

The Value of Positive Emotions

The emerging science of positive psychology is coming to understand why it's good to feel good

Barbara L. Fredrickson

Back in the 1930s some young Catholic nuns were asked to write short, personal essays about their lives. They described edifying events in their childhood, the schools they attended, their religious experiences and the influences that led them to the convent. Although the essays may have been initially used to assess each nun's career path, the documents were eventually archived and largely forgotten. More than 60 years later the nuns' writings surfaced again when three psychologists at the University of Kentucky reviewed the essays as part of a larger study on aging and Alzheimer's disease. Deborah Danner, David Snowdon and Wallace Friesen read the nun's biographical sketches and scored them for positive emotional content, recording instances of happiness, interest, love and hope. What they found was remarkable: The nuns who expressed the most positive emotions lived up to 10 years longer than those who expressed the fewest. This gain in life expectancy is considerably larger than the gain achieved by those who quit smoking.

The nun study is not an isolated case. Several other scientists have found that people who feel good live longer. But why would this be so? Some answers are emerging from the new field of positive psychology. This branch of psychological science surfaced about five years ago, as the brainchild of Martin E. P. Seligman, then president of the American Psychological Association

(APA). Like many psychologists, Seligman had devoted much of his research career to studying mental illness. He coined the phrase *learned helplessness* to describe how hopelessness and other negative thoughts can spiral down into clinical depression.

At the start of his term as APA president, Seligman took stock of the field of psychology, noting its significant advances in curing ills. In 1947, none of the major mental illnesses were treatable, whereas today 16 are treatable by psychotherapy, psychopharmacology or both. Although psychology had become proficient at rescuing people from various mental illnesses, it had virtually no scientifically sound tools for helping people to reach their higher ground, to thrive and flourish. Seligman aimed to correct this imbalance when he called for a "positive psychology." With the help of psychologist Mihaly Csikszentmihalyi—who originated the concept of "flow" to describe peak motivational experiences—Seligman culled the field for scientists whose work might be described as investigating "that which makes life worth living."

This is how many research psychologists, myself included, were drawn to positive psychology. My own background is in the study of emotions. For more than a dozen years, I've been studying the positive emotions—joy, contentment, gratitude and love—to shed light on their evolved adaptive significance. Among scientists who study emotions, this is a rare specialty. Far more emotion researchers have devoted their careers to studying negative emotions, such as anger, anxiety and sadness. The study of optimism and positive emotions was seen by some as a frivolous pursuit. But the

positive psychology movement is changing that. Many psychologists have now begun to explore the largely uncharted terrain of human strengths and the sources of happiness.

The new discoveries generated by positive psychology hold the promise of improving individual and collective functioning, psychological well-being and physical health. But to harness the power of positive psychology, we need to understand how and why "goodness" matters. Although the discovery that people who think positively and feel good actually live longer is remarkable, it raises more questions than it answers. Exactly how do positive thinking and pleasant feelings help people live longer? Do pleasant thoughts and feelings help people live better as well? And why are positive emotions a universal part of human nature? My research traces the possible pathways for the life-enhancing effects of positive emotions and attempts to understand why human beings evolved to experience them.

Why So Negative?

There are probably a number of reasons why the positive emotions received little attention in the past. There is, of course, the natural tendency to study something that afflicts the well-being of humanity—and the expression and experience of negative emotions are responsible for much of what ails this world. But it may also be that the positive emotions are a little harder to study. They are comparatively few and relatively undifferentiated—joy, amusement and serenity are not easily distinguished from one another. Anger, fear and sadness, on the other hand, are distinctly different experiences.

