The Role of Positive Emotions in Positive Psychology

The Broaden-and-Build Theory of Positive Emotions

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In this article, the author describes a new theoretical perspective on positive emotions and situates this new perspective within the emerging field of positive psychology. The broaden-and-build theory posits that experiences of positive emotions broaden people's momentary thought–action repertoires, which in turn serves to build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources. Preliminary empirical evidence supporting the broaden-and-build theory is reviewed, and open empirical questions that remain to be tested are identified. The theory and findings suggest that the capacity to experience positive emotions may be a fundamental human strength central to the study of human flourishing.

The mission of positive psychology is to understand and foster the factors that allow individuals, communities, and societies to flourish (Seligman & Csikszentmihalyi, 2000). What role do positive emotions play in this mission? On first consideration, the answer seems simple: Positive emotions serve as markers of flourishing, or optimal well-being. Certainly moments in people's lives characterized by experiences of positive emotions—such as joy, interest, contentment, love, and the like—are moments in which they are not plagued by negative emotions—such as anxiety, sadness, anger, and despair. Consistent with this intuition, the overall balance of people's positive and negative emotions has been shown to predict their judgments of subjective well-being (Diener, Sandvik, & Pavot, 1991). Building on this finding, Kahneman (1999) suggested that "objective happiness" can best be measured by tracking (and later aggregating) people's momentary experiences of good and bad feelings (but see Fredrickson, 2000c). According to these perspectives, positive emotions signal flourishing. But this is not the whole story: Positive emotions also produce flourishing. Moreover, they do so not simply within the present, pleasant moment but over the long term as well. The take-home message is that positive emotions are worth cultivating, not just as end states in themselves but also as a means to achieving psychological growth and improved well-being over time.

A review of current perspectives on emotions, affect, and their respective functions provides an important backdrop. A selective review follows.

Perspectives on Emotions and Affect

Working definitions of emotions and affect vary somewhat across researchers. Yet despite ongoing debate (e.g., Diener, 1999; Ekman & Davidson, 1994), consensus is emerging that emotions are but a subset of the broader class of affective phenomena. Emotions, according to this perspective, are best conceptualized as multicomponent response tendencies that unfold over relatively short time spans. Typically, an emotion begins with an individual's assessment of the personal meaning of some antecedent event. This appraisal process may be either conscious or unconscious, and it triggers a cascade of response tendencies manifest across loosely coupled component systems, such as subjective experience, facial expression, cognitive processing, and physiological changes.

Affect, a more general concept, refers to consciously accessible feelings. Although affect is present within emotions (as the component of subjective experience), it is also present within many other affective phenomena, including physical sensations, attitudes, moods, and even affective traits. Thus, emotions are distinct from affect in multiple ways. First, emotions are typically about some personally meaningful circumstance (i.e., they have an object), whereas affect is often free-floating or objectless (Oatley & Jenkins, 1996; Russell & Feldman Barrett, 1999; Ryff & Singer, in press). Additionally, emotions are typically brief and implicate the multiple-component systems described above, whereas affect is often more long-lasting and may be salient only at the level of subjective experience (Ekman, 1994; Rosenberg, 1998; Russell & Feldman Barrett, 1999). Finally, emotions are often conceptualized as fitting into discrete categories of emotion families, like fear, anger, joy, and interest. Affect, by contrast, is often concep-

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tualized as varying along two dimensions, either pleasantness and activation (Russell & Feldman Barrett, 1999) or positive and negative emotional activation (Tellegen, Watson, & Clark, 1999).

