for their appetites for reward. A popular metaphor for this model suggests that young people are driving a car that's "all gas" (a hormone-induced, neural impulse for reward) with "no brakes" (lacking a reasonable brain that can stop the impulse). Due to this supposed lack of a prefrontal cortex, it's unwise to ask young people to make consequential decisions that could affect their future.

The incompetence model has ancient roots. Plato wrote in the *Phaedrus* in the fourth century BCE that the process of transitioning from youth into mature adulthood is like a charioteer struggling to control two powerful winged horses, like Pegasus. In this metaphor, the charioteer represents our reason or logic, and the unruly horses our passions. According to Plato, we must learn to discipline and suppress our youthful passions, and only then can we ascend to the heavens and see what is true, good, and beautiful. The basic contours of Plato's argument persisted for centuries and were later adopted by neuroscientists. By the turn of the twenty-first century, our prefrontal cortices took the place of the charioteer and our limbic systems symbolized the unruly team of horses to be controlled. "The prefrontal [cortex] became the aspiration for how adolescents should develop," Galván told me.

A key actor in this intellectual history was the MacArthur Foundation Network on Adolescent Development and Juvenile Justice. Started in 1995 and continuing until 2017, this was a network of leading neuroscientists, developmental scientists, and legal scholars. They were brought together for a noble purpose. They aimed to reverse a trend, started in the 1990s, toward increasingly harsh and punitive sentencing for severe

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crimes committed by youth under eighteen, such as the death penalty or life without parole. Such sentences rested on an assumption that the adolescent's brain would not continue to mature later in adulthood. The MacArthur network argued that the adolescent brain was still maturing and that irreversible punishments (e.g., the death penalty or life without parole) should not apply to teenagers because they should be withheld for people who are fully responsible for their actions. The network's research explained how "adolescent immaturity in higher-order executive functions such as impulse control, planning ahead and risk avoidance" was no match for the emotional, impulsive reward-sensitive regions of the brain. A 2012 Supreme Court amicus curiae brief summarizing the network's research described the "relative deficit in mature self-control" among young people and concluded that "expecting the experience-based ability to resist impulses . . . to be fully formed prior to age eighteen or nineteen would seem on present evidence to be wishful thinking." With this evidence, the MacArthur network successfully lobbied the Supreme Court to change federal policy about sentencing juveniles to the death penalty and later life without parole, first in 2005 (*Roper v. Simmons*), then in 2010 (*Graham v. Florida*), and later in 2012 (*Miller v. Alabama*). The neurobiological-incompetence model, therefore, could be used for good, even though it wasn't the whole story.

The MacArthur network's take on the adolescent brain soon spread beyond the narrow use case of adolescent criminal sentencing. It was applied to any and every youth decision-making process. One kidney transplant doctor I talked to heard a presentation on the network's research. He soon concluded that asking an adolescent to use their prefrontal cortex to remember to take their immunosuppressants "is like asking someone without triceps to do pushups—it's impossible." Outside of the legal context, the incompetence model urges adults to try to take control of young people since we can't trust their judgment. The same kidney doctor joked that we should just implant a chip in young patients' brains to remind them to take their meds, and shock them if they don't, to make up for the hole where their prefrontal cortex is supposed to be. That's the incompetence model taken to its logical conclusion.

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Was the MacArthur network's incompetence model founded on solid