



# LIVING IN AN IMAGINARY WORLD

DAYDREAMING CAN HELP SOLVE PROBLEMS, TRIGGER CREATIVITY, AND INSPIRE GREAT WORKS OF ART AND SCIENCE. WHEN IT BECOMES COMPULSIVE, HOWEVER, THE CONSEQUENCES CAN BE DIRE

By Josie Glausiusz

Photoillustration by Aaron Goodman

**W**hen Rachel Stein (not her real name) was a small child, she would pace around in a circle shaking a string for hours at a time, mentally spinning intricate al-

ternative plots for her favorite television shows. Usually she was the star—the imaginary seventh child in *The Brady Bunch*, for example. “Around the age of eight or nine, my older brother said, ‘You’re doing this on the front lawn, and the neighbors are looking at you. You just can’t do it anymore,’” Stein recalls.

So she retreated to her bedroom, reveling in her elaborate reveries alone. As she grew older, the television shows changed—first *General Hospital*, then *The West Wing*—but her intense need to immerse herself in her imaginary world did not.

“There were periods in my life when daydreaming just took over everything,” she recalls. “I was not in control.” She would retreat into fantasy “any waking moment when I could get away with it. It was the first thing I wanted to do when I woke up in the morning. When I woke up in the night to go to the bathroom, it would be bad if I got caught up in a story because then I couldn’t go back to sleep.” By the time she was 17,



FAST FACTS

**INNER WORLD**

1 Daydreams are an inner world where we can rehearse the future and imagine new adventures without risk. Allowing the mind to roam freely can aid creativity—but only if we pay attention to the content of our daydreams.

2 Neuroscientists have identified the “default network”—a web of brain regions that become active when we mentally drift away from the task at hand into our own reveries.

3 When daydreaming turns addictive and compulsive, it can overwhelm normal functioning, impeding relationships and work.

Stein was exhausted. “I loved the daydreams, but I just felt it was consuming my real life. I went to parties with friends, but I just couldn’t wait to get home. There was nothing else that I wanted to do as much as daydreaming.”

Convinced that she was crazy, she consulted six different therapists, none

mental imagery is helping researchers understand the multiple purposes that daydreaming serves in our lives. They have dubbed this web of neurons “the default network” because when we are not absorbed in more focused tasks, the network fires up. The default network appears to be essential to generating our

unrelated to one’s task at hand.” In his view, mind wandering is a broad category that may include everything from pondering ingredients for a dinner recipe to saving the planet from alien invasion. Most of the time when people fall into mind wandering, they are thinking about everyday concerns, such as recent

## MOST PEOPLE SPEND BETWEEN 30 AND 47 PERCENT OF THEIR WAKING HOURS SPACING OUT, DRIFTING OFF, LOST IN THOUGHT, WOOLGATHERING—OR, AS ONE SCIENTIST PUT IT, “WATCHING YOUR OWN MENTAL VIDEOS.”

of whom could find anything wrong with her. The seventh prescribed Prozac, which had no effect. Eventually Stein began taking another antidepressant, Luvox, which, like Prozac, is also a selective serotonin reuptake inhibitor but is usually prescribed for obsessive-compulsive disorder. Gradually she brought her daydreaming under control. Now age 39, she is a successful lawyer, still nervously guarding her secret world.

The scientific study of people such as Stein is helping researchers better understand the role of daydreaming in normal consciousness—and what can happen when this process becomes unhealthy. For most of us, daydreaming is a virtual world where we can rehearse the future, explore fearful scenarios or imagine new adventures without risk. It can help us devise creative solutions to problems or prompt us, while immersed in one task, with reminders of other important goals.

For others, however, the draw of an alternative reality borders on addiction, choking off other aspects of everyday life, including relationships and work. Staring as idealized versions of themselves—as royalty, raconteurs and saviors in a complex, ever changing cast of characters—addictive daydreamers may feel enhanced confidence and validation. Their fantasies may be followed by feelings of dread and shame, and they may compare the habit to a drug or describe an experience akin to drowning in honey.