This lack of differentiation is evident in how we think about the emotions. Consider that scientific taxonomies of

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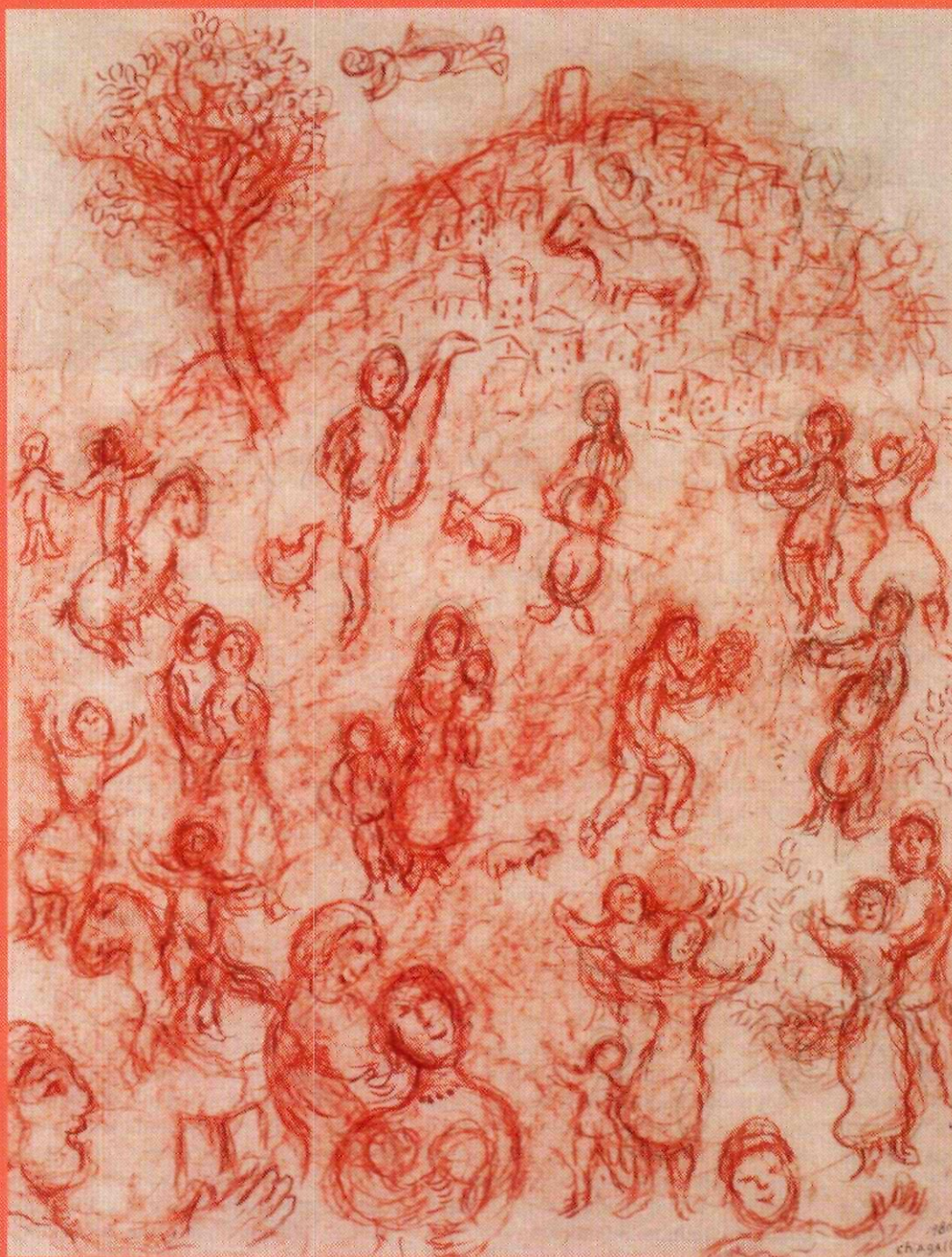


Figure 1. Feeling joy in the pleasures of life, as depicted in Marc Chagall's *Festival in the Village*, offers rewards beyond those of simply experiencing the moment. There are benefits to personal health, development and longevity, as well as evolutionary reasons why human beings experience positive emotions.

basic emotions typically identify one positive emotion for every three or four negative emotions and that this imbalance is also reflected in the relative numbers of emotion words in the English language.

Various physical components of emotional expression similarly reveal a lack of differentiation for the positive emotions. The negative emotions have specific facial configurations that imbue them with universally recognized signal value. We can readily identify an-

gry, sad or fearful faces. In contrast, facial expressions for positive emotions have no unique signal value: All share the *Duchenne smile*—in which the corners of the lips are raised and the muscles are contracted around the eyes, which raises the cheeks. A similar distinction is evident in the response of the autonomic nervous system to the expression of emotions. About 20 years ago, psychologists Paul Ekman and Wallace Friesen at the University of California, San Francisco, and Robert Lev-

enson at Indiana University showed that anger, fear and sadness each elicit distinct responses in the autonomic nervous system. In contrast, the positive emotions appeared to have no distinguishable autonomic responses.

