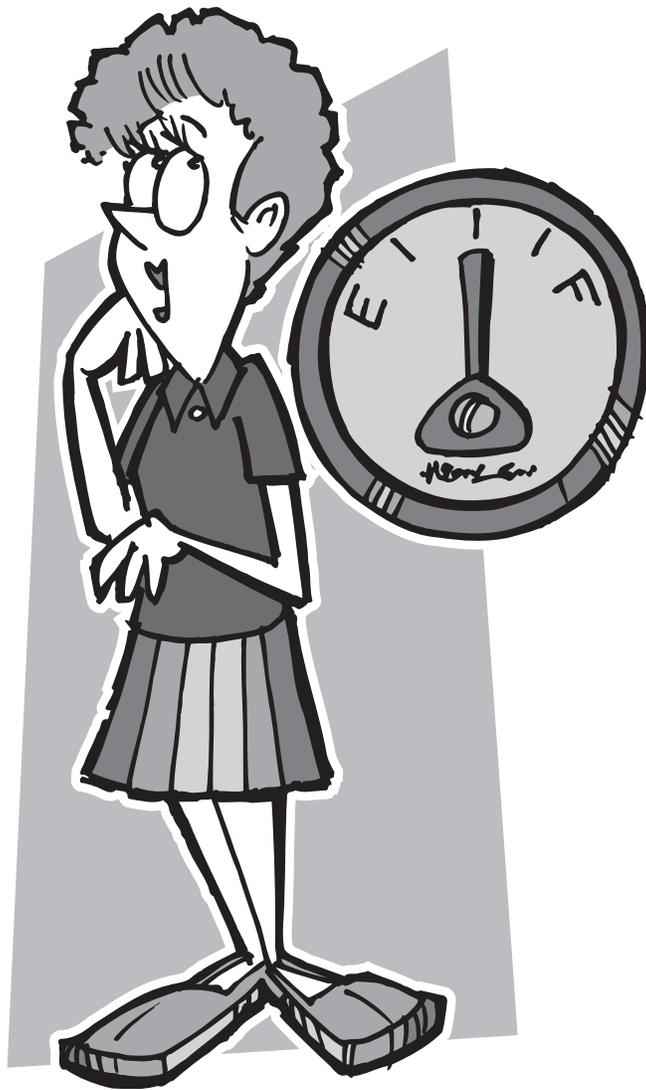


8

Steer Toward the Positive

Keep A “Gauge Is Half-Full” Attitude





The traffic light turns green as you start to drive through the intersection. Suddenly, another driver ignores his red light and speeds through the intersection in front of you. As you slam on the brakes, your car veers into a terrifying skid. But with a death grip on the steering wheel, you swerve and miss the errant driver's car. *Phew!* Although your breathing is rapid and your hands are shaking, the danger has passed. You can start to relax now.

The physical and mental reactions you experienced during the wild ride through the stress zone were nature's way of protecting you. Not that you care to relive that frightening scene, but it is important to understand how your brain reacts under stress. If you roll your memory tape backwards, you'll see your foot lightly push the accelerator as the light turned green. As soon as you spotted the imminent threat, your eyes immediately alerted your brain that you were facing trouble. A tiny region at the base of your brain—the hypothalamus—set off your body's emergency warning system. With lightning speed, your adrenal glands unleashed a battalion of chemical forces into your bloodstream. This caused your heart rate and blood pressure to push extra oxygen toward your muscles. Potent stress hormones—including adrenaline and cortisol—coursed through your veins to boost your mental focus and strength. As your glucose (sugar) levels spiked, your brain suppressed bodily functions—such as immunity and digestion—that are unnecessary for crisis management. Your body remained in this high-alert state until the danger passed. Fortunately for you, the threat ended safely, and your body calmed and returned to normal soon afterward.