Perspectives on the Functions of Affect and Emotions

Positive affect, according to numerous theorists, facilitates approach behavior (Cacioppo, Gardner, & Berntson, 1999; Davidson, 1993; Watson, Wiese, Vaidya, & Tellegen, 1999) or continued action (Carver & Scheier, 1990; Clore, 1994). From this perspective, experiences of positive affect prompt individuals to engage with their environments and partake in activities, many of which are adaptive for the individual, its species, or both. This link between positive affect and activity engagement provides an explanation for the often-documented positivity offset, or the tendency for individuals to experience mild positive affect frequently, even in neutral contexts (Diener & Diener, 1996; Ito & Cacioppo, 1999). Without such an offset, individuals most often would be unmotivated to engage with their environments. Yet with such an offset, individuals exhibit the adaptive bias to approach and explore novel objects, people, or situations. (See Watson et al., 1999, for a related explanation for diurnal patterns of positive emotional activation.)

Because positive emotions include a component of positive affect, they too function as internal signals to approach or continue. Even so, positive emotions share this function with a range of other positive affective states. Sensory pleasure, for instance, motivates people to approach and continue consuming whatever stimulus is biologically useful for them at the moment (Cabanac, 1971). Likewise, free-floating positive moods motivate people to continue along any line of thinking or action that they have initiated (Clore, 1994). As such, functional accounts of positive emotions that emphasize tendencies to approach or continue may only capture the lowest common denominator across all affective states that share a pleasant subjective feel, leaving additional functions unique to specific positive emotions uncharted.

Discrete emotion theorists often link the function of specific emotions to the concept of *specific action tendencies* (Frijda, 1986; Frijda, Kuipers, & Schure, 1989; Lazarus, 1991; Levenson, 1994; Oatley & Jenkins, 1996; Tooby & Cosmides, 1990). Fear, for example, is linked with the urge to escape, anger with the urge to attack, disgust with the urge to expel, and so on. It is not that people invariably act out these urges when feeling particular emotions. Rather, people's ideas about possible courses of action narrow in on a specific set of behavioral options. A key idea from this perspective is that a specific action tendency is what makes an emotion evolutionarily adaptive: These are among the actions that presumably worked best in helping human ancestors survive life-or-death situations (Tooby & Cosmides, 1990). Another key idea from the specific emotions perspective is that specific action tendencies and physiological changes go hand in hand. So, for example, when someone experiences an urge to escape when feeling fear, that person's body reacts by mobilizing appropriate autonomic support for the possibility of running (Levenson, 1994).

Although specific action tendencies have been invoked to describe the function of specific positive emotions as well, the action tendencies identified for positive emotions are notably vague and underspecified (Fredrickson & Levenson, 1998). For instance, joy has been linked with aimless activation, interest with attending, and contentment with inactivity (Frijda, 1986). These tendencies are far too general to be called specific (Fredrickson, 1998). They resemble generic urges to do anything or do nothing more than urges to do something quite specific, like flee, attack, or spit. This is troublesome: If the action tendencies triggered by positive emotions are vague, their effects on survival may be inconsequential. So, like the view centered on generic approach tendencies, the view centered on specific action tendencies yields an incomplete analysis of the function of positive emotions.

The Broaden-and-Build Theory of Positive Emotions

To advance understanding in this area, I formulated a new theoretical model to better capture the unique effects of positive emotions. I call this the *broaden-and-build theory* of positive emotions (Fredrickson, 1998). This theory states that certain discrete positive emotions—including joy, interest, contentment, pride, and love—although phenomenologically distinct, all share the ability to broaden people's momentary thought–action repertoires and build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources.

I contrast this new theory to traditional models based on specific action tendencies. Specific action tendencies

work well to describe the function of negative emotions and should be retained for models of this subset of emotions. Without loss of theoretical nuance, a specific action tendency can be redescribed as the outcome of a psychological process that narrows a person's momentary thought–action repertoire by calling to mind an urge to act in a particular way (e.g., escape, attack, expel). In a life-threatening situation, a narrowed thought–action repertoire promotes quick and decisive action that carries direct and immediate benefit. Specific action tendencies called forth by negative emotions represent the sort of actions that likely worked best to save human ancestors' lives and limbs in similar situations.