The study of positive emotions has also been hindered because scientists attempted to understand them with models that worked best for negative emotions. Central to many theories of emotion is that they are, by definition, associated with urges to act in particular



Figure 2. Negative emotions—like anger, fear and disgust—can be understood as evolutionary adaptations to threats our ancestors faced. Anger (left) elicits the urge to attack, fear (middle) the urge to escape and disgust (right) the urge to expel. In this view, the negative emotions narrow our thoughts and actions to those that promoted survival in life-threatening situations. Because the positive emotions—joy, serenity, gratitude and the like—were not so readily understood from this perspective, psychological science had not come up with a satisfying explanation for their evolutionary significance until recently.

ways. Anger creates the urge to attack, fear the urge to escape and disgust the urge to expectorate (Figure 2). Of course, no theorist argues that people invariably act out these urges; rather, people's ideas about possible courses of action narrow in on these specific urges. And these urges are not simply thoughts existing in the mind. They embody specific physiological changes that enable the actions called forth. In the case of fear, for example, a greater amount of blood flows to the large muscle groups to facilitate running.

The models that emphasize the role of these specific action tendencies typically cast the emotions as evolved adaptations. The negative emotions have an intuitively obvious adaptive value: In an instant, they narrow our thought-action repertoires to those that best promoted our ancestors' survival in life-threatening situations. In this view, negative emotions are efficient solutions to recurrent problems that our ancestors faced.

Positive emotions, on the other hand, aren't so easily explained. From this evolutionary perspective, joy, serenity and gratitude don't seem as useful as fear, anger or disgust. The bodily changes, urges to act and the facial expressions produced by positive emotions aren't as specific or as obviously relevant to survival as those sparked by negative emotions. If positive emotions didn't promote our ancestors' survival in life-threatening situations, then what good were they? Did they have any adaptive value at all? Perhaps they merely signaled the absence of threats.

The Broaden-and-Build Theory

We gain some insight into the adaptive role of positive emotions if we abandon the framework used to understand the negative emotions. Instead of solving problems of immediate survival, positive emotions solve problems concerning personal growth and development. Experiencing a positive emotion leads to states of mind and to modes of behavior that indirectly prepare an individual for later hard times. In my broaden-and-build theory, I propose that the positive emotions broaden an individual's momentary mindset, and by doing so help to build enduring personal resources. We can test these ideas by exploring the ways that positive emotions change how people think and how they behave.

My students and I conducted experiments in which we induced certain emotions in people by having them watch short, emotionally evocative film clips. We elicited joy by showing a herd of playful penguins waddling and sliding on the ice, we elicited serenity with clips of peaceful nature scenes, we elicited fear with films of people at precarious heights, and we elicited sadness with scenes of deaths and funerals. We also used a neutral "control" film of an old computer screen saver that elicited no emotion at all.

We then assessed the participant's ability to think broadly. Using global-local visual processing tasks, we measured whether they saw the "big picture" or focused on smaller details (Figure 3, left). The participant's task is to judge which of two comparison figures is more similar to a "standard"

figure. Neither choice is right or wrong, but one comparison figure resembles the standard in global configuration, and the other in local, detailed elements. Using this and similar measures, we found that, compared to those in negative or neutral states, people who experience positive emotions (as assessed by self-report or electromyographic signals from the face) tend to choose the global configuration, suggesting a broadened pattern of thinking.

This tendency to promote a broader thought-action repertoire is linked to a variety of downstream effects of positive emotions on thinking. Two decades of experiments by Alice Isen of Cornell University and her colleagues have shown that people experiencing positive affect (feelings) think differently. One series of experiments tested creative thinking using such tests as Mednick's Remote Associates Test, which asks people to think of a word that relates to each of three other words. So, for example, given the words *mower*, *atomic* and *foreign*, the correct answer is *power* (Figure 3, right). Although this test was originally designed to assess individual differences in the presumably stable trait of creativity, Isen and colleagues showed that people experiencing positive affect perform better on this test than people in neutral states.