You Are Wired for Survival

Thousands of years ago, wild animals roamed the earth and warriors raged against rival clans and carried off their women. Your primitive ancestors had to remain vigilant against threats from such predators, and the stress response aided their survival against sudden attacks or threats. This powerful physiological response is meant to kick in briefly and prepare the body to flee or fight the danger. This atavistic system continues to work in the 21st century, but what our brains interpret today as a threat has drastically changed. While we no longer fear being eaten alive by predators, modern society tends to eat us alive in more subtle, but equally catastrophic ways. Stock market meltdowns, global economic downturns, and pandemic flu warnings keep us frazzled. Cell phone interruptions, rude tailgaters and obnoxious television commercials further agitate our senses. It seems as if modern life is a perpetual merry-go-round of anxiety and unresolved stress that can trigger the stress response in our bodies—and that response doesn't get a chance to relax and stand down.

Beware of Excess Stress

In some situations, small amounts of short-term stress can increase our creativity, concentration, and performance. But too much stress can be physically and mentally damaging. Not to increase your stress level...but research indicates that persistent stress can make your body vulnerable to disease, and it can exacerbate conditions such as heart and autoimmune diseases, ul-



cers, diabetes, hardening of the arteries, insomnia, or stroke. Chronic stress can also disturb the body's hormonal balance leading to digestive disorders and infections. Stress also speeds up the aging process and can negatively affect your brain. The stress response chemicals that cause your blood pressure to rise can also shunt blood away from your brain's frontal (thinking) cortex. Scientists believe that over time this may cause neurological impairments. Animal studies reveal that excess stress diminishes the process of neurogenesis—brain cell replacement—in the body.

New scientific evidence confirms that gnawing stress can literally rob the brain. Autopsies performed on older adults who had experienced long-term exposure to stress and whose bodies contained high levels of cortisol have shown up to a 25 percent average reduction in the size of the hippocampus—the area most important to memory processing and learning—region of their brains! Research studies also show that older adults with continuously high levels of the stress hormone cortisol perform worse on memory tests than groups with low or moderate cortisol levels in their bodies.

To protect yourself from the harmful effects of your stress response system, you must learn to effectively cope with the stressors in your life. But in today's nerve-racking world, how do you shut off the stress?

How Well Do You Deal with Stress?

Before you can manage a condition, you have to know what it is; however, if you were to ask a dozen people to define what stress is, you would likely get twelve different answers. This is because there is no clear definition of stress that everyone agrees on. The term is highly subjective, and even scientists cannot agree. Ironically, some events that are hair-raising for some people are delightful to others who seek thrills. Suppose, for example, that you visit an amusement park and observe riders on a roller coaster. You would notice some riders hunched down in their seats with their eyes shut near the back of the roller coaster. Their pale faces, clenched jaws and iron grip on the safety bar in front of them reveal that they want the torturous ride to end. But seated up front, you observe wide-eyed riders who raise their arms and squeal with glee each time the roller coaster takes a steep plunge. When the ride ends these brave souls get back in line to ride the coaster again. So...was the event stressful?

A key factor that distinguishes the passengers in the front of the roller coaster from those in the rear was the sense of control they believed they had over the event. That sense prevented some from paralyzing fear, and the others felt the situation was beyond their control. In reality, neither group had any more or less control over the event than the other. Their perceptions and expectations were merely different. Many times in life we allow faulty perceptions to distress us.

Researchers have studied caged rats and discovered a phenomenon known as "learned helplessness." In a now-classic experiment, researchers sounded a tone, and then zapped the rats with

How Harmful is Stress?

- 43% of adults suffer adverse health effects from stress.
- 75-79% of all doctor visits are for stress-related complaints and ailments.
- Stress is linked to the six leading causes of death: heart disease, cancer, lung ailments, accidents, cirrhosis of the liver, and suicide.



a mild electrical shock. The rats quickly began to associate the tone with the impending pain. Soon after, researchers added an escape route. If the rats headed for the exit when they heard the tone, they were able to avoid the inevitable shock, and all was well. Researchers then added a twist to the experiment. They sounded the tone, but blocked the exits. The rats froze in place when they discovered that their escape route was no longer accessible. After a period of time, the researchers reopened the escape route and sounded the tone. Although the rats formerly had escaped through the exit to avoid the shock, they no longer tried to get away. When the tone sounded, they stayed in place and suffered the consequences.

