

Introduction	<p>"Attention," cognitive neuroscientists Michael Posner and Mary Rothbart write, provides the mechanisms "that underlie our awareness of the world and the voluntary regulation of our thoughts and feelings."</p> <p>Tony Schwartz, a consultant who coaches leaders on how to best manage their energy, tells me, "We get people to become more aware of how they use attention—which is always poorly."</p> <p>Attention is now the number-one issue on the minds of our clients.</p> <p>You can spot the focused folks at a party: they are able to immerse themselves in a conversation, their eyes locked on the other person as they stay fully absorbed in their words—despite that speaker next to them blaring the Beastie Boys.</p> <p>The unfocused, in contrast, are in continual play, their eyes gravitating to whatever might grab them, their attention adrift.</p>
Workplace Attention	<p>Workplace surveys, though, find large numbers of people are in a very different brain state: they daydream, waste hours cruising the Web or YouTube, and do the bare minimum required.</p> <p>Their attention scatters. Such disengagement and indifference are rampant, especially among repetitive, undemanding jobs. To get the disengaged workers any nearer the focused range demands upping their motivation and enthusiasm, evoking a sense of purpose, and adding a dollop of pressure.</p> <p>Another large group are stuck in the state neurobiologists call "frazzle," where constant stress overloads their nervous system with floods of cortisol and adrenaline.</p> <p>Their attention fixates on their worries, not their job. This emotional exhaustion can lead to burnout.</p>
Two main varieties of distractions	<p>The sensory distractors are easy: as you read these words you're tuning out of the blank margins surrounding this text.</p> <p>Or notice for a moment the feeling of your tongue against your upper palate—just one of an endless wave of incoming stimuli your brain weeds out from the continuous wash of background sounds, shapes and colors, tastes, smells, sensations, and on and on.</p> <p>More daunting is the second variety of lures: emotionally loaded signals.</p> <p>While you might find it easy to concentrate on answering your email in the hubbub of your local coffee shop, if you should overhear someone mention your name (potent emotional bait, that)</p> <p>it's almost impossible to tune out the voice that carries it—your attention reflexively alerts to hear what's being said about you. Forget that email.</p> <p>Overloading attention shrinks mental control. It's in the moments we feel most stressed that we forget the names of people we know well, not to mention their birthdays, our anniversaries, and other socially crucial data.</p>
Attention Overload	<p>Researchers find that the prevalence of obesity in the United States over the last thirty years tracks the explosion of computers and tech gadgets in people's lives—and suspect this is no accidental correlation.</p> <p>Life immersed in digital distractions creates a near-constant cognitive overload. And that overload wears out self-control.</p> <p>Social anxiety. In general, anxious people fixate on anything even vaguely threatening; those with social anxiety compulsively spot the least sign of rejection, such as a fleeting expression of disgust on someone's face—a reflection of their habitual assumption that they will be social flops.</p>
Bottom-up mind	<p>Faster in brain time, which operates in milliseconds</p> <p>Involuntary and automatic: always on</p> <p>Intuitive, operating through networks of association</p> <p>Impulsive, driven by emotions</p> <p>Executor of our habitual routines and guide for our actions</p> <p>Manager for our mental models of the world</p> <p>Dating back millions of years in evolution, the reflexive, quick-acting bottom-up circuitry favors short-term thinking, impulse, and speedy decisions.</p> <p>The brain's more ancient bottom-up systems apparently worked well for basic survival during most of human prehistory—but their design makes for some troubles today. In much of life the older system holds sway, usually to our advantage but sometimes to our detriment: overspending, addictions, and recklessly speeding drivers all count as signs of this system out of whack.</p> <p>The survival demands of early evolution packed our brains with preset bottom-up programs for procreation and child-rearing, for what's pleasurable and what's disgusting, for running from a threat or toward food, and the like. Fast-forward to today's very different world: we so often need to navigate life top-down despite the constant undertow of bottom-up whims and drives.</p> <p>The bottom-up system multitasks, scanning a profusion of inputs in parallel, including features of our surroundings that have not yet come into full focus.</p> <p>Walk into someone's office, and what's the first thing you notice? That's a clue to what's driving your bottom-up focus in that moment. If you're set on a financial goal, you might immediately take in an earnings graph on the computer screen. If you have arachnophobia, you'll fixate on that dusty web in the corner of the window.</p>
Top-down mind	<p>Slower</p> <p>Voluntary</p> <p>Effortful</p> <p>The seat of self-control, which can (sometimes) overpower automatic routines and mute emotionally driven impulses</p> <p>Able to learn new models, make new plans, and take charge of our automatic repertoire—to an extent</p> <p>Our top-down mind takes more time to deliberate on what it gets presented with, taking things one at a time and applying more thoughtful analysis.</p> <p>The top-down circuits at the front and top of the brain are a later addition, their full maturation dating back mere hundreds of thousands of years.</p> <p>Top-down wiring adds talents like self-awareness and reflection, deliberation, and planning to our mind's repertoire. Intentional, top-down focus offers the mind a lever to manage our brain.</p>
The two minds	

Focus: The Hidden Driver of Excellence
Daniel Goleman

Attention

Two minds working together

Much (some say all) of what the top-down mind believes it has chosen to focus on, think about, and do is actually plans dictated bottom-up.