Although positive emotions can occur in adverse circumstances, the typical context of positive emotions is not a life-threatening situation. As such, a psychological process that narrows a person's momentary thought–action repertoire to promote quick and decisive action may not be needed. Instead, the positive emotions of joy, interest, contentment, pride, and love appear to have a complementary effect: They broaden people's momentary thought–action repertoires, widening the array of the thoughts and actions that come to mind (Fredrickson, 1998; Fredrickson & Branigan, 2001). Conceptual analyses of a range of positive emotions support this claim. Joy, for instance, broadens by creating the urge to play, push the limits, and be creative. These urges are evident not only in social and physical behavior, but also in intellectual and artistic behavior (Ellsworth & Smith, 1988; Frijda, 1986). Interest, a phenomenologically distinct positive emotion, broadens by creating the urge to explore, take in new information and experiences, and expand the self in the process (Csikszentmihalyi, 1990; Izard, 1977; Ryan & Deci, 2000; Tomkins, 1962). Contentment, a third distinct positive emotion, broadens by creating the urge to savor current life circumstances and integrate these circumstances into new views of self and of the world (Izard, 1977). Pride, a fourth distinct positive emotion that follows personal achievements, broadens by creating the urge to share news of the achievement with others and to envision even greater achievements in the future (Lewis, 1993). Love, conceptualized as an amalgam of distinct positive emotions (e.g., joy, interest, contentment) experienced within contexts of safe, close relationships (Izard, 1977), broadens by creating recurring cycles of urges to play with, explore, and savor experiences with loved ones. These various thought–action tendencies—to play, to explore, to savor and integrate, or to envision future achievement—each represent ways that positive emotions broaden habitual modes of thinking or acting (Fredrickson, 1998, 2000a; Fredrickson & Branigan, 2001).

In contrast to negative emotions, which carry direct and immediate adaptive benefits in situations that threaten survival, the broadened thought–action repertoires triggered by positive emotions are beneficial in other ways. Specifically, these broadened mindsets carry indirect and long-term adaptive benefits because broadening builds enduring personal resources, which function as reserves to be drawn on later to manage future threats.

Take play, the urge associated with joy, as an example. Animal research has found that specific forms of chasing play evident in juveniles of a species, like running into a flexible sapling or branch and catapulting oneself in an unexpected direction, are seen in adults of that species exclusively during predator avoidance (Dolhinow, 1987). Such correspondences suggest that juvenile play builds enduring physical resources (Boulton & Smith, 1992; Caro, 1988). Play also builds enduring social resources: Social play, with its shared amusement, excitement, and smiles, builds lasting social bonds and attachments (Aron, Norman, Aron, McKenna, & Heyman, 2000; Lee, 1983; Simons, McCluskey-Fawcett, & Papini, 1986), which can become the locus of subsequent social support. Childhood play also builds enduring intellectual resources by increasing levels of creativity (Sherrod & Singer, 1989), creating theory of mind (Leslie, 1987), and fueling brain development (Panksepp, 1998). Other positive emotions, like interest, contentment, pride, and love, similarly augment individuals' personal resources, ranging from physical and social resources to intellectual and psychological resources. (Fuller descriptions of the broaden-and-build theory are available in Fredrickson, 1998, 2000a, in press; Fredrickson & Branigan, 2001.)

It is important to note that the personal resources accrued during states of positive emotions are conceptualized as durable. They outlast the transient emotional states that led to their acquisition. By consequence, then, the often incidental effect of experiencing a positive emotion is an increase in one's personal resources. These resources function as reserves that can be drawn on in subsequent moments and in different emotional states.

In short, the broaden-and-build theory describes the form of positive emotions in terms of broadened thought–action repertoires and describes their function in terms of building enduring personal resources. In doing so, the theory provides a new perspective on the evolved adaptive significance of positive emotions. Human ancestors who succumbed to the urges sparked by positive emotions to play, explore, and so on would have by consequence accrued more personal resources. When these same ancestors later faced inevitable threats to life and limb, their greater personal resources would have translated into greater odds of survival, and, in turn, greater odds of living long enough to reproduce. To the extent, then, that the capacity to experience positive emotions is genetically encoded, this capacity, through the process of natural selection, would have become part of universal human nature.