Obviously, as humans, we have more intellectual resources at our disposal than bewildered rodents, but the underlying principle remains the same. Researchers tell us that learned helplessness affects humans, too. When our circumstances change and stress enters our lives, we may fail to seek strategies to help us avoid some of life's *zaps*.

Neuroscientists are discovering remarkable connections between the mind and the body. At the same time, they are learning more about the effects of stress and negative thinking. They report that the chemicals that flow through our bodies when we think negative thoughts are different from those that flow when we think positively. Both animal and human research studies show that there is a relatively small window for reversing the physiological effects of stress-related illness and problems that can result when cortisol levels go out of control. Awareness of your stressors and your attitude are important factors for the future health of your body and brain.

Stay on the Sunny Side

Neuroscientists warn us that a healthy brain depends on a positive attitude. The medical community has recently begun to use optimism as a traditional measure of health and wellness. In a breakthrough study conducted in 2004, subjects who described themselves as optimistic during the previous decade had lower rates of death from cardiovascular disease and, in general, they lived longer. Yale University researchers report that subjects with a “half-full” attitude live an extra 7.6 years!

But when you get older, aren't you supposed to be crabby? Sadly, stereotypes of curmudgeonly older adults paint an erroneous picture. Rather, psychologists find the opposite to be true. Older adults possess what is described as a “happiness advantage.” Startling new research at Stanford University shows that the frequency of negative emotions actually decreases as people age! Functional magnetic resonance imaging technology has confirmed this phenomenon. Scientists tracked the brain activity patterns of subjects ages 70 to 90 in the amygdala region of the brain—the area central to emotional processing. They found that when shown images, older adults focus longer on positive images and tune out negative images far more easily than younger adults. Psychologists believe that the emotional circuitry in mature adults who show no evidence of neurological impairment becomes more balanced and negative moods tend to pass more quickly.

It is nice to know that as we age, we have an innate physiological advantage that leads to optimism. But, as we all know, life is not a 24/7 “happy hour.” Stressors abound and each of us has to look for strategies to help us stay on the “sunny side.” There is no shortage of stress relievers available to us. But just as stress is different for each of us, there are no coping solutions that work for everyone.



In a classic experiment, researchers put two rats into a cage with a running wheel. They locked the two rats together. The first rat could run on the wheel whenever he felt like it. Because of the yoke, the poor second rat was forced to run whenever his partner did. While exercise is normally an effective stress reducer that stimulates the growth of new neurons, the second rat resented having to run when he didn't feel like it. He lacked the crucial element of control. Since he could not pick his schedule—pardon the pun—he was forced into a *rat race*. At the end of the experiment, researchers examined the brains of both animals. They found that the first rat's brain bloomed with new brain cells. But the second rat's brain cells decreased in number...most likely because of the stress.

Everything can be taken away from man except the last of the human freedoms—his ability to choose his own attitude in any given set of circumstances.

~Viktor Frankl
Auschwitz survivor, neurologist,
psychoanalyst, author

If you examine your life and realize that anxiety and stress are high and your attitude lever points toward the negative end of the gauge, you may be jeopardizing your brain and hindering your memory. Consider discussing your symptoms with your doctor if you often feel overwhelmed. In addition, you may want to consider adopting some of the simple strategies provided in this chapter.

Strengthen Your Social Network

Philosophers, religious leaders, and neuroscientists all agree that a key element—perhaps THE key—to a happy life is having strong social bonds. Even short interactions with others can boost your mood and reduce your stress. Surprisingly, this is true for introverts as well as extroverts.

There is no doubt about it. Buddies boost your brainpower! Having close friends and staying in touch with family members also offers a protective effect against the damaging effects of Alzheimer's disease. A study in Sweden, for example, found that the risk of dementia rose by nearly 60 percent for individuals with a limited social network. Another study reported a substantially higher incidence of cognitive impairment for individuals who had limited social activity during the previous twelve-year period.

As people grow older, loneliness is a stressor that is often overlooked. The MacArthur Foundation Study on aging revealed that the two strongest predictors of well-being among older people are the frequency of visits with friends and attendance at organizational meetings. Aging experts unanimously recommend staying involved in community functions and volunteering. According to research reports, it really *is* more blessed to give. Studies show that older people who give back to the community have better overall health and lower mortality risks than those who do not.