In other experiments, Isen and colleagues tested the clinical reasoning of practicing physicians. They made some of the physicians feel good by giving them a small bag of candy, then asked all of them to think aloud while they solved a case of a patient with liver dis-

ease. Content analyses revealed that physicians who felt good were faster to integrate case information and less likely to become anchored on initial thoughts or come to premature closure in their diagnosis. In yet another experiment, Isen and colleagues showed that negotiators induced to feel good were more likely to discover integrative solutions in a complex bargaining task. Overall, 20 years of experiments by Isen and her colleagues show that when people feel good, their thinking becomes more creative, integrative, flexible and open to information.

Even though positive emotions and the broadened mindsets they create are themselves short-lived, they can have deep and enduring effects. By momentarily broadening attention and thinking, positive emotions can lead to the discovery of novel ideas, actions and social bonds. For example, joy and playfulness build a variety of resources. Consider children at play in the schoolyard or adults enjoying a game of basketball in the gym. Although their immediate motivations may be simply hedonistic—to enjoy the moment—they are at the same time building physical, intellectual, psychological and social resources. The physical activity leads to long-term improvements in health, the game-playing strategies develop problem-solving skills, and the camaraderie strengthens social bonds that may provide crucial support at some time in the future (Figure 4). Similar links between playfulness and later gains in physical, social and intellectual resources are also evident in nonhuman animals, such as monkeys, rats and squirrels. In human beings, other positive states of mind and positive actions work along similar lines: Savoring an experience solidifies life priorities; altruistic acts strengthen social ties and build skills for expressing love and care. These outcomes often endure long after the initial positive emotion has vanished.

My students and I recently tested these ideas by surveying a group of people to examine their resilience and optimism. The people were originally interviewed in the early months of 2001, and then again in the days after the September 11th terrorist attacks. We asked them to identify the emotions they were feeling, what they had learned from the attacks and how optimistic they were about the future. We

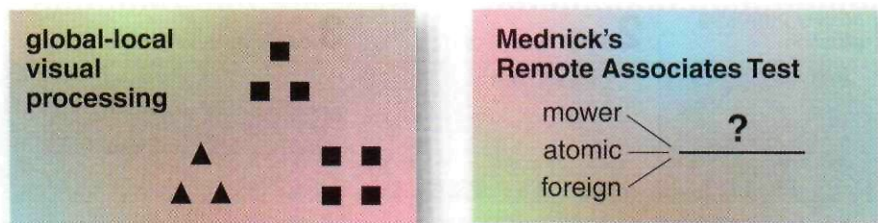


Figure 3. Psychological tests reveal that people tend to think broadly when they experience positive emotions. A global-local visual processing test (left) asks participants to judge which of two comparison figures (bottom) is most similar to a standard figure (top). People experiencing positive emotions tend to choose the figure that resembles the standard configuration in global configuration (the triangles). Similarly, people experiencing positive emotions score highly on tests of creativity such as Mednick's Remote Associates Test (right), which asks people to think of a word that relates to each of three other words. (The answer is in the text on the previous page.) The positive emotions broaden people's mindsets, which allows them to solve problems like this more readily.

learned that after September 11 nearly everyone felt sad, angry and somewhat afraid. And more than 70 percent were depressed. Yet the people who were originally identified as being resilient in the early part of 2001 felt positive emotions strongly as well. They were also half as likely to be depressed. Our statistical analyses showed that their tendency to feel more positive emo-

tions buffered the resilient people against depression.