Evidence for the Broaden-and-Build Theory

Empirical support for several key propositions of the broaden-and-build theory can be drawn from multiple subdisciplines within psychology, ranging from cognition and intrinsic motivation to attachment styles and animal behavior (for a review, see Fredrickson, 1998). This evidence suggests that positive emotions broaden the scopes of attention, cognition, and action and that they build physical, intellectual, and social resources. Yet much of this evi-

dence, because it predated the broaden-and-build theory, provides only indirect support for the model. My collaborators and I have since initiated direct tests of hypotheses drawn from the broaden-and-build theory. Although much work remains to be done, I briefly describe our preliminary findings here. My hope is that this initial evidence will cultivate interest among readers to conduct further studies on positive emotions that may serve to test and refine the broaden-and-build theory (Fredrickson, 2000b).

Positive Emotions Broaden Thought–Action Repertoires

Foundational evidence for the proposition that positive emotions broaden people's momentary thought–action repertoires comes from two decades of experiments conducted by Isen and colleagues (for a review, see Isen, 2000). They have documented that people experiencing positive affect show patterns of thought that are notably unusual (Isen, Johnson, Mertz, & Robinson, 1985), flexible (Isen & Daubman, 1984), creative (Isen, Daubman, & Nowicki, 1987), integrative (Isen, Rosenzweig, & Young, 1991), open to information (Estrada, Isen, & Young, 1997), and efficient (Isen & Means, 1983; Isen et al., 1991). They have also shown that those experiencing positive affect show an increased preference for variety and accept a broader array of behavioral options (Kahn & Isen, 1993). In general terms, Isen has suggested that positive affect produces a "broad, flexible cognitive organization and ability to integrate diverse material" (Isen, 1990, p. 89), effects recently linked to increases in brain dopamine levels (Ashby, Isen, & Turken, 1999). So although Isen's work does not target specific positive emotions or thought–action tendencies per se, it provides the strongest evidence that positive affect broadens cognition. Whereas negative emotions have long been known to narrow people's attention, making them miss the forest for the trees (or the suspect's style of dress for the gun), recent work suggests that positive affect may expand attention (Derryberry & Tucker, 1994). The evidence comes from studies that use global–local visual processing paradigms to assess biases in attentional focus. Negative states—like anxiety, depression, and failure—predict local biases consistent with narrowed attention, whereas positive states—like subjective well-being, optimism, and success—predict global biases consistent with broadened attention (Basso, Schefft, Ris, & Dember, 1996; Derryberry & Tucker, 1994).

These findings provide initial empirical footing for the hypothesis, drawn from the broaden-and-build theory, that distinct types of positive emotions serve to broaden people's momentary thought–action repertoires, whereas distinct types of negative emotions serve to narrow these same repertoires. With Christine Branigan, I tested this broadening hypothesis by showing research participants short, emotionally evocative film clips to induce the specific emotions of joy, contentment, fear, and anger. We also used a nonemotional film clip as a neutral control condition. Immediately following each film clip, we measured the breadth of participants' thought–action repertoires. We asked them to step away from the specifics of the film and imagine being in a situation in which similar feelings would arise. We then asked them to list what they would like to do right then, given this feeling. Participants recorded their responses on up to 20 blank lines that began with the phrase "I would like to."

Tallying the things each participant listed, Branigan and I found support for the broadening hypothesis. Participants in the two positive emotions conditions (joy and contentment) identified more things that they would like to do right then relative to those in the two negative emotion conditions (fear and anger) and, more important, relative to those in the neutral control condition. Those in the two negative emotion conditions also named fewer things than did those in the neutral control condition (Fredrickson & Branigan, 2000).