Find Your Funny Bone

“Hey, did you hear the one about...?”

Humor is so central to health that it is surprising how little attention has been paid to it over the years. Most scientists prefer to tackle serious subjects such as cures for cancer and impotence. However, a smattering of scientists has forged ahead trying to find the source of funny bones. To their amazement, they found them in an unexpected place...inside the human head!

Research scientists and medical providers are having a field day listing all of the positive things that happen to our bodies and brains when we laugh. That evil immune suppressor cortisol becomes less prevalent in our bloodstream when we laugh. Laughter moves lymph fluids through our bodies and flushes dead wastes from our tissues and organs. Laughing requires you to inhale large amounts of oxygen. This, in turn, reduces your stress, boosts your energy, clears your mind, and enhances your memory.

Scientists estimate that if you tried to purchase all of the positive chemicals your body produces when you engage in hearty laughter; the list would carry a hefty price tag. Some estimate that if the chemical compounds were available for purchase at a pharmaceutical lab, the price would be approximately \$10,000. But, *woohoo*—when you laugh, your brain produces these chemicals for free!

• • •

The Check Is In the Mail?

Husband: *“I saw the doctor today about my memory problem.”*

Wife: *“Well...what did he say?”*

Husband: *“Pay me in advance.”*

• • •

The Amazing Benefits of Laughter

Physical Health:

- Strengthens immunity
- Reduces stress hormones
- Reduces pain
- Lowers blood pressure

Mental Health:

- Pumps dopamine into the bloodstream
- Reduces anger and anxiety
- Improves mood, memory and creativity

Although a functional MRI machine seems a rather strange place for a comedy club, researchers have studied what happens when subjects view sitcoms or cartoons. Subjects, while in scanners, have been asked to push buttons on hand-held devices as they rate the hilarity-level of cartoons or funny moments in television shows. At the same time, researchers observe and measure functions such as blood flow to various regions of the brain. Results showed that the funnier the subjects rated cartoons or antics to be, the harder they worked their brains! Although slapstick humor, such as the type *The Three Stooges* comedy provides, is funny and beneficial to the brain, more complex, nuanced humor provides a superior workout. Think about that the next time you watch *Comedy Central!*

Without a doubt, laughing is one of the best things you can do to mitigate stress, improve your attitude, and boost the health of your body and brain. And it’s effortless. While no one claims that daily viewings of *I Love Lucy* re-runs will qualify you for membership in Mensa’s High-IQ club, frequent doses of humor will tune up your mind and keep you



mentally limber. It is time to take humor seriously! But don't be surprised if you become addicted. Humor stimulates the part of your brain that produces the feel-good chemical messenger, dopamine. Yes, laughter ranks right up there in the category with activities you want to engage in over and over...such as eating chocolate or having sex!

Live Long, Live Well and Prosper

At age 78 Eleanor Roosevelt said, *"A stumbling block to the pessimist is a stepping stone to the optimist."* Optimistic people experience less stress and depression and feel less sense of hopelessness. While no one can remove the stressors of life entirely, if we can recognize our limitations and prioritize our activities to spend time doing things that really matter and bring us pleasure, we will be taking important steps toward gaining control over our lives. Learning to manage stress will improve our outlook on life and our health.

When you get older, hopefully you've developed the smarts to know that if you wake up in the morning and you're vertical and your kids are healthy, that's 90 percent of being happy.

~Judge Judy

If you reflect back over the chapters in Parts 1 and 2 of this book, you know that an actively-engaged brain, plenty of mental and physical exercise, a healthy diet, a big dose of optimism, and a network of friends will keep octane flowing to your brain. You have a great deal of control over how your brain ages—and you have the power to influence your health and longevity as well.

No matter what challenges you must steer around as you grow older, you can choose to start each day with a "half-full attitude." Cherish both the years behind and in front of you. Manage your health, keep your sense of adventure, and laugh lots. Life happens. But remember...a truly happy person is one who can enjoy the scenery...*even on a detour!*