The recent discovery of a network in the brain dedicated to autobiographical

sense of self, suggesting that daydreaming plays a crucial role in who we are and how we integrate the outside world into our inner lives. Cognitive psychologists are now also examining how brain disease may impair our ability to meander mentally and what the consequences are when we just spend too much time, well, out to lunch.

### Videos in the Mind’s Eye

Most people spend between 30 and 47 percent of their waking hours spacing out, drifting off, lost in thought, woolgathering, in a brown study or building castles in the air. Yale University emeritus psychology professor Jerome L. Singer defines daydreaming as shifting attention “away from some primary physical or mental task toward an unfolding sequence of private responses” or, more simply, “watching your own mental videos.” The 89-year-old Singer, who published a lyrical account of his decades of research on daydreams in his 1975 book, *The Inner World of Daydreaming* (Harper & Row), divides daydreaming styles into two main categories: “positive-constructive,” which includes upbeat and imaginative thoughts, and “dysphoric,” which encompasses visions of failure or punishment. Most people experience both kinds to some degree.

Other scientists distinguish between mundane musings and extravagant fantasies. Michael Kane, a cognitive psychologist at the University of North Carolina at Greensboro, considers “mind wandering” to be “any thoughts that are

encounters and items on their to-do list. More exotic daydreams in the style of James Thurber’s grandiose fictional fantasist Walter Mitty—such as Mitty’s dream of piloting an eight-engine hydroplane through a hurricane—are rare.

Humdrum concerns figured prominently in one study that rigorously measured how much time we spend mind wandering in daily life. In a 2009 study Kane and his colleague Jennifer McVay asked 72 U.N.C. students to carry PalmPilots that beeped at random intervals eight times a day for a week. The subjects then recorded their thoughts at that moment on a questionnaire. About 30 percent of the beeps coincided with thoughts unrelated to the task at hand. Mind wandering increased with stress, boredom or sleepiness or in chaotic environments and decreased with enjoyable tasks. That may be because enjoyable activities tend to grab our attention.

Intense focus on our problems may not always lead to immediate solutions. Instead allowing the mind to float freely can enable us to access unconscious ideas hovering underneath the surface—a process that can lead to creative insight, according to psychologist Jonathan W. Schooler of the University of California, Santa Barbara.

We may not even be aware that we are daydreaming. We have all had the experience of “reading” a book yet absorbing nothing—moving our eyes over the words on a page as our attention wanders and the text turns into gibberish. “People oftentimes don’t realize that



People’s minds typically wander to everyday concerns, such as conversations with co-workers or errands they have to run. More elaborate fantasies—such as Walter Mitty’s of piloting a plane—are far less common.

they’re daydreaming while they’re daydreaming; they lack what I call ‘meta-awareness,’ consciousness of what is currently going on in their mind,” Schooler says. Aimless rambling across the moors of our imaginings may allow us to stumble on ideas and associations that we may never find if we strive to seek them.

### A Key to Creativity

Artists and scientists are well acquainted with such playful fantasizing. Orhan Pamuk, the Turkish novelist who won the Nobel Prize in Literature in 2006, imagined “another world,” to which he retreated as a child, where he was “someone else, somewhere else ... in my grandmother’s sitting room, I’d pretend to be inside a submarine.” Albert

Einstein pictured himself running along a light wave—a reverie that led to his theory of special relativity. Filmmaker Tim Burton daydreamed his way to Hollywood success, spending his childhood holed up in his bedroom, creating posters for an imaginary horror film series.

Why should daydreaming aid creativity? It may be in part because the waking brain is never really at rest. As psychologist Eric Klinger of the University of Minnesota explains, floating in unfocused mental space serves an evolutionary purpose: when we are engaged with one task, mind wandering can trigger reminders of other, concurrent goals so that we do not lose sight of them. Some researchers believe that increasing the amount of imaginative daydreaming we do or replaying variants of the millions of events we store in our brain can be beneficial. A painful procedure in a doctor’s office, for example, can be made less distressing by visualizations of soothing scenes from childhood.