These data provide preliminary evidence that two distinct types of positive emotion—a high activation state of joy and a low activation state of contentment—each produce a broader thought–action repertoire than does a neutral state. Likewise, two distinct types of negative emotion—fear and anger—each produce a narrower thought–action repertoire than does a neutral state. This pattern of results supports a core proposition of the broaden-and-build theory: that distinct positive emotions widen the array of thoughts and actions that come to mind. By contrast, distinct negative emotions, as models based on specific action tendencies would suggest, shrink this same array.

Despite this encouraging initial evidence, many questions arise: Do other positive and negative emotions (e.g., interest, pride, love and sadness, disgust) conform to these effects? Do the effects generalize to other measures of broadened cognition? If so, what basic cognitive processes underlie this phenomenon? Do distinct positive emotions broaden (and distinct negative emotions narrow) the scope of attention or the scope of working memory? What are the neurological underpinnings? Are these effects mediated by changing levels of circulating brain dopamine, as Ashby and colleagues (1999) have suggested? What brain structures, circuits, and processes are involved? Finally, how are broadened thought–action repertoires translated into decisions and action? These and other questions provide directions for future work.

Positive Emotions Undo Lingering Negative Emotions

Evidence for the broadening hypothesis has clear implications for the strategies that people use to regulate their experiences of negative emotions. If negative emotions narrow the momentary thought–action repertoire and positive emotions broaden this same repertoire, then positive emotions ought to function as efficient antidotes for the lingering effects of negative emotions. In other words, positive emotions might correct or undo the after effects of negative emotions; my colleagues and I call this the *undoing hypothesis* (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan, & Tugade, in press). The basic observation that positive emotions (or key components of them) are somehow incompatible with negative emotions is not new and has been demon-

strated in earlier work on anxiety disorders (e.g., systematic desensitization; Wolpe, 1958), motivation (e.g., opponent-process theory; Solomon & Corbit, 1974), and aggression (e.g., principle of incompatible responses; Baron, 1976). Even so, the precise mechanism ultimately responsible for this incompatibility has not been adequately identified. The broadening function of positive emotions may play a role. By broadening a person's momentary thought–action repertoire, a positive emotion may loosen the hold that a negative emotion has gained on that person's mind and body by dismantling or undoing preparation for specific action.

One marker of the specific action tendencies associated with negative emotions is increased cardiovascular activity, which redistributes blood flow to relevant skeletal muscles. In the context of negative emotions, then, positive emotions should speed recovery from or undo this cardiovascular reactivity, returning the body to more midrange levels of activation. By accelerating cardiovascular recovery, positive emotions create the bodily context suitable for pursuing the broader array of thoughts and actions called forth.

My collaborators and I tested this undoing hypothesis by first inducing a high-activation negative emotion in all participants (Fredrickson & Levenson, 1998; Fredrickson et al., in press). In one study (Fredrickson et al., in press), we used a time-pressured speech preparation task. In just one minute, participants prepared a speech on the topic "Why you are a good friend," believing that their speech would be videotaped and evaluated by their peers. This speech task induced the subjective experience of anxiety along with increases in heart rate, peripheral vasoconstriction, and systolic and diastolic blood pressure. Into this context of anxiety-related sympathetic arousal, we randomly assigned participants to view one of four films. Two films elicited mild positive emotions (joy and contentment), and a third served as a neutral control condition. Notably, these three films, when viewed following a resting baseline, elicit virtually no cardiovascular reactivity (Fredrickson et al., in press). So the two positive-emotion films used in this study are indistinguishable from neutrality with respect to cardiovascular changes. Our fourth film elicited sadness. We chose sadness as an additional comparison because, among the negative emotions, it has not been definitively linked to a high-energy action tendency, and thus it could be a contender for speeding cardiovascular recovery.

The undoing hypothesis predicts that those who experience positive emotions on the heels of a high-activation negative emotion will show the fastest cardiovascular recovery. My colleagues and I tested this by measuring the time elapsed from the start of the randomly assigned film until the cardiovascular reactions induced by the negative emotion returned to baseline levels. In three independent samples, participants in the two positive emotion conditions (joy and contentment) exhibited faster cardiovascular recovery than did those in the neutral control condition. Participants in the sadness condition exhibited the most protracted recovery (Fredrickson & Levenson, 1998; Fredrickson et al., in press).