Gratitude was the most common positive emotion people felt after the September 11th attacks. Feeling grateful was associated both with learning many good things from the crisis and with increased levels of optimism. Resilient people made statements such as, "I learned that most people in the

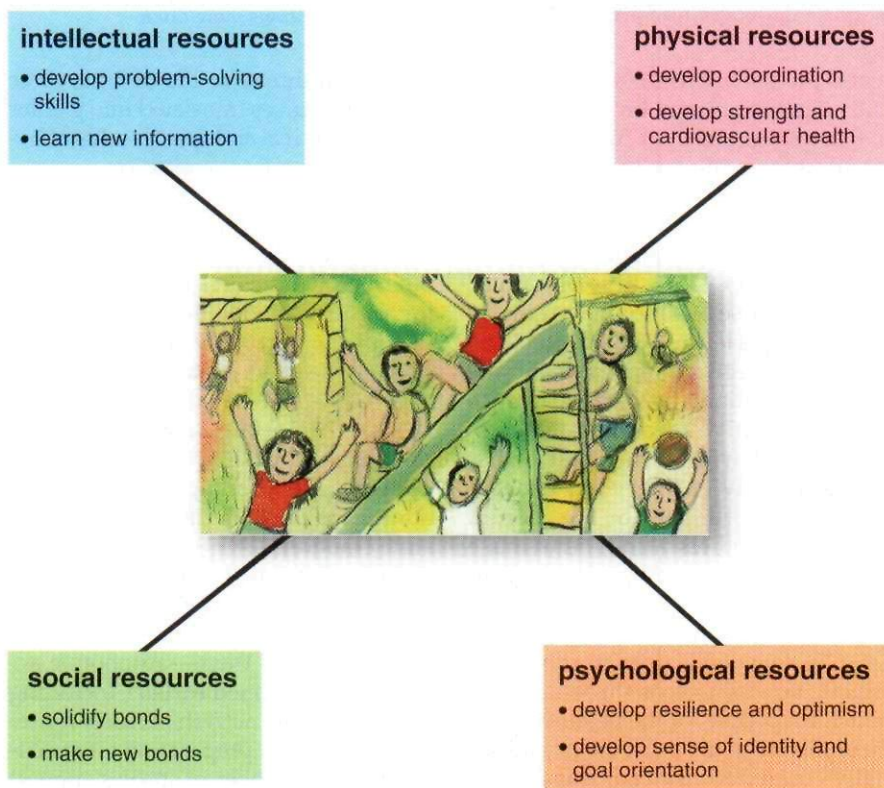


Figure 4. Positive emotions broaden people's momentary thought-action repertoires. Joy, for example, encourages playful behavior. These broadened thought-action repertoires in turn build intellectual, physical, social and psychological resources for the future. Such resources translate into greater odds of survival and reproductive success.