Yet to enhance creativity, it is important to pay attention to daydreams. Schooler calls this “tuning out” or deliberate “off-task thinking.” In an as yet unpublished study, he and his colleague Jonathan Smallwood asked 122 undergraduates at the University of British Columbia to read a children’s story and press a button each time they caught themselves tuning out. The researchers also periodically interrupted the students as they were reading and asked them if they were “zoning out” or drifting off without being aware of it. “What we find is that the people who regularly catch themselves—who notice when they’re doing it—seem to be the most creative,” Schooler says. Such

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If you are faced with a difficult decision, try not to think about the problem for a while. Instead do something else while letting your mind ramble. You may get a flash of insight from your subconscious that will lead you in the right direction.

subjects score higher on a standard test of creativity, in which they are asked to describe all the uses of a common object, such as a brick; high scorers compile a longer and more creative list. “You need to have the mind-wandering process,” he explains, “but you also need to have meta-awareness to say, ‘That’s a creative idea that popped into my mind.’”

The mind’s freedom to wander during a period of deliberate tuning out could also explain the flash of insight that may pop into a person’s head when he or she takes a break from an unsolved problem. Ut Na Sio and Thomas Ormerod, two researchers at the University of Lancaster in England, conducted a recent meta-analysis of studies of these

brief reveries. They found that people who engaged in a mildly demanding task, such as reading, during a break from, say, a visual assignment, such as the hat-rack problem—in which participants have to construct a sturdy hat rack using two boards and a clamp—did better on that problem than those who did nothing at all. They also scored higher than those engaged in a highly demanding task—such as mentally rotating shapes—during the interval. Allowing our mind to ramble during a moderately challenging task, it seems, enables us to access ideas not easily available to our conscious mind or to combine these insights in original ways. Our ability to do so is now known to depend on the normal functioning of a dedicated daydreaming network deep in our brain.

### The Mental Matrix of Fantasy

Like Facebook for the brain, the default network is a bustling web of memories and streaming movies, starring ourselves. “When we daydream, we’re at the center of the universe,” says neurologist Marcus Raichle of Washington University in St. Louis, who first described the network in 2001. It consists of three main regions: the medial prefrontal cortex, the posterior cingulate cortex and the parietal cortex. The medial prefrontal cortex helps us imagine ourselves and the thoughts and feelings of others; the posterior cingulate cortex draws personal memories from the brain; and the parietal cortex has major connections with the hippocampus, which stores episodic memories—what we ate for breakfast, say—but not impersonal facts, such as the capital of Kyrgyzstan. “The default mode network is critical to the establishment of a sense of self,” Raichle says.

It was not until 2007, however, that cognitive psychologist Malia Fox Mason, now at Columbia University, discovered that the default network—which lights up when people switch from an attention-demanding activity to drifting reveries with no specific goal—becomes more active when people engage in a monotonous verbal task, when they are more likely to mind wander. In an experiment, partici-

pants were shown a string of four letters such as R H V X for one second, which was then replaced by an arrow pointing either left or right, to indicate whether the sequence should be read forward or backward. When one of the characters in the string appeared, subjects were asked to indicate its position (first, second, third or last, depending on the direction of the arrow). The more the participants practiced on each of the four original letter strings, the better they performed. They were then given a novel task, consisting

were caught in the act. Notably, activity was strongest when people were unaware that they had lost their focus. “The more complex your mind-wandering episode is, the more of your mind it’s going to consume,” Smallwood says.

Defects in the default network may also impair our ability to daydream. A range of disorders—including schizophrenia and depression—have been linked to malfunctions in the default network. In a 2007 study neuroscientist Peter Williamson of the University of West-

repetitively analyzing their causes and consequences, or worrying about all the ways things could go wrong in the future—are well aware that their thoughts are their own, but they have intense difficulty turning them off. The late Yale psychologist Susan Nolen-Hoeksema did not believe that rumination is a form of daydreaming, which she defined as “imagining situations in the future that are largely positive in tone.” Nevertheless, she had found that in obsessive ruminators, who are at greater risk of depression, the same

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of letter sequences they had not seen before. Activity in the default network went down during the novel version of the test. Subjects who daydreamed more in everyday life—as determined by a questionnaire—also showed greater activity in the default network during the monotonous original task.