Although the two positive-emotion films and the neutral film did not differ in what they do to the cardiovascular system, these data suggest that they do differ in what they can undo within this system. Two distinct types of positive emotions—mild joy and contentment—share the ability to undo the lingering cardiovascular aftereffects of negative emotions. Although the precise cognitive and physiological mechanisms of the undoing effect remain unknown, the broaden-and-build theory suggests that broadening at the cognitive level mediates undoing at the cardiovascular level. Phenomenologically, positive emotions may help people place the events in their lives in broader context, lessening the resonance of any particular negative event. Perhaps pointing to physiological markers of broadening effects, some have suggested that parasympathetic cardiac control (measured as heart rate variability or respiratory sinus arrhythmia) underlies positive emotions as well as the ability to regulate negative emotions (Fox, 1989; McCraty, Atkinson, Tiller, Rein, & Watkins, 1995; Porges, 1995). Testing these suggestions and extending the work to other emotions and other contexts provide a road map for future research.

Positive Emotions Fuel Psychological Resiliency

Evidence for the undoing effect of positive emotions suggests that people might improve their psychological well-being, and perhaps also their physical health, by cultivating experiences of positive emotions at opportune moments to cope with negative emotions (Fredrickson, 2000a). Folkman and colleagues have made similar claims that experiences of positive affect during chronic stress help people cope (Folkman, 1997; Folkman & Moskowitz, 2000; Lazarus, Kanner, & Folkman, 1980). Evidence supporting this claim can be drawn from experiments showing that positive affect facilitates attention to negative, self-relevant information (Reed & Aspinwall, 1998; Trope & Neter, 1994; Trope & Pomerantz, 1998; for a review, see Aspinwall, 1998). Extrapolating from these findings, Aspinwall (2001) described how positive affect and positive beliefs serve as resources for people coping with adversity (see also Aspinwall & Taylor, 1997; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000).

It seems plausible that some individuals, more than others, might intuitively understand and use the benefits of positive emotions to their advantage. One candidate individual difference is psychological resilience. Resilient individuals are said to bounce back from stressful experiences quickly and efficiently, just as resilient metals bend but do not break (Carver, 1998; Lazarus, 1993). This theoretical definition of resilience suggests that, relative to their less resilient peers, resilient individuals would exhibit faster cardiovascular recovery following a high-activation negative emotion. Additionally, the broaden-and-build theory suggests that this ability to bounce back to cardiovascular baseline may be fueled by experiences of positive emotion.

With Michele Tugade, I tested these two hypotheses about resilient individuals using the same time-pressured speech preparation task (described earlier) to induce a high-activation negative emotion. We measured psychological resilience using Block and Kremen's (1996) self-report scale. It is interesting to note that resilience did not predict the levels of anxiety participants reported experiencing during the speech task or the magnitude of their cardiovascular reactions to the stressful task, both of which were considerable. Resilience did, however, predict participants' reports of positive emotions. Before the speech task was even introduced, more resilient individuals reported higher levels of preexisting positive affect on an initial mood measure. When later asked how they felt during the time-pressured speech preparation phase, more resilient individuals reported that alongside their high anxiety, they also experienced higher levels of happiness and interest.

As predicted by the theoretical definition of psychological resilience, more resilient participants exhibited significantly faster returns to baseline levels of cardiovascular activation following the speech task. Moreover, as predicted by the broaden-and-build theory, this difference in time needed to achieve cardiovascular recovery was mediated by differences in positive emotions (Tugade & Fredrickson, 2000).