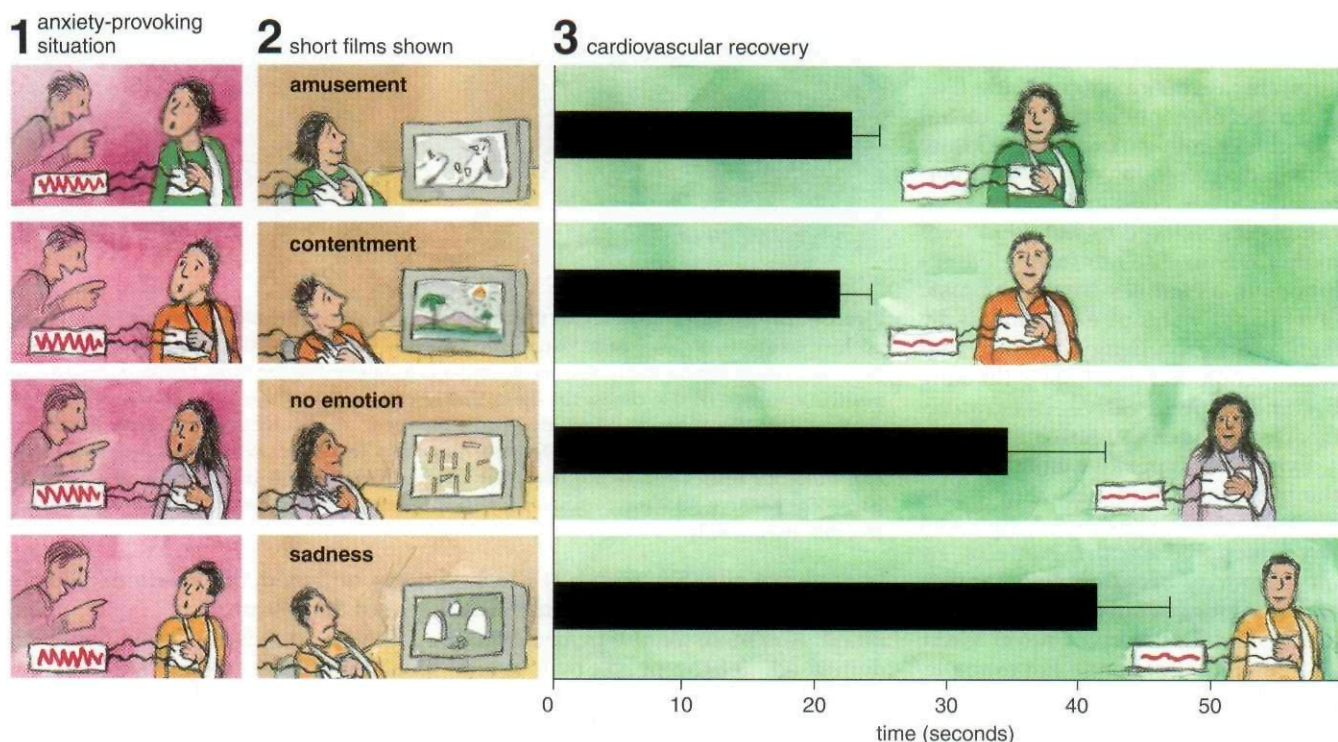


Figure 5. Undoing hypothesis suggests that positive emotions “undo” the lingering effects of negative emotions. This was examined by provoking anxiety in a group of participants by asking them to prepare a speech under time pressure. After learning that they did not have to deliver their speeches after all, the participants were shown one of four films, eliciting either amusement, contentment, no emotion or sadness. Measurements of the participants’ heart rate, blood pressure and peripheral vasoconstriction revealed that feeling positive emotions leads to the quickest recovery to baseline measures obtained before they were placed in the anxiety-provoking situation. These undoing effects may partly explain the longevity of people who experience positive emotions more often.

world are inherently good.” Put differently, feeling grateful broadened positive learning, which in turn built optimism, just as the broaden-and-build theory suggests.

My students and I have recently completed an experimental test of the building effect of positive emotions. Over the course of a month-long study of daily experiences, we induced one group of college students to feel more positive emotions by asking them to find the positive meaning and long-term benefit within their best, worst and seemingly ordinary experiences each day. At the end of the month, compared to others who did not make this daily effort to find positive meaning, those who did showed increases in psychological resilience.

So “feeling good” does far more than signal the absence of threats. It can transform people for the better, making them more optimistic, resilient and socially connected. Indeed, this insight might solve the evolutionary mystery of positive emotions: Simply by experiencing positive emotions, our ancestors would have naturally accrued more personal resources. And when later

faced with threats to life or limb, these greater resources translated into greater odds of survival and greater odds of living long enough to reproduce.

The Undoing Hypothesis

We might also ask whether there are other immediate benefits to experiencing positive emotions, aside from the tautology that they make us “feel good.” One effect relates to how people cope with their negative emotions. If negative emotions narrow people’s mindsets and positive emotions broaden them, then perhaps positive emotions undo the lingering effects of negative emotions.

Such effects may extend to the physiological realm. The negative emotions have distinct physiological responses associated with them—autonomic activity (as mentioned earlier), including cardiovascular activity, which represents the body’s preparation for specific action. A number of studies suggest that the cardiovascular activity associated with stress and negative emotions, especially if prolonged and recurrent, can promote or exacerbate heart disease. Experiments on nonhu-

man primates reveal that recurrent emotion-related cardiovascular activity also appears to injure the inner walls of arteries and initiate atherosclerosis. Because the positive emotions broaden people’s thought-and-action repertoires, they may also loosen the hold that negative emotions gain on both mind and body, dismantle preparation for specific action and undo the physiological effects of negative emotions.

My colleagues and I tested this undoing hypothesis in a series of experiments. We began by inducing a negative emotion: We told participants that they had one minute to prepare a speech that would be videotaped and evaluated by their peers. The speech task induced the subjective feeling of anxiety as well as increases in heart rate, peripheral vasoconstriction and blood pressure. We then randomly assigned the participants to view one of four films: two films evoked mild positive emotions (amusement and contentment), a third served as a neutral control condition and a fourth elicited sadness.