A surprising factor constantly tips the balance toward bottom-up: the brain economizes on energy.

Cognitive efforts like learning to use your latest tech upgrade demand active attention, at an energy cost.

But the more we run through a once-novel routine, the more it morphs into rote habit and gets taken over by bottom-up circuitry, particularly neural networks in the basal ganglia, a golf-ball-sized mass nestled at the brain's bottom, just above the spinal cord.

The more we practice a routine, the more the basal ganglia take it over from other parts of the brain.

The peak of automaticity can be seen when expertise pays off in effortless attention to high demand, whether a master-level chess match, a NASCAR race, or rendering an oil painting. If we haven't practiced enough, all of these will take deliberate focus.

But if we have mastered the requisite skills to a level that meets the demand, they will take no extra cognitive effort—freeing our attention for the extras seen only among those at top levels.

As world-class champions attest, at the topmost levels, where your opponents have practiced about as many thousands of hours as you have, any competition becomes a mental game: your mind state determines how well you can focus, and so how well you can do. The more you can relax and trust in bottom-up moves, the more you free your mind to be nimble.

Brain studies find that having a champion athlete start pondering technique during a performance offers a sure recipe for a screwup.

The motor cortex, which in a well-seasoned athlete has these moves deeply etched in its circuits from thousands of hours of practice, operates best when left alone. When the prefrontal cortex activates and we start thinking about how we're doing, how to do what we're doing—or, worse, what not to do—the brain gives over some control to circuits that know how to think and worry, but not how to deliver the move itself. Whether in the hundred meters, soccer, or baseball, it's a universal recipe for tripping up.

The bottom/top systems distribute mental tasks between them so we can make minimal effort and get optimal results. As familiarity makes a routine easier, it gets passed off from the top to the bottom. The way we experience this neural transfer is that we need pay less attention—and finally none—as it becomes automatic.

Research by Harvard's Howard Gardner, Stanford's William Damon, and Claremont's Mihaly Csikszentmihalyi zeroed in on what they call "good work," a potent mix of what people are excellent at, what engages them, and their ethics—what they believe matters.

Those are more likely to be high-absorption callings: people love what they are doing. Full absorption in what we do feels good, and pleasure is the emotional marker for flow.

People are in flow relatively rarely in daily life.

Sampling people's moods at random reveals that most of the time people are either stressed or bored, with only occasional periods of flow; only about 20 percent of people have flow moments at least once a day. Around 15 percent of people never enter a flow state during a typical day.

There are several doorways to flow.

Flow

One may open when we tackle a task that challenges our abilities to the maximum—a "just-manageable" demand on our skills.

Another entryway can come via doing what we are passionate about; motivation sometimes drives us into flow.

But either way the final common pathway is full focus: these are each ways to ratchet up attention. No matter how you get there, a keen focus jump-starts flow.

"Whenever you notice your mind wandering," a fundamental instruction in meditation advises, "bring your mind back to its point of focus." The operative phrase here is whenever you notice. As our mind drifts off, we almost never notice the moment it launches into some other orbit on its own. A meander away from the focus of meditation can last seconds, minutes, or the entire session before we notice, if we do at all.

That simple challenge is so hard because the very brain circuits we need to catch our mind as it wanders are recruited into the neural web that sets the mind adrift in the first place.

The wandering mind Noticing that our mind has wandered marks a shift in brain activity; the greater this meta-awareness, the weaker the mind wandering becomes.

When we are hijacked the amygdala circuitry captures the right side and takes over. But the left side can send signals downward that calm the hijack.

Emotional resilience comes down to how quickly we recover from upsets. People who are highly resilient—who bounce back right away—can have as much as thirty times more activation in the left prefrontal area than those who are less resilient.

While mind wandering may hurt our immediate focus on some task at hand, some portion of the time it operates in the service of solving problems that matter for our lives.

Rappers immersed in "freestyling," where they improvise lyrics in the moment, show heightened activity in the mind-wandering circuitry, among other parts of the brain—allowing fresh connections between far-ranging neural networks.

Among other positive functions of mind wandering are generating scenarios for the future, self-reflection, navigating a complex social world, incubation of creative ideas, flexibility in focus, pondering what we're learning, organizing our memories, just mulling life—and giving our circuitry for more intensive focusing a refreshing break.

Focused goal-driven attention vs open spontaneous awareness.

A moment's reflection leads me to add two more: reminding me of things I have to do so they don't get lost in the mind's shuffle, and entertaining me. I'm sure you can suggest some other useful features, if you let your mind drift awhile.