These data suggest that positive emotions may fuel psychological resilience. In effect, then, resilient individuals may be—wittingly or unwittingly—expert users of the undoing effect of positive emotions. Again, questions arise from this initial study: Do resilient individuals intentionally recruit positive emotions to cope? If so, how do they do it? Folkman and Moskowitz (2000) identified three kinds of coping that can generate positive affect during stressful circumstances: positive reappraisal, problem-focused coping, and the infusion of ordinary events with positive meaning. Do resilient individuals use any or all of these strategies? If so, can these strategies be taught to less resilient individuals? Finally, do resilient individuals think more broadly, as the broaden-and-build theory would suggest? If so, does broadened thinking enable people to find positive meaning within adversity? Again, these remaining questions provide directions for future work.

Positive Emotions Build Psychological Resiliency and Trigger Upward Spirals Toward Improved Emotional Well-Being

Preliminary evidence suggests that positive emotions may fuel individual differences in resilience. Noting that psychological resilience is an enduring personal resource, the broaden-and-build theory makes the bolder prediction that experiences of positive emotions might also, over time, build psychological resilience, not just reflect it. That is, to the extent that positive emotions broaden the scopes of attention and cognition, enabling flexible and creative thinking, they should also augment people's enduring coping resources (Aspinwall, 1998, 2001; Isen, 1990). In turn, by building this psychological resource, positive emotions should enhance people's subsequent emotional well-being. Consistent with this view, studies have shown that people who experience positive emotions during bereavement are more likely to develop long-term plans and goals. Together with positive emotions, plans and goals predict greater psychological well-being 12 months postbereavement (Stein, Folkman, Trabasso, & Richards, 1997; for related work, see Bonanno & Keltner, 1997; Keltner & Bonanno, 1997). One way people experience positive emotions in the face of adversity is by finding positive meaning in ordinary events and within the adversity itself (Affleck & Tennen, 1996; Folkman & Moskowitz, 2000; Fredrickson, 2000a). It is important to note that the relation between positive meaning and positive emotions is considered reciprocal: Not only does finding positive meaning trigger positive emotion, but also positive emotions, because they broaden thinking, should increase the likelihood of finding positive meaning in subsequent events (Fredrickson, 2000a).

These suspected reciprocal relations among positive emotions, broadened thinking, and positive meaning suggest that over time the effects of positive emotions should accumulate and compound. The broadened attention and cognition triggered by earlier experiences of positive emotion should facilitate coping with adversity, and this improved coping should predict future experiences of positive emotion. As this cycle continues, people build their psychological resilience and enhance their emotional well-being.

The cognitive literature on depression has already documented a downward spiral in which depressed mood and the narrowed, pessimistic thinking it engenders influence one another reciprocally, over time leading to ever-worsening moods and even clinical levels of depression (Peterson & Seligman, 1984). The broaden-and-build theory predicts a comparable upward spiral in which positive emotions and the broadened thinking they engender also influence one another reciprocally, leading to appreciable increases in emotional well-being over time. Positive emotions may trigger these upward spirals, in part by building resilience and influencing the ways people cope with adversity. (For a complementary discussion of upward spirals, see Aspinwall, 1998, 2001.)

With Thomas Joiner, I conducted an initial prospective test of the hypothesis that through cognitive broadening, positive emotions produce an upward spiral toward enhanced emotional well-being. We assessed positive and negative emotions, as well as a concept we called *broad-minded coping*, at two time points, five weeks apart. Broad-minded coping was tapped by items such as "think of different ways to deal with the problem" and "try to step back from the situation and be more objective."

Our data revealed clear evidence for an upward spiral. Individuals who experienced more positive emotions than others became more resilient to adversity over time, as indexed by increases in broad-minded coping. In turn, these enhanced coping skills predicted increased positive emotions over time (Fredrickson & Joiner, 2000).

These findings suggest that positive emotions and broad-minded coping mutually build on one another. Not only do positive emotions make people feel good in the present, but also, through their effects on broadened think-

ing, positive emotions increase the likelihood that people will feel good in the future. Because broad-minded coping is a form of psychological resilience, these data are consistent with the prediction, drawn from the broaden-and-build theory, that momentary experiences of positive emotion can build enduring psychological resources and trigger upward spirals toward enhanced emotional well-being.