Mason did not directly measure mind wandering during the scans, however, so she could not determine exactly when subjects were “on task” and when they were daydreaming. In 2009 Smallwood, Schooler and Kalina Christoff of the University of British Columbia published the first study to directly link mind wandering with increased activity in the default network. The researchers scanned the brains of 15 U.B.C. students while they performed a simple task in which they were shown random numbers from zero to nine. Each was asked to push a button when he or she saw any number except three. In the seconds before making an error—a key sign that an individual’s attention had drifted—default network activity shot up. Periodically the investigators also interrupted the subjects and asked them if they had zoned out. Again, activity in the default network was higher in the seconds before the moment they

ern Ontario found that people with schizophrenia have deficits in the medial prefrontal cortex, which is associated with self-reflection. In patients experiencing hallucinations, the medial prefrontal cortex dropped out of the network altogether. Although the patients were thinking, they could not be sure where the thoughts were coming from. People with schizophrenia daydream normally most of the time, but when they are ill, “they often complain that someone is reading their mind or that someone is putting thoughts in their head,” Williamson says.

On the other hand, those who ruminate obsessively—rehashing past events,

default network circuitry turns on that is activated when we daydream.

These ruminators—who may repeatedly scrutinize faux pas, family issues or lovers’ betrayals—have trouble switching off the default network when asked to focus mentally on a neutral image, such as a truckload of watermelons. They may spend hours going over some past incident, asking themselves how it could have happened and why they did not react differently and end up feeling overwhelmed instead of searching for solutions. Experimental studies have shown that positive distraction—for example, exercise and social activities—can help ruminators



Daydreaming can serve as a useful distraction. For example, conjuring up soothing scenes from the past could make a visit to the doctor more bearable.

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reappraise their situation, as can techniques for cultivating mindfulness that teach individuals to pay precise attention to activities such as breathing or walking, rather than to thoughts. Yet people who daydream excessively may have the same problems ignoring their thoughts once they get going. Indeed, extreme daydreamers find their private world so difficult to escape that they describe it as an addiction—one as enslaving as heroin.

### When Daydreaming Becomes a Drug

“I’m like an alcoholic with an unlimited supply of booze everywhere I go,” says Cordellia Amethyste Rose. A 33-year-old woman in Oregon, she started an online forum called Wild Minds (<http://wildminds.ning.com>) for

people who simply cannot stop daydreaming. Since childhood, Rose has conjured up countless imaginary characters in ever changing plots. “They’ve grown right along with me, had children—some have died,” she says. The deeper she delved into her virtual world, though, the more distressed she became. “I couldn’t pay attention for more than a split second. I would look at a book and zone out after every word.” Even so, she found her invented companions more compelling than anyone real. “I’ve learned to socialize internally with fictional characters I get along with,” she says. She could engage them in intellectual debate, whereas “socializing with outside people frustrates me. They all want to talk about the silliest things.”

Rose says that she has no friends, but

on Wild Minds she has found her peers. Many people posting to the site express relief that they have found others like themselves, emerging from a cocoon of loneliness and shame to share their experiences: misdiagnoses, lack of understanding from families and therapists, and rituals like the one described by a quiet girl who spends “endless hours” swaying in a rocking chair listening to music, daydreaming her life away. “It’s like a drug, poisoning and destroying your life,” says one anonymous fantasist, who admits to bingeing for days on a story line. “It’s even worse because an addict can put a drug down and walk away. You can’t put down your mind and walk away from it.”

Yet few of the members of the Wild Minds community would abandon their mental creations, even if they could. One hardworking nurse revels in imagined adventures starring a fictional medieval Queen Eleanor of Scotland, a skilled horsewoman with four concurrent husbands, who practices a made-up religion and is “a genius in both state and battlecraft ... trained in martial arts and is always inventing marvelous things.” Like Thurber’s fictional fantasist, Queen Eleanor’s creator spends a lot of time mentally rescuing disaster victims from burning buildings or “abseiling over cliffs, being winched in and out of helicopters with casualties.”

She has also documented her preposterous plots for independent biopsychologist Cynthia Schupak, a researcher with a single-minded mission to understand compulsive daydreamers, who treated Rachel Stein and described her ordeal in a journal article published in 2009. Schupak is convinced that compulsive daydreaming is a unique disorder, characterized by an inability to control it and the deep distress over the condition. “Everyday escapist fantasy is fine and dandy, but this syndrome is different,” she says.