Our mind holds endless ideas, memories, and potential associations waiting to be made. But the likelihood of the right idea connecting with the right memory within the right context—and all that coming into the spotlight of attention—

	<p>diminishes drastically when we are either hypofocused or too gripped by an overload of distractions to notice the insight.</p> <p>Attention reflects a mental mode where we simply notice whatever comes into awareness without getting caught up or swept away by any particular thing. Everything flows through.</p> <p>"The capacity to remain with your attention open in a panoramic awareness," says Davidson, "lets you attend with equanimity, without getting caught in a bottom-up capture that ensnares the mind in judging and reactivity, whether negative or positive."</p> <p>It also decreases mind wandering. The goal, he adds, is to be better able to engage in mind wandering when you want to, and not otherwise.</p> <p>The intuitive mind is a sacred gift and the rational mind is a faithful servant," Albert Einstein once said. "We have created a society that honors the servant and has forgotten the gift.</p> <p>Good days for insights had nothing to do with stunning breakthroughs or grand victories. The key turned out to be having small wins—minor innovations and troubling problems solved—on concrete steps toward a larger goal.</p> <p>Creative insights flowed best when people had clear goals but also freedom in how they reached them. And, most crucial, they had protected time—enough to really think freely. A creative cocoon.</p>			
Open Awareness				
Restoring Attention	<p>Consider the cognitive effort demanded by our new normal information overload—the explosion of news streams, emails, phone calls, tweets, blogs, chats, reflections about opinions about opinions that we expose our cognitive processors to daily.</p> <p>That neural buzz adds tension to the demands of getting something done. Selecting one sharp focus requires inhibiting a multitude of others. The mind has to fight off the pull of everything else, sorting out what's important from what's irrelevant. That takes cognitive effort.</p> <p>"The antidote to attention fatigue is the same as for the physical kind: take a rest. But what rests a mental muscle?</p> <p>Try switching from the effort of top-down control to more passive bottom-up activities, taking a relaxing break in a restful setting.</p> <p>The most restful surroundings are in nature, argues Stephen Kaplan at the University of Michigan, who proposes "what he calls "attention restoration theory."</p> <p>But only certain kinds of bottom-up focus act to restore energy for focused attention. Surfing the Web, playing video games, or answering email does not.</p> <p>Taking a walk down a city street, Kaplan points out, still puts demands on attention—we've got to navigate through crowds, dodge cars, and ignore honking horns and the hum of street noise.</p> <p>In contrast, a walk through a park or in the woods puts little such demand on attention. We can restore by spending time in nature—even a few minutes strolling in a park or any setting rich in fascinations like the muted reds of clouds at sunset or a butterfly's flutter.</p> <p>The insula maps our body's insides via circuitry linking to our gut, heart, liver, lungs, genitals—every organ has its specific spot.</p> <p>This lets the insula act as a control center for organ functions, sending signals to the heart to slow its beat, the lungs to take a deeper breath.</p> <p>"Attention turned inward toward any part of the body amps up the insula's sensitivity to the particular area we're checking on. Tune in to your heartbeat and the insula activates more neurons in that circuitry.</p> <p>How well people can sense their heartbeat, in fact, has become a standard way to measure their self-awareness. The better people are at this, the bigger their insula.</p>			
The insula	<p>The insula attunes us to more than our organs; our very sense of how we are feeling depends on it.</p> <p>People who are oblivious to their own emotions (and also—tellingly, as we'll see—to how other people feel) have sluggish insula activity compared with the high activation found in people highly attuned to their inner emotional life.</p> <p>Our "gut feelings" are messages from the insula and other bottom-up circuits that simplify life decisions for us by guiding our attention toward smarter options. The better we are at reading these messages, the better our intuition.</p>			
Somatic marker	<p>Somatic marker is neuroscientist Antonio Damasio's term for the sensations in our body that tell us when a choice feels wrong or right.</p> <p>This bottom-up circuitry telegraphs its conclusions through our gut feelings, often long before the top-down circuits come to a more reasoned conclusion.</p>			
Self-Awareness	<p>A statistical analysis found that a child's level of self-control is every bit as powerful a predictor of her adult financial success and health (and criminal record, for that matter) as are social class, wealth of family of origin, or IQ.</p> <p>How we focus holds the key to willpower. Hundreds of hours of observation of little kids fighting off temptation reveal "the strategic allocation of attention," as he puts it, to be the crucial skill.</p>			
Self-Control	<p>The kids who waited out the full fifteen minutes did it by distracting themselves with tactics like pretend play, singing songs, or covering their eyes.</p> <p>If a kid just stared at the marshmallow, he was a goner (or more precisely, the marshmallow was).</p> <p>At least three sub-varieties of attention, all aspects of the executive, are at play when we pit self-restraint against instant gratification.</p>			
				<p>The first is the ability to voluntarily disengage our focus from an object of desire that powerfully grabs our attention.</p> <p>The second, resisting distraction, lets us keep our focus elsewhere—say, on fantasy play—rather than gravitating back to that juicy whatever.</p> <p>And the third allows us to keep our focus on a goal in the future, like the two marshmallows later. All that adds up to willpower.</p>
	Attention regulates emotion			