Again, many questions arise from these data. Does this upward spiral effect hold over longer time intervals and across other measures of well-being and broadening? What are the mechanisms of the effect? Do positive emotions beget future positive emotions because the broadened thinking associated with earlier positive emotions helps people solve their original problems, or because this broadened thinking enables people to find positive meaning in other life circumstances and thus experience additional positive emotions? Future studies, including experimental designs, are needed to answer these questions.

Concluding Remarks

What role do positive emotions play within positive psychology? Traditional views would suggest that experiences of positive emotion signal well-being and perhaps guide behavior in the moment. Without minimizing the importance of these functions, the broaden-and-build theory casts positive emotions in a much larger role. The theory suggests that positive emotions, although fleeting, also have more long-lasting consequences. From the perspective of the broaden-and-build theory, positive emotions are vehicles for individual growth and social connection: By building people's personal and social resources, positive emotions transform people for the better, giving them better lives in the future.

More specifically, the broaden-and-build theory suggests that multiple, discrete positive emotions are essential elements of optimal functioning. As such, the capacities to experience joy, interest, contentment, and love might be construed as fundamental human strengths that yield multiple, interrelated benefits (Fredrickson, 2000e). My own research outlines a small subset of these benefits. Specifically, I have shown that positive emotions (a) broaden people's thought–action repertoires (Fredrickson & Branigan, 2000), (b) undo lingering negative emotions (Fredrickson & Levenson, 1998; Fredrickson et al., in press), (c) fuel psychological resilience (Tugade & Fredrickson, 2000), and (d) build psychological resilience and trigger upward spirals toward enhanced emotional well-being (Fredrickson & Joiner, 2000). Complementing this work, two new perspectives highlight the lasting personal and social benefits of the positive emotions of gratitude (McCullough, Kilpatrick, Emmons, & Larson, 2001; see also Fredrickson, 2000d) and elevation (Haidt, 2000). I hope these initial findings inspire the further investigations of positive emotions that are needed to test, refine, uphold, or discard the broaden-and-build theory, which in turn will advance positive psychology.

One topic in particular need of study is the long-held but scantly supported hypothesis that positive emotions foster physical health (for reviews, see Ryff & Singer, 1998; Salovey, Rothman, Detweiler, & Steward, 2000). For instance, negative emotions, with their heightened and often prolonged cardiovascular activation, have been implicated in the etiology of coronary heart disease (Blascovich & Katkin, 1993; Fredrickson et al., 2000; Williams, Barefoot, & Shekelle, 1985). If positive emotions shorten the duration of negative emotional arousal, perhaps they may also slow the incremental progression toward disease (Fredrickson & Levenson, 1998). Relaxation techniques are known to reduce blood pressure in hypertensive adults (Blumenthal, 1985; Schneider et al., 1995), and they may do so precisely because they capitalize on the broadening and undoing effects of contentment (Fredrickson, 2000a). Additionally, Ryff and Singer (1998) suggested that physical health depends on having quality connections to others and leading a life of purpose. Recent evidence seems to support this assertion. For instance, people who consistently experienced positive emotions with their parents as children and then later with their spouses as adults were less than half as likely as others to exhibit high levels of cumulative wear and tear on the body (Ryff, Singer, Wing, & Love, in press). Similarly, in a longitudinal study of 2,282 older Mexican Americans, those who reported high positive affect, compared with those with less positive affect, were half as likely to have become disabled or to have died during a two-year follow-up (Ostir, Markides, Black, & Goodwin, 2000). These new findings, although somewhat isolated, underscore the message that positive emotions may be essential for optimizing both psychological and physical functioning (Fredrickson, 2000a).

Yet the benefits of positive emotions identified thus far are likely just the tip of the proverbial iceberg. As the positive psychology movement inspires additional research on positive emotions, even more reasons to cultivate positive emotions may be discovered.

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