In 2011 Schupak and psychology re-

A pleasant reverie about a successful acting career might motivate you to work hard for a desired outcome, but it could be detrimental if you become oblivious to pickpockets or vehicular traffic.

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searcher Jayne Bigelsen published a study of 90 compulsive fantasizers—75 women and 15 men—garnered from Web sites such as the Yahoo group Maladaptive Daydreamers ([http://health.groups.](http://health.groups.yahoo.com/group/maladaptivedaydreamers)

[yahoo.com/group/maladaptivedaydreamers](http://health.groups.yahoo.com/group/maladaptivedaydreamers)). The self-selected respondents devoted between 12.5 and 99 percent of their waking hours to daydreaming, and 79 percent of them engaged in physical movement such as pacing while doing so. Many said everyday activities paled by comparison with their vivid inner worlds, and some drifted in and out of their alternative reality in the midst of conversation. Typically they reported that their daydreams made them feel comforted or confident “because it’s me, just magnified,” as one subject put it. Nevertheless, 88 percent said they anguished over the amount of time spent fantasizing, even though most were gainfully employed or students. Nine percent had no friends or meaningful relationships, and 82 percent kept their daydreaming habit hidden from almost everyone.

Some evidence suggests that maladaptive daydreaming could be a distinctive disorder. Eleven years ago clinical psychologist Eli Somer of the University of Haifa in Israel recounted cases of six people consumed by fantasy lives packed with sadism and bloodshed. All had suffered some form of childhood trauma. One had been sexually molested by her grandfather. Another described his father as a brutal man who humiliated and physically abused family members.

Somer believes that this mental activity emerged as a coping mechanism to help his patients deal with intolerable or inescapable realities. When their enhanced ability to conjure up vivid imagery is under control and does not interfere with social or academic success, “the phenomenon should probably be classified as a talent rather than a disorder,” he

says. Attitude may also be important. Singer, who grew up during the Great Depression and had no formal musical training, he says, entertained himself through childhood and adolescence

## “I’M LIKE AN ALCOHOLIC WITH AN UNLIMITED SUPPLY OF BOOZE WHEREVER I GO,” SAYS CORDELLIA AMETHYSTE ROSE, WHO STARTED AN ONLINE FORUM FOR PEOPLE WHO CANNOT STOP DAYDREAMING.

with the imaginary achievements of “Singer the Composer,” an alter ego who wrote a complete repertoire of classical music, including operas and an unfinished Seventh Symphony. He does not consider his inner adventures harmful but rather sees them as a boredom-banishing sport—one that likely helped to propel him into his profession.

### Is Your Mind Wandering Out of Control?

How do you know when you have tipped over from useful and creative daydreaming into the netherworld of compulsive fantasizing? First, notice whether you are deriving any useful insights from your fantasies. “The proof is in the pudding,” Schooler says. “Creative individuals—artists, scientists, and so on—often report ideas that have occurred to them during daydreams.” Second, it is important to take stock of the content of your daydreams. To distinguish between beneficial and pathological imaginings,

he adds, “Ask yourself if this is something useful, helpful, valuable, pleasant, or am I just rehashing the same old perseverative thoughts over and over again?” And if daydreaming feels out of control, then

even if it is pleasant it is probably not useful or valuable.

Whether or not mind wandering causes distress often depends on the context, Kane observes. “We argue that it’s not inherently good or bad; it all depends on what the goals of the person are at the time.” It may be perfectly reasonable for a scientist to mentally check out in the midst of a repetitive experiment. And a novelist who can publish her reveries is clearly putting them to good use.

“Happily, a lot of what we do in life doesn’t require that much concentration,” Kane says. “But there are going to be some contexts in which it is costly. Does the cost to your activity, to your reputation, to your performance, overwhelm the benefit that you may be getting from those thoughts? You can imagine situations where it is so costly that there’s no thought you could be having that’s worth it,” he says, pausing to consider the possibilities. “You’ve crossed the line,” he concludes, “if you walk into traffic and get killed.” **M**

### FURTHER READING

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