We then measured the time elapsed from the beginning of the randomly assigned film until the cardiovascular re-

actions induced by the speech task returned to each participant's baseline levels. The results were consistent: Those individuals who watched the two positive-emotion films recovered to their baseline cardiovascular activity sooner than those who watched the neutral film. Those who watched the sad film showed the most delayed recovery (Figure 5). Positive emotions had a clear and consistent effect of undoing the cardiovascular repercussions of negative emotions.

At this point the cognitive and physiological mechanisms of the undoing effect are unknown. It may be that broadening one's cognitive perspective by feeling positive emotions mediates the physiological undoing. Such ideas need further exploration.

Ending on a Positive Note

So how do the positive emotions promote longevity? Why did the happy nuns live so long? It seems that positive emotions do more than simply feel good in the present. The undoing effect suggests that positive emotions can reduce the physiological "damage" on the cardiovascular system sustained by feeling negative emotions. But some other research suggests that there's more to it than that. It appears that experiencing positive emotions increases the likelihood that one will feel good in the future.

My colleague Thomas Joiner and I sought to test whether positive affect and broadened thinking mutually enhance each other—so that experiencing one produces the other, which in turn encourages more of the first one, and so on in a mutually reinforcing ascent to greater well-being. We measured positive affect and broadened thinking strategies in 138 college students on two separate occasions, five weeks apart (times T1 and T2), with standard psychological tests. When we compared the students' responses on both occasions we found some very interesting results: Positive affect at T1 predicted increases in both positive affect and broadened thinking at T2; and broadened thinking at T1 predicted increases in both positive affect and broadened thinking at T2. Further statistical analyses revealed that there was indeed a mutually reinforcing effect between positive affect and broadened thinking. These results suggest that people who regularly feel positive emotions are in some respects lifted on

an "upward spiral" of continued growth and thriving.

But positive emotions don't just transform individuals. I've argued that they may also transform groups of people, within communities and organizations. Community transformation becomes possible because each person's positive emotion can resound through others. Take helpful, compassionate acts as an example. Isen demonstrated that people who experience positive emotions become more helpful to others. Yet being helpful not only springs from positive emotions, it also produces positive emotions. People who give help, for instance, can feel proud of their good deeds and so experience continued good feelings. Plus, people who receive help can feel grateful, and those who merely witness good deeds can feel elevated. Each of these positive emotions—pride, gratitude and elevation—can in turn broaden people's mindsets and inspire further compassionate acts. So, by creating chains of events that carry positive meaning for others, positive emotions can trigger upward spirals that transform communities into more cohesive, moral and harmonious social organizations.

All of this suggests that we need to develop methods to experience more positive emotions more often. Although the use of humor, laughter and other direct attempts to stimulate positive emotions are occasionally suitable, they often seem poor choices, especially in trying times. Based on our recent experiment with college students, my advice would be to cultivate positive emotions indirectly by finding positive meaning within current circumstances. Positive meaning can be obtained by finding benefits within adversity, by infusing ordinary events with meaning and by effective problem solving. You can find benefits in a grim world, for instance, by focusing on the newfound strengths and resolve within yourself and others. You can infuse ordinary events with meaning by expressing appreciation, love and gratitude, even for simple things. And you can find positive meaning through problem solving by supporting compassionate acts toward people in need. So although the active ingredient within growth and resilience may be positive emotions, the leverage point for accessing these benefits is finding positive meaning.

So, what good is it to think about the good in the world? The mind can be a

powerful ally. As John Milton told us, "The mind is its own place, and in itself can make a heaven of hell, a hell of heaven." The new science of positive psychology is beginning to unravel how such transformations can take place. Think about the good in the world, or otherwise find positive meaning, and you seed your own positive emotions. A focus on goodness cannot only change your life and your community, but perhaps also the world, and in time create a heaven on earth.

Acknowledgments

The author would like to thank the University of Michigan, the National Institute of Mental Health (MH59615) and the John Templeton Foundation for supporting some of the research described in this article